Detroit River
INTERNATIONAL CROSSING
S T U D Y

Alternatives Analysis – Canadian Side

Canada Federal Highway Administration Ontario MDOT URS

Alternatives Analysis – Canadian Side

This document contains the detailed analysis of illustrative crossing, inspection plaza and connecting route alternatives.

In addition to the analysis, these tables include reasoned arguments supporting the selection of a preferred route segment alternative, as well as weighted-scoring results.

The tables are organized in accordance with the attached Route Segment Evaluation Sequence Chart.

ROUTE SEGMENT EVALUATIONS

EAST

Plaza CE2

1 "Best ED"= EC-ED / EB-ED → **EC-ED**

2 "Best EE" = EC-ED-EG / EA-EE → **EA-EE**

3 "Best EF"= EA-EE-EF / EC-ED-EG-EF → **EA-EE-EF**

Plaza CE1

4 "Best EG"= EC-ED-EG / EA-EE-EF-EG → **EC-ED-EG**

5 "Best Way to CE1"= **EC-ED-EG-EI-EJ**

5 "Best Way to CE2"= **EA-EE-EF-EH-EJ**

23 "Best Way to X15"= EA-EE-EF-EH-EJ (CE2 plaza impacts) / EC-ED-EG-EI-EJ (CE1 plaza impacts) → **EC-ED-EG-EI-EJ**

CENTRAL

6 "Best CL"= EC-EG-CL / CB-CL → **CB-CL**

7 "Best CE"= CC-CE / CA-SA-SB-CD-CE → **CC-CE**

8 "Best CI"= CC-CI / CC-CE-CI → **CC-CI**

9 "Best CF"= CC-CD-CF / CA-SA-SB-CF → **CC-CD-CF**

10 "Best CM"= CC-CI-CM / CB-CL-CM → **CC-CI-CM**

SOUTH

11 "Best SE" = CC-CD-SD-SE / CA-SA-SC-SE → **CC-CD-SD-SE**

12 "Best SH" = CC-CD-SD-SG-SH / CA-SA-SC-SF-SH → **CC-CD-SD-SG-SH**

13 "Best SK" = CC-CD-SD-SG-SJ-SK / CA-SA-SC-SF-SI-SK → **CC-CD-SD-SG-SJ-SK**

14 "Best SL" = CC-CD-SD-SG-SJ-SL / CA-SA-SC-SF-SI-SL → **CC-CD-SD-SG-SJ-SL**

15 Best Way to X1 = CC-SD-SD-SG-SJ-SK-SN / CC-CD-SD-SG-SJ-SL-SN → **CC-CD-SD-SG-SJ-SK-SN**

16 Best Way to X2/X3/X5 = CC-CD-CF-CG-SM / CC-CD-SD-SE-SM / CC-CD-SD-SG-SH-SM → **CC-CD-CF-CG-SM**

17 Best Way to X4/X6 = CC-CE-CH / CC-CD-CF-CG-CH → **CC-CD-CF-CG-CH**

18 Best Way to X7/X8 = CC-CK-CJ-CK / CC-CI-CM-CN-CR-CK / CC-CI-CJ-CO-CN-CR-CK → **CC-CI-CM-CN-CR-CK**

19 Best Way to X9/X10 = CC-CI-CM / CC-CI-CJ-CO / CC-CI-CJ-CK-CR → **CC-CI-CM-CN-CR**

20 Best Way to X10/X11= CC-CI-CM-CN-CP-CQ / CC-CI-CJ-CO-CN-CP-CQ / CC-CI-CJ-CK-CR-CP-CQ / CC-CI-CM-CT-CQ → **CC-CI-CM-CN-CP-CQ**

21 Best Way to X12 = CB-CL-CS-CT / CC-CI-CM-CT / CC-CI-CM-CN-CP-CQ-CT / CC-CI-CJ-CO-CN-CP-CQ-CT / CC-CI-CJ-CK-CR-CP-CQ-CT → **CC-CI-CM-CT**

22 Best Way to X13/X14 = **CB-CL-CS**

ANALYSIS OF PLAZAS

24 East

25 Central

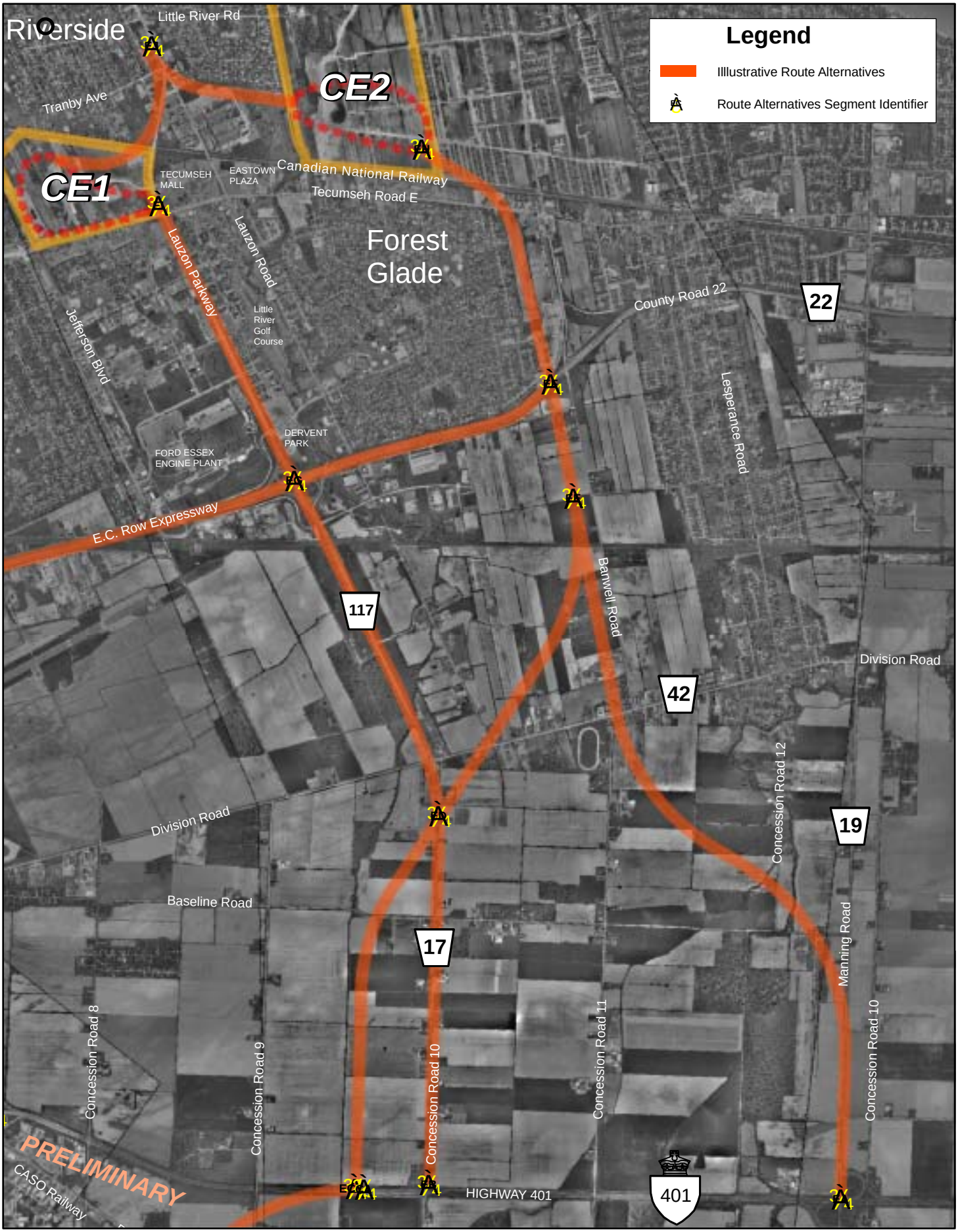
26 South

ANALYSIS OF CROSSINGS

27 Crossings X1 to X15

ANALYSIS OF HIGHWAY 401 TO DETROIT RIVER

28 X1
29 X2
30 X3
31 X4
32 X5
33 X6
34 X7
35 X8
36 X9
37 X10
38 X11
39 X12
40 X13
41 X14
42 X15



November 2005

EAST - Routes

Illustrative Alternative Route Segment Evaluation

EB – ED vs. EC – ED

Segment EB – ED and Segment EC – ED originate at Highway 401 and run parallel in a northeasterly direction joining at common point ED (see attached figure).

Seven performance measures were evaluated for each Illustrative Alternative and include: Change in Air Quality, Protect Community/Neighbourhood Characteristics, Maintain Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost. Analysis of Change in Air Quality has not been carried out by individual segment. Air Quality analysis computer models require route system connected lengths (results of individual segment comparisons joined to form a route) with traffic loading in order to provide reasonable results.

Segment EB - ED follows Concession 10, an existing roadway fronted by rural residences, business, and farmhouses, while Segment EC-ED avoids existing buildings by following rear lot lines. Segment EB – ED has higher impacts to farm operations than Segment EC – ED. Neither Segment EB – ED or Segment EC – ED affects any significant social features.

Segment EB – ED and Segment EC – ED have no significant impacts on Built Heritage features. However, a portion of Segment EC- ED affects an area of high archaeological potential. From a natural environment perspective, Segment EC-ED has fewer direct impacts to natural features while Segment EB-ED crosses a greater number of watercourses (natural and drainage channels) than Segment EC – ED.

Regarding Regional Mobility, the two segments are similar except that Segment EB-ED has a lower benefit to mobility, while Segment EC - ED provides a moderate benefit to the overall network. From the perspective of constructability Segment EC - ED presents fewer issues and lower construction costs.

In conclusion, Segment EC-ED has fewer direct impacts to residences and environmental features, fewer constructability issues and lower construction costs however, some potential for impacts to archaeological resources. On balance the advantages of Segment EC – ED outweighs the disadvantage of potential for impacts to archaeological resources. EC-ED was preferred and carried forward.

Illustrative Alternatives
Route Segment Evaluation

EB-ED vs. EC-ED

Route Segment Evaluation
EB-ED vs. EC-ED

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	There is a slight difference between the impacts of Alternative EB-ED and Alternative EC-ED, however, Alternative EC-ED impacts one fewer home/farms than EB-ED. **EC-ED is preferred.**
Protect Community/ Neighborhood Characteristics	Alternative EB-ED follows existing roadway which is fronted by existing residences/farmhouses, while EC-ED avoids existing buildings by following rear lot lines. **EC-ED has fewer direct impacts and is therefore preferred**.
Maintain Consistency with Existing and Planned Land Use	Both segments lie in the Tecumseh agricultural area as identified in the Sandwich South Official Plan. EB-ED eliminates a larger number of rural residences and farms and therefore has a greater impact on the planned function of the area. **Therefore, EC-ED is preferred.**
Protect Cultural Resources	No significant impacts to Built Heritage Features, Cultural Landscape Units, parks with either alternative. A portion of EC-ED impacts an area of high archaeological potential.
Protect the Natural Environment	EC-ED has fewer direct impacts to natural features; EB-ED has fewer indirect (proximity) impacts. **EC-ED is slightly preferred**.
Improve Regional Mobility	EB-ED has a low benefit to mobility, while EC-ED has a moderate benefit. EC-ED is preferred.
Minimize Cost	Between these two route segments, EC-ED is preferred due to fewer constructability issues and substantially lower construction costs.
Trade-Off Summary:	**EC-ED has fewer direct impacts to residences and environmental features, fewer constructability issues and lower construction costs than EB-ED. These advantages outweighed the potential impacts to archaeological resources. Therefore, EC-ED is preferred.**

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in concentrations vs. No-build scenario	Number of sensitive receptors within 250m of ROW	3	2	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	There is a slight difference between the impacts of segments EB-ED and EC-ED, however, segment EC-ED impacts one less homes/farms than EB-ED. EC-ED is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
			EB-ED	EC-ED	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: Cars 980 / 610 / -370; Trucks 840 / 580 / -260 Talbot Road: Cars 390 / 240 / -150; Trucks 680 / 470 / -210 EC Row Expressway: Cars 410 / 150 / -260; Trucks 30 / 30 / 0 Ouellette Avenue: Cars 290 / 80 / -210; Trucks 140 / 30 / -110 Dougall Avenue: Cars 250 / 120 / -130; Trucks 210 / 70 / -140	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: Cars 980 / 610 / -370; Trucks 840 / 580 / -260 Talbot Road: Cars 390 / 240 / -150; Trucks 680 / 470 / -210 EC Row Expressway: Cars 410 / 150 / -260; Trucks 30 / 30 / 0 Ouellette Avenue: Cars 290 / 80 / -210; Trucks 140 / 30 / -110 Dougall Avenue: Cars 250 / 120 / -130; Trucks 210 / 70 / -140	Each segment would provide for significant decrease in international volumes, as a part of a complete route to a new crossing. No significant difference between alternatives.
	Volume/Capacity (V/C) ratios by vehicle type	Change in V/C ratio	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: 1.18 / 0.99 / -0.19 Talbot Road: 1 / 1.04 / 0.04 EC Row Expressway: 0.89 / 0.77 / -0.12 Ouellette Avenue: 1.3 / 1.14 / -0.16 Dougall Avenue: 1.44 / 1.17 / -0.27	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: 1.18 / 0.99 / -0.19 Talbot Road: 1 / 1.04 / 0.04 EC Row Expressway: 0.89 / 0.77 / -0.12 Ouellette Avenue: 1.3 / 1.14 / -0.16 Dougall Avenue: 1.44 / 1.17 / -0.27	Key links would be operating at or near capacity. No significant difference between alternatives
	Local Access	No of streets crossed/closed	**3 Crossed** (401, 10th Con, Baseline) / **0 Closed**	**3 Crossed** (401, Baseline, 10th Con) / **0 Closed**	Minor impacts for both segments. Slightly greater impacts for EB-ED as it is aligned over Conc Rd 10
Noise	Potential increases in noise detected in sensitive receptors		3	2	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	3	2	
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	0	0	No social features identified.
		Qualitative assessment on planned land use and community cohesion, character and function.	Moderate impact on community cohesion, character and function. Concession 10 is eliminated. Large number of rural residences and agricultural operations will be displaced. While only part of the properties (driveways) along the Concession will be displaced, it will be harder to mitigate the loss of property and access.	Very minor effect. Proposed ROW follows back lot lines and therefore only minimal impact on community cohesion, character and function.	EC-ED is preferred from a community cohesion, character and function as it leaves in-tact the rural residences and farm homes and barns along Concession Road 10.
Acquisitions (Whole or Partial)	**RESIDENTIAL**				
		Quantitative assessment of the total number of households and/or dwellings (all housing formats) displaced within proposed ROW	9	1	
		Number of dwellings (all housing formats) disrupted./ No. within 100 m of proposed ROW	0	0	
	BUSINESS				

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	5	0	Impacts are mostly associated with displacement of a residential unit or farm property
		Number of businesses disrupted./ No. within 100 m of proposed ROW	0	0	No disruption
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW	0	0	No social features identified
		Total number of institutional uses disrupted./ No. within 100 m of proposed ROW	0	0	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm operations within the 100 metre ROW	13	1	Large number of farm operations will be likely displaced with EB-ED option because some property will be required in vicinity of farm households and barns. Much smaller number of farm operations impacted with EC-ED.
		Number of farm operations disrupted within the 500 metre study area (250 metres of centre line).	2	1	EB-ED One Stable, one large farm operation with road side market
		Qualitative assessment of agricultural operations effected.	At least four larger farm operations were identified with this alternative and will be likely displaced by the alternative. One of the farm operations include a large market stand. One horse stable located near corner of baseline and Concession 10 will also be likely displaced.	Generally the only loss will be a loss of total field area for farming operations, with a small number of actual operations lost.	EB-ED alternative will likely displace several large farm operations as the investment in buildings and infrastructure is located adjacent to Concession 10. These farm operations include at least one market stand and one stable. EB-ED will have a much lower impact as only field area is lost.
Factor Summary:	EB-ED follows existing roadway which is fronted by existing residences/farmhouses, while EC-ED avoids existing buildings by following rear lot lines. EC-ED has fewer direct impacts and is therefore preferred.				
Factor Score:			2	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Land Use (Existing and Planned)	Compatible with Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Qualitative assessment on planned land use and community cohesion, character and function	Qualitative assessment	Rural community along Concession 10 will be completely dislocated. Rural area characterized primarily by farm operations and rural non-farm residences. This operation eliminates all of Concession 10 and the homes and farm operations along it. Note the poor road alignment with Lauzon. Both segments lie in the Tecumseh agricultural area as identified in the Sandwich South Official Plan.	Generally little community or land-use impact except for the loss of some farmland. Rural area characterized primarily by farm operations and rural non-farm residences. This option runs along the back of lots thereby leaving in-tact the rural community along Concession Road 10. Both segments lie in the Tecumseh agricultural area as identified in the Sandwich South Official Plan. EB-ED eliminates a larger number of rural residences and farms and therefore has a greater impact on the planned function of the area.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future commited land uses	No displacement/disruption to future commited land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	No impacts
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	No impacts
Factor Summary:	Both segments lie in the Tecumseh agricultural area as identified in the Sandwich South Official Plan. EB-ED eliminates a larger number of rural residences and farms and therefore has a greater impact on the planned function of the area. Therefore, EC-ED is preferred.				
Factor Score:			2	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	Captured in built heritage analysis		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	0	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	0	Up to 25% in proximity to a watercourse	
Factor Summary:	No significant impacts to Built Heritage Features, Cultural Landscape Units, parks with either alternative. A portion of EC-ED impacts an area of archaeological potential.				
Factor Score:			4	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Environmentally Significant Areas	Impacts to ANSI (Areas of Natural & Scientific Interest)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to ESA (Environmentally Significant Areas)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to CNHS (Candidate Natural Heritage Site)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to PNHF (Potential Natural Heritage Features)	Area in ha impacted by ROW	0	0.02	EC-ED directly impacts a forest block (PNHF).
		Area in ha within 500m of ROW	4.64	6.86	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to drains	Area in ha impacted by ROW	2.86	0.07	EB-ED has greater impacts on agricultural lands.
		Area in ha within 500m of ROW	0.13	2.94	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0	0	
	Impacts to water crossings	No. within 100m of proposed ROW	13	2	EB-ED crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland (0) CNHS(0) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Farmland/Prime Agricultural Soils	Soil type/impact in ha	good	29.67	31.54	
Factor Summary:	EC-ED has fewer direct impacts to natural features; EB-ED has fewer indirect (proximity) impacts. EC-ED is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - Tecumseh to AMB 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or near capacity; assessment based on connection to Crossing X15
			HCL - ECR to Tecumseh 1.18/0.99/-	HCL - ECR to Tecumseh 1.18/0.99/-	
			HCL - Cabana to ECR 0.99/0.81/-	HCL - Cabana to ECR 0.99/0.81/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.14/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.63/-	EC Row - HCL to Dougall 0.69/0.63/-	
			EC Row - Dougall to Walker 0.89/0.77/-	EC Row - Dougall to Walker 0.89/0.77/-	
			EC Row - Walker to Lauzon 0.87/0.76/-	EC Row - Walker to Lauzon 0.87/0.76/-	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
	Change in travel distance	Change in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	2800/1700	2800/1700	Assessment based on connection to Crossing X15
	Change in travel time	Change in total vehicle-hours of travel vs. no-build; Autos/Trucks	1540/170	1540/170	Assessment based on connection to Crossing X15
	Directness of route for through traffic	Distance traveled between common points	3.8	3.5	Common points = EA @401 to ED
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.80	1.22/0.80	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.73	1.15/0.73	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	New crossing operates well below capacity during peak periods; assessment based on connection to Crossing X15
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
Factor Summary:	Two segments are similar except that EC-ED is 25% longer than EB-ED; EB-ED has a low benefit to mobility, while EC-ED has a moderate benefit. EC-ED is preferred.				
Factor Score:			5	6	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-Huron Church Line

Route Segment Evaluation EB-ED vs. EC-ED	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EB-ED	EC-ED	
Cost	Length of Alternative	km	3.2	3.5	
	Preliminary Construction Costs	$ millions CAD (2005)	108.9	90.1	EB-ED has higher property and unit construction costs associated with use of existing road corridor
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	Constructing of a new freeway on this segment would require closure/detour of Concession Road 10/County Road 17; this is not expected to be a significant impact as there are parallel routes in the area, but would have impacts to local traffic.	Substantially fewer road closures/detours or maintenance of traffic issues during construction	
	Brine wells	Proximity(metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitative	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 30 m or more deep over bedrock	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 30 m or more deep over bedrock	
Factor Summary:	EC-ED is preferred due to fewer constructability issues and substantially lower construction costs.				
Factor Score:			2	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best ED	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	EB-ED		EC-ED		Weighting	EB-ED		EC-ED		Weighting	EB-ED		EC-ED	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	2	31.86	3	47.79	15.49	2	30.98	3	46.47	13.88	2	27.76	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	3	37.17	12.89	2	25.78	3	38.67	13.69	2	27.38	3	41.07
Protect Cultural Resources	12.39	4	49.56	3	37.17	13.14	4	52.56	3	39.42	13.12	4	52.48	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	6	106.20	15.28	5	76.40	6	91.68	14.83	5	74.15	6	88.98
Minimize Cost	13.27	2	26.54	3	39.81	9.54	2	19.08	3	28.62	10.07	2	20.14	3	30.21
Total Weighted Score	100.00		306.20		353.10	100.00		305.78		345.84	100.00		305.14		344.49
Ranking			***2***		***1***			***2***		***1***			***2***		***1***

COMMENT: The Reasoned Argument evaluation method concluded that EC-ED is the preferred route segment because it has fewer direct impacts to residences and natural features; fewer constructability issues and lower construction costs. The Arithmetic Evaluation method resulted in the same outcome; EC-ED had a higher total weighted score and therefore was the preferred route segment. EC-ED was carried forward.

* Does not imply consensus in weighting/scoring

Illustrative Alternative Route Segment Evaluation

EC – ED – EE vs. EA - EE

Segment EC – ED - EE and Segment EA – EE originates at Highway 401, run parallel in a northeasterly direction joining at common point EE (see attached figure).

Seven performance measures were evaluated for each Illustrative Alternative Segment and include: Change in Air Quality, Protect Community/Neighbourhood Characteristics, Maintain Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost. Analysis of Change in Air Quality has not been undertaken by individual segment at the illustrative segment level. Air Quality analysis computer models require route system connected lengths (results of individual segment comparisons joined to form a route) with traffic loading in order to provide reasonable results.

Segment EC- ED - EE has fewer noise receptors than Segment EA – EE with in 250 m of the centre line of the proposed right-of-way. However, the effect of segment EC-ED-EE and Segment EA – EE on communities and neighbourhoods is primarily in the area at the intersection Division Road and Lauzon Parkway were there is already an established neighbourhood. The addition of a new transportation route will result in a fragmentation of other planned uses. Both segments affect the area at the intersection Division Road and Lauzon Parkway equally. Segment EC-ED-EE does not disrupt any future development plans however; Segment EA-EE does displaces/disrupts portions Tecumseh Hamlet.

Segment EB – ED – EE and Segment EA – EE have no significant impacts on Built Heritage features, Cultural Landscape Units, or parks. However, a portion of Segment EC - ED affects an area of high archaeological potential. Segment EA-EE has fewer direct impacts on natural features whereas Segment EC-ED - EE has fewer direct (proximity) impacts.

Regarding Regional Mobility the two segments are similar except that Segment EC-ED-EE has a lower benefit to mobility, while Segment EA - EE provides a moderate benefit to the overall network. Segment EC – ED – EE presents fewer constructability issues than EA-EE.

In short, Segment EA - EE has fewer direct impacts on residences and environmental features, fewer constructability issues than EC-ED-EE. EA-EE is slightly preferred.

Illustrative Alternatives
Route Segment Evaluation

EC-ED-EE vs. EA-EE

Route Segment Evaluation
EC-ED-EE vs. EA-EE

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	EC-ED-EE has fewer sensitive receptors than EA-EE, therefore **EC-ED-EE is preferred.**
Protect Community/ Neighborhood Characteristics	Impact on EC-ED-EE is primarily in the area of Division Rd/ Lauzon which is already fragmented/impacted by other planned uses. These impacts are therefore considered to be equal.
Maintain Consistency with Existing and Planned Land Use	Segments EC-ED-EE does not disrupt any future development plans. EA-EE displaces/disrupts Tecumseh Hamlet. **Therefore, EC-ED-EE is preferred.**
Protect Cultural Resources	No significant impacts to cultural resources with either alternative. A portion of EC-ED-EE impacts an area of archaeological potential.
Protect the Natural Environment	EA-EE has fewer direct impacts to natural features. EC-EE has fewer direct (proximity) impacts. **Therefore, EA-EE is slightly preferred.**
Improve Regional Mobility	EC-ED-EE has a low benefit to mobility, while EA-EE has a moderate benefit. **EA-EE is preferred.**
Minimize Cost	**EC-ED-EE is slightly preferred** due to fewer constructability issues.
Trade-Off Summary:	**EA-EE is slightly preferred over EC-ED-EE, due to less air quality impacts, fewer natural environment impacts, and mobility benefits.**

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not measured; no difference for these route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in concentrations vs. No-build scenario	Number of sensitive receptors within 250m of ROW centre line	10	33	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms distrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	EC-ED-EE has fewer sensitive receptors, and therefore EC-ED-EE is preferred over EA-EE.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
			EC-ED-EE	EA-EE	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: Cars 980 610 -370; Trucks 840 580 -260 Tallbot Road: Cars 390 240 -150; Trucks 680 470 -210 EC Row Expressway: Cars 410 150 -260; Trucks 30 30 0 Ouellette Avenue: Cars 290 80 -210; Trucks 140 30 -110 Dougall Avenue: Cars 250 120 -130; Trucks 210 70 -140	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: Cars 980 610 -370; Trucks 840 580 -260 Tallbot Road: Cars 390 240 -150; Trucks 680 470 -210 EC Row Expressway: Cars 410 150 -260; Trucks 30 30 0 Ouellette Avenue: Cars 290 80 -210; Trucks 140 30 -110 Dougall Avenue: Cars 250 120 -130; Trucks 210 70 -140	Each segment would provide for significant decrease in international volumes, as a part of a complete route to a new crossing. No significant difference between alternatives
	V/C ratios by vehicle type	Change in V/C ratio	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: 1.18 0.99 -0.19 Tallbot Road: 1 1.04 0.04 EC Row Expressway: 0.89 0.77 -0.12 Ouellette Avenue: 1.3 1.14 -0.16 Dougall Avenue: 1.44 1.17 -0.27	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: 1.18 0.99 -0.19 Tallbot Road: 1 1.04 0.04 EC Row Expressway: 0.89 0.77 -0.12 Ouellette Avenue: 1.3 1.14 -0.16 Dougall Avenue: 1.44 1.17 -0.27	Key links would be operating at or near capacity. No signicant difference between alternatives
	Local Access	No. of streets crossed/closed	**5 Crossed** (401, Baseline, 10th, Division Rd, Lauzon Rd) / **0 Closed**	**5 Crossed** (401, Manning, Baseline,11th Concs, Division) / **2 Closed** (16-17th Sderd, 12th Cons)	Minor impact to local access to network for both Segments. Slightly greater impacts for the EA-EE segment as new route would be aligned on Manning Road
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors within 500m (250m of centre line) of ROW	10	33	For the purposes of analysis of illustrative Segments a quantitative assessment of the total number of homes or households or farms distrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	10	33	
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2 (unknown cemetery; Sikh Cul. Society) (4 headstones)	1 (Unknown Cemetery; Friends of Pike Creek Park not within 250 metres)	
		Qualitative assessment and community cohesion, character and function.	Very minor effect on community cohesion and character.	Minor to moderate effect on community cohesion, character and function. Some dislocational effects on a few rural residences (at Baseline). Will segment many fields because of length and curvilinear nature of roadway. Disruptional effects to the "Friends of Pike Creek Park". Cemetery consisting of 4 headstones on west side of Banwell. Disruptional effects to a large number of rural residences. The Park lies immediately north of Fairplay Woods.	Each segment is equal in terms of how it impacts community cohesion
Acquisitions (Whole or Partial)	**RESIDENTIAL**				

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
		Total number of households and/or dwellings (all housing formats) directly affected by proposed ROW	4	5	
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	0	1	EA-EE: construction related business at Manning Road
		Number of businesses disrupted./ No. With partial property taking	0	0	EC-ED-EE: No business impact
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW	0	0	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	4	2	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	3	11	
		Qualitative assessment of agricultural operations effected.	equal	equal	
Factor Summary:	Impact on EC-ED-EE is primarily in area of Division Rd/ Lauzon which is already fragmented/impacted by other planned uses. These impacts are therefore considered to be equal.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Land Use (Existing and Planned)	Compatible with the Provincial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Generally little community or land use impact except for the loss of some farmland.	Generally a rural area. This area is a combination of agricultural area and urban area within the Town of Tecumseh. It appears the urban area covered by this segment would be many years from future development.	
	Compatibility with any other federal, provincial, or municipal initiatives	Qualitative assessment	As compatible as any highway project in an agricultural/urban area.	As compatible as any highway project in an agricultural/urban area.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future development plans	Displacement/disruption to Tecumseh Hamlet	
Contaminated Sites/Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	2, 3.02 ha	
Factor Summary:	Segments EC-ED-EE does not disrupt any future development plans. EA-EE displaces/disrupts Tecumseh Hamlet. Therefore, EC-EE is preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	Captured in Built Heritage Analysis		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	1	Friends of Pike Creek
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 25%	0	
Factor Summary:	No significant impacts to cultural resources with either alternative. A portion of EC-EE impacts an area of archaeological potential.				
Factor Score:			2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Environmentally Significant Areas	Impacts to ANSI (Areas of Natural and Scientific Interest)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to ESA (Environmentally Significant Areas)	Area in ha impacted by ROW	0	0	EA-EE-proximity to Fairplay Woods ESA.
		Area in ha within 500m of ROW	0	15.38	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to CNHS (Candidate Natural Heritage Site)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to PNHF (Potential Natural Heritage Feature)	Area in ha impacted by ROW	0.02	0	EC-EE directly impacts a forest block (PNHF).
		Area in ha within 500m of ROW	8.41	7.9	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to drains	Area in ha impacted by ROW	0.46	0.37	Impacts to drains are similar between the two routes.
		Area in ha within 500m of ROW	6.29	6.95	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0	1.27	EA-EE directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	9	6	EC-EE crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural	Soil type/impact in ha	good	60.24	49.99	

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Soils		good to fair	0	12.46	
		fair to poor	0	1.5	
		TOTAL AREA IMPACTED (ha)	60.24	63.95	
Factor Summary:	EA-EE has fewer direct impacts to natural features. EC-EE has fewer direct (proximity) impacts. Therefore, EA-EE is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - Tecumseh to AMB 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or over capacity; assessment based on connection to Crossing X15
			HCL - ECR to Tecumseh 1.18/0.99/-	HCL - ECR to Tecumseh 1.18/0.99/-	
			HCL - Cabana to ECR 0.99/0.81/-	HCL - Cabana to ECR 0.99/0.81/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.14/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.63/-	EC Row - HCL to Dougall 0.69/0.63/-	
			EC Row - Dougall to Walker 0.89/0.77/-	EC Row - Dougall to Walker 0.89/0.77/-	
			EC Row - Walker to Lauzon 0.87/0.76/-	EC Row - Walker to Lauzon 0.87/0.76/-	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	2800/1700	2800/1700	Assessment based on connection to Crossing X15
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	1540/170	1540/170	Assessment based on connection to Crossing X15
	Directness of route for through traffic	Distance traveled between common points	10	6.4	Common points = EA @401 to EE
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.80	1.22/0.80	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.73	1.15/0.73	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	New crossing operates well below capacity during peak periods; assessment based on connection to Crossing X15

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
Factor Summary:	EC-ED-EE has a low benefit to mobility, while EA-EE has a moderate benefit. EA-EE is preferred.				
Factor Score:			5	7	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

* HCL- Huron Church Line

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EE	EA-EE	
Cost	Length of Alternative	km	6.1	6.4	
	Preliminary Construction Costs	$ millions CAD (2005)	140.4	145.4	Costs are comparable
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**EC-ED** No constructability issues are anticipated. ENWIN utility lines may need to be relocated. **ED-EE** A detour will be required for traffic on Division Road while an interchange with ED-EE is being constructed there. ENWIN utility lines, Hydro One transmission lines and Union Gas pipeline may need to be relocated.	**EA-EE** Existing interchange at Highway 401 / Manning Road will be reconstructed and modified to a freeway-to-freeway style interchange.This will require traffic staging and detour for traffic to/from Manning Road while the interchange is being modified.Another detour will be constructed at Division Road while an interchange is being constructed there.ENWIN and Bell Canada utility lines, Hydro One transmission lines and Union Gas pipeline may need to be relocated.	
	Brine wells	Proximity (metres); age	none	none	
	Soil Conditions (geotechncial)	Qualitative	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils may become softer to the north	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils may become softer to the north	
Factor Summary:	EC-ED-EE is slightly preferred due to fewer constructability concerns.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best EE	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	EC-EE		EA-EE		Weighting	EC-EE		EA-EE		Weighting	EC-EE		EA-EE	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79	15.49	3	46.47	3	46.47	13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	2	24.78	12.89	3	38.67	2	25.78	13.69	3	41.07	2	27.38
Protect Cultural Resources	12.39	2	24.78	2	24.78	13.14	2	26.28	2	26.28	13.12	2	26.24	2	26.24
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	7	123.90	15.28	5	76.40	7	106.96	14.83	5	74.15	7	103.81
Minimize Cost	13.27	3	39.81	2	26.54	9.54	3	28.62	2	19.08	10.07	3	30.21	2	20.14
Total Weighted Score	100.00		323.01		332.75	100.00		317.42		325.55	100.00		316.54		322.44
Ranking			***2***		***1***			***2***		***1***			***2***		***1***

COMMENT: The Reasoned Argument method concluded that EA-EE was slightly preferred over EC-EE, due to less air quality impacts, fewer natural environment impacts, and mobility benefits. The Arithmetic Evaluation method resulted in EA-EE having a higher total weighted score over EC-EE. Therefore, both methodologies came to the same conclusion that EA-EE is the preferred route segment over EC-EE. EA-EE was carried forward.

*Does not imply consensus in weighting/scoring

Illustrative Alternative Route Segment Evaluation

EA – EE - EF vs. EC –ED – EG -EF

Segment EA – EE - EF and Segment EC –ED – EG –EF originate at Highway 401, runs parallel in a northeasterly direction to the E.C. Row Expressway joining at common point EF (see attached figure).

Seven performance measures were evaluated for each Illustrative Alternative Segment: Change in Air Quality, Protect Community/Neighbourhood Characteristics, Maintain Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost. Analysis of Change in Air Quality has not been carried out by individual segment. Air Quality analysis computer models require route system connected lengths (results of individual segment comparisons joined to form a route) with traffic loading in order to provide reasonable results.

Segment EA - EE - EF affects fewer noise receptors than Segment EC – ED – EG – EF. However, Segment EC – ED – EG – EF has greater affect on communities and neighborhoods, primarily in the area of established neighbourhoods along the E.C Row Expressway. Furthermore, Segment EC –ED – EG –EF will better support future development plans due to its proximity to proposed employment lands.

Segment EC – ED – EG – EF has a high potential to disturb archaeological and cultural resources. From a natural environment perspective, Segment EA – EE - EF has fewer direct and proximity affects on Environmental Significant Areas and natural features; Segment EC – ED – EG – EF affects a greater number of watercourses (natural and drainage channels) than Segment EA – EE – EF.

Both segments offer similar benefits to regional mobility. In addition, Segment EC-ED-EG-EF utilizes a portion of EC Row Expressway, which limits the reliability/choice in the transportation network. Segment EC-ED-EG-EF has a lower construction costs and fewer constructability issues.

In conclusion, Segment EC – ED – EG – EF will provide better access to employment lands east of Windsor Airport, has greater direct affects on residences (along EC Row Expressway) and environmental features. In addition, Segment EC – ED – EG – EF also has the potential to affect archaeological resources. On balance, the advantages of Segment EC – ED - EG – EF are outweighed by the potential impacts to residential areas (along EC Row Expressway), environmental features and archaeological resources. Therefore EA-EE-EF is preferred.

Illustrative Alternatives
Route Segment Evaluation

EA-EE-EF vs. EC-ED-EG-EF

Route Segment Evaluation
EA-EE-EF vs. EC-ED-EG-EF

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	Alternative **EA-EF is preferred** since there are fewer sensitive receptors located in close proximity to this segment.
Protect Community/ Neighborhood Characteristics	Alternative EA-EE-EF is preferred since there is less disruption to homes or households in the within the study area; EA-EF is more consistent with adjacent land uses.
Maintain Consistency with Existing and Planned Land Use	Alternative **EC-EF is preferred** due to its proximity to future employment lands.
Protect Cultural Resources	EA-EF has greater impacts to cultural resources; EC-EF has the potential to disturb archaeological resources; therefore **EC-EF is slightly preferred.**
Protect the Natural Environment	Alternative EA-EF is preferred because there are fewer direct impacts to Environmentally Significant Areas; EA-EF also has fewer proximity impacts than EC-EF.
Improve Regional Mobility	Two segments offer similar benefits to regional mobility except that EC-ED-EG-EF is 70% longer than EA-EE-EF; as well, EC-ED-EG-EF utilizes a portion of EC Row Expressway, which is an important east-west facility for local traffic; sharing a section of EC Row Expressway as the key route for international traffic to access the border crossing limits reliability/choice in the network. EC-ED-EG-EF has a low benefit to mobility, while EA-EE-EF has a high benefit. **EA-EE-EF is preferred.**
Minimize Cost	Alternative EA-EF has lower construction costs and fewer constructability issues. **EA-EF is preferred.**
Trade-Off Summary:	**EC-EF provides better access to employment levels east of Windsor Airport. Access to these employment lands will be provided through other roadways. The advantages of EA-EF outweight the advantages of EC-EF. Therefore, EA-EF is preferred.**

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not measured as there would be no difference to regional burden for these route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in concentrations vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	36	410	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (within 250 metres of a centre line) was utilized as an indication of possible impacts.
Factor Summary:	EC-EF affects more sensitive receptors; EA-EF is therefore preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF vs EC-ED-EG-EF	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
			EA-EE-EF	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: Cars 980 / 610 / -370; Trucks 840 / 580 / -260 Talbot Road: Cars 390 / 240 / -150; Trucks 680 / 470 / -210 EC Row Expressway: Cars 410 / 150 / -260; Trucks 30 / 30 / 0 Outlette Avenue: Cars 290 / 80 / -210; Trucks 140 / 30 / -110 Dougall Avenue: Cars 250 / 120 / -130; Trucks 210 / 70 / -140	Each segment would provide for significant decrease in international volumes, as a part of a complete route to a new crossing. No significant difference between alternatives
	V/C ratios by vehicle type	Change in V/C ratio	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: 1.18 / 0.99 / -0.19 Talbot Road: 1 / 1.04 / 0.04 EC Row Expressway: 0.89 / 0.77 / -0.12 Outlette Avenue: 1.3 / 1.14 / -0.16 Dougall Avenue: 1.44 / 1.17 / -0.27	Key links would be operating at or near capacity. No significant difference between alternatives
	Local Access	No of streets crossed/closed	**6 Crossed** (401, Manning, Baseline, 11th Concs, Division, E.C. Row Expwy) / **3 Closed** (16-17th Sderd, 12th Cons, E.C. Row Ave)	Minor impact to local access to network for both Segments. Slightly greater impacts for the EA-EE segment as new route would be aligned on Manning Road
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	36	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (within 250 metres of a centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	36	Greater disruption along E.C. Row corridor primarily nuisance impacts
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	1 (Unknown Cemetery, Friends of Pike Creek not within 250 metres)	No significant difference
		Qualitative assessment and community cohesion, character and function.	Minor to moderate effect on community cohesion, character and function. Some dislocational effects on a few rural residences (at Baseline). Will segment many fields because of length and curvilinear nature of the roadway. Disruptional effects to the "Friends of Pike Creek Park" (not shown on airphoto) Cemetery consisting of 4 headstones on west side of Banwell. Disruptional effects to a large number of rural residences. The Park lies immediately north of Fairplay Woods. Note that ther is no Concession 12 south of Baseline versus as depicted on the airphoto.	less impact with EC-EF as EA-EF is more consistent with adjacent land use character
Acquisitions (Whole or Partial)	**RESIDENTIAL**			
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	8	No widening of EC Row ROW
	BUSINESS			
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	1	1 Construction related business at 401

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
			EC-ED-EG-EF	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: Cars 980 / 610 / -370; Trucks 840 / 580 / -260 Talbot Road: Cars 390 / 240 / -150; Trucks 680 / 470 / -210 EC Row Expressway: Cars 410 / 150 / -260; Trucks 30 / 30 / 0 Outlette Avenue: Cars 290 / 80 / -210; Trucks 140 / 30 / -110 Dougall Avenue: Cars 250 / 120 / -130; Trucks 210 / 70 / -140	Each segment would provide for significant decrease in international volumes, as a part of a complete route to a new crossing. No significant difference between alternatives
	V/C ratios by vehicle type	Change in V/C ratio	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road: 1.18 / 0.99 / -0.19 Talbot Road: 1 / 1.04 / 0.04 EC Row Expressway: 0.89 / 0.77 / -0.12 Outlette Avenue: 1.3 / 1.14 / -0.16 Dougall Avenue: 1.44 / 1.17 / -0.27	Key links would be operating at or near capacity. No significant difference between alternatives
	Local Access	No of streets crossed/closed	**8 Crossed** (401, Baseline, Division, Lauzon Prkwy, South Service Rd, Twin Oaks, Service Rd, E.C. Row Expwy) / **0 Closed**	Minor impact to local access to network for both Segments. Slightly greater impacts for the EA-EE segment as new route would be aligned on Manning Road
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	410	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (within 250 metres of a centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	410	Greater disruption along E.C. Row corridor primarily nuisance impacts
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2 (Derwent and Twin Oaks Parks)	No significant difference
		Qualitative assessment and community cohesion, character and function.	Less impact; perhaps slightly better along Lauzon more industrial uses vs residential.	less impact with EC-EF as EA-EF is more consistent with adjacent land use character
Acquisitions (Whole or Partial)	**RESIDENTIAL**			
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	1	No widening of EC Row ROW
	BUSINESS			
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	0	1 Construction related business at 401

Route Segment Evaluation EA-EF vs EC-ED-EG-EF	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
		Number of businesses disrupted./ No. with partial property taking	0	1	Pit on corner of Lauzon Rd and E.C. Row
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	0	0	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	2	4	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	13	3	
		Qualitative assessment of agricultural operations effected.	Equal	Equal	
Factor Summary:	Primary factor why EC-ED-EG-EF is less preferred is that it represents a significantly higher number of disruptional effects as EC Row is expanded.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005

Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Land Use (Existing and Planned)	Compatible with Provincial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Generally a rural area. This area is a combination of agricultural areas and urban area within the Town of Tecumseh. It appears the urban area covered by this segment would be many years from now future development.	More compatible due to proximity to future employment lands.	
	Compatibility with any other federal, provincial or municipal initiatives	Qualitative assessment	As compatible as any highway project in an agricultural/near urban area.	As compatible as any highway project in an agricultural/near urban area.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	Displacement/disruption to future committed land uses	Not as much disruption as with the EC option	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	1, 3 ha	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	2, 3.02 ha	4, 4.06 ha	
Factor Summary:	EC-ED-EG-EF is slightly preferred based on existing plans and discussions with municipalities.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Protect Cultural Resources

Date: November 28, 2005

Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	Captured in Built Heritage Analysis		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	1	0	Friends of Pike Creek
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	1	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 25%	up to 50%	
Factor Summary:	EA-EF has greater impacts to cultural resources; EC-EF has the potential to disturb archaeological resources; therefore EC-EF is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Protect the Natural Environment

Date: November 28, 2005

Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Environmentally Significant Areas	Impacts to ANSI	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to ESA	Area in ha impacted by ROW	0	0	EA-EE is in close proximity to Fairplay Woods ESA.
		Area in ha within 500m of ROW	15.38	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to CNHS	Area in ha impacted by ROW	0	0.19	EC-EF directly impacts two CNHSs including W11 and W12.
		Area in ha within 500m of ROW	0	9.39	
	Impacts to PNHF	Area in ha impacted by ROW	0	2.63	EC-EF directly impacts a large forest block (PNHF) and is in close proximity to a number of other forest blocks.
		Area in ha within 500m of ROW	7.9	31.79	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	2.33	
	Impacts to drains	Area in ha impacted by ROW	0.52	2	EC-EF directly impacts a greater number of drains.
		Area in ha within 500m of ROW	8.6	8.27	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	1.27	0.78	EA-EF directly impacts a greater floodplain area
	Impacts to water crossings	No. within 100m of proposed ROW	9	23	EC-EF crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0.1) Water(0) SSH(0)	EF-EG directly impacts CNHS W11, home to Prairie Rose (Special Concern and SARA Schedule 1)
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	59.35	83.34	
		good to fair	12.49	0	
		fair to poor	1.5	0	
		TOTAL AREA IMPACTED (ha)	73.34	83.34	

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Protect the Natural Environment

Date: November 28, 2005

Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Factor Summary:	EA-EE-EF has fewer direct impacts and few proximity impacts than EC-ED-EG-EF. Therefore EA-EE-EF is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - Tecumseh to AMB 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or over capacity; assessment based on connection to Crossing X15
			HCL - ECR to Tecumseh 1.18/0.99/-	HCL - ECR to Tecumseh 1.18/0.99/-	
			HCL - Cabana to ECR 0.99/0.81/-	HCL - Cabana to ECR 0.99/0.81/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.14/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.63/-	EC Row - HCL to Dougall 0.69/0.63/-	
			EC Row - Dougall to Walker 0.89/0.77/-	EC Row - Dougall to Walker 0.89/0.77/-	
			EC Row - Walker to Lauzon 0.87/0.76/-	EC Row - Walker to Lauzon 0.87/0.76/-	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.55/NA	New Segment NA/0.55/NA	
	Change in travel distance	Change in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	2800/1700	2800/1700	Assessment based on connection to Crossing X15
	Change in travel time	Change in total vehicle-hours of travel vs. no-build; Autos/Trucks	1540/170	1540/170	Assessment based on connection to Crossing X15
	Directness of route for through traffic	Distance traveled between common points	7.3	12.3	Common points = EA @401 to EF
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.80	1.22/0.80	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.73	1.15/0.73	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15

Route Segment Evaluation EA-EF vs. EC-ED-EG-EF	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	With EC--EFoption, access to border requires sharing a section of EC Row Expressway with local traffic; lower reliability/options in network compared to the EA--EF option; new crossing operates well below capacity during peak periods; assessment based on connection to Crossing X15
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
Factor Summary:	Two segments offer similar benefits to regional mobility except that EC-ED-EG-EF is 70% longer than EA-EE-EF; as well, EC-ED-EG-EF utilizes a portion of EC Row Expressway, which is an important east-west facility for local traffic; sharing a section of EC Row Expressway as the key route for international traffic to access the border crossing limits reliability/choice in the network. EC-ED-EG-EF has a low benefit to mobility, while EA-EE-EF has a high benefit. EA-EE-EF is preferred.				
Factor Score:			5	7	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

* Huron Church Line

Route Segment Evaluation EA-EE-EF vs. EC-ED-EG-EF	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
Cost	Length of Alternative	km	7.3	8.4	
	Preliminary Construction Costs	$ millions CAD (2005)	306.3	564.4	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**EA-EE** Existing interchange at Highway 401 / Manning Road will be reconstructed and modified to a freeway-to-freeway style interchange.This will require traffic staging and detour for traffic to/from Manning Road while the interchange is being modified.Another detour will probably be constructed at Division Road while an interchange is being constructed there.ENWIN and Bell Canada utility lines, Hydro One transmission lines and Union Gas pipeline may need to be relocated. **EE-EF** No out of ordinary constructability issues are anticipated although a newly proposed freeway to freeway style interchange at E.C. ROW Expressway will be very complex. It is possible that proposed interchange could not provide for all traffic movements to avoid huge property impact on Forest Glade residential community.Bell Canada utility lines may need to be relocated.	**EC-ED** No out of ordinary constructability issues are anticipated. ENWIN utility lines may need to be relocated. **ED-EG** A detour will be required for traffic on Division Road while an interchange is being constructed there. Traffic staging and detour will be required at Lauzon Parkway while it is being reconstructed to a 6-lane freeway section with a service road on the east side. ENWIN and Bell Canada utility lines, Hydro One transmission lines, watermains and Union Gas pipeline may need to be relocated. **EG-EF** Existing E.C. ROW Expressway will be reconstructed to a 10-lane urban section. A traffic staging and detour will be required while this section is being upgraded. Existing interchange at E.C. ROW Expressway / Lauzon Parkway will be reconstructed and modified to a freeway-to-freeway style interchange. Traffic staging and detour will be required while the interchange is being modified. ENWIN and Bell Canada utility lines, watermains, sanitary sewers and Union Gas pipeline may need to be relocated.	EC-ED-EG-EF requires more complex construction due to improvements along E.C. Row Expressway
	Brine wells	Proximity (metres); cost	None	None	

Route Segment Evaluation EA-EE-EF vs. EC-ED-EG-EF	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF	EC-ED-EG-EF	
	Soil Conditions (geotechnical)	Qualitative	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils may become softer to the north	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils may become softer to the north	
Factor Summary:	EA-EE-EF is preferred due to lower cost and fewer constructability concerns				
Factor Score:			3	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best EF	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	EA-EF		EC-EF		Weighting	EA-EF		EC-EF		Weighting	EA-EF		EC-EF	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	2	24.78	17.32	3	51.96	2	34.64	17.30	3	51.90	2	34.60
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	2	31.86	15.49	3	46.47	2	30.98	13.88	3	41.64	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	7	123.90	15.28	5	76.40	7	106.96	14.83	5	74.15	7	103.81
Minimize Cost	13.27	3	39.81	1	13.27	9.54	3	28.62	1	9.54	10.07	3	30.21	1	10.07
Total Weighted Score	100.00		335.40		315.94	100.00		330.56		309.23	100.00		329.66		308.00
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument evaluation method concluded that EA-EF was the preferred route segment since it has less disruption to homes; had fewer proximity impact to natural features; and has a high benefit to mobility. The Arithmetic evaluation method resulted in EA-EF having the higher total weighted score, therefore being the preferred route segment. EA-EF was carried forward.

* Does not imply consensus in weighting/scoring

Summary

Illustrative Alternative Route Segment Evaluation

EC – ED – EG vs. EA – EE – EF - EG

The purpose of this summary is to highlight the key differences found between segments during the pair wise comparison illustrative evaluation process. Segment EC – ED - EG and Segment EA – EE – EF – EG originate at Highway 401, run parallel in a northwesterly direction to the E.C. Row Expressway joining at common point EG (see attached figure).

Seven performance measures were evaluated for each Illustrative Alternative and include: Protect Community/Neighbourhood Characteristics, Maintain Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost. Analysis of Change in Air Quality has not been carried out by individual segment. Air Quality analysis computer models require route system connected lengths (results of individual segment comparisons joined to form a route) with traffic loading in order to provide reasonable results.

Segment EA - EE – EF – EG has significantly fewer noise receptors than Segment EC – ED – EG – EF. However, Segment EA – EE – EF – EG has a significant impact on communities and neighborhoods, primarily in the area of established neighborhoods along the E.C Row Expressway. Segment EC – ED - EG directly removes one residence and one business where as Segment EA –EE – EF –EG removes nine residences from within the purposed right-of-way. Segment EC – ED – EG –EF will better support future development plans due to its proximity to proposed employment lands.

Both Segments EC – ED - EG and EA – EE – EF – EG affect areas with high archaeological potential. Segment EA – EE – EF – EG directly affects a Candidate Natural Heritage Site (CNHS) with significant species, in addition it also affects a greater number of natural features, both directly and indirectly (proximity). Segment EC – ED – EG directly affects a large forest block, a Potential Natural Heritage Feature (PNHF).

Both offer similar benefits to regional mobility except that Segment EA – EE - EF - EG utilizes a portion of E.C. Row Expressway, which is an important east-west facility for local traffic. The sharing of a section of E.C. Row Expressway as the key route for international traffic to access the border crossing will limit reliability/choice in the network. Segment EA-EE-EF-EG is longer therefore has a lower benefit to mobility, while Segment EC-ED-EG has a moderate benefit. Segment EC-ED-EG has a lower construction costs and fewer constructability issues.

In conclusion, Segment EA – EE – EF - EG has greater direct affects on residences (along E.C. Row Expressway) and environmental features. Segment EA –EE – EF –EG directly affects a CNHS with significant species, in addition it also affects a greater number of features, both directly and indirectly (proximity). While Segment EC – ED – EG does directly affect a large forest block PNHF. On balance, Segment EA – EE – EF - EG potential for impacts to residential areas (along EC Row Expressway) and environmental features are out weighted by the advantages of Segment EC – ED – EG. Segment EC-EG is preferred.

Illustrative Alternatives
Route Segment Evaluation

EC-ED-EG vs. EA-EE-EF-EG

Route Segment Evaluation
EC-ED-EG vs EA-EE-EF-EG

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	**EC-EG is preferred** over EA-EG because it impacts fewer sensitive noise receptors.
Protect Community/ Neighborhood Characteristics	**Alternative EC-EG is preferred** over EA-EG because it impacts fewer homes than EA-EG, there are no business impacts, and it impacts fewer farm operations.
Maintain Consistency with Existing and Planned Land Use	**EC-EG is preferred** because it passes by an employment area; whereas EA-EG does not service an employment area.
Protect Cultural Resources	EC-EG impacts an area of archaeological potential; EA-EG impacts an area of archaeological potential and parklands. **Therefore, EC-EG is preferred**.
Protect the Natural Environment	EA-EG impacts a greater number of features, both directly and indirectly (proximity), and directly impacts a Candidate Natural Heritage Site (CNHS) with significant species. EC-EG directly impacts a large forest block [Potential Natural Heritage Feature (PNHF)]. **EC-EG is slightly preferred.**
Improve Regional Mobility	Two segments offer similar benefits to regional mobility except that EA-EE-EF-EG utilizes a portion of EC Row Expressway, which is an important east-west facility for local traffic; sharing a section of EC Row Expressway as the key route for international traffic to access the border crossing limits reliability/choice in the network. EA-EE-EF-EG has a low benefit to mobility, while EC-ED-EG has a moderate benefit. **Therefore, EC-ED-EG is preferred.**
Minimize Cost	**EC-EG is preferred** due to lower construction cost and fewer constructability issues.
Trade-Off Summary:	**Overall, EC-EG is preferred over EA-EG due to fewer direct impacts to residences, its location adjacent to an employment area, and its lower construction cost; however it has greater direct impacts to waterbodies.**

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			EC-ED-EG	EA-EE-EF-EG	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	4	441	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or parks disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	EC-EG is preferred over EA-EG because it impacts fewer sensitive noise receptors.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemsor

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
			EC-ED-EG	EA-EE-EF-EG	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 610 -370; Trucks 840 580 -260 Talbot Road — Cars 390 240 -150; Trucks 680 470 -210 EC Row Expressway — Cars 410 150 -260; Trucks 30 30 0 Outlette Avenue — Cars 290 80 -210; Trucks 140 30 -110 Dougall Avenue — Cars 250 120 -130; Trucks 210 70 -140	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 610 -370; Trucks 840 580 -260 Talbot Road — Cars 390 240 -150; Trucks 680 470 -210 EC Row Expressway — Cars 410 150 -260; Trucks 30 30 0 Outlette Avenue — Cars 290 80 -210; Trucks 140 30 -110 Dougall Avenue — Cars 250 120 -130; Trucks 210 70 -140	Each segment would provide for significant decrease in international volumes, as a part of a complete route to a new crossing. No significant difference between alternatives
	V/C ratios by vehicle type	Change in V/C ratio	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road 1.18 0.99 -0.19 Talbot Road 1 1.04 0.04 EC Row Expressway 0.89 0.77 -0.12 Outlette Avenue 1.3 1.14 -0.16 Dougall Avenue 1.44 1.17 -0.27	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road 1.18 0.99 -0.19 Talbot Road 1 1.04 0.04 EC Row Expressway 0.89 0.77 -0.12 Outlette Avenue 1.3 1.14 -0.16 Dougall Avenue 1.44 1.17 -0.27	Key links would be operating at or near capacity. No significant difference between alternatives
	Local Access	No of streets crossed/closed	**8 Crossed** (401, Baseline Rd, Division Rd, Lauzon Prkwy, South Service Rd, Twin Oaks, Service Rd, EC Row Expwy) / **0 Closed**	**6 Crossed** (401, Manning, Baseline, 11th Concs, Division, EC Row Expwy) / **3 Closed** (16-17th Sderd, 12th Concs, EC Row Ave)	Both options would result in moderate impacts. EC-ED-EG would be aligned on Conc Rd 10 and Lauzon Parkway, while EA-EE-EF-EG would be aligned on Manning Road and EC Row Expressway. No significant difference between segments.
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	4	441	For the purposes of analysis of Illustrative Segments a quantiative assessment of the total number of homes or households or farmsdisrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	4	441	
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	1	3	
		Qualitative assessment and community cohesion, character and function.	More preferred Lauzon Rd is more suitable for highway	Less preferred, residential impact on Barvell	
Acquisitions (Whole or Partial)	**RESIDENTIAL**				
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	1	9	
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	0	1	Pit on corner of Lauzon and Ecrow
		Number of businesses disrupted./ No. with partial property taking	1	0	Pit on corner of Lauzon and Ecrow; 1 business at 401/Manning Rd
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools,	0	0	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	4	2	

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemsor

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	2	13	
		Qualitative assessment of agricultural operations effected.	Equal	Equal	
Factor Summary:	EC-ED-EG has significantly fewer disruption and displacement effects, primarily because it is a shorter route and does not follow the existing residential development along EC Row.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
Land Use (Existing and Planned)	Compatible with the Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	More compatible due to proximity to future employment lands.	Generally a rural area. This area is a combination of agricultural areas and urban area within the Town of Tecumseh. It appears the urban area covered by this segment would be many years from now future development.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Compatible	City expressed interest that EC Row maintained for existing land use.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	Displacement/disruption to future committed land uses	
Contaminated Sited/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	1, 3 ha	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	2, 4.02 ha	4, 3.06 ha	
Factor Summary:	EC-ED-EG is preferred because it is more compatible due to its proximity to future employment lands. It also has fewer contaminated/disposal sites.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC ED-EG vs EA--EE-EF-EG	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	Captured in Built Heritage Analysis		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	1	Friends of Pike Creek
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	1	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 50%	up to 25%	
Factor Summary:	EC-EG impacts an area of archaeological potential; EA-EG impacts an area of archaeological potential and parklands. Therefore, EC-EG is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
Environmentally Significant Areas	Impacts to ANSI (Areas of Natural and Scientific Interest)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to ESA (Environmentally Significant Areas)	Area in ha impacted by ROW	0	0	EA-EE is in close proximity to Fairplay Woods ESA.
		Area in ha within 500m of ROW	0	15.38	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to CNHS (Candidate Natural Heritage Site)	Area in ha impacted by ROW	0	0.19	EA-EG directly impacts two CNHSs, including W11 and W12.
		Area in ha within 500m of ROW	3.7	6.33	
	Impacts to PNHF(Potential Natural Heritage Feature)	Area in ha impacted by ROW	2.63	0	EC-EG directly impacts a large forest block (PNHF) and is in close proximity to a number of other forest blocks.
		Area in ha within 500m of ROW	29.59	9.28	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	EC-EG is in close proximity to an online pond of Russette Drain.
		Area in ha within 500m of ROW	2.33	0	
	Impacts to drains	Area in ha impacted by ROW	0.52	2	EA-EG is in close proximity to and directly impacts a greater number of drains.
		Area in ha within 500m of ROW	6.76	10.11	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.22	1.83	EA-EG directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	8	24	EA-EG crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0.1) Water(0) SSH(0)	EF-EG directly impacts CNHS W11, home to Prairie Rose (Special Concern and SARA Schedule 1).
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
Farmland/Prime Agricultural Lands	Soil type/impacts in ha	good	61.1	81.58	
		good to fair	0	12.46	
		fair to poor	0	1.5	
		TOTAL AREA IMPACTED (ha)	61.1	95.54	
Factor Summary:	EA-EG impacts a greater number of features, both directly and indirectly (proximity), and directly impacts a Candidate Natural Heritage Site with significant species. EC-EG directly impacts a large forest block (Potential Natural Heritage Feature). EC-EG is slightly preferred				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EG vs. EA-EE-EF-EG	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - Tecumseh to AMB 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or over capacity; assessment based on connection to Crossing X15
			HCL - ECR to Tecumseh 1.18/0.99/-	HCL - ECR to Tecumseh 1.18/0.99/-	
			HCL - Cabana to ECR 0.99/0.81/-	HCL - Cabana to ECR 0.99/0.81/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.14/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.63/-	EC Row - HCL to Dougall 0.69/0.63/-	
			EC Row - Dougall to Walker 0.89/0.77/-	EC Row - Dougall to Walker 0.89/0.77/-	
			EC Row - Walker to Lauzon 0.87/0.76/-	EC Row - Walker to Lauzon 0.87/0.76/-	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.55/NA	New Segment NA/0.55/NA	
	Change in travel distance	Change in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	2800/1700	2800/1700	Assessment based on connection to Crossing X15
	Change in travel time	Change in total vehicle-hours of travel vs. no-build; Autos/Trucks	1540/170	1540/170	Assessment based on connection to Crossing X15
	Directness of route for through traffic	Distance traveled between common points	10.1	9.5	Common points = EA @401 to EG
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.80	1.22/0.80	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.73	1.15/0.73	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15

Route Segment Evaluation EC-ED-EG vs. EA-EE-EF-EG	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	With EA--EG option, access to border requires sharing a section of EC Row Expressway with local traffic; lower reliability/options in network compared to the EC--EG option; new crossing operates well below capacity during peak periods; assessment based on connection to Crossing X15
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	This analysis is not applicable to these minor route segments and will be incorporated once end-to-end connection is identified
Factor Summary:	Two segments offer similar benefits to regional mobility except that EA-EE-EF-EG utilizes a portion of EC Row Expressway, which is an important east-west facility for local traffic; sharing a section of EC Row Expressway as the key route for international traffic to access the border crossing limits reliability/choice in the network. EA-EE-EF-EG has a low benefit to mobility, while EC-ED-EG has a moderate benefit. EC-ED-EG is preferred.				
Factor Score:			6	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
Cost	Length of Alternative	km	6.2	9.5	
	Preliminary Construction Costs	$ millions CAD (2005)	301.1	569.6	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**EC-ED** - No constructability issues are anticipated.ENWIN utility lines may need to be relocated. **ED-EG -** A detour will be required for traffic on Division Road while an interchange is being constructed there. Traffic staging and detour will be required at Lauzon Parkway while it is being reconstructed to a 6-lane freeway section with a service road on the east side. ENWIN and Bell Canada utility lines, Hydro One transmission lines, watermains and Union Gas pipeline may need to be relocated.	**EA- EE** - Existing interchange at Highway 401 / Manning Road will be reconstructed and modified to a freeway-to-freeway type interchange.This will require traffic staging and detour for traffic to/from Manning Road while the interchange is being modified.Another detour will be constructed at Division Road while an interchange is being constructed there.ENWIN and Bell Canada utility lines, Hydro One transmission lines and Union Gas pipeline may need to be relocated. **EE-EF -** No unusual constructability issues are anticipated although a newly proposed freeway to freeway style interchange at E.C. ROW Expressway will be very complex. It is possible that proposed interchange could not provide for all traffic movements to avoid large property impact on Forest Glade residential community. Bell Canada utility lines may need to be relocated. **EF-EG -** Existing E.C. ROW Expressway will be reconstructed to a 10-lane urban section. Traffic staging and detour will be required while this section is being upgraded.ENWIN and Bell Canada utility lines, watermains, sanitary sewers and Union Gas pipeline may need to be relocated.	

Route Segment Evaluation EC-ED-EG vs EA-EE-EF-EG	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG	EA-EE-EF-EG	
	Brine wells	Proximity (metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitative	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils may become softer to the north	Generally firm soils between 35 m and 40 m deep, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils may become softer to the north	
Factor Summary:	EC-ED-EG is preferred due to lower construction cost and fewer constructability concerns				
Factor Score:			3	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best EG	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	EC-EG		EA-EG		Weighting	EC-EG		EA-EG		Weighting	EC-EG		EA-EG	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	2	24.78	17.32	3	51.96	2	34.64	17.30	3	51.90	2	34.60
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	2	31.86	15.49	3	46.47	2	30.98	13.88	3	41.64	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	6	106.20	5	88.50	15.28	6	91.68	5	76.40	14.83	6	88.98	5	74.15
Minimize Cost	13.27	3	39.81	1	13.27	9.54	3	28.62	1	9.54	10.07	3	30.21	1	10.07
Total Weighted Score	100.00		353.10		280.54	100.00		345.84		278.67	100.00		344.49		278.34
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument evaluation method resulted in EC-EG being preferred over EA-EG because it had fewer direct impacts to residences, its location adjacent to an employment area, and its lower construction costs. The Arithmetic evaluation method scored EC-EG higher over EA-EG. The Reasoned Argument and Arithmetic Evaluation method resulted in the same conclusion. EA-EG was carried forward.

* Does not imply consensus in weighting/scoring

Illustrative Alternative Route Segment Evaluation

EA – EE - EF – EH – EJ vs. EC – ED – EG - EI - EJ

Segment EA – EE - EF – EH – EJ and Segment EC – ED – EG - EI - EJ originate at Highway 401, run parallel in a northwesterly direction to the edge of the Detroit River joining at common point EG (see attached figure).

Seven performance measures were evaluated for each Illustrative Alternative Segment and include: Change in Air Quality, Protect Community/Neighbourhood Characteristics, Maintain Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost. Analysis of Change in Air Quality has not been carried out on individual segment. Air Quality analysis computer models require route system connected lengths (results of individual segment comparisons joined to form a route) with traffic loading in order to provide reasonable results.

Segment EA – EE - EF – EH – EJ and accompanying plaza CE2 will disrupt less households than Segment EC – ED – EG - EI - EJ and accompanying plaza CE1. Segment EC – ED – EG - EI - EJ has a greater affect on communities and neighbourhoods, primarily in the area of established neighbourhoods along the Lauzon Parkway and northerly to the edge of the river. Segment EA – EE - EF – EH – EJ displaces/disrupts future committed land uses (large residential development currently under construction).

Segment EA – EE - EF – EH – EJ and Segment EC – ED – EG - EI - EJ have similar effects on areas with high archaeological potential. In term of the natural environment Segment EC – ED – EG - EI – EJ has fewer direct impacts, fewer crossings and less proximity affects, but has a direct impact on significant habitats/species.

Both offer similarly low benefits to regional mobility, however both result in minor improvement to operations on the local network and at existing crossings, while operating well below capacity during peak periods. Segment EC – ED – EG - EI - EJ will be more complex to construct because of the need to convert existing interchanges along its length.

In conclusion, Segments EA – EE - EF – EH – EJ and Segment EC – ED – EG - EI - EJ both offers similar benefits to regional mobility. However, Segment EC – ED – EG - EI - EJ has fewer affects on the natural environment and does not displace/disrupt future committed land uses. EC-EJ is preferred.

Illustrative Alternatives
Route Segment Evaluation

EA-EF-EH-EJ vs. EC-ED-EI-EJ

Route Segment Evaluation
EA-EJ vs. EC-EJ

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	There are more impacts to sensitive receptors via segment EC-EJ than with EA-EJ; **therefore EA-EJ is preferred**.
Protect Community/ Neighborhood Characteristics	There are significantly more impacts to residences and farms with segment EC-EJ than with EA-EJ; EA-EJ will displace more businesses while EC-EJ will disrupt more businesses. **Therefore EC-EJ is preferred**.
Maintain Consistency with Existing and Planned Land Use	EA-EJ displaces/disrupts future committed land uses; EC-EJ does not. **Therefore, EC-EJ is preferred**.
Protect Cultural Resources	Both segments have similar impacts to cultural resources.
Protect the Natural Environment	EC-EJ has fewer direct impacts, fewer crossings and fewer proximity impacts, but has a direct impact on significant habitats/species. **Therefore EC-EJ is slightly preferred**.
Improve Regional Mobility	Two options offer similar low benefits to regional mobility; both result in minor improvement to operations on local network and at existing crossings, while operating well below capacity during peak periods. **Both options are equally preferred.**
Minimize Cost	EA-EF-EH-EJ is slightly preferred as conversion of existing interchanges along EC-ED-EI-EJ will require more complex construction.
Trade-Off Summary:	**EC-EJ has fewer direct impacts to natural resources; and does not displace/disrupt future committed land uses. EC-EJ offers similar benefits to regional mobility; therefore EC-EJ is preferred..**

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EJ	CE2	EC-EJ	CE1	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A		N/A		Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in concentrations vs. No-build scenario	Number of sensitive receptors (eg. homes/households/farms) within 250 m of ROW centre line	990	516 (estimated disruption based on build-out of the area)	1657	39	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	There are more impacts to sensitive receptors via segment EC-EJ than with EA-EJ; therefore EA-EJ is preferred.						
Factor Score:			2		1		

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment: EA-EE-EF-EH-EJ	CE2	EC-EJ	CE1	Comments
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 610 -370; Trucks 840 580 -260 Talbot Road — Cars 390 240 -150; Trucks 680 470 -210 EC Row Expressway — Cars 410 150 -260; Trucks 30 30 0 Ouellette Avenue — Cars 290 80 -210; Trucks 140 30 -110 Dougall Avenue — Cars 250 120 -130; Trucks 210 70 -140		NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 610 -370; Trucks 840 580 -260 Talbot Road — Cars 390 240 -150; Trucks 680 470 -210 EC Row Expressway — Cars 410 150 -260; Trucks 30 30 0 Ouellette Avenue — Cars 290 80 -210; Trucks 140 30 -110 Dougall Avenue — Cars 250 120 -130; Trucks 210 70 -140		Each segment would provide for significant decrease in international volumes, as a part of a complete route to a new crossing. No significant difference between alternatives
	Volume over capacity (V/C) ratios by vehicle type	Change in Volume of Capacity (V/C) ratio	NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — 1.18 0.99 -0.2 Talbot Road — 1 1.04 0.04 EC Row Expressway — 0.89 0.77 -0.1 Ouellette Avenue — 1.3 1.14 -0.2 Dougall Avenue — 1.44 1.17 -0.3		NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — 1.18 0.99 -0.2 Talbot Road — 1 1.04 0.04 EC Row Expressway — 0.89 0.77 -0.1 Ouellette Avenue — 1.3 1.14 -0.2 Dougall Avenue — 1.44 1.17 -0.3		Key links would be operating at or near capacity. No significant difference between alternatives
	Local Access	No of streets crossed/closed	**7 Crossed** (401, Manning, Baseline, 11th Cons, Division, E.C. Row Expy, Tecumseh) / **3 Closed** (16&17th Sideroad, 12th Cons, E.C. Row Ave)		**16 Crossed** (401, Baseline Rd, Division, Lauzon Prkwy, South Service Rd, Twin Oaks, Service Rd, EC Row Expwy, Quality Way, Forest Glade, Essex Way, Cantelon Dr, Hawthorne Dr, Enterprise Way, Tecumseh Rd, Lauzon Rd) / **3 Closed** (Lauzon Lane, Tranby Ave, Catherine St)		Minor impacts for EA-EJ as segment is aligned primarily over open land. Access impacts are limited to Manning Road and the section between EC Row Expressway and the plaza. EC-EJ would result in major impacts to access along Lauzon Parkway from Division Road to Tecumseh Road.
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors within 500 m (250m of centre line) of ROW	1094	516 (estimated disruption based on build-out of the area prior to approvals)	1100	39	For the purposes of analysis of Illustrative Segments a quantiative assessment of the total number of homes or households or farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	1091	516 (estimated disruption based on build-out of the area prior to approvals)	1098	39	
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2	3 (Kiwanis Park and East End Park, not also that a Secondary School will also be built on site by time of approval).	2	0	
		Qualitative assessment and community cohesion, character and function.	larger impact on existing community	Significant negative impact. The plaza would have a very negative effect on this planned community. Would fundamentally change the cohesion, character and function of this new emerging community.	larger impact on planned community	Miminal impact on community cohesion, character and function as this is primarily a commercial area.	Both options have significant negative impacts
Acquisitions (Whole or Partial)	**RESIDENTIAL**						
		Total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	429	0 (estimated 504 by time of approvals)	273	109	
	BUSINESS						
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	28	5	6	10	EA-EJ: Displace 2 small plazas and other businesses. CE1: Existing and developing retail centre on more than 50% of plaza would be displaced. EC-EJ: Displace major retail outlet and supermarket and other small retail/commercial.

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EE-EF-EH-EJ	CE2	EC-EJ	CE1	
		Number of businesses disrupted./ No. With partial property taking	6	2	71	2	EC-EJ: Disruption primarily to Tecumseh Mall and industrial uses along Lauzon.
	INSTITUTIONAL						
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW	0	Kiwanis Park portion	1	0	Partial displacement of Kiwanis Park
	FARM PROPERTY/STRUCTURES						
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	3	0	4	0	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	3	0	2	0	
		Qualitative assessment of agricultural operations effected.	Equal	0	Equal	0	
Factor Summary:	There are significantly more impacts to residences and farms with segment EC-EJ than with EA-EJ; EA-EJ will displace more businesses while EC-EJ will disrupt more businesses. Therefore EC-EJ is preferred.						
Factor Score:			1		2		

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EF-EH-EJ	CE2	EC-ED-EI-EJ	CE1	
Land Use (Existing and Planned)	Compatible with the Provincial Policy Statement	Qualitative assessment	Incompatible	Not consistent	Compatible	Not consistent	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Lauzon Parkway is already a highly used arterial roadway	The study area for the plaza is known as the East Riverside Secondary Plan, which was approved in September 2000. The East Riverside Area is generally bounded by the Little River Park on the west, Wyandotte on the north and Tecumseh on the South.	Impact to Forest Glade	Not very compatible. This area is known as the Forest Glade North Planning Area with approval as of July 2004. The area is segmented into business park and commercial centre. Air photo is dated. Significant commercial development has occurred along Tecumseh and Lauzon. The replacement of the commercial function by a plaza would represenent a comprehensive change to the Secondary Plan	

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EF-EH-EJ	CE2	EC-ED-EI-EJ	CE1	
	Compatibility with any other federal, provincial or municipal initiatives	Qualitative assessment	As compatible as any highway project in an agricultural/near urban area.	The study area for the plaza is known as the East Riverside Secondary Plan, which was approved in September 2000. The East Riverside Area is generally bounded by the Little River Park on the west, Wyandotte on the north and Tecumseh on the South. Residential development is occurring on eastern side. The land is being developed now and sold. Community facilities will have to be developed in the future to accommodate residential development.	Segments of this alignment area incompatible with local planning.	Not very compatible	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	Displacement/disruption to future commited land uses	Does disrupt known future land uses	No displacement/disruption to future committed land uses	Does not disrupt known future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	2, 6 ha	0	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	5, 19.06 ha	0	12, 28.26 ha	1.0.2 - south edge of plaza intersects an old rail switch yard that may be contaminated with crosote, wood preservative, PAHs, petroleum hydrocarbons, extent unknown	
Factor Summary:	EA-EJ displaces/disrupts future committed land uses; EC-EJ does not. Therefore, EC-EJ is preferred.						
Factor Score:			1		2		

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI .

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EF-EH-EJ	CE2	EC-ED-EI-EJ	CE1	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	0	0	
		b) Number of listed built heritage features disrupted	0	0	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	Captured in built heritage analysis				
		b) Number of cultural landscapes disrupted					
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	2	0	0	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	1	0	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 25%	0	up to 50%	up to 25%	
Factor Summary:	Both segments have similar impacts to cultural resources						
Factor Score:			3		3		

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EA-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EF-EH-EJ	CE2	EC-ED-EI-EJ	CE1	
Environmentally Significant Areas	Impacts to ANSI (Areas of Natural & Scientific Interest)	Area in ha impacted by ROW	0	0	0	0	
		Area in ha within 500m of ROW	0	0	0	0	
	Impacts to ESA (Environmentally Significant Areas)	Area in ha impacted by ROW	0	0	0	0	
		Area in ha within 500m of ROW	15.38	0	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	0	0	
		Area in ha within 500m of ROW	0	0	0	0	
	Impacts to CNHS (Candidate Natural Heritage Site)	Area in ha impacted by ROW	13.35	0.64	2.66	0.37	
		Area in ha within 500m of ROW	12.86	5.19	26.17	11.6	
	Impacts to PNHF (Potential Natural Heritage Feature)	Area in ha impacted by ROW	4.38	4.06	2.63	0	
		Area in ha within 500m of ROW	32.38	20.01	29.59	0	
	Impacts to waterbodies	Area in ha impacted by ROW	0.6	0.4	0	0	
		Area in ha within 500m of ROW	3.59	2.4	2.62	0.7	
	Impacts to drains	Area in ha impacted by ROW	0.83	0.15	0.59	0	
		Area in ha within 500m of ROW	12.96	1.71	9.5	0.92	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	34.12	31.21	0.46	0	
	Impacts to water crossings	No. within 100m of proposed ROW	16	2	9	0	
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(4.06) Water(0) SSH(4.06)	ANSI(0) ESA(0) Wetland(0) CNHS(1.99) Water(0) SSH(1.99)	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(0) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	89.71	39.74	101.18	41.02	
		good to fair	18.12	0	0	0	
		fair to poor	1.5	0	0	0	
		TOTAL AREA IMPACTED (ha)	99.33	39.74	101.18	41.02	
Factor Summary:	EA-EJ impacts a greater number of features, both directly and indirectly (proximity). EC-EJ has fewer direct impacts (hectares) fewer crossings and fewer proximity impacts, but has a direct impact on significant habitats/species.						
Factor Score:			3		3		

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF-EJ+ Plaza	EC-ED-EG-EJ+ Plaza	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - Tecumseh to AMB 1.05/0.88/-	HCL - AMB to Tecumseh 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or over capacity; assessment based on connection to Crossing X15
			HCL - ECR to Tecumseh 1.18/0.99/-	HCL - ECR to Tecumseh 1.18/0.99/-	
			HCL - Cabana to ECR 0.99/0.81/-	HCL - Cabana to ECR 0.99/0.81/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.14/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.63/-	EC Row - HCL to Dougall 0.69/0.63/-	
			EC Row - Dougall to Walker 0.89/0.77/-	EC Row - Dougall to Walker 0.89/0.77/-	
			EC Row - Walker to Lauzon 0.87/0.76/-	EC Row - Walker to Lauzon 0.87/0.76/-	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment S of ECR NA/0.55/NA	New Segment S of ECR NA/0.55/NA	
			New Segment N of ECR NA/0.40/NA	New Segment N of ECR NA/0.40/NA	
	Change in travel distance	Change in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	2800/1700	2800/1700	Assessment based on connection to Crossing X15
	Change in travel time	Change in total vehicle-hours of travel vs. no-build; Autos/Trucks	1540/170	1540/170	Assessment based on connection to Crossing X15
	Directness of route for through traffic	Distance traveled between common points	11.0	14.2	Common points = EA @401 to EJ
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.80	1.22/0.80	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.73	1.15/0.73	Existing crossing has a significant improvement to level of service vs. do nothing; assessment based on connection to Crossing X15

Route Segment Evaluation EC-ED-EE vs. EA-EE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EA-EE-EF-EJ+ Plaza	EC-ED-EG-EJ+ Plaza	
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	New crossing operates well below capacity during peak periods; assessment based on connection to Crossing X15
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	0.4	0.4	Plaza operates well below capacity during peak travel periods.
	Potential impacts to network during periods of congestion at border		Plaza located 2+km from EC Row Xway;	Plaza located 2+km from EC Row Xway;	Plaza sized to accommodate peak conditions at plaza; some storage available on new facility for queuing during extreme congestion/high security conditions at border
Factor Summary:	Two options offer similar low benefits to regional mobility; both result in minor improvement to operations on local network and at existing crossings, while operating well below capacity during peak periods. Both options are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-Huron Church Line

Route Segment Evaluation EA-EE-EF-EH-EJ vs. EC-ED-EI-EJ	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment				Comments
			EA-EF-EH-EJ	CE2	EC-ED-EG-EI-EJ	CE1	
Cost	Length of Alternative	km	11		10.3		
	Remediation	$ millions CAD (2005)	4		503		
	Preliminary Construction Costs	$ millions CAD (2005)	457.5	159.4	482.6	161.4	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**EA to EE** - Existing interchange at Highway 401 / Manning Road will be reconstructed and modified to a freeway-to-freeway interchange.This will require traffic staging and detour for traffic to/from Manning Road while the interchange is being modified. A detour will be required for traffic on Division Road while an interchange is being constructed there. **EE to EF** - No out of ordinary constructability issues are anticipated although a newly proposed freeway to freeway style interchange at E.C. ROW Expressway will be very complex. It is probable that proposed interchange could not provide for all traffic movements to avoid property impact on Forest Glade residential community. **EF to EH** - A detour will be required on Tecumseh Road while an interchange is being constructed there.	No out of ordinary constructability issues are anticipated although potential disruptions to rail operations on the south side of the site will need to be addressed	**ED to EG** - A detour will be required for traffic on Division Road while an interchange is being constructed there. Traffic staging and detour will be required at Lauzon Parkway while it is being reconstructed to a 6-lane freeway section with a service road on the east side. **EG to EI** - Existing interchange at E.C. ROW Expressway / Lauzon Parkway will be reconstructed and modified to a freeway-to-freeway style interchange. Traffic staging and detour will be required while the interchange is being modified.Traffic staging and detour will be required on Lauzon Parkway while it is being reconstructed to a 6-lane freeway section with service roads.	No out of ordinary constructability issues are anticipated although potential disruptions to rail operations on the north and west sides of the site will need to be addressed	
	Brine wells	Proximity (metres); age	None	None	None	None	
	Soil Conditions (geotechnical)	Qualitatitive	Generally firm soils between 35 m and 40 m deep at south end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils become progressively softer near and to the north of EC Row Expwy until near EJ are soft and deep foundations and embankment settlement/stability mitigation measures will likely be required	Soft soils between 25 m and 35 m deep will require deep foundations for large structures, settlement mitigation measures may be required for high embankments	Generally firm soils between 35 m and 40 m deep at south end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required, soils are 35 m or more deep over bedrock, soils become progressively softer near and to the north of EC Row Expwy until near EJ are soft and deep foundations and embankment settlement/stability mitigation measures will likely be required	Soft soils between 25 m and 35 m deep will require deep foundations for large structures, settlement mitigation measures may be required for high embankments	
Factor Summary:	EA-EF-EH-EJ is slightly preferred as conversion of existing interchanges along EC-ED-EI-EJ will require more complex construction.						
Factor Score:			3		3		

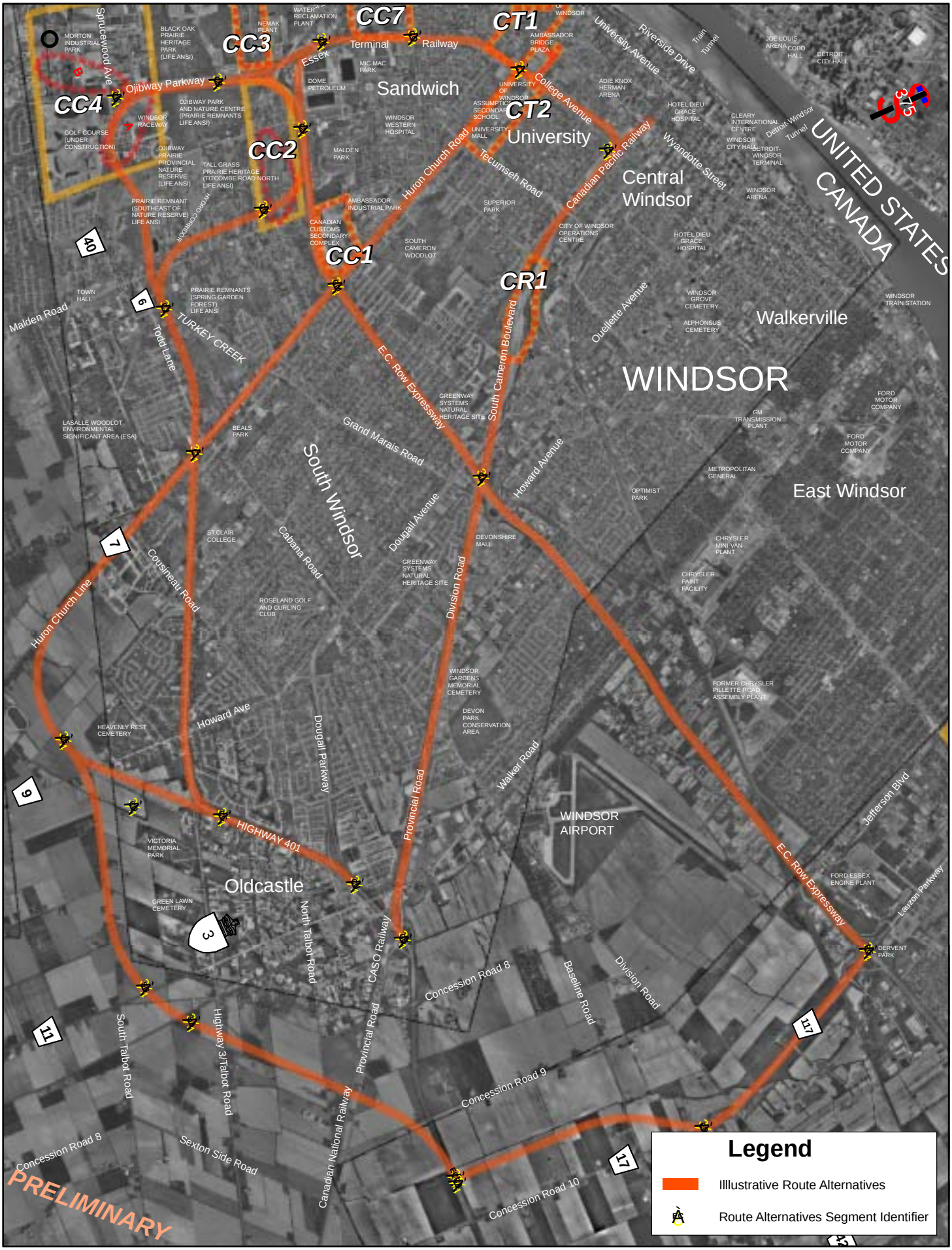
1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best EJ	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	EA-EJ		EC-EJ		Weighting	EA-EJ		EC-EJ		Weighting	EA-EJ		EC-EJ	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	2	24.78	1	12.39	17.32	2	34.64	1	17.32	17.30	2	34.60	1	17.30
Protect Community/ Neighborhood Characteristics	15.93	1	15.93	2	31.86	15.49	1	15.49	2	30.98	13.88	1	13.88	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	1	12.39	2	24.78	12.89	1	12.89	2	25.78	13.69	1	13.69	2	27.38
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	3	39.81	9.54	3	28.62	3	28.62	10.07	3	30.21	3	30.21
Total Weighted Score	100.00		266.37		282.30	100.00		256.48		267.54	100.00		257.22		267.49
Ranking			***2***		***1***			***2***		***1***			***2***		***1***

COMMENT: The Reasoned Argument evaluation method concluded that EC-EJ had fewer direct impacts to natural features; and has fewer disruptions/displacements to future committed land uses. The Arithmetic Evaluation method scored EC-EJ higher than EA-EJ, indicating that it is the preferred route. TThe Reasoned Argument and Arithmetic Evaluation processes came to the same conclusion that EC-EJ was the preferred alignment, and it was carried forward as alignment to X15.

* Does not imply consensus in weighting/scoing



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October 14, 2005

CENTRAL - Routes

Illustrative Alternatives
Route Segment Evaluation

EC-EG-CL vs. CB-CL

Route Segment Evaluation
EC-EG-CL vs CB-CL

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	There are similar impacts to sensitive receptors between the two segments. There is no significant difference between the two.
Protect Community/ Neighborhood Characteristics	Both alternatives use existing transportation infrastructure corridors which represent natural divides in the the community. The larger number of disruptional effects associated with Alternative EG-CL is associated with the additional length of the route (ie. longer distance more likely increases the odds of impacting residences and features). CB-CL results in the displacement of a large number of businesses. While both alternatives have been ranked equally as having medium impact, the effect of CB-CL on the city's retail economy outweights the social disruption that would result from EC-EG-CL. **Therefore, EC-EG-CL is preferred.**
Maintain Consistency with Existing and Planned Land Use	EC-EG-CL runs along the back of lots thereby leaving in-tact the rural community along Concession 10. There are fewer impacts to land uses to Alternative CB-CL. **Therefore, CB-CL is preferred.**
Protect Cultural Resources	There is greater potential to impact archaeological resources with Alternative EC-EG-CL than CB-CL. **Therefore, CB-CL is preferred.**
Protect the Natural Environment	CB-CL has fewer direct and indirect (proximity) impacts. **CB-CL is slightly preferred.**
Improve Regional Mobility	Both options provide benefits to regional mobility; both result in improvement to operations on local network and at existing crossings, while operating below capacity during peak periods. EC-ED-EG-CL uses a major portion of EC Row Expressway as key link to/from crossing, which reduces reliability/choice in the road network; as well, EC-CL option is substantially longer than CB-CL option. EC-CL option provides minor benefit to regional mobility and CB-CL provides a moderate benefit. **CB-CL is preferred.**
Minimize Cost	Alternative EC-CL has greater costs associated with its construction than CB-CL. No significant constructability issues with either option. **CB-CL is preferred.**
Trade-Off Summary:	**CB-CL has fewer community cohesion impacts, and fewer cultural resource impacts. CB-CL and EC-EG-CL have similar natural resource impacts. CB-CL provides a moderate benefit to regional mobility and it has fewer costs associated with its construction. Therefore, CB-CL is preferred.**

Route Segment Evaluation EC-EG-EL vs CB-CL	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			EC-EG -CL	CB - CL	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	589	456 (+ 100 to be developed)	For the purposes of analysis of Illustrative Segments a quantiative assessment of the total number of homes or households or farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	There are similar impacts to sensitive receptors between the two segments. There is no significant difference between the two.				
Factor Score:			2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment									Comments
			EC-EG-CL					CB - CL				
			NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	Huron Church Road	Cars	980	600	-380	Huron Church Road	Cars	980	600	-380	CB-CL is preferred as it adds significantly less traffic to ECR.
				Trucks	840	260	-580		Trucks	840	260	-580	
			Talbot Road	Cars	390	200	-190	Talbot Road	Cars	390	200	-190	
				Trucks	680	30	-650		Trucks	680	30	-650	
			EC Row Expressway	Cars	410	1200	790	EC Row Expressway	Cars	410	550	140	
				Trucks	30	1030	1000		Trucks	30	120	90	
			Outlette Avenue	Cars	290	250	-40	Outlette Avenue	Cars	290	250	-40	
				Trucks	140	0	-140		Trucks	140	0	-140	
			Dougall Avenue	Cars	250	0	-250	Dougall Avenue	Cars	250	0	-250	
				Trucks	210	0	-210		Trucks	210	0	-210	
	Local Access	No of streets crossed/closed	**13 Crossed** (401, Baseline, Division, Lauzon Prkwy, South Service Rd, Twin Oaks, Service Rd, EC Row Expwy, Jefferson, Central, Walker, Conservation Dr, Howard) / **0 Closed**					**8 Crossed** (401, Provincial, Walker, 6th, Cabana E, Division, Howard, EC Row Expwy) / **0 Closed**					
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	589					456 (+ 100 to be developed)					For the purposes of analysis of Illustrative Segments a quantiative assessment of the total number of homes or households or farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	589					456 (+ 100 to be developed)					Somewhat comparable disruption effects
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	11 (unknown 28, Jehovah's Witness Ambassador Church, Salvation Army South Windsor Church, Bishop J.C. Cody School, Library, Udine Park, St Samuel Church of God in Christ, unknown church, J J McWilliam Public School, Parkwood Gospel Temple, park in Twin Oaks Park)					2 (Windsor Gardens Memorial Cemetery, Devonshire Conservation Area)					More significant disruption effects owing primarily to the added length of the route.
		Qualitative assessment and community cohesion, character and function.	EC Row has already acted as natural divide in the community and therefore community cohesiveness is not overly impacted. Significant number of disruptional effects. Minor impact to the rural area and the urban fringe.					Significant disruptional effects because of the length of alignment and that this is an already built-up area. There will be more disruption to business and community as a result of this option					Both routes are already impacted by existing traffic and infrastructure.
Acquisitions (Whole or Partial)	**RESIDENTIAL**												
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	1					1					
	BUSINESS												
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	7					45					CB-CL: Displacement of major industrial and retail businesses. Big box retail at Roundhouse Centre, supermarkets, car dealerships, etc. and mid size industrial operations. EC-EL: All industrial uses along EC Row that are displaced are disrupted are highly avoidable through minor redesign.
		Number of businesses disrupted./ No. with partial property taking	5					13					CB-CL: Disruption to major industrial and retail including the Devonshire Mall. EC-EL: All industrial uses along EC Row that are displaced or distrupted are highly avoidable through minor redesign.
	INSTITUTIONAL												
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	0					0					
	FARM PROPERTY/STRUCTURES												

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-EG-CL	CB - CL	
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	4	0	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	1	0	
		Qualitative assessment of agricultural operations effected.	Moderate impact to farm operations.	None-N/A	Rural route has more impacts on farm operations.
Factor Summary:	Both alternatives use existing transportation infrastructure corridors which represent natural divides in the the community. The larger number of disruptional effects associated with Alternative EG-CL is associated with the additional length of the route (ie. longer distance more likely increases the odds of impacting residences and features). Most of these institutions are located near the existing EC Row Expressway and the additional social impact associated with the proposed undertaking is likely to be limited to increased levels of air emissions. CB-CL results in the displacement of a large number of businesses. The retail uses in this area represent the largest concentration of retail activity in the city. The amount of displacements and disruptions that would occur would have a significant impact on the retail structure in the Windsor area. While both alternatives have been ranked equally as having medium impact, the effect of CB-CL on the city's retail economy outweighs the social disruption that would result from EC-EG-CL. Therefore, EC-EG-CL is preferred.				
Factor Score:			2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-EG-CL	CB - CL	
Land Use (Existing and Planned)	Compatibility with the Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Uses existing infrastructure (EC Row Expressway) and proposed facility is similiar in use. Cuts through industrial and business park land uses from Lauzon through to Walker Road. From Walker Road to rail line planned land uses include residential, industrial and mixed use. Generally little community or land-use impact except for the loss of some farmland. Rural area characterized primarily by farm operations and rural non-farm residences. This option runs along the back of lots thereby leaving in-tact the rural community along Concession Road 10. Both segments lie in the Tecumseh agricultural area as identified in the Sandwich South Official Plan. EB-ED eliminates a larger number of rural residences and farms and therefore has a greater impact on the planned function of the area.	This segment uses the existing infrastructure of the railway, which is a somewhat comparable facility to a highway. Cuts a swath through an extremely diverse land use fabric including residential, industrial, mixed use, commercial and industrial land uses.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Not incompatible but a dense urban fabric.	Not incompatible.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	No displacement/disruption to future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	2, 4.02 ha	3, .06 ha	Haz 288, haz 289 two auto junk yard on road perimeter, impacts possible. Haz 233 large chemical factory at 50 metre boundary-potential impacts unknown-Assume .02 ha (200 m2) per site.
Factor Summary:	EC-EG-CL runs along the back of lots thereby leaving in-tact the rural community along Concession 10. There are fewer impacts to land uses to Alternative CB-CL. Therefore, CB-CL is preferred.				
Factor Score:			2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC EG-CL VS CB-CL	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-EG-CL	CB - CL	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	1	Locally designated
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	2	1	
Archaeological Featuers	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 50%	up to 25%	
Factor Summary:	There is greater potential to impact archaeological resources with Alternative EC-EG-CL than CB-CL. Therefore, CB-CL is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-EG-CL	CB - CL	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	CB-CL is in close proximity to Devonwoods ESA.
		Area in ha within 500m of ROW	0	17.77	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	0	0	CB-CL is in close proximity to a greater number and area of CNHSs.
		Area in ha within 500m of ROW	20.61	41.8	
	Impacts to Potential Natural Heritage Feature (PNHF)	Area in ha impacted by ROW	2.63	0.25	EC-CL directly impacts a forest block (PNHF).
		Area in ha within 500m of ROW	29.59	14.69	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	EC-CL is in close proximity to a number of ponds.
		Area in ha within 500m of ROW	8.17	4.9	
	Impacts to drains	Area in ha impacted by ROW	0.84	0.17	EC-CL directly impacts a greater number of drains.
		Area in ha within 500m of ROW	10.06	2.88	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	3.42	0.32	EC-CL directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	13	3	EC-CL crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) PNHF(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha by type of feature and species affected	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	123.93	57.17	
		good to fair	0	0	
		fair to poor	0	0	

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-EG-CL	CB - CL	
		TOTAL AREA OF IMPACTS (ha)	123.93	57.17	
Factor Summary:	CB-CL has fewer direct and indirect (proximity) impacts. CB-CL is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation EC-EG-CL vs. CB-CL	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG-CL	CB-CL	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.8/-	HCL - AMB to Tecumseh 1.05/0.8/-	Significant improvement to service levels on local road network with either option vs. do-nothing; key links to AMB operating below capacity; key links to D-W Tunnel operating near capacity; EC-CL option uses major portion of EC Row expressway as access to border crossing, mixing int'l traffic with local traffic on major east-west facility; while CB-CL uses a major portion of Division Provincial assessment based on connection to Crossing X10 with/without ECR connection.
			HCL - ECR to Tecumseh 1.18/0.83/-	HCL - ECR to Tecumseh 1.18/0.83/-	
			HCL - Cabana to ECR 0.99/0.73/-	HCL - Cabana to ECR 0.99/0.73/-	
			Talbot - HCR to 401 1.00/0.85/-	Talbot - HCR to 401 1.00/0.85/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.81/-	Ouellette - Tunnel to Tecumseh 0.89/0.81/-	
			Dougall - Tecumseh to ECR 1.30/1.10/-	Dougall - Tecumseh to ECR 1.30/1.10/-	
			Dougall - ECR to 401 1.44/0.92/-	Dougall - ECR to 401 1.44/0.92/-	
			EC Row - HCL to Dougall 0.69/0.73/+	EC Row - HCL to Dougall 0.69/0.73/+	
			EC Row - Dougall to Walker 0.89/0.79/-	EC Row - Dougall to Walker 0.89/0.94/+	
			EC Row - Walker to Lauzon 0.87/0.75/-	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.66/+	401 - Dougall to Manning 0.60/0.66/+	
			New Segment Lauzon NA/0.73/NA	New Segment Provincial/Division NA/0.79/NA	
			New Segment ECR NA/0.79/NA		
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(6500)/(5600)	(4900)/(2000)	Increase in veh-km reflects some new out-of-way travel to cross facility/access new interchanges; less benefits with EC--CL option; assessment assumes connection to crossing X10
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	810/150	1320/110	Minor savings in travel time with either option; assessment assumes connection with X10
	Directness of route for through traffic	Distance traveled between common points	13.6	8.7	Travel distance is 90% longer with EC-CL option than CB-CL option; common points = EC @401 to CL
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.60	1.22/0.60	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.50	1.15/0.50	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.64	NA/0.64	New crossing operates below capacity during peak periods;

Route Segment Evaluation EC-EG-CL vs. CB-CL	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG-CL	CB-CL	
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
Factor Summary:	Both options provide benefits to regional mobility; both result in improvement to operations on local network and at existing crossings. EC-ED-EG-CL uses a major portion of EC Row Expressway as key link to/from crossing, which reduces reliability/chioce in the road network; as well, EC-CL option is substantially longer than CB-CL option. EC-CL option provides minor benefit to regional mobility and CB-CL provides a moderate benefit. CB-CL is preferred.				
Factor Score:			5	6	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-Huron Church Line

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG-CL	CB - CL	
Cost	Length of Alternative	km	13.6	5.7	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	550.7	438	
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**EC to ED** Detour could be required at Baseline Road while a grade separation structure is being constructed. **ED to EG** Detour could be required at Division Road while an interchange is being constructed. Traffic staging and detour will be required while existing interchange at Lauzon Parkway / E.C. ROW Expressway is being modified to a freeway to freeway type interchange. Traffic staging and detour will be required while Lauzon Parkway is being modified to a 6-lane freeway with service roads.	**CB to CL** Existing interchange at Provincial Road / Highway 401 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. Detour and traffic staging could be required at Division Road while the proposed interchange is being constructed. Detours could be required at Walker Road and Howard Avenue while proposed grade separation structures are being constructed. Staging and Detours will be extremely complex for the construction of freeway to freeway type interchange at E.C. ROW Expressway	

Route Segment Evaluation EC-EG-CL vs CB-CL	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			EC-ED-EG-CL	CB - CL	
			EG to CL Traffic staging and detour will be required while E.C. ROW Expressway is being modified to a 10-lane express / collector freeway section. Traffic staging and detours will be required while existing interchanges at Jefferson Blvd., Central Avenue, Walker Road, and Howard Avenue are being reconstructed.		
	Brine wells	Proximity (metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 20 m and 30 m deep will require deep foundations for structures, settlement mitigation measures may be required for high embankments	Soft soils between 20 m and 30 m deep will require deep foundations for structures, settlement mitigation measures may be required for high embankments	
Factor Summary:	Alternative EC-CL has greater costs associated with its construction than CB-CL. No significant constructability issues.				
Factor Score:			1	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best CL	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	EC-CL		CB-CL		Weighting	EC-CL		CB-CL		Weighting	EC-CL		CB-CL	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	2	24.78	2	24.78	17.32	2	34.64	2	34.64	17.30	2	34.60	2	34.60
Protect Community/ Neighborhood Characteristics	15.93	2	31.86	2	31.86	15.49	2	30.98	2	30.98	13.88	2	27.76	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	2	24.78	12.89	2	25.78	2	25.78	13.69	2	27.38	2	27.38
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	6	106.20	15.28	5	76.40	6	91.68	14.83	5	74.15	6	88.98
Minimize Cost	13.27	1	13.27	2	26.54	9.54	1	9.54	2	19.08	10.07	1	10.07	2	20.14
Total Weighted Score	100.00		268.15		299.12	100.00		265.78		290.60	100.00		264.65		289.55
Ranking			***2***		***1***			***2***		***1***			***2***		***1***

COMMENT: The Reasoned Argument evaluation method concluded that CB-CL has fewer social impacts on residents and social features, fewer community cohesion impacts, and fewer cultural resource impacts. The Arithmetic evaluation process scored CB-CL highest, indicating that its was the preferred route to CL. CB-CL was carried forward.

* Does not imply a consensus of weighting/scoring

Illustrative Alternatives
Route Segment Evaluation

CC-CE vs. CA-SA-SB-CD-CE

Route Segment Evaluation
CC-CE vs CA-SA-SB-CD-CE

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	There are fewer direct impacts to sensitive receptors for Alternative CA-CE than CC-CE. **Therefore, CA-CE is preferred.**
Protect Community/ Neighborhood Characteristics	CC-CE largely impacts a near urban fringe, while CA-SA-SB-CD-CD more significantly impacts the rural community, displacing 10 farm operations. CA-SA-SB-CD-CE will also bisect the Trans-Canada Trail. **Therefore, CC-CE is preferred.**
Maintain Consistency with Existing and Planned Land Use	Alternative CA-SE has more of an impact to future land use than Alternative CC-CE. **Therefore, Alternative CC-CE is preferred.**
Protect Cultural Resources	There is no significant difference between the two segments.
Protect the Natural Environment	Alternative CA-CE has larger impacts to Potential Natural Heritage Features, Farmland/Prime Agricultural Soils than Alternative CC-CE. **Therefore, Alternative CC-CE is preferred.**
Improve Regional Mobility	Both options provide benefits to regional mobility; both result in some improvement to operations on local network, while operating below capacity during peak periods. Both options are equally preferred.
Minimize Cost	Alternative CC-CE is less costly to construct than Alternative CA-CE. In addition, the constructability of CC-CE is less difficult than Alternative CA-CE. **Therefore, CC-CE is preferred.**
Trade-Off Summary:	**Alternative CC-CE has less impacts to the residences and businesses, natural environment, and is less costly to construct than Alternative CA-CE. Therefore Alternative CC-CE is preferred.**

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CE	CA-SA-SB-CD-CE	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	51	11	For the purposes of analysis of Illustrative Segments a quantiative assesment of the total number of homes or households or farms distrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	There are fewer direct impacts to sensitive receptors for Alternative CA-CE than CC-CE, therefore CA-CE is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment										Comments
			CC - CE					CA-SA-SB-CD-CE					
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	Due to slightly less volumes on Highway 401, CA-SA-SB-CD-CE is slightly preferred.
			Huron Church Road	Cars	980	10 to 910	-970 to -70	Huron Church Road	Cars	980	10 to 910	-970 to -70	
				Trucks	840	40 to 310	-800 to -530		Trucks	840	40 to 310	-800 to -530	
			Talbot Road	Cars	390	200 to 790	-190 to 400	Talbot Road	Cars	390	200 to 790	-190 to 400	
				Trucks	680	30 to 1090	-650 to 410		Trucks	680	30 to 1090	-650 to 410	
			EC Row Expressway	Cars	410	490 to 1200	80 to 790	EC Row Expressway	Cars	410	490 to 1200	80 to 790	
				Trucks	30	90 to 1030	60 to 1000		Trucks	30	90 to 1030	60 to 1000	
			Outlette Avenue	Cars	290	20 to 240	-270 to -50	Outlette Avenue	Cars	290	20 to 240	-270 to -50	
				Trucks	140	0 to 40	-140 to -100		Trucks	140	0 to 40	-140 to -100	
			Dougall Avenue	Cars	250	0 to 130	-250 to -120	Dougall Avenue	Cars	250	0 to 130	-250 to -120	
				Trucks	210	0 to 0	-210 to -210		Trucks	210	0 to 0	-210 to -210	
								There would be less volumes on Highway 401 (existing alignment from CA to CC) for this segment					
	Local Access	No of streets crossed/closed	**5 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, Howard Ave) / **0 Closed**					**7 Crossed** (401, Provincial, North Talbot, Talbot Rd, Walker, South Tablot, Howard) / **3 Closed** (9th Cons, Oldcastle, Holden)					CC-CE is preferred as only two roads are crossed. CA-SA-SB-CD-CE is not preferred as it crosses over 10 roads. The segment is aligned over one of these roads (South Talbot Road).
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	51					11					For the purposes of analysis of Illustrative Segments a quantiative assesment of the total number of homes or households or farms distrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	51					11					Significantly more disruptions with CC-CE
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	5 (Al Hijra Mosque and School, Apostolic Catholic Church, St. Nicholas Macedonian Orthodox, Windsor Community of Christ, Heavenly Rest Cemetery)					2 (St. Stevens Church and Cemetary and Evangelical Slavic Mission)					Significantly more disruptions with CC-CE
		Qualitative assessment and community cohesion, character and function.	Minimal social impact except for nuisance impacts to local churches.					Minor impact to community cohesion.					
Acquisitions (Whole or Partial)	**RESIDENTIAL**												
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	1					2					
	BUSINESS												
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	1					0					CE-CE:Possible displacement of business. However, may be institution or utility bldg.
		Number of businesses disrupted./ No. with partial property taking	1					0					CE-CE: Disrupts unused portion of property.
	INSTITUTIONAL												
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	1 (Evangelical Slavic Mission)					2 (Tecumseh Park - very minor property taking; Trans-Canada Trail - crossing)					
	FARM PROPERTY/STRUCTURES												

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CE	CA-SA-SB-CD-CE	
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	0	10	CC-CE is preferred due to signficantly fewer impacts on agricultural operations.
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	0	6	
		Qualitative assessment of agricultural operations effected.	None-N/A	Significant, large number of farm operations are dislocated.	
Factor Summary:	CC-CE largely impacts a near urban fringe, while CA-SA-SB-CD-CD more significantly impacts the rural community, displacing 10 farm operations. CA-SA-SB-CD-CE will also end up bisecting the Trans-Canada Trail, an important community resource. Therefore, CC-CE is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CE	CA-SA-SB-CD-CE	
Land Use (Existing and Planned)	Compatibility with the Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Planned land use here includes “hamlet development” in the Town of Tecumseh and into the urban area boundary of La Salle. Planned land uses impacted in La Salle include Highway Commercial and Residential.	Segment cuts through a diversity of land uses identified in the Town of Sandwich South Official Plan (now Tecumseh). This segment cuts through the following land uses: recreational (park), general commercial, hamlet development and rural/agricultural. This particular segment wasn’t commented on directly by La Salle, but the portion of the segment west of Howard will be in the future urban area boundary of La Salle, impacting residential development and highway commercial district. However, as this segment is a feeder to either CE-CI or CE-CH the Town will view this as incompatible. Tecumseh portion of the segment lies in agricultural/rural area.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	The logical extension of this option represents an incompatiblity with La Salle's interests.	The logical extension of this option represents an incompatiblity with La Salle's interests.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	Not compatible with planned land use	Not compatible with planned land use	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	haz 56 at .5 km boundary - topographic anomaly; no expected impacts.

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CE	CA-SA-SB-CD-CE	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	Alternative CA-SE has more of an impact to future land use than Alternative CC-CE.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CE	CA-SA-SB-CD-CE	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	1	Tecumseh Park (small amount of physical taking)
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	0	0	
Factor Summary:	There are no significant difference between the two segments.				
Factor Score:			4	4	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CE	CA-SA-SB-CD-CE	
Environmentally Significant Areas	Impacts to ANSI (Areas of Natural and Scientific Interest)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to ESA (Environmentally Significant Areas)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to CNHS (Candidate Natural Heritage Site)	Area in ha impacted by ROW	0	0	Proximity impacts are similar for both routes.
		Area in ha within 500m of ROW	6.74	5.56	
	Impacts to PNHF (Potential Natural Heritage Feature)	Area in ha impacted by ROW	0	5.8	CA-CE directly impacts a greater number of forest blocks (PNHFs).
		Area in ha within 500m of ROW	0	13.48	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CA-CE is in close proximity to an off-line pond.
		Area in ha within 500m of ROW	0	0.82	
	Impacts to drains	Area in ha impacted by ROW	0.93	2	CA-CE directly impacts a greater floodplain area.
		Area in ha within 500m of ROW	3.92	8.47	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.23	0	CA-CE crosses a greater number of watercourses.
	Impacts to water crossings	No. within 100m of proposed ROW	6	17	
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(5.07) Water(0) SSH(0)	

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CE	CA-SA-SB-CD-CE	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	21.52	77.9	
		good to fair	0	0	
		fair to poor	0	0	
		TOTAL AREA IMPACTED (ha)	21.52	77.9	
Factor Summary:	Alternative CA-CE has larger impacts to Potential Natural Heritage Feature, Farmland/Prime Agricultural Soils than Alternative CC-CE. Therefore, Alternative CC-CE is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CE vs. CA-SA-SB-CD-CE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE	CA-SA-SB-CD-CE	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.85/-	HCL - AMB to Tecumseh 1.05/0.85/-	Minor improvement to service levels on local road network with either option vs. do-nothing; key links to AMB operating at or over capacity; key links to D-W Tunnel operating at or over capacity; this is a minor benefit to the road network; assessment assumes connection to X6 crossing
			HCL - ECR to Tecumseh 1.18/1.01/-	HCL - ECR to Tecumseh 1.18/1.01/-	
			HCL - Cabana to ECR 0.99/0.79/-	HCL - Cabana to ECR 0.99/0.79/-	
			Talbot - HCR to 401 1.00/0.90/-	Talbot - HCR to 401 1.00/0.90/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	
			Dougall - Tecumseh to ECR 1.30/1.16/-	Dougall - Tecumseh to ECR 1.30/1.16/-	
			Dougall - ECR to 401 1.44/1.22/-	Dougall - ECR to 401 1.44/1.22/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.38/NA	New Segment NA/0.38/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(2500)/(2900)	(2500)/(2900)	Increase in veh-km reflects some new out-of-way travel to cross facility/access new interchanges; assessemnt assumes connection to crossing X6
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	690/120	690/120	Minor savings in travel time with either option; assessment assumes connection to crossing X6
	Directness of route for through traffic	Distance traveled between common points	8	7.8	Travel distance is comparable; common points = CA @401 to CE
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.60	1.22/0.60	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.50	1.15/0.50	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.64	NA/0.64	New crossing operates below capacity during peak periods;
Operational considerations of crossing system (crossing and	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified

Route Segment Evaluation CC-CE vs. CA-SA-SB-CD-CE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE	CA-SA-SB-CD-CE	
plazas)	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
Factor Summary:	Both options provide benefits to regional mobility; both result in some improvement to operations on local network, while operating below capacity during peak periods. Both options are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

* HCL-Huron Church Line

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE	CA-SA-SB-CD-CE	
Cost	Length of Alternative	km	4	7.8	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	246.8	223.7	
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CE** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. Detours could be required at Howard Avenue while proposed grade separation structure is being constructed. The proposed 6-lane freeway will be constructed at grade.	**CA to SA** There will be a newly constructed freeway-to-freeway type interchange at Highway 401. Traffic staging and detour will be required at the proposed Provincial Road interchange. The proposed underpass structure at North Talbot Road will require traffic staging and detour. There could also be a new freeway-to-freeway type interchange at Highway 3. **SA to SB** Detours will be required at Walker Road while the new grade separation structure is being constructed. **SB to CE** South Talbot Road could be closed at the proposed freeway.	
	Brine wells	Proximity (metres);age	None	None	

Route Segment Evaluation CC-CE vs CA-SA-SB-CD-CE	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE	CA-SA-SB-CD-CE	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock	
Factor Summary:	Alternative CA-CE is less costly to construct than Alternative CC-CE. In addition, the constructability of CC-CE is less difficult than Alternative CA-CE.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best CE	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-CE		CA-CE		Weighting	CC-CE		CA-CE		Weighting	CC-CE		CA-CE	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79	15.49	3	46.47	3	46.47	13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	4	49.56	4	49.56	13.14	4	52.56	4	52.56	13.12	4	52.48	4	52.48
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	2	26.54	9.54	3	28.62	2	19.08	10.07	3	30.21	2	20.14
Total Weighted Score	100.00		347.79		334.52	100.00		343.70		334.16	100.00		342.78		332.71
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument evaluation method concluded that CC-CE was preferred over CA-CE because it had less impacts to residences and businesses, natural environment, and is less costly to construct. The Arithmetic evaluation method scored CC-CE higher over CA-CE, and was therefore the preferred alignment to CE. Therefodre, CC-CE was carried forward.

* Does not imply a concensus of weighting/scoring for this route segment

Illustrative Alternatives
Route Segment Evaluation

CC-CI vs. CC-CE-CI

Route Segment Evaluation
CC-CI vs CC-CE-CI

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	There are similar impacts to sensitive air receptors for both alternatives, when considering future housing developments.
Protect Community/ Neighborhood Characteristics	Both alternatives have similar number of displacements and disruptions of homes/farms. Both options will have a significantly high negative impact, a new ROW along CC-CE-CI would effectively put two transportation corridors around this existing and future community. **Therefore, CC-CI is preferred.**
Maintain Consistency with Existing and Planned Land Use	CC-CE-CI is less compatible with land use particularly, future land use in the urban area of La Salle. **Therefore Alternative CC-CI is preferred.**
Protect Cultural Resources	Alternative CC-CI has an impact to locally designated heritage feature. There is the potential to disturb archaeological resources for both alternatives; however there is the a greater impact to Alternative CC-CI. **Therefore, Alternative CC-CE-CI is preferred.**
Protect the Natural Environment	CC-CE-CI has fewer direct and indirect (proximity) impacts and has no impacts on significant species or communities. **CC-CE-CI is slightly preferred.**
Improve Regional Mobility	Both options provide benefits to regional mobility; both result in some improvement to operations on local network, while operating below capacity during peak periods. There is a minor benefit to having a new link in the network (CC-CI removes Talbot Road from local road network), but this is not a substantial benefit, given the short length of the road bypassed. Both options are equally preferred.
Minimize Cost	Alternative CC-CI has lower construction costs and has less constructability issues than Alternative CC-CE-CI; therefore **Alternative CC-CI is preferred.**
Trade-Off Summary:	**CC-CE-CI will put another transportation corridor around existing and future community in LaSalle; CC-CI also has lower construction costs and less constructability issues than Alternative CC-CE-CI; therefore CC-CI is preferred.**

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CI	CC-CE-CI	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	902 (+ approx. 90 to be developed)	141 (Note: based on assumptions, it is estimated that 777 homes would be built and therefore disrupted in the next five years)	For the purposes of analysis for Illustrative Segments a quantitative assessment of the total number of homes or households or farms distrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	There are similar impacts to sensitive air receptors for both alternatives, when considering future housing developments.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	**CC - CI** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars: 980 / 10 to 910 / -970 to -70; Trucks: 840 / 40 to 310 / -800 to -530 Talbot Road — Cars: 390 / 780 / 390; Trucks: 680 / 1040 / 360 EC Row Expressway — Cars: 410 / 490 to 1200 / 80 to 790; Trucks: 30 / 90 to 1030 / 60 to 1000 Outlette Avenue — Cars: 290 / 20 to 240 / -270 to -50; Trucks: 140 / 0 to 40 / -140 to -100 Dougall Avenue — Cars: 250 / 0 to 130 / -250 to -120; Trucks: 210 / 0 to 0 / -210 to -210 **CC-CE-CI** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars: 980 / 10 to 910 / -970 to -70; Trucks: 840 / 40 to 310 / -800 to -530 Talbot Road — Cars: 390 / 350 / -40; Trucks: 680 / 20 / -660 EC Row — Cars: 410 / 490 to 1200 / 80 to 790; Trucks: 30 / 90 to 1030 / 60 to 1000 Outlette Avenue — Cars: 290 / 20 to 240 / -270 to -50; Trucks: 140 / 0 to 40 / -140 to -100 Dougall Avenue — Cars: 250 / 0 to 130 / -250 to -120; Trucks: 210 / 0 to 0 / -210 to -210	CC-CE-CI reduces international truck/auto traffic on Talbot Road and places this traffic on a new roadway in LaSalle
	Local Access	No of streets crossed/closed	**13 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, Howard, Grosvenor, Surrey, Montgomery, Consineau, Sandwich W, St. Clair Entrance, Anastasia St, Huron Church Line) / **0 Closed**	**12 Crossed** (401, Dougall Ave, North Talbot, Talbot, Howard, Huron Church Line, 6th, Sandwich W, Cousineau, Disputed, Normandy, Brooklyn) / **0 Closed**	No significant difference - for both segments, access to existing and planned landuses from either Huron Line or Talbot Road is required.
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	902 (+ approx. 90 to be developed)	141 (Note: based on assumptions, it is estimated that 777 homes would be built and therefore disrupted in the next five years)	For the purposes of analysis for Illustrative Segments a quantitative assessment of the total number of homes or households distrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	902 (+ approx. 90 to be developed)	141 (Note: based on assumptions, it is estimated that 777 homes would be built and therefore disrupted in the next five years)	
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	5 (Our Lady of Mount Caramel Separate School, Our Lady of Mount Caramel Church, St. Charbel Maronite Catholic Church, St. Clair College, Baseball Complex)	7 (Al Hijra Mosque and School, Holy Cross Elementary School and Day Care, Apostolic Catholic Church, St. Nicholas Macedonian Orthodow, Windsor Community of Christ, Heavenly Rest Cemetery)	
		Qualitative assessment and community cohesion, character and function.	The community cohensiveness currently is impacted significantly due to high levels of existing traffic. This option displaces a high number of residences, which will result in a substantial number of displacements.	Significant impact both current and in future. The existing community between Huron-Church and Talbot Road would be "encircled" by two highways/road.	
Acquisitions (Whole or Partial)	**RESIDENTIAL**				
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	96	85	
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	6	5	CC-CI: Displaced businesses all small retail, CC-CE-CI: Small retail establishments & potential rural business
		Number of businesses disrupted./ No. with partial property taking	2	1	CC-CI: Minor disruption to small retail and major disruption to major retail. CC-CE-CI: Minor disruption to unused edge of property.
	INSTITUTIONAL				

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CI	CC-CE-CI	
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	1 (Heritage Park Alliance Church - partial)	1 (Evangelical Slavic Mission)	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	0	10	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	0	0	
		Qualitative assessment of agricultural operations effected.	None-N/A	Large number of farm operations will be impacted, however these farms are all in the urban area boundary of La Salle an will therefore shift to urban form most likely in the next 10 years	
Factor Summary:	Some development is already occuring and Town of La Salle has indicated that this will occur in the next few years. Assuming, that the Town is correct in its analysis, both alternatives have roughly comparable number of displacements and disruptions of homes/farms. While both options will hava a significantly high negative impact, a new ROW along CC-CE-CI would effectively put two transportation corridors around this existing and future community. Furthermore, Talbot Road has already disrupted the residences and social features of this neighborhood and to some extent the community is divided by it already (meaning not fully cohesive or functioning as a whole community/neighborhood).				
Factor Score:			1	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CI	CC-CE-CI	
Land Use (Existing and Planned)	Compatibility with the Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Not incompatible. Talbot Road runs along the border of La Salle and Windsor. The Windsor side contains planned land uses including major institutional (St. Clair College) and very low-density residential uses along Talbot. The La Salle includes commercial and residential uses (some existing and some currently infilled). The Town of La Salle had no formal comments on this option as Talbot Road lies in Windsor, but it appears that the Town is of the opinion that adjacent land uses have already accommodated the imposition of the traffic along Huron Church and are concerned that a route along Huron Church instead of Talbot would segment the community. City of Windsor Gateway Study also considered alternative routes to the river and identified Huron Church/Talbot Rd as the preferred route.	Will have significant urban planning implications. Existing, planned and future urban development would need to be re-oriented for this option. Several subdivisions currently being constructed would need to be altered. Note that the entire block from Huron-Church Line to Cousineau to Heritage to Concession Road 6 is currently being developed. The Town of La Salle view this as being incompatible as this will destroy the Town's long range planning strategy for this area and physically and socially divide and separate the existing Heritage Estates community from the rest of La Salle. Planned land use here includes "hamlet development" in the Town of Tecumseh and into the urban area boundary of La Salle. Planned land uses impacted in La Salle include Highway Commercial and Residential.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Not incompatible.	The Town views this option as not being compatible with the PPS.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/ distruption to future committed land uses	No displacement/distruption to future committed land uses	

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CI	CC-CE-CI	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	haz 56 at .5 km boundary - topographic anomaly no expected impacts.
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	CC-CE-CI is less compatible with land use particularly, future land use in the urban area of La Salle. Therefore Alternative CC-CI is preferred.				
Factor Score:			2	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CI	CC-CE-CI	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	1	0	Locally designated
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	0	
Archaeological Featues	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 50%	up to 25%	
Factor Summary:	Alternative CC-CI has an impact to locally designated heritage feature. There is the potential to disturb archaeological resources for both alternatives; however there is the a greater impact to Alternative CC-CI. Therefore, Alternative CC-CE-CI is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CI	CC-CE-CI	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	1.66	0	CC-CI directly impacts St. Clair College Prairie ESA.
		Area in ha within 500m of ROW	13.49	5	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	2.92	0	CC-CI directly impacts CNHSs including W31 and TC2.
		Area in ha within 500m of ROW	24.25	20.38	
	Impacts to Potential Natural Heritage Features (PNHF)	Area in ha impacted by ROW	0	0.85	CC-CE-CI directly impacts a semi-natural/cultural community (PNHF).
		Area in ha within 500m of ROW	0.01	14.1	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CC-CI is in close proximity to an off-line pond.
		Area in ha within 500m of ROW	0.27	0	
	Impacts to drains	Area in ha impacted by ROW	2.59	1.32	CC-CI directly impacts a greater number of drains.
		Area in ha within 500m of ROW	3.38	7.4	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	9.4	1.24	CC-CI directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	11	12	Both routes cross a similar number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(1.66) Wetland(0) CNHS(2.92) PNHF(0) Water(0) SSH(3.62)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	CC-CM directly impacts St. Clair College Prairie ESA/CNHS W31, home to prairie communities and Willow Aster (Threatened), Spiked Blazing Star (Threatened) and Prairie Rose (Special Concern), all SARA Schedule 1. CC-CM directly impacts CNHS TC2, home to significant wildlife habitat and Spiked Blazing Star.

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC - CI	CC-CE-CI	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	21.5	42.11	
		good to fair	12.56	0	
		fair	8.14	19.18	
		fair to poor	3.51	2.45	
		TOTAL AREA OF IMPACT (ha)	45.71	63.74	
Factor Summary:	CC-CE-CI has fewer direct and indirect (proximity) impacts and has fewer impacts on significant species or communities. CC-CE-CI is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI vs. CC-CE-CI	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI	CC-CE-CI	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.82/-	HCL - AMB to Tecumseh 1.05/0.82/-	Minor improvement to service levels on local road network with either option vs. do-nothing; key links to AMB operating at or over capacity; key links to D-W Tunnel operating at or over capacity; CC-CE-CI option provides a new route in network, reducing mixing of int'l and local traffic and somewhat improving reliability/choice, although EC Row remains as primary alternative route; assessment assumes connection to X7 crossing
			HCL - ECR to Tecumseh 1.18/1.02/-	HCL - ECR to Tecumseh 1.18/1.02/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/NA/NA	Talbot - HCR to 401 1.00/0.40/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.14/-	
			Dougall - ECR to 401 1.44/1.19/-	Dougall - ECR to 401 1.44/1.19/-	
			EC Row - HCL to Dougall 0.69/0.68/-	EC Row - HCL to Dougall 0.69/0.68/-	
			EC Row - Dougall to Walker 0.89/0.92/+	EC Row - Dougall to Walker 0.89/0.92/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.50/NA	New Segment NA/0.50/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(1600)/(3000)	(1600)/(3000)	Increase in veh-km reflects some new out-of-way travel to cross facility/access new interchanges; assessemnt assumes connection to crossing X7
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	620/120	620/120	Minor savings in travel time with either option; assessment assumes connection to crossing X7
	Directness of route for through traffic	Distance traveled between common points	6.4	8.2	Travel distance is comparable; common points = CC @401 to CI
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.61	1.22/0.61	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.85	1.15/0.85	
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.53	NA/0.53	New crossing operates well below capacity during peak periods;
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified

Route Segment Evaluation CC-CI vs. CC-CE-CI	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI	CC-CE-CI	
Factor Summary:	Both options provide benefits to regional mobility; both result in some improvement to operations on local network, while operating below capacity during peak periods. There is a minor benefit to having a new link in the network (CC-CI removes Talbot Road from local road network), but this is not a subtantial benefit. Both options are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-Huron Church Line

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI	CC-CE-CI	
Cost	Length of Alternative	km	6.4	8.2	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	395.4	447.6	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CI** Traffic staging and detour will be required on Talbot Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. A detour will probably be required at Todd Lane / Cabana Road while an interchange is being constructed. Detours could be required at Howard Avenue and Cousineau Road while proposed grade separation structures are being constructed.	**CC to CE** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. Detours could be required at Howard Avenue while the proposed grade separation structure is being constructed.	

Route Segment Evaluation CC-CI vs CC-CE-CI	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI	CC-CE-CI	
				CE to CI Traffic staging and detour will be required on Huron Church Line while it is being reconstructed to a 6-lane freeway section with service roads and an intersection. A detour will probably be constructed at Highway 3 / Todd Lane / Cabana Road while an interchange is being constructed.	
	Brine Wells	Proximity (metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 20 m and 30 m deep will require deep foundations for structures, settlement mitigation measures may be required for high embankments	Soft soils between 20 m and 30 m deep will require deep foundations for structures, settlement mitigation measures may be required for high embankments	
Factor Summary:	Alternative CC-CI has lower construction costs and has less constructability issues than Alternative CC-CE-CI; therefore Alternative CC-C is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best CI	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-CI		CC-CE-CI		Weighting	CC-CI		CC-CE-CI		Weighting	CC-CI		CC-CE-CI	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	1	15.93	1	15.93	15.49	1	15.49	1	15.49	13.88	1	13.88	1	13.88
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	1	12.39	12.89	2	25.78	1	12.89	13.69	2	27.38	1	13.69
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	3	39.81	9.54	3	28.62	3	28.62	10.07	3	30.21	3	30.21
Total Weighted Score	100.00		291.15		278.76	100.00		286.69		273.80	100.00		288.21		274.52
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument evaluation method concluded that CC-CI is the preferred alignment because it would not place another high volume transportation corridor around an existing/future community, it has lower construction costs and less constructability issues. The Arithmetic evaluation method concluded that CC-CI scored higher than CC-CE-CI; therefore CC-CI was carried forward.

* Does not imply consensus in weighting/scoring

Illustrative Alternatives
Route Segment Evaluation

CC-CD-CF vs. CA-SA-SB-CF

Route Segment Evaluation
CC-CD-CF vs. CA-SA-SB-CF

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	Alternative CC-CF has greater impacts to sensitive receptors than Alternative CA-CF. **Therefore, Alternative CA-CF is preferred.**
Protect Community/ Neighborhood Characteristics	A signficantly larger number of disruptions occur with the CC-CD-CF option which occurs in a more settled area. However the CA-SA-SB-CF has a more signficant negative impact on the agriculutral/rural community and also the Trans-Canada Trail would be bisected by this alternative. **Therefore, Alternative CC-CF is preferred.**
Maintain Consistency with Existing and Planned Land Use	There are very minor land use impacts with Alternative CA-CF; however there will be displacement/disruption to future committed land use with this alternative. **Therefore, CC-CF is preferred.**
Protect Cultural Resources	There are no impacts to Cultural Resources for Alternative CC-CF; there is one park impacted in Alternative CA-CF. **Therefore, Alternative CC-CF is preferred.**
Protect the Natural Environment	Alternative CA-CF has greater impacts to Potential Natural Heritage Feature, than Alternative CC-CF, and has more than double the impacts to water crossings. Alternative CA-CF has over 80 ha of impacts to good soils. Overall, **Alternative CC-CF is preferred.**
Improve Regional Mobility	Both options provide benefits to regional mobility; both result in some improvement to operations on local network, while operating below capacity during peak periods. Both options are equally preferred.
Minimize Cost	Both alternatives carry similar construction costs and constructability issues and are equally preferred.
Trade-Off Summary:	**Both alternatives have similar impacts; however CC-CF was considered to have slightly lower impacts to neighbourhood characteristics, land use, cultural resources and natural environment. Therefore CC-CF is preferred.**

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CD-CF	CA-SA-SB-CF	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	51	19	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes and households and farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	Alternative CC-CF has greater impacts to sensitive receptors than Alternative CA-CF. Therefore, Alternative CA-CF is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment										Comments
			CC-CD-CF					CA-SA-SB-CF					
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	Due to slightly less volumes on Highway 401, CA-SA-SB-CF is slightly preferred.
			Huron Church Road	Cars	3050	3450 to 4400	400 to 1350	Huron Church Road	Cars	3050	3450 to 4400	400 to 1350	
				Trucks	760	280 to 300	-480 to -460		Trucks	760	280 to 300	-480 to -460	
			Talbot Road	Cars	3000	3450 to 3900	450 to 900	Talbot Road	Cars	3000	3450 to 3900	450 to 900	
				Trucks	750	310 to 310	-440		Trucks	750	310 to 310	-440	
			EC Row Expressway	Cars	7450	7200 to 7250	-250 to -200	EC Row Expressway	Cars	7450	7200 to 7250	-250 to -200	
				Trucks	260	190 to 200	-70 to -60		Trucks	260	190 to 200	-70 to -60	
			Ouellette Avenue	Cars	4150	4100 to 4100	-50	Ouellette Avenue	Cars	4150	4100 to 4100	-50	
				Trucks	250	130 to 130	-120		Trucks	250	130 to 130	-120	
			Dougall Avenue	Cars	3400	3450 to 3450	50	Dougall Avenue	Cars	3400	3450 to 3450	50	
				Trucks	260	70 to 90	-190 to -170		Trucks	260	70 to 90	-190 to -170	
								There would be less volumes on Highway 401 (existing alignment) for this segment					
	Local Access	No of streets crossed/closed	**6 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, South Talbot, Howard) / **1 Closed** (Outer Dr)					**8 Crossed** (401, Provincial, North Talbot, Talbot, Walker, South Talbot, Holden, Howard) / **2 Closed** (9th Cons, Oldcastle)					CC-CD-CF is slightly preferred as it crosses fewer roads. Neither segment is aligned over a an existing access road.
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	51					19					For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes and households disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	51					19					
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2 (Dominion Golf Club and St. Charbel Catholic Church)					1 (Dominion Golf Club)					
		Qualitative assessment and community cohesion, character and function.	No dislocations but may severely segment one farm operation. Minor disruptional effects to a few farms and rural residences. Some disruptional effects but these uses are already located in close proximity to 401 and Talbot. Minor impact to St. Stephens Church and Cemetery.					Very minor impact.					
Acquisitions (Whole or Partial)	**RESIDENTIAL**												
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	0					0					
	BUSINESS												
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	0					0					No business impacts
		Number of businesses disrupted./ No. with partial property taking	1					0					CC-CD: Unused edge of one property
	INSTITUTIONAL												
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	0					2 (Tecumseh Park (but really just a disruption) and Trans-Canada Trail)					Trans-Canada Trail would need to be a feature that would get addressed.
	FARM PROPERTY/STRUCTURES												

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	0	1	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	4	10	
		Qualitative assessment of agricultural operations effected.	Minor impact to existing rural area. While there are no urban area expansion plans at this point, the urban area will eventually be extended in this direction.	Minor to moderate impact on farm operations.	
Factor Summary:	From an SIA perspective these alternatives are balanced. A signficantly larger number of disruptions occur with the CC-CD-CF option which occurs in a more settled area. However the CA-SA-SB-CF has a more signficant negative impact on the agriculutral/rural community and also the Trans-Canada Trail would be bisected by this alternative.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
Land Use (Existing and Planned)	Compatibility with the Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Tecumseh hamlet and rural/agricultural area. Outside of the future urban area boundary of La Salle. Impacts agricultural/rural area.	Very minor impact. Planned land uses in the area include agricultural, hamlet development and general commercial. General commercial area has a re-zoning for a commercial bus facility.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Same impact as highway in rural area near an urban fringe.	Same impact as highway in rural urban fringe area.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	Displacement/disruption to future committed land use	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	haz 56 at .5 km boundary - topographic anamolie no expected impacts.
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	There are very minor land use impacts with Alternative CA-CF; however there will be displacement/disruption to future committed land use with this alternative. Therefore, CC-CF is preferred.				
Factor Score:			3	3	

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	2	Trans-Canada Trail Park would be impacted
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	0	0	
Factor Summary:	There are no impacts to Cultural Resources for Alternative CC-CF; there are two parks impacted in Alternative CA-CF. Therefore, Alternative CC-CF is preferred.				
Factor Score:			4	4	

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
Environmentally Significant Areas	Impacts to ANSI (Areas of Natural and Scientific Interest)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	1.3	0	
	Impacts to Potential Natural Heritage Features (PNHF)	Area in ha impacted by ROW	0	5.8	CA-CF directly impacts a greater number of forest blocks (PNHFs).
		Area in ha within 500m of ROW	0	13.48	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CA-CF is in close proximity to an offline pond.
		Area in ha within 500m of ROW	0.12	1.2	
	Impacts to drains	Area in ha impacted by ROW	1.7	0.95	CA-CF directly impacts a greater number of drains.
		Area in ha within 500m of ROW	3.89	7.7	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.28	0	CC-CF directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	8	12	CA-CF crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(5.07) Water(0) SSH(0)	

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	31.87	80.73	
		good to fair	0	0	
		fair to poor	0	0	
		TOTAL AREA OF IMPACTS (ha)	31.87	80.73	
Factor Summary:	Alternative CA-CF has greater impacts to PNHF, than Alternative CC-CF, and has more than double the impacts to water crossings. Alternative CA-CF has over 80 ha of impacts to good soils. Overall, Alternative CC-CF is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-CF vs. CA-SA-SB-CF	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.85/-	HCL - AMB to Tecumseh 1.05/0.85/-	Minor improvement to service levels on local road network with either option vs. do-nothing; key links to AMB operating at or over capacity; key links to D-W Tunnel operating at or over capacity; CA--CF option adds a new link to the road network; this is a minor benefit to the road network in this area; assessment assumes connection to X6 crossing
			HCL - ECR to Tecumseh 1.18/1.01/-	HCL - ECR to Tecumseh 1.18/1.01/-	
			HCL - Cabana to ECR 0.99/0.79/-	HCL - Cabana to ECR 0.99/0.79/-	
			Talbot - HCR to 401 1.00/0.90/-	Talbot - HCR to 401 1.00/0.90/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	
			Dougall - Tecumseh to ECR 1.30/1.16/-	Dougall - Tecumseh to ECR 1.30/1.16/-	
			Dougall - ECR to 401 1.44/1.22/-	Dougall - ECR to 401 1.44/1.22/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.38/NA	New Segment NA/0.38/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(2500)/(2900)	(2500)/(2900)	Increase in veh-km reflects some new out-of-way travel to cross facility/access new interchanges; assessment assumes connection to crossing X6
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	690/120	690/120	Minor savings in travel time with either option; assessment assumes connection to crossing X6
	Directness of route for through traffic	Distance traveled between common points	9.0	8.1	Travel distance is comparable (<10% difference); common points = CA @401 to CE
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.60	1.22/0.60	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.50	1.15/0.50	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.64	NA/0.64	New crossing operates below capacity during peak periods;
Operational considerations of crossing system (crossing and	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified

Route Segment Evaluation CC-CD-CF vs. CA-SA-SB-CF	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
plazas)	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
Factor Summary:	Both options provide benefits to regional mobility; both result in some improvement to operations on local network, while operating below capacity during peak periods. Both options are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

* HCL- Huron Church Line

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
Cost	Length of Alternative	km	5	8.1	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	231.5	229.3	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CD** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Detours and traffic staging will be required as the interchange is being modified. Detours could be required at South Talbot Road while the proposed grade separation structure is being constructed. **CD to CF** Traffic staging and detours will be required at the proposed Huron Church Line interchange and Howard Road grade separation structure. **CC-CD-CF** The proposed 6-lane freeway will be constructed at grade.	**CA to SA** There will be a newly constructed freeway-to-freeway style interchange at Highway 401. Traffic staging and detour will be required at the proposed Provincial Road interchange. The proposed underpass structure at North Talbot Road will probably require detour. There could also be a newly constructed freeway-to-freeway style interchange at Highway 3. **SA to SB** Detours will be required at Walker Road while the proposed grade separation structure is being constructed. **SB to CF** Detours will be required at Howard Road while the proposed grade separation structure is being constructed. Traffic staging and detours could be required at the proposed Holden Road underpass structure, or it could be closed for traffic during construction. Traffic staging and detour will be required at the proposed Huron Church Line interchange.	
	Brine wells	Proximity (metres); age	None	None	

Route Segment Evaluation CC-CD-CF vs CA-SA-SB-CF	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-CF	CA-SA-SB-CF	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock	
Factor Summary:	Both alternatives have similar construction costs and constructability issues. Both are equally preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best CF	ARITHMETIC EVALUATION	Date:November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting*					CCG Weighting*				
	Weighting	CC-CF		CA-CF		Weighting	CC-CF		CA-CF		Weighting	CC-CF		CA-CF	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79	15.49	3	46.47	3	46.47	13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	4	49.56	4	49.56	13.14	4	52.56	4	52.56	13.12	4	52.48	4	52.48
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	3	39.81	9.54	3	28.62	3	28.62	10.07	3	30.21	3	30.21
Total Weighted Score	100.00		347.79		347.79	100.00		343.70		343.70	100.00		342.78		342.78
Ranking			***1***		***1***			***1***		***2***			***1***		***2***

COMMENT: The Arithmetic method identified both alternatives as equally preferred. The Reasoned Argument method noted slight preferences for segment CC-CF in neighbourhood characteristics, land use, cultural resources and natural environment impacts. Therefore CC-CF was carried forward

* Does not imply consensus in weighting/scoring

Illustrative Alternative Route Segment Evaluation

CC – CI – CM vs. CB – CL – CM

Segment CC – CI – CM originates at Highway 401, runs in a northerly direction along Talbot Road and Huron Church Road to the EC Row Expressway where it is met by segment CB – CL – CM. CB-CL-CM runs northwesterly along Provincial Road, Division Road and EC Row Expressway from Highway 401 (see attached figure).

The following performance measures were evaluated for each Illustrative Alternative Segment: Protect Community/Neighborhood Characteristics, Maintain Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment Improve Regional Mobility and Minimize Cost. Analysis of Change in Air Quality has not been carried out by individual segment. Air Quality analysis computer models require route system connected lengths (results of individual segment comparisons joined to form a route) with traffic loading in order to provide reasonable results.

Segment CC – CI – CM and SB-CL-CM will disrupt similar households. Both segments affect an equal number of social features. Segment CB-CL-CM has a greater amount of cultural and archeological affect but fewer direct and indirect (proximity) natural environmental impacts with no impacts on significant species or communities.

Both segment CC – CI – CM and Segment CB – CL – CM provide benefits to regional mobility as both result in some improvement to operations on the local network while operating below capacity during peak periods. Both segments are similar in terms of constructability issues, however Segment CC – CB – CM is less costly.

In conclusion, Segment CC-CI-CM is more compatible with existing land uses along its route, it presents fewer community cohesion and business affects. It also has fewer cultural impacts and lower costs to construct.

Illustrative Alternatives
Route Segment Evaluation

CC-CI-CM vs. CB-CL-CM

Route Segment Evaluation
CC-CI-CM vs CB-CL-CM

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	There are no significant differences between the two segments; therefore each are equally preferred.
Protect Community/ Neighborhood Characteristics	CC-CI-CM has highway commercial oriented businesses, which include auto and truck services, hotels and restaurants. The remaining businesses are directed to a more local market, but few are considered critical to the neighbourhood retail structure and none are significant to the regional retail structure. Businesses found along CB-CL-CM represent one of Windsors major retail areas. The disruption to this area would result in a major disruption to the entire retail structure of the Windsor area. The established retail function of the area would be diminished and could not be replicated elsewhere. Both options have a significant number of social disruptional effects. **CB-CL-CM has less retail impacts and fewer residential displacements; it is therefore preferable.**
Maintain Consistency with Existing and Planned Land Use	CC-CI-CM is compatible with existing land use; CB-CL-CM is not. There are no displacement/disruption to hazardous sites with CC-CI-CM; **therefore CC-CI-CM is preferred.**
Protect Cultural Resources	The two features impacted by CB-CL-CM (Windsor Mosque and a heritage residence) aer of greater significance than the designated feature impacted by CC-CI-CM. These impacts are greater than the higher potential for impacts to areas of higher archaeological potential. CB-CL-CM has a moderate impact to cultural features while CC-CI-CM has a low impact. **CC-CI-CM is preferred.**
Protect the Natural Environment	CB-CM has fewer direct and fewer indirect (proximity) impacts and has no impacts on significant species or communities. **CB-CL-CM is preferred.**
Improve Regional Mobility	CC-CI-CL provides improved reliability by providing a new freeway link in regional road network to separate local and international trips, while providing choice for local trips. **CC-CI-CL is preferred.**
Minimize Cost	CC-CI-CM requires staging during construction to maintain access to existing crossing. CB-CL-CM requires staging during construction on EC Row with three complex freeway-to-freeway interchanges. Both segments are comparable in terms of cost and constructablity.
Trade-Off Summary:	**CC-CI-CM is compatible with existing land uses; CC-CI-CM has fewer cultural impacts; and it has lower construction costs therefore CC-CI-CM is preferred.**

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CI-CM	CB-CL-CM	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable for minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	1262 (+ approx. 90 to be developed)	1268 (+ 100 to be developed)	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	There are no significant differences between the two segments; therefore each are equally preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	**CC-CI-CM** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / Cars / 980 / 520 / -460 Trucks / 840 / 210 / -630 Talbot Road / Cars / 390 / 740 / 350 Trucks / 680 / 1070 / 390 EC Row Expressway / Cars / 410 / 550 / 140 Trucks / 30 / 120 / 90 Outlette Avenue / Cars / 290 / 200 / -90 Trucks / 140 / 40 / -100 Dougall Avenue / Cars / 250 / 90 / -160 Trucks / 210 / 0 / -210 **CB-CL-CM** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / Cars / 980 / 560 / -420 Trucks / 840 / 220 / -620 Talbot Road / Cars / 390 / 140 / -250 Trucks / 680 / 30 / -650 EC Row Expressway / Cars / 410 / 540 / 130 Trucks / 30 / 120 / 90 Outlette Avenue / Cars / 290 / 230 / -60 Trucks / 140 / 50 / -90 Dougall Avenue / Cars / 250 / 70 / -180 Trucks / 210 / 0 / -210	Each segment would result in mostly moderate reductions in volume on key network links; Both would result in moderate increases in volumes on ECR; While CB-CL-CM is preferred for measure as it results in a significant decrease in traffic on Talbot Road, while CC-CI-CM results in a significant increase; Assessment based on crossing X10
	Volume by vehicle type	Change in V/C ratio	**CC-CI-CM** NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / 1.18 / 0.8 / -0.4 Talbot Road / 1 / 0.52 / -0.5 EC Row Expressway / 0.89 / 0.94 / 0.05 Outlette Avenue / 1.3 / 1.14 / -0.2 Dougall Avenue / 1.44 / 1.05 / -0.4 **CB-CL-CM** NETWORK LINK / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / 1.18 / 0.8 / -0.4 Talbot Road / 1 / 0.84 / -0.2 EC Row Expressway / 0.89 / 0.96 / 0.07 Outlette Avenue / 1.3 / 1.12 / -0.2 Dougall Avenue / 1.44 / 0.87 / -0.6	Both result in significant improvement in LOS, however key links would operate at or near capacity. CC-CI-CM is slightly preferred for this measure as it results in a greater increase in LOS on Talbot Road.
	Local Access	No of streets crossed/closed	**26 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, Howard, Grosvenor, Surrey, Montgomery, Consineau, Sandwich W, St. Clair Entrance, Anastasia St, Huron Church Line, Todd, Cabana, Huron Church Rd, Reddock(Beacon), Pulford, Lansing, Gratiot, Lambton, Grand Marais W, Lamont, Spring Garden, Labelle, EC Row Expwy) / **0 Closed**	**11 Crossed** (401, Provincial, Walker, 6th, Cabana E, Division, Howard, EC Row Expwy, Dougall, Dominion, Huron Church Rd) / **0 Closed**	Both would significantly reduce local access as both segments are aligned on major network links. CC-CI-CM results in a greater impact at more roads are crossed/closed.
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	1262 (+ approx. 90 to be developed)	1268 (+ 100 to be developed)	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (within 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	1262 (+ approx. 90 to be developed)	1268 (+ 100 to be developed)	Very comparable disruptional effects to dwellings in terms of disruption.
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	8 (Bellwood Park, South Windsor Recreation Complex (Beals Park), Oakwood Public School, Our Lady of Mount Caramel Separate School, Our Lady of Mount Caramel Church, St. Charbel Maronite Catholic Church, St. Clair College, Baseball Complex)	8 (Partington Park, Maranatha Christian Academy, Indian Memorial Park (small taking), Nobles Memorial Baptist Church, La Jeunesse French High SchoolWindsor Gardens Memorial Cemetery, Devonshire Conservation Area)	Very comparable in terms of disruption.
		Qualitative assessment and community cohesion, character and function.	Minor to moderate impact. Huron-Church already is pedestrian unfriendly area and carries high volume of a large number of trucks. Impact is the incremental addition of more traffic and new infrastructure. Residential development is not immediately adjacent to the road.	Despite the diverse urban fabric, it appears that the property takings would be minimial. Significant disruptional effects because of the length and that this is an already built-up area. EC Row is already a segmentation within the City. The City has developed around EC Row. Note that residential streets "T" into EC Row resulting in a further extension of dead ends and limiting property takings.	These two route segments are very different in terms of their impact on community cohesion and character. The CC-CI-CM is already heavily impacted and the community segmented by the existing traffic headed towards the Ambassador Bridge. Communities exist on either side of these roads. The CB-CL-CM segment impacts community cohesion and character in two ways. First, the existing railway is only lightly used and therefore represents a minimal intrusion into the community. Second, while it is primarily the commercial area that is impacted in this area, the loss of this commercial area and impacts on Provincial and Cameron Roads fundamentally changes many characteristics of the area and how it is used by neighbourhoods. Given this context, the CC-CI-CM segment will have less impact on community cohesion and character.
Acquisitions (Whole or Partial)	**RESIDENTIAL**				

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	131	41 (14 single family homes and 3 apartments of 9 units)	Greater number of displacements with CC-CI-CM
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	37	63	CC-CI-CM: Variety of highway-commercial establishments, auto services, hotel chains, food related, and some small retail would be displaced. CB-CL-CM: Displaced businesses include a number of major industrial operations and retail establishments in addition to a variety of small to medium businesses.
		Number of businesses disrupted./ No. with partial property taking	3	13	CC-CI-CM: highway oriented businesses. CB-CL-CM: Distruption to major retail, shopping mall, and 2 big box retailers.
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	1 (Heritage Park Alliance Church - partial)	1 (Congregation Beth El)	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	0	0	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	0	0	
		Qualitative assessment of agricultural operations effected.	None - N/A	None-N/A	
Factor Summary:	CC-CI-CM has highway commercial oriented businesses, which include auto and truck services, hotels and restaurants. The remaining businesses are directed to a more local market, but few are considered critical to the neighbourhood retail structure and none are significant to the regional retail structure. Businesses found along CB-CL-CM represent one of Windsors major retail areas. The disruption to this area would result in a major disruption to the entire retail structure of the Windsor area. The established retail function of the area would be diminished and could not be replicated elsewhere. Both options have a similarly significant number of social disruptional effects.				
Factor Score:			1	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Land Use (Existing and Planned)	Compatible with the Provinicial Policy Statement	Qualitative assessment	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Not incompatible. Talbot Road runs along the border of La Salle and Windsor. The Windsor side contains planned land uses including major institutional (St. Clair College) and very low-density residential uses along Talbot. The La Salle area includes commercial and residential uses (some existing and some currently infilled). Adjacent land uses have already accommodated the imposition of the traffic along Huron Church and many uses have adapted to the current traffic situation. Within the City of Windsor Official Plan, Volume II Special Policy Areas it is recognized that the Huron-Church Corridor is an important "international gateway route" and that any development is to occur with respect to such. The Town of La Salle supports the use of existing transportation infrastructure (i.e. Talbot Road/Highway 3 Corridor). Land use on Huron Church is both open space and commercial corridor, with residential development off of the immediate adjacent area. Huron-Church already functions with large volumes of vehicles including transport trucks and local land uses such as the commercial strips have developed in order to take advantage of the existing traffic corridor. In the cases of both La Salle and Windsor both municipalities have addressed land use planning issues in this area by recognizing the existing transportation situation and uses that would be compatible with it. While a large number of land-use planning issues (particularly residential access and services) would need to address a new highway in this location there is some compatiblity between the proposed facility and existing local land uses.	The CB-CL-CM segment uses the existing infrastructure of the railway, which is a somewhat comparable facility to a highway from a land-use planning perspective. However, the existing railway use occurs at such a low level of use and is therefore is not readily comparable to a high intensity highway. At the same time, this proposed route segment cuts a swath through an extremely diverse land use fabric including residential, industrial, mixed use, commercial and industrial land uses. While the residential area is generally only disrupted in this area, the planned function of the commercial area is highly disrupted and a highway would potentially segment the commercial area from many of the local neighbourhoods. In general, the proposed highway use is not compatible with the planned function of the local land uses. In general, the EC Row portion of this route is more compatible with local land use than the CB-CL portion.	CC-CI-CM is the preferred route segment as local land use planning and land uses have developed around the existing transportation traffic and infrastructure in the Talbot Road and Huron-Church corridor. This existing corridor has already adapted to the current situation. A proposed ROW along CB-CL would fundamentally change the planned function of land uses along Provincial Road and South Cameron. This has implications not only for these commercial uses but for the neighbourhoods of which they are connected to and dependent upon. The development of a highway in this area would require a fundamental change to many of the land use planning objectives for this area of Windsor.

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Not incompatible.	EC Row already serves a highway function and therefore some compatiblity with expansion	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	Beyond the business establishments displaced these uses co-exist with new transportation facilities with minor negative impact or possibly even benefit from them.	Beyond the business establishments displaced these uses can co-exist with new transportation facilities with minor negative impact or possibly even benefit from them.	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	3, .06 ha	CC1 plaza - has three industrial facilities with a potential for soil groundwater impacts
Factor Summary:	CC-CI-CM is more compatible with existing land use than CB-CL-CM. Local land uses have already adapted to the existing transportation infrastructure along Talbot Road and Huron Church. CB-CL-CM route segment fundamentally changes the planned function of land uses in this area of Windsor and would be highly incompatible with local land use planning. CC-CI-CM is preferred.				
Factor Score:			3	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	1	2 (Windsor Mosque; heritage residence)	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area in ha.	2	2	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	1	1	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 50%	less than 25%	
Factor Summary:	The two features impacted by CB-CL-CM (Windsor Mosque and a heritage residence) aer of greater significance than the designated feature impacted by CC-CI-CM. These impacts are greater than the higher potential for impacts to areas of higher archaeological potential. CB-CL-CM has a moderate impact to cultural features while CC-CI-CM has a low impact. CC-CI-CM is preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	CC-CM is in close proximity to Spring Garden Prairie Remnants ANSI
		Area in ha within 500m of ROW	15.31	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	1.66	0	CC-CM directly impacts St.Clair College Prairie ESA and is in close proximity to Spring Garden Road Prairie ESA.
		Area in ha within 500m of ROW	36.66	17.77	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	7.98	0	CC-CM directly impacts CNHSs including, TC2, W31 and W33 and is in close proximity to large areas of these CNHSs.
		Area in ha within 500m of ROW	136.91	53.87	
	Impacts to Potentially Natural Heritage Feature (PNHF)	Area in ha impacted by ROW	0	0.25	CB-CM directly impacts a cultural community (PNHF)
		Area in ha within 500m of ROW	1.43	20.41	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CB-CM is in close proximity to an off line pond.
		Area in ha within 500m of ROW	0.38	4.9	
	Impacts to drains	Area in ha impacted by ROW	2.71	0.17	CC-CM directly impacts a greater floodplain area.
		Area in ha within 500m of ROW	4.65	3.2	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	9.64	0.32	CC-CM directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	14	3	CC-CM crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(1.66) Wetland(0) CNHS(7.98) Water(0) SSH(8.68)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	CC-CM directly impacts St.Clair College Prairie ESA/CNHS W31, home to prairie communities and Willow Aster (Threatened), Spiked Blazing Star (Threatened) and Prairie Rose (Special Concern), all SARA Schedule 1. CC-CM directly impacts CNHS W33, home to prairie communities and Massasauga and Butler's Garter Snake, both Threatened and SARA Schedule 1. CC-CM directly impacts CNHS TC2, home to significant wildlife habitat and Spiked Blazing Star.

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	21.5	80.16	
		good to fair	12.56	0	
		fair	34.95	6.67	
		fair to poor	3.51	0	
		TOTAL AREA OF IMPACT (ha)	72.52	86.83	
Factor Summary:	CB-CM has fewer direct and fewer indirect (proximity) impacts and has no impacts on significant species or communities. CB-CM is preferred.				
Factor Score:			2	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CI-CM vs. CB-CL-CM	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.73/-	HCL - AMB to Tecumseh 1.05/0.74/-	Moderate improvement to service levels on local road network with either option vs. do-nothing; increase in v/c for ECR links to near capacity; key links to AMB operating below capacity; key links to D-W Tunnel operating below capacity; Both options use existing network links; assessment based on X10 runs (with and without provinical link)
			HCL - ECR to Tecumseh 1.18/0.80/-	HCL - ECR to Tecumseh 1.18/0.80/-	
			HCL - Cabana to ECR 0.99/1.06/+	HCL - Cabana to ECR 0.99/0.58/-	
			Talbot - HCR to 401 1.00/0.52/-	Talbot - HCR to 401 1.00/0.84/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.81/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.14/-	Dougall - Tecumseh to ECR 1.30/1.12/-	
			Dougall - ECR to 401 1.44/1.05/-	Dougall - ECR to 401 1.44/0.87/-	
			EC Row - HCL to Dougall 0.69/0.75/+	EC Row - HCL to Dougall 0.69/0.73/+	
			EC Row - Dougall to Walker 0.89/0.94/+	EC Row - Dougall to Walker 0.89/0.96/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.86/-	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.97/+	
			New Segment CC-CI NA/0.52/NA	New Segment CB-CL NA/0.78/NA	
			New Segment CI-CM NA/1.06/NA	New Segment CL-CM NA/0.75/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(4900)/(2000)	(6500)/(5600)	Increase in veh-km reflects some new out-of-way travel to cross facility/access new interchanges; assessment assumes connection to crossing X6
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	810/150	1320/110	Minor savings in travel time with either option; CC-CI-CM assessment assumes connection to crossing X10; CB-CL-CM assessment assumes connection to crossing X10 via ECR
	Directness of route for through traffic	Distance traveled between common points	10	8.7	Travel distance is comparable (<10% difference); common points = CA @401 to CE
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.47	1.22/0.50	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.78	1.15/0.78	Both existing crossings have a significant improvement to level of service vs. do nothing;
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.63	NA/0.60	New crossing operates below capacity during peak periods;

Route Segment Evaluation CC-CI-CM vs. CB-CL-CM	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
Factor Summary:	CC-CI-CL provides improved reliability by providing a new freeway link in regional road network to separate local and international trips, while providing choice for local trips. CC-CI-CL is preferred.				
Factor Score:			6	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL- Huron Church Line

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Cost	Length of Alternative	km	9.1	8.7	
	Preliminary Construction Costs	$ millions CAD (2005)	572.5	542.3	
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CI** Traffic staging and detour will be required on Talbot Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. A detour will be required at Todd Lane / Cabana Road while an interchange is being constructed. Detours could be required at Howard Avenue and Cousineau Road while proposed grade separation structures are being constructed.	**CB to CL** Existing interchange at Provincial Road / Highway 401 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. Detour and traffic staging could be required at Division Road while the proposed interchange is being constructed. Detours could be required at Walker Road and Howard Avenue while proposed grade separation structures are being constructed. Traffic staging and detour will be required for the construction of freeway to freeway type interchange at E.C. ROW Expressway	Both Segments are comparable in terms of constructability

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
			CI to CM Traffic staging and detour will be required on Huron Church Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at E.C. ROW Expressway / Huron Church Road will be reconstructed and modified to a freeway-to-freeway style interchange. Traffic staging and detour will be required while the interchange is being modified. Detour could be required at Lambton Street / Grand Marais Road West while proposed grade separation structure is being constructed.	**CL to CM** Existing E.C. ROW Expressway will be reconstructed to a 10-lane urban section. Traffic staging and detour will be required while this section is being upgraded and the Dougall Avenue, Dominion Avenue and Huron Church Road interchanges are reconstructured.	
	Brine Wells	Proximity (metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 20 m and 30 m deep will require deep foundations for structures, settlement mitigation measures may be required for high embankments	Soft soils between 20 m and 30 m deep will require deep foundations for structures, settlement mitigation measures may be required for high embankments	

Route Segment Evaluation CC-CI-CM vs CB-CL-CM	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CI-CM	CB-CL-CM	
Factor Summary:	CC-CI-CM requires staging during construction to maintain access to existing crossing. CB-CL-CM requires staging during construction on EC Row with three complex freeway-to-freeway interchanges. Both segments are comparable in terms of cost and constructablity.				
Factor Score:			2	2	

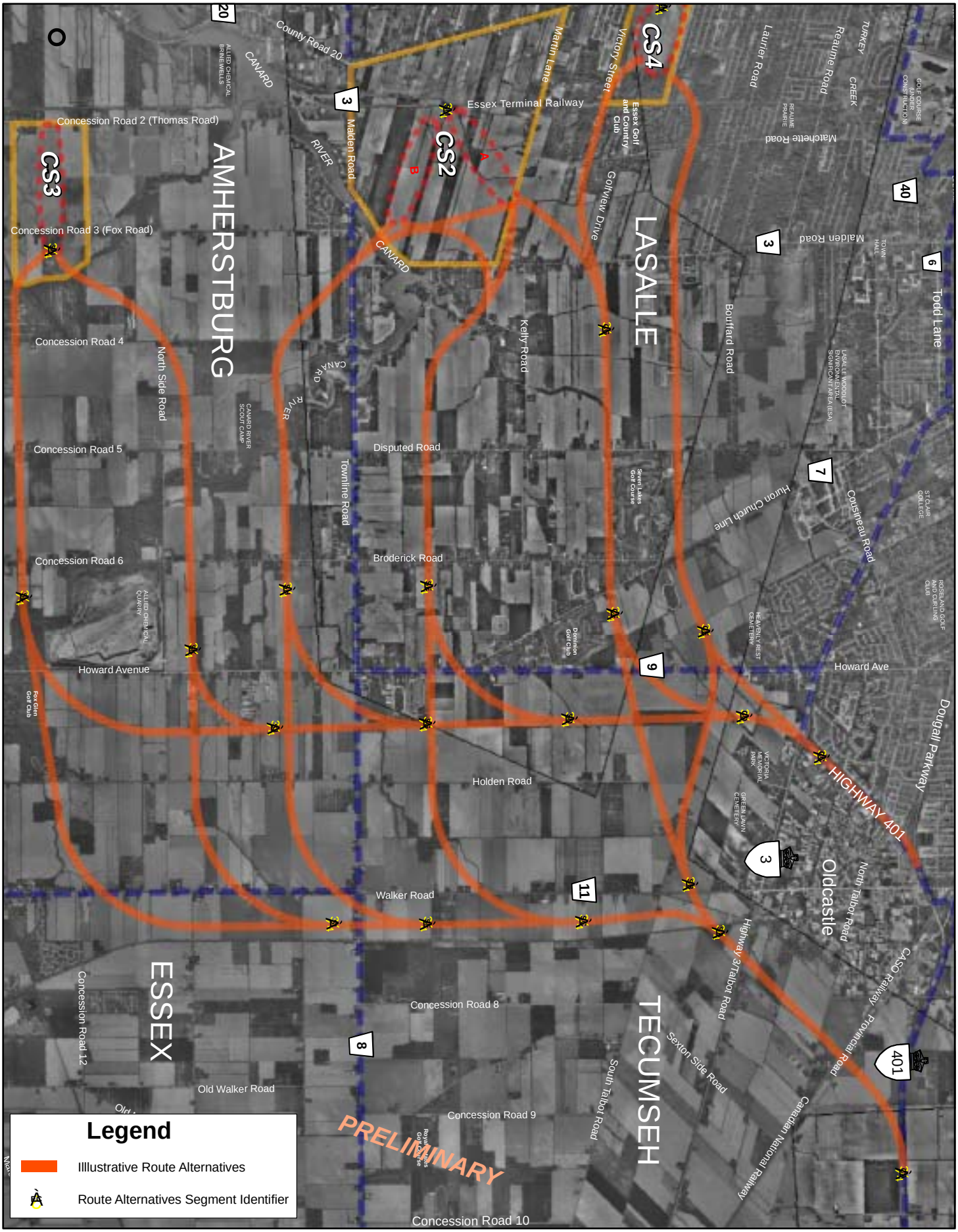
1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best CM	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-CI-CM		CB-CL-CM		Weighting	CC-CI-CM		CB-CL-CM		Weighting	CC-CI-CM		CB-CL-CM	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	1	15.93	1	15.93	15.49	1	15.49	1	15.49	13.88	1	13.88	1	13.88
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	1	12.39	12.89	3	38.67	1	12.89	13.69	3	41.07	1	13.69
Protect Cultural Resources	12.39	3	37.17	2	24.78	13.14	3	39.42	2	26.28	13.12	3	39.36	2	26.24
Protect the Natural Environment	15.93	2	31.86	3	47.79	16.34	2	32.68	3	49.02	17.11	2	34.22	3	51.33
Improve Regional Mobility	17.70	6	106.20	5	88.50	15.28	6	91.68	5	76.40	14.83	6	88.98	5	74.15
Minimize Cost	13.27	2	26.54	2	26.54	9.54	2	19.08	2	19.08	10.07	2	20.14	2	20.14
Total Weighted Score	100.00		292.04		253.10	100.00		288.98		251.12	100.00		289.55		251.33
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument evaluation method concluded that CC-CI-CM is compatible with existing land use; has fewer cultural resource impacts; and is less costly to construct; and is therefore preferred. The Arithmetic evaluation method scored CC-CI-CM as higher than CB-CL-CM; indicating that this route segment is preferred. CC-CI-CM was carried forward.

*Does not imply concensus in weighting/scoring



November 2005

SOUTH - Routes

Illustrative Alternatives
Route Segment Evaluation

CC-CD-SD-SE vs. CA-SA-SC-SE

Route Segment Evaluation
CC-CD-SD-SE vs CA-SA-SC-SE

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	CC-SE impacts a greater number of sensitive receptors than CA-SE. **Therefore, CA-SE is slightly preferred.**
Protect Community/ Neighborhood Characteristics	CC-SE has greater impacts to households than CA-SE; however CA-SE has greater impacts to farms building complexes. CC-SE has possible disruption of disposal businesses associated with a house and minor disruption to an unused portion of property. CA-SE has a possible disruption to a disposal business. **Therefore, CC-SE is slightly preferred.**
Maintain Consistency with Existing and Planned Land Use	CC-SE has limited land use and community impacts. CA-SE disrupts future committed land uses. Therefore, **Alternative CC-SE is preferred.**
Protect Cultural Resources	There are minor disruptions to two parks with CA-SE; otherwise, each alternative has no significant impacts.
Protect the Natural Environment	CC-SE has fewer direct and indirect (proximity) impacts. **CC-SE is slightly preferred.**
Improve Regional Mobility	Both options provide some benefits to regional mobility; both of these route segments are equally preferred.
Minimize Cost	Both alternatives have no unique constructability issues; Alternative CC-SE is less costly than CA-CE; **therefore CC-SE is preferred.**
Trade-Off Summary:	**CC-SE has fewer direct and indirect impacts to natural resources; it has no impacts to cultural resources; it is less costly to construct than CA-CE. Therefore CC-SE is preferred.**

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	57	28	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	Alternative CC-SE impacts a greater number of sensitive receptors than CA-SE. Therefore, CA-SE is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC CD-SD-SE vs CA-SA-SC-SE	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment										Comments
			CC-CD-SD-SE					CA-SA-SC-SE					
			NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	Huron Church Road	Cars	3050	3450 to 2500	400 to -550	Huron Church Road	Cars	3050	3450 to 2500	400 to -550	
				Trucks	760	310 to 50	-450 to -710		Trucks	760	310 to 50	-450 to -710	
			Talbot Road	Cars	3000	3900 to 1750	900 to -1250	Talbot Road	Cars	3000	3900 to 1750	900 to -1250	
				Trucks	750	350 to 50	-400 to -700		Trucks	750	350 to 50	-400 to -700	
			EC Row Expressway	Cars	7450	7200 to 8050	-250 to 600	EC Row Expressway	Cars	7450	7200 to 8050	-250 to 600	
				Trucks	260	180 to 330	-80 to 70		Trucks	260	180 to 330	-80 to 70	
			Ouellette Avenue	Cars	4150	4100 to 4100	-50 to -50	Ouellette Avenue	Cars	4150	4100 to 4100	-50 to -50	
				Trucks	250	130 to 150	-120 to -100		Trucks	250	130 to 150	-120 to -100	
			Dougall Avenue	Cars	3400	3450 to 3350	50 to -50	Dougall Avenue	Cars	3400	3450 to 3350	50 to -50	
				Trucks	260	90 to 60	-170 to -200		Trucks	260	90 to 60	-170 to -200	
	Local Access	No of streets crossed/closed	**6 Crossed** (401, Dougall, North Talbot, Highway3/Talbot, South Talbot, Howard) / **1 Closures** (Outer Dr)					**8 Crossed** (401, Provincial, North Talbot, Hwy 3/Talbot Rd, South Talbot, Walker, Holden, Howard) / **1 Closed** (9th Cons)					
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	57					28					For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	52					28					
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	1					0					
		Qualitative assessment and community cohesion, character and function.	Minor impact on community cohesiveness.					Little impact.					
Acquisitions (Whole or Partial)	**RESIDENTIAL**												
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	*3*					*0*					
	BUSINESS												
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	0					0					Possible disruption of disposal business associated with a house and minor disruption to unused portion of property.
		Number of businesses disrupted./ No. with partial property taking	2					1					
	INSTITUTIONAL												
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals)	0					2 (Trans-Canada Trail + Tecumseh Park disruption)					
	FARM PROPERTY/STRUCTURES												
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	2					7					
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	5					19					
		Qualitative assessment of agricultural operations effected.	Minor to moderate impact with two farms displaced and 4 disrupted.					Significant impact on a large number of agricultural operation (including stables).					
Factor Summary:	Alternative CC-SE has greater impacts to households than CA-SE; however CA-SE has greater impacts to farms building complexes. CC-SE has possible disruption of disposal businesses associated with a house and minor disruption to an unused portion of property. CA-SE has a possible disruption to a disposal business.												
Factor Score:			3					3					

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Land Use (Existing and Planned)	Compatible with Provinicial Policy Statement	Qualitative assessment	Not compatible	Not compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	This area is identified as hamlet development within Tecumseh. There appear to be no specific development plans for this area at this point. Limited land use and community impact. Located in Tecumseh agricultural/rural area. Located in La Salle rural area, outside of future urban area boundary.	Segment cuts through a diversity of land uses identified in the Town of Sandwich South Official Plan (now Tecumseh). This segment cuts through the following land uses: recreational (park), hamlet development and rural/agricultural. Limited planned land use impact. Tecumseh and La Salle agricultural/rural areas.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Same impact as highway in rural area near an urban fringe.	Same impact as highway in rural area near an urban fringe.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	Displacement/disruption to future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	2, unknown area	0	Haz 47 listed as a closed landfill and haz 59 as a former car graveyard - exact location could not be confirmed during site visit estimated are of impact currently not known and can not be estimated
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	Alternative CC-SE has limited land use and community impact. Alternative CA-SE disrupts future committed land uses. Therefore, Alternative CC-SE is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	2	Minor disruptions
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	0	0	
Factor Summary:	There are minor disruptions to two parks with Alternative CA-SE; otherwise, each alternative has no significant impacts.				
Factor Score:			4	4	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Sensitive Areas (ESA)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	0	0	Both routes are in close proximity to CNHS CA9.
		Area in ha within 500m of ROW	4.47	3.72	
	Impacts to Potential Natural Heritage Features (PNHF)	Area in ha impacted by ROW	0	5.3	CA-SE directly impacts a greater number of forest blocks (PNHFs).
		Area in ha within 500m of ROW	10.64	29.2	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CA-SE is in close proximity to an off line pond.
		Area in ha within 500m of ROW	0	1.17	
	Impacts to drains	Area in ha impacted by ROW	1.2	1.6	CA-SE directly impacts a greater number of drains.
		Area in ha within 500m of ROW	4.92	10.87	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.28	0	CC-SE directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	10	15	CA-SE crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(5.28) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural	Soil type/impacts in ha	good	53.16	97.64	

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Soils		good to fair	5.38	10.6	
		fair to poor	0	1.32	
		TOTAL AREA OF IMPACT (ha)	58.54	100.56	
Factor Summary:	CC-SE has fewer direct and indirect (proximity) impacts. CC-SE is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - AMB to Tecumseh 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or over capacity; new link operates well below capacity; assessment based on connection to Crossing X2 to I-75
			HCL - ECR to Tecumseh 1.18/1.03/-	HCL - ECR to Tecumseh 1.18/1.03/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/1.05/+	Talbot - HCR to 401 1.00/1.05/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	
			Dougall - Tecumseh to ECR 1.30/1.17/-	Dougall - Tecumseh to ECR 1.30/1.17/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Link - NA/0.43/NA	New Link - NA/0.43/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(3300)/(3900)	-3300/-3900	
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	610/100	610/100	
	Directness of route for through traffic	Distance traveled between common points	11.7	11	
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.77	1.22/0.77	Assessment based on connection to Crossing X2 to I-75
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.94	1.15/0.94	Assessment based on connection to Crossing X2 to I-75
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	Assessment based on connection to Crossing X2 to I-75
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	
	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection	Not Determined	Not Determined	
Factor Summary:	Both options provide some benefits to regional mobility; both of these route segments are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-Huron Church Line

Route Segment Evaluation CC-CD-SD-SE vs CA-SA-SC-SE	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SE	CA-SA-SC-SE	
Cost	Length of Alternative	km	7.7	11	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	274	289.6	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CD** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Detours and traffic staging will be required as the interchange is being modified. Detours could be required at South Talbot Road while proposed grade separation structure is being constructed. **CD to SD** No constructability issues are anticipated. **SD to SE** Traffic staging and detours will be required at the proposed Howard Road interchange. **CC-CD-SD-SE** The proposed 6-lane freeway will be constructed at grade.	**CA to SA** There will be a newly constructed freeway-to-freeway type interchange at Highway 401. Traffic staging and detour will be required at the proposed Provincial Road interchange. Detours could be required at North Talbot Road while proposed grade separation structure is being constructed. There could also be a newly constructed freeway-to-freeway type interchange at Highway 3. The proposed 6-lane freeway will be constructed at grade. **SA to SC** No constructability issues are anticipated. **SC to SE** Traffic staging and detours will be required at the proposed Walker Road and Howard Road interchanges.	
	Brine wells	Proximity(metres);age	none	none	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock, soils may be particularly soft near Canard River	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock, soils may be particularly soft near Canard River	
Factor Summary:	Both alternatives have no unique constructability issues; Alternative CC-SE is less costly than CA-CE; therefore CC-SE is preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best SE	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-SE		CA-SE		Weighting	CC-SE		CA-SE		Weighting	CC-SE		CA-SE	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79	15.49	3	46.47	3	46.47	13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	4	49.56	4	49.56	13.14	4	52.56	4	52.56	13.12	4	52.48	4	52.48
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	2	26.54	9.54	3	28.62	2	19.08	10.07	3	30.21	2	20.14
Total Weighted Score	100.00		347.79		334.52	100.00		343.70		334.16	100.00		342.78		332.71
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument evaluation method concluded that CC-SE has fewer direct and indirect impacts to natural resources; has no impacts to cultural resources and is less costly to construct than CA-CE; therefore CC-SE was preferred. The Arithmetic evaluation method resulted in CC-SE being scored higher than CA-SE. Therefore, CC-SE was carried forward.

*Does not imply a consensus of weighting/scoring.

Illustrative Alternatives
Route Segment Evaluation

CC-CD-SD-SH vs. CA-SA-SC-SH

Route Segment Evaluation
CC-CD-SD-SH vs CA-SA-SC-SH

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	Each alternative has virtually similar impacts to sensitive receptors; therefore **each is equally preferred.**
Protect Community/ Neighborhood Characteristics	Each alternative has similar impacts to households and farms; Alternative CC-SH has possible disruption to two disposal businesses. Alternative CA-SH impacts nine residences at Paquette Corners; **therefore CC-SH is preferred.**
Maintain Consistency with Existing and Planned Land Use	There is moderate impacts to planned land uses with Alternative CC-SH; CA-SH completely segments the rural hamlet of Paquette Corners; **therefore CC-SH is preferred.**
Protect Cultural Resources	Alternative CA-SH impacts the Trans-Canada Trail and partially impacts the Tecumseh Park. There are no impacts to cultural resources with Alternative CC-SH; **therefore CC-SH is preferred.**
Protect the Natural Environment	CC-SH has fewer direct and indirect (proximity) impacts. **CC-SH is slightly preferred.**
Improve Regional Mobility	Both options provide benefits to regional mobility; **both are equally preferred.**
Minimize Cost	Both alternatives have no out of the ordinary constructability issues. Alternative CC-SH is less costly to construct. Therefore, **CC-SH is preferred.**
Trade-Off Summary:	**CA-SH impacts nine residences and segments the community at Paquette Corners; it impacts the Trans-Canada Trail and partially impacts Tecumseh Park. CC-SH has fewer direct impacts to the community, environment, and it is less costly to construct; therefore CC-SH is preferred.**

Route Segment Evaluation **CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH**	**Factor: Changes in Air Quality**

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	**Criteria/Indicator**	**Measurement/Units**	**Route Segments**		**Comments**
			CC-CD-SD-SG-SH	**CA-SA-SC-SF-SH**	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	59	60	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	Each alternative has virtually similar impacts to sensitive receptors; therefore each is equally preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH	**Factor: Protection of Community and Neighborhood Characteristics**

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
			CC-CD-SD-SG-SH	**CA-SA-SC-SF-SH**	
Traffic Impacts	Volume by vehicle type	Key Link PM Peak Volumes	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / Cars / 3050 / 3450 to 2500 / 400 to -550 Trucks / 760 / 310 to 50 / -450 to -710 Talbot Road / Cars / 3000 / 3900 to 1750 / 900 to -1250 Trucks / 750 / 350 to 50 / -400 to -700 EC Row Express / Cars / 7450 / 7200 to 8050 / -250 to 600 Trucks / 260 / 180 to 330 / -80 to 70 Outlette Avenue / Cars / 4150 / 4100 to 4100 / -50 to -50 Trucks / 250 / 130 to 150 / -120 to -100 Dougall Avenue / Cars / 3400 / 3450 to 3350 / 50 to -50 Trucks / 260 / 90 to 60 / -170 to -200	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / Cars / 3050 / 3450 to 2500 / 400 to -550 Trucks / 760 / 310 to 50 / -450 to -710 Talbot Road / Cars / 3000 / 3900 to 1750 / 900 to -1250 Trucks / 750 / 350 to 50 / -400 to -700 EC Row Express / Cars / 7450 / 7200 to 8050 / -250 to 600 Trucks / 260 / 180 to 330 / -80 to 70 Outlette Avenue / Cars / 4150 / 4100 to 4100 / -50 to -50 Trucks / 250 / 130 to 150 / -120 to -100 Dougall Avenue / Cars / 3400 / 3450 to 3350 / 50 to -50 Trucks / 260 / 90 to 60 / -170 to -200	
	Local Access	No of streets crossed/closed	**7 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, South Talbot, Hwy 8, Howard) / **1 Closed** (Outer Dr)	**9 Crossed** (401, Provincial, North Talbot, Talbot Rd, South Talbot, Hwy 8, Walker, Cons. 8, Howard) / **1 Closed** (9th Cons)	
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	59	60	
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	59	60	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	1	1	Trans-Canada Trail
		Qualitative assessment and community cohesion, character and function.	Minor	Minor	
Acquisitions (Whole or Partial)	**RESIDENTIAL**				
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	0	9 (Paquette Corners)	
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	0	0	No businesses displaced.
		Number of businesses disrupted./ No. with partial property taking	2	0	CC-CD-SD-SG-SH: Possible disruption of disposal business associated with a house and minor disruption to unused portion of property.
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools,	0	2	Trans-Canada Trail and Tecumseh Park (partial)
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	3	2	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	11	13	
		Qualitative assessment of agricultural operations effected.	Moderate Impact	Moderate Impact	

Route Segment Evaluation CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
Factor Summary:	Each alternative has similar impacts to households and farms; Alternative CC-SH has possible disruption to two disposal businesses. Alternative CA-SH impacts nine residences at Paquette Corners; therefore CC-SH is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
Land Use (Existing and Planned)	Compatible with Provinicial Policy Statement	Qualitative assessment	Incompatible	Incompatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Moderate impact to planned land uses.	Moderate impact to planned land uses but ROW completely segments the rural hamlet of Paquette Corners. The hamlet generally appears to be a more dense collection of rural residences with limited commercial use at Walker and County Road 8. Planned land uses include agricultural and heavy industrial.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Same impact as highway in rural area near an urban fringe.	Same impact as highway in rural area near an urban fringe.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	No displacement/disruption to future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	There is moderate impacts to planned land uses with Alternative CC-SH; CA-SH completely segments the rural hamlet of Paquette Corners; therefore CC-SH is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation **CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH**	**Factor: Protect Cultural Resources**

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	**Criteria/Indicator**	**Measurement/Units**	**Route Segment**		**Comments**
			CC-CD-SD-SG-SH	**CA-SA-SC-SF-SH**	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	2	Trans-Canada Trail and Tecumseh Park (partial)
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	0	0	
Factor Summary:	Alternative CA-SH impacts the Trans-Canada Trail and partially impacts the Tecumseh Park. There are no impacts to cultural resources with Alternative CC-SH; therefore CC-SH is preferred.				
Factor Score:			4	4	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	1.3	0	
	Impacts to Potential Natural Heritage Features (PNHF)	Area in ha impacted by ROW	0	5.3	CA-SH directly impacts a greater number of forest blocks (PNHFs)
		Area in ha within 500m of ROW	7.63	46.78	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CA-SH is in close proximity to an off line pond
		Area in ha within 500m of ROW	0	0.82	
	Impacts to drains	Area in ha impacted by ROW	2.08	1.51	Direct impacts to drains are similar between routes. CA-SH is in close proximity to a greater number of drains.
		Area in ha within 500m of ROW	6.63	12.22	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.28	0	CC-SH directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	16	17	CA-SH crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	future gravel pit
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	68.68	137.15	
		good to fair	6.73	0	

Route Segment Evaluation CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
		fair to poor	0.89	0	
		TOTAL AREA OF IMPACT (ha)	76.36	137.15	
Factor Summary:	CC-SH has fewer direct and indirect (proximity) impacts. CC-SH is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation **CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH**	**Factor: Improve Regional Mobility**

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
Highway Network Effectiveness	Network operations during peak travel periods	Service Levels on key roadway links	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - AMB to Tecumseh 1.05/0.88/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or near capacity; new link operates well below capacity during peak travel periods; assessment based on connection to Crossing X2 to I-75
			HCL - ECR to Tecumseh 1.18/1.03/-	HCL - ECR to Tecumseh 1.18/1.03/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/1.05/+	Talbot - HCR to 401 1.00/1.05/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	
			Dougall - Tecumseh to ECR 1.30/1.17/-	Dougall - Tecumseh to ECR 1.30/1.17/-	
			Dougall - ECR to 401 1.44/1.17/-	Dougall - ECR to 401 1.44/1.17/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Link - NA/0.43/NA	New Link - NA/0.43/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(3300)/(3900)	(3300)/(3900)	
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	610/100	610/100	
	Directness of route for through traffic	Distance traveled between common points	13.5	12.8	
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.77	1.22/0.77	Assessment based on connection to Crossing X2 to I-75
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.94	1.15/0.94	Assessment based on connection to Crossing X2 to I-75
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.40	NA/0.40	Assessment based on connection to Crossing X2 to I-75
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	
	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection	Not Determined	Not Determined	
Factor Summary:	Both options provide benefits to regional mobility; both are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-Huron Church Line

Route Segment Evaluation **CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH**	**Factor: Minimize Cost**

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
Cost	Length of Alternative	km	9.5	12.8	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	295.7	305.2	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CD** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Detours and traffic staging will be required as the interchange is being modified. Detours could be required at South Talbot Road while proposed grade separation structure is being constructed. **CD to SD to SG** No out of the ordinary constructability issues are anticipated. **SG to SH** Traffic staging and detours will be required at the proposed Townline Road interchange. Also, detours will be required at Howard Road while proposed grade separation structure is being constructed.	**CA to SA** There will be a newly constructed freeway-to-freeway type interchange at Highway 401. Traffic staging and detour will be required at the proposed Provincial Road interchange. Detours could be required at North Talbot Road while proposed grade separation structure is being constructed. There could also be a newly constructed freeway-to-freeway type interchange at Highway 3. **SA to SC to SF** No out of the ordinary constructability issues are anticipated. **SF to SH** Traffic staging and detours will be required at the proposed Townline Road and the proposed Howard Road interchanges. Detours could be required at Holden Road while proposed grade separation structure is being constructed or it could be closed for traffic during construction. **CA-SA-SC-SF-SH** The proposed 6-lane freeway will be constructed at grade.	
	Brine wells	Proximity(metres); age	None	None	

Route Segment Evaluation CC-CD-SD-SG-SH vs CA-SA-SC-SF-SH	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SH	CA-SA-SC-SF-SH	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock, soils may be particularly soft near Canard River	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end, soils are 30 m or more deep over bedrock, soils may be particularly soft near Canard River	
Factor Summary:	Both alternatives have no out of the ordinary constructability issues. Alternative CC-SH is less costly to construct. Therefore, CC-SH is preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best SH	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-SH		CA-SH		Weighting	CC-SH		CA-SH		Weighting	CC-SH		CA-SH	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79	15.49	3	46.47	3	46.47	13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	4	49.56	4	49.56	13.14	4	52.56	4	52.56	13.12	4	52.48	4	52.48
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	2	26.54	9.54	3	28.62	2	19.08	10.07	3	30.21	2	20.14
Total Weighted Score	100.00		347.79		334.52	100.00		343.70		334.16	100.00		342.78		332.71
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument method concluded that CC-SH had fewer direct impacts to the community, natural features, and is less costly to construct than CA-SH. Alignment CA-SH negatively impacted the community at Paquette Corners aand impacted the Trans-Canada Trail. The Arithmetic Evaluation method resulted in CC-SH having a higher total weighted score than CA-SH. Therefore, CC-SH was carried forward.

*Does not imply a consensus of weighting/scoring

Illustrative Alternatives
Route Segment Evaluation

CC-CD-SD-SG-SJ-SK vs.CA-SA-SC-SF-SI-SK

Route Segment Evaluation
CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	Both alternatives have similar numbers of sensitive receptors; therefore they are equally preferred.
Protect Community/ Neighborhood Characteristics	Alternative CC-SK displaces 59 households and farms; and disrupts one medium and two small sized industrial operations. Alternative CA-SK displaces 61 households and farms and displaces one medium sized industrial business. There is a high community cohesion impact with CA-SK due to the fact that it segments the hamlet of Paquette Corners. **Therefore, CC-SK is preferred.**
Maintain Consistency with Existing and Planned Land Use	Both alternatives have moderate impacts to planned land uses; however CA-SK displaces/disrupts Old Castle Development and impacts the hamlet of Paquette Corners. **Therefore, CC-SK is preferred.**
Protect Cultural Resources	Both alternatives equally impact similar amounts of cultural resources. **Both are equally preferred.**
Protect the Natural Environment	CC-SK has fewer direct and indirect (proximity) impacts. **CC-SK is slightly preferred.**
Improve Regional Mobility	Both options provide some benefits to regional mobility; **both are equally preferred.**
Minimize Cost	Alternative CC-SK has fewer constructability issues; projected costs are lower. Alternative CA-SK is costly and is located near several brine wells. Therefore, **Alternative CC-SK is preferred.**
Trade-Off Summary:	**There is a high community cohesion impact with CA-SK due to the fact that it segments the hamlet of Paquette Corners; CC-SK has fewer direct and indirect impacts to natural resources; CC-SK has fewer constructability issues and projected costs are lower; therefore CC-SK is preferred.**

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	Factor: Changes in Air Quality	Date: November 28, 2005	Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	59	61	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	Both alternatives have similar numbers of sensitive receptors; therefore they are equally preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	**Factor: Protection of Community and Neighborhood Characteristics**

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment: CC-CD-SD-SG-SJ-SK	Route Segment: CA-SA-SC-SF-SI-SK	Comments
Traffic Impacts	Volume by vehicle type		NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / Cars / 3050 / 3400 to 2500 / 350 to -550 Huron Church Road / Trucks / 760 / 290 to 50 / -470 to -710 Talbot Road / Cars / 3000 / 4100 to 1750 / 1100 to -1250 Talbot Road / Trucks / 750 / 330 to 50 / -420 to -700 EC Row Expressway / Cars / 7450 / 7250 to 8050 / -200 to 600 EC Row Expressway / Trucks / 260 / 190 to 330 / -70 to 70 Outlette Avenue / Cars / 4150 / 4150 to 4100 / 0 to -50 Outlette Avenue / Trucks / 250 / 130 to 150 / -120 to -100 Dougall Avenue / Cars / 3400 / 3500 to 3350 / 100 to -50 Dougall Avenue / Trucks / 260 / 80 to 60 / -180 to -200	NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road / Cars / 3050 / 3400 to 2500 / 350 to -550 Huron Church Road / Trucks / 760 / 290 to 50 / -470 to -710 Talbot Road / Cars / 3000 / 4100 to 1750 / 1100 to -1250 Talbot Road / Trucks / 750 / 330 to 50 / -420 to -700 EC Row Expressway / Cars / 7450 / 7250 to 8050 / -200 to 600 EC Row Expressway / Trucks / 260 / 190 to 330 / -70 to 70 Outlette Avenue / Cars / 4150 / 4150 to 4100 / 0 to -50 Outlette Avenue / Trucks / 250 / 130 to 150 / -120 to -100 Dougall Avenue / Cars / 3400 / 3500 to 3350 / 100 to -50 Dougall Avenue / Trucks / 260 / 80 to 60 / -180 to -200	
	Local Access	No of streets crossed/closed	**8 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, South Talbot, Hwy 8, Smith Industrial Dr, Howard) / **1 Closed** (Outer Dr)	**10 Crossed** (401, Provincial, North Talbot, Talbot Rd, South Talbot, Hwy 8, Cons 14, Walker, Cons 8, Howard) / **1 Closed** (9th Cons)	
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	59	61	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	59	61	
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2	1	
		Qualitative assessment and community cohesion, character and function.	Minor	High impact. Community of Paquette Corners is heavily impacted and segmented by this option.	
Acquisitions (Whole or Partial)	**RESIDENTIAL**				
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	2	7	
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	1 small industrial operation displaced	1 medium sized industrial business displaced	
		Number of businesses disrupted./ No. with partial property taking	1 medium and 2 small sized industrial operations displaced	0	
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools,	0	1 (Trans-Canada Trail)	
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	2	5	
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	10	14	
		Qualitative assessment of agricultural operations effected.	Minor to moderate impact	Moderate to High impact.	
Factor Summary:	Alternative CC-SK displaces 59 households and farms; and disrupts one medium and two small sized industrial operations. Alternative CA-SK displaces 61 households and farms and displaces one medium sized industrial business There is a high community cohension impact with CA-SK due to the fact that it segments the hamlet of Paquette Corners. Therefore, CC-SK is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI SK	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
Land Use (Existing and Planned)	Compatible with Provinicial Policy Statement	Qualitative assessment	Not compatible	Not compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Moderate impact to planned land uses.	Moderate impact to planned land uses but Hamlet of Paquette Corners particularly impacted.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Same impact as major transportation infrastructure in rural areas.	Same impact as major transportation infrastructure in rural area.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	Displacement/disruption to Old Castle Development	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	Both alternatives have moderate impacts to planned land uses; however CA-SK displaces/disrupts Old Castle Development and impacts the hamlet of Paquette Corners. Therefore, CC-SK is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	**Factor: Protect Cultural Resources**

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	2	1	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	1	2	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 25%	up to 25%	
Factor Summary:	Both alternatives equally impact similar amounts of cultural resources. Both are equally preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	**Factor: Protect the Natural Environment**

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Area (ESA)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Site (CNHS)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	1.3	0	
	Impacts to Potential Natural Heritage Feature (PNHF)	Area in ha impacted by ROW	0	8.72	CA-SK directly impacts a greater number of forest blocks (PNHFs).
		Area in ha within 500m of ROW	9.57	53.89	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CA-SK is in close proximity to an off line pond.
		Area in ha within 500m of ROW	0	0.82	
	Impacts to drains	Area in ha impacted by ROW	2.38	1.11	CC-SK directly impacts a greater number of drains.
		Area in ha within 500m of ROW	7.26	13.46	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.28	0	CC-SK directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	19	17	Both routes cross a similar number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) PNHF(0) Water(0) SSH(0)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(0)	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	80.91	129.48	
		good to fair	2.51	0	
		fair to poor	0.7	0	
		TOTAL AMOUNT OF IMPACTS (ha)	84.12	129.48	
Factor Summary:	CC-SK has fewer direct and indirect (proximity) impacts. CC-SK is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	**Factor: Improve Regional Mobility**

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
Highway Network Effectiveness	Network operations during peak travel periods	Service Levels on key roadway links	HCL - AMB to Tecumseh 1.05/0.90/-	HCL - AMB to Tecumseh 1.05/0.90/-	Minor improvement to service levels on local road network with either
			HCL - ECR to Tecumseh 1.18/1.04/-	HCL - ECR to Tecumseh 1.18/1.04/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.85/-	Ouellette - Tunnel to Tecumseh 0.89/0.85/-	
			Dougall - Tecumseh to ECR 1.30/1.19/-	Dougall - Tecumseh to ECR 1.30/1.19/-	
			Dougall - ECR to 401 1.44/1.29/-	Dougall - ECR to 401 1.44/1.29/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.62/+	401 - Dougall to Manning 0.60/0.62/+	
			New Link - NA/0.40/NA	New Link - NA/0.40/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(10700)/(5800)	(10700)/(5800)	
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	460/70	460/70	
	Directness of route for through traffic	Distance traveled between common points	14.3	13.2	
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.83	1.22/0.83	Assessment based on connection to Crossing X1 to I-75
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.98	1.15/0.98	Assessment based on connection to Crossing X1 to I-75
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.34	NA/0.34	Assessment based on connection to Crossing X1 to I-75
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	
	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection	Not Determined	Not Determined	
Factor Summary:	Both options provide some benefits to regional mobility; both are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL-High Crash Location

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	**Factor: Minimize Cost**

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
Cost	Length of Alternative	km	10.3	13.2	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	321.6	330.7	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CD** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Detours and traffic staging will be required as the interchange is being modified. Detours could be required at South Talbot Road while proposed grade separation structure is being constructed. **CD to SD to SG to SJ** No special constructability issues are anticipated. **SJ to SK** Traffic staging and detour will be required at the proposed Howard Road interchange. The proposed 6-lane freeway will be constructed at grade.	**CA to SA** There will be a new freeway-to-freeway type interchange at Highway 401. Traffic staging and detour will be required at the proposed Provincial Road interchange. Detours could be required at North Talbot Road while proposed grade separation structure is being constructed. There could also be a new freeway-to-freeway type interchange at Highway 3. The proposed 6-lane freeway will be constructed at grade. **SA to SC to SF** No special constructability issues are anticipated. **SF to SI** Traffic staging and detour will be required at the proposed Townline Road interchanges. Detours could be required at Concession Road 14 while proposed grade separation structure is being constructed or it could be closed for traffic during the construction. **SI to SK** Traffic staging and detours will be required at the proposed Walker Road and Howard Road interchanges. Detours could be required at Concession Road 8 while proposed grade separation structure is being constructed or it could be closed for traffic during the construction.	

Route Segment Evaluation CC-CD-SD-SG-SJ-SK vs CA-SA-SC-SF-SI-SK	**Factor: Minimize Cost**

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK	CA-SA-SC-SF-SI-SK	
				CA-SA-SC-SF-SI-SK The proposed 6-lane freeway will be constructed at grade.	
	Brine wells	Proximity(metres); age	Adjacent to 600m buffer of pre-1980 well. Time and cost for mitigation may be significant depending on future study. Methods for mitigation are undetermined at this time.	Traverses 300m buffer of post1980 well; traverses 600m buffer of pre-1980 well. Time and cost for mitigation may be significant depending on future study. Methods for mitigation are undetermined at this time.	
	Soil conditions (geotechnical)	qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end or central section of route, soils are 30 m or more deep over bedrock	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in west end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at west end or central section of route, soils are 30 m or more deep over bedrock	
Factor Summary:	Alternative CC-SK has fewer constructability issues; projected costs are lower. Alternative CA-SK is costly and is located near several brine wells. Therefore, Alternative CC-SK is preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best SK	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-SK		CA-SK		Weighting	CC-SK		CA-SK		Weighting	CC-SK		CA-SK	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79	15.49	3	46.47	3	46.47	13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	2	26.54	9.54	3	28.62	2	19.08	10.07	3	30.21	2	20.14
Total Weighted Score	100.00		335.40		322.13	100.00		330.56		321.02	100.00		329.66		319.59
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument methodology concluded that CC-SK had fewer direct and indirect impacts to natural resources; has fewer constructability issues and less community cohesion impacts than CA-SK. The Arithmetic evaluation method scored CC-SK higher than CA-SK. Therefore, CC-SK was carried forward.

*Does not imply a consensus of weighting/scoring

Illustrative Alternatives
Route Segment Evaluation

CC-CD-SD-SG-SJ-SL vs. CA-SA-SC-SF-SI-SL

Route Segment Evaluation
CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	CC-SL impacts fewer sensitive receptors than CA-SL. **Therefore, CC-SL is preferred.**
Protect Community/ Neighborhood Characteristics	CC-SL will disrupt fewer households and farms than CA-SL; CA-SL impacts the hamlet of Paquette Corners and heavily disrupts McGregor Square. T**herefore, CC-SL is preferred.**
Maintain Consistency with Existing and Planned Land Use	CC-SL has moderate impacts to planned land uses; CA-SL impacts the hamlets of Paquette Corners and McGregor. CA-SL displaces future committed land uses; **therefore CC-SL is preferred.**
Protect Cultural Resources	CC-SL potentially disturbs a known archaeological site; CA-SL potentially disturbs two archaeological sites and the Trans-Canada Trail; therefore; **CC-SL is preferred.**
Protect the Natural Environment	CC-SL has fewer direct and indirect (proximity) impacts. **CC-SL is slightly preferred.**
Improve Regional Mobility	Both options provide some benefits to regional mobility; **both options are equally preferred**.
Minimize Cost	CC-SL has no constructability concerns and lower costs; CA-SL is costlier and traverses several brine wells. **Therefore CC-SL is preferred.**
Trade-Off Summary:	**CC-SL impacts fewer sensitive receptors; disrupts fewer households and farms; has moderate impacts to planned land uses; and has no constructability concerns and lower costs; therefore it is preferred.**

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	Not applicable to minor route segments
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	55	76	For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households or farms disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Factor Summary:	Alternative CC-SL impacts fewer sensitive receptors than CA-SL. Therefore, CC-SL is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment										Comments
			CC-CD-SD-SG-SJ-SL					CA-SA-SC-SF-SI-SL					
Traffic Impacts	Volume by vehicle type		NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	
			Huron Church Road	Cars	3050	3400 to 2500	350 to -550	Church Road	Cars	3050	3400 to 2500	350 to -550	
				Trucks	760	290 to 50	-470 to -710		Trucks	760	290 to 50	-470 to -710	
			Talbot Road	Cars	3000	4100 to 1750	1100 to -1250	Talbot Road	Cars	3000	4100 to 1750	1100 to -1250	
				Trucks	750	330 to 50	-420 to -700		Trucks	750	330 to 50	-420 to -700	
			EC Row Expressway	Cars	7450	7250 to 8050	-200 to 600	Row Expressway	Cars	7450	7250 to 8050	-200 to 600	
				Trucks	260	190 to 330	-70 to 70		Trucks	260	190 to 330	-70 to 70	
			Outlette Avenue	Cars	4150	4150 to 4100	0 to -50	e Avenue	Cars	4150	4150 to 4100	0 to -50	
				Trucks	250	130 to 150	-120 to -100		Trucks	250	130 to 150	-120 to -100	
			Dougall Avenue	Cars	3400	3500 to 3350	100 to -50	l Avenue	Cars	3400	3500 to 3350	100 to -50	
				Trucks	260	80 to 60	-180 to -200		Trucks	260	80 to 60	-180 to -200	
	Local Access	No of streets crossed/closed	**9 Crossed** (401, Dougall Ave, North Talbot, Talbot Rd, South Talbot, Hwy 8, Smith Industrial Dr, North Side Rd, Howard) / **1 Closed** (Outer Dr)					**11 Crossed** (401, Provincial, North Talbot, Talbot Rd, South Talbot, Hwy 8, Cons 14, Cons 13, Walker, Cons 8, Howard) / **1 Closed** (9th Cons)					
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	55					76 (includes infill lots in McGregor)					For the purposes of analysis of Illustrative Segments a quantitative assessment of the total number of homes or households disrupted (with 250 metres of centre line) was utilized as an indication of possible impacts.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	55					76 (includes infill lots in McGregor)					
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2					1 (Trans-Canada)					
		Qualitative assessment and community cohesion, character and function.	Minor Impact					Impacts to the hamlets of Paquette Corners and McGregor. Paquette Corners will be functionally segmented and McGregor heavily disrupted.					
Acquisitions (Whole or Partial)	**RESIDENTIAL**												
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	1					5					
	BUSINESS												
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	1					1					CC-SL: 1 small industrial use displaced. CA - SL: Fox Glan Golf CC displaced.
		Number of businesses disrupted./ No. with partial property taking	2					0					CC - SL: Disruption to unused portion of property and 1 small industrial use.
	INSTITUTIONAL												
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools,	0					1 (Trans-Canada Trail)					
	FARM PROPERTY/STRUCTURES												
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	1					3					
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	6					14					
		Qualitative assessment of agricultural operations effected.	Minor Impact					Moderate Impact					
Factor Summary:	Alternative CC-SL will disrupt fewer households and farms than CA-SL; Alternative CA-SL impacts the hamlet of Paquette Corners and heavily disrupts McGregor Square. Therefore, CC-SL is preferred.												
Factor Score:			3					2					

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
Land Use (Existing and Planned)	Compatible with Provinicial Policy Statement	Qualitative assessment	Not Compatible	Not Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Moderate impact to planned land uses.	Moderate impact to planned land uses, hamlets of Paquette Corners and McGregor impacted by options.	
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Same impact as major transportation infrastructure in rural area.	Same impact as major transportation infrastructure in rural area.	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement/disruption to future committed land uses	Displacement/disruption to future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	Alternative CC-SL has moderate impacts to planned land uses; Alternative CA-SL impacts the hamlets of Paquette Corners and McGregor. Alternative CA-SL displaces future committed land uses; therefore CC-SL is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage Inventories.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	1 (Trans-Canada Trail)	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	1	2	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 25%	up to 25%	
Factor Summary:	Alternative CC-SL potentially disturbs a known archaeological site; CA-SL potentially disturbs two archaeological sites and the Trans-Canada Trail; therefore; CC-SL is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Sites (CNHS)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	1.3	0	
	Impacts to Potential Natural Heritage Feature (PNHF)	Area in ha impacted by ROW	3.23	11.2	CA-SL directly impacts a greater number of forest blocks (PNHFs).
		Area in ha within 500m of ROW	29.45	82.13	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CA-SL is in close proximity to an off line pond.
		Area in ha within 500m of ROW	0	1.67	
	Impacts to drains	Area in ha impacted by ROW	2.76	1.73	CC-SL directly impacts a greater number of drains.
		Area in ha within 500m of ROW	10.19	16.22	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	3.4	3.5	Impacts to floodplains are similar between routes.
	Impacts to water crossings	No. within 100m of proposed ROW	27	24	Both routes cross the same number of watercourses, including the Canard River.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0.8) SSH(0.8)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0.07) SSH(0.07)	Both routes directly impact the Canard River, home to the Spotted Sucker (Special Concern and SARA Schedule 1).
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	27.12 ha Pit or Quarry	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	102.71	146.19	
		good to fair	2.65	0.12	
		fair to poor	3.78	9.52	
		TOTAL AMOUNT OF IMPACTS (ha)	109.14	155.83	
Factor Summary:	CC-SL has fewer direct and indirect (proximity) impacts. CC-SL is slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
Highway Network Effectiveness	Network operations during peak travel periods	Service Levels on key roadway links	HCL - AMB to Tecumseh 1.05/0.90/-	HCL - AMB to Tecumseh 1.05/0.90/-	Minor improvement to service levels on local road network with either option; key links to existing crossings continue operating at or near capacity; new link operates well below capacity during peak travel periods; assessment based on connection to Crossing X1 to I-75
			HCL - ECR to Tecumseh 1.18/1.04/-	HCL - ECR to Tecumseh 1.18/1.04/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.85/-	Ouellette - Tunnel to Tecumseh 0.89/0.85/-	
			Dougall - Tecumseh to ECR 1.30/1.19/-	Dougall - Tecumseh to ECR 1.30/1.19/-	
			Dougall - ECR to 401 1.44/1.29/-	Dougall - ECR to 401 1.44/1.29/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.62/+	401 - Dougall to Manning 0.60/0.62/+	
			New Link - NA/0.40/NA	New Link - NA/0.40/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(10700)/(5800)	(10700)/(5800)	
	Change in travel time	Change in total vehicle-hours of travel vs. no-build; Autos/Trucks	460/70	460/70	
	Directness of route for through traffic	Distance traveled between common points	16.8	15.6	
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.83	1.22/0.83	Assessment based on connection to Crossing X1 to I-75
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.98	1.15/0.98	Assessment based on connection to Crossing X1 to I-75
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.34	NA/0.34	Assessment based on connection to Crossing X1 to I-75
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	
	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection	Not Determined	Not Determined	
Factor Summary:	Both options provide some benefits to regional mobility; both options are equally preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit
*HCL- High Crash Location

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
Cost	Length of Alternative	km	12.8	15.6	
	Preliminary Construction and Property Costs	$ millions CAD (2005)	349.4	357.6	
	Constraints to Construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC to CD** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Detours and traffic staging will be required as the interchange is being modified. Detours could be required at South Talbot Road while the proposed grade separation structure is being constructed. **CD to SD to SG to SJ** No special constructability issues are anticipated. **SJ to SL** Traffic staging and detour could be required at the proposed Howard Road interchange. Detour could be required at North Side Road while the proposed grade separation structure is being constructed or the road could be closed for traffic during the construction.	**CA to SA** There will be a new freeway-to-freeway type interchange at Highway 401. Traffic staging and detour will be required at the proposed Provincial Road interchange. Detours could be required at North Talbot Road while the proposed grade separation structure is being constructed. There could also be a newly constructed freeway-to-freeway type interchange at Highway 3. **SA to SC to SF** No special constructability issues are anticipated. **SF to SI** Traffic staging and detour will be required at the proposed Townline Road interchanges. Detours could be required at Concession Road 14 while the proposed grade separation structure is being constructed or it could be closed for traffic during the construction. **SI to SL** Traffic staging and detours will be required at the proposed Walker Road and Howard Road interchanges. Detours could be required at Concession Roads 8 and 13 while the proposed grade separation structures are being constructed or these local roads could be closed for traffic during the construction. **CA-SA-SC-SF-SI-SL** The proposed 6-lane freeway will be constructed at grade.	

Route Segment Evaluation CC-CD-SD-SG-SJ-SL vs CA-SA-SC-SF-SI-SL	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SL	CA-SA-SC-SF-SI-SL	
	Brine wells	Proximity (metres); age	None	Traverses 300m buffer of post1980 well; traverses 600m buffer of pre-1980 well. Time and cost for mitigation may be significant depending on future study. Methods for mitigation are undetermined at this time.	
	Soil conditions (geotechnical)	qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east end, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	
Factor Summary:	Alternative CC-SL has no constructability concerns and lower costs; CA-SL is costlier and traverses several brine wells. Therefore CC-SL is preferred.				
Factor Score:			3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

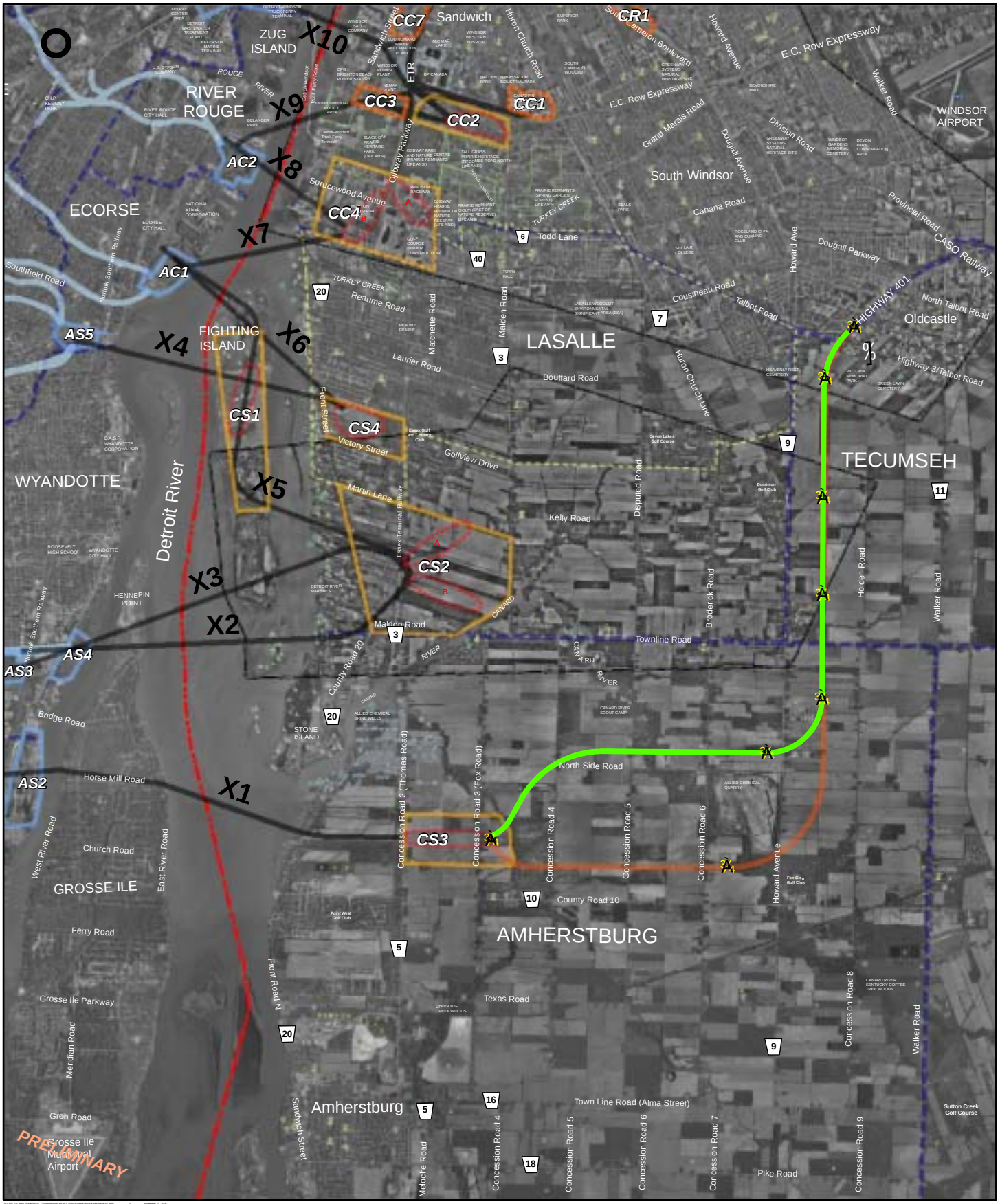
Route Segment Evaluation Best SL	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-SL		CA-SL		Weighting	CC-SL		CA-SL		Weighting	CC-SL		CA-SL	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	2	31.86	15.49	3	46.47	2	30.98	13.88	3	41.64	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	12.89	3	38.67	3	38.67	13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79	16.34	3	49.02	3	49.02	17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	2	26.54	9.54	3	28.62	2	19.08	10.07	3	30.21	2	20.14
Total Weighted Score	100.00		335.40		306.20	100.00		330.56		305.53	100.00		329.66		305.71
Ranking			***1***		***2***			***1***		***2***			***1***		***2***

COMMENT: The Reasoned Argument method concluded that CC-SL has fewer social disruptions; has fewer impacts to current and future commited land uses; fewer direct and indirect impacts to natural features; and has no constructability concerns and was preferred over CA-SL. The Arithmetic evaluation method socred CC-SL higher than CA-SL; therefore CC-SL was carried forward.

*Does not imply a consensus of weighting/scoring

BEST WAY TO X1



NOVEMBER 2005

0 0.5 1 2 3 4 5 Kilometers

Illustrative Alternative Route Segment Evaluation

Best Way To X1
CC – CD – SD – SG – SJ – SK - SN vs. CC – CD – SD – SG – SJ – SL –SN

The Best Way To Crossing X1 analysis is a comparison of two routes comprised of the following segments: CC – CD – SD – SG – SJ – SK - SN and CC – CD – SD – SG – SJ – SL –SN (see attached figure).

Seven performance measures were evaluated for each Illustrative Alternative and include: Change in Air Quality, Community/Neighbourhood Characteristics, Consistency with Existing Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost.

There is no substantial differences or benefits in terms of air quality or noise affects as both are in rural areas. With respect to community/neighbourhood characteristics, there are no significant impacts to differentiate between the routes. The community is primarily agricultural; neither option has significant impacts. Generally, there are no discernable differences with respect to land-use planning for both alternatives. Both routes pass through rural areas of Tecumseh and Amherstburg.

Route CC-CD-SD-SG-SJ-SN contains fewer known archaeological sites than Route CC-CD-SD-SG-SJ-SL-SN. Both routes do not have any inventoried built heritage features along their lengths, and both have similar estimated amounts of archaeological site potential (>25%). Route CC-CD-SD-SG-SJ-SK-SN is slightly preferred due to fewer known and potential cultural impacts

Route CC-CD-SD-SG-SJ-SK-SN has fewer direct natural environmental features impacts, but is in close proximity to two Environmentally Significant Areas. Route CC-CD-SD-SG-SJ-SL-SN has slightly greater direct impacts to natural features and area of good soils.

Both Routes CC – CD – SD – SG – SJ – SK - SN and CC – CD – SD – SG – SJ – SL –SN provide low benefit to regional mobility. However, both routes provide additional links/capacity in the highway network, with limited improvement in overall network performance. On the basis that Route CC-CD-SD-SG-SJ-SK-SN is shorter and offers the same benefits as the other options, Route CC – CD – SD – SG – SJ – SK - SN is considered slightly preferred. There are no substantial differences in cost or constructability with either route.

Illustrative Alternatives
Route Segment Evaluation

BEST WAY TO X1

Route Segment Evaluation
Best Way to X1

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	No substantial differences in terms of air quality impacts or benefits with either option. Both options would reduce international traffic in the populated areas of Windsor/LaSalle and both pass through lightly populated rural areas.
Protect Community/ Neighborhood Characteristics	With respect to residential and business impacts there are no significant impacts to differentiate between routes. The community is primarily agricultural; neither option has significant impacts and all result in similiar impacts.
Maintain Consistency with Existing and Planned Land Use	Generally there are no discernable differences with respect to land-use planning for both alternatives. Both will have equal but low impact on planned land uses.
Protect Cultural Resources	CC-CD-SD-SG-SJ-SK-SN route contains two archaeological sites, while CC-CD-SD-SG-SJ-SL-SN route includes four archaeological sites. Both routes do not have any inventoried built heritage features along the route, and both have similar estimated amounts of archaeological site potential (>25%). **CC-CD-SD-SG-SJ-SK-SN route is slightly preferred due to fewer known and potential cultural impacts.**
Protect the Natural Environment	CC-CD-SD-SG-SJ-SK-SN has fewer direct impacts, but is in close proximity to two ESAs. There is no significant difference between these alternatives, however, because the CC-CD-SD-SG-SJ-SL-SN option has slightly greater direct impacts to natural features and impacts a greater area of good soils, the CC-CD-SD-SG-SJ-SK-SN option is slightly preferred. **Slight preference to CC-CD-SD-SG-SJ-SK-SN due to less impacts associated with the crossing of Canard River.**
Improve Regional Mobility	Low benefit to regional mobility with either alternative. Both alternatives provide additional links/capacity in highway network, with limited improvement in overall network performance. On the basis that CC-CD-SD-SG-SJ-SK-SN alternative is shorter and offers the same benefits as the other options, the **SJ-SK-SN option is slightly preferred.**
Minimize Cost	No substantial differences in cost or constructability with either option. Both options, due to length and cost, considered to have a moderate impact.
Trade-Off Summary:	Both alternatives pass through the lightly populated agricultural area of north Amherstburg. Both alternatives result in low to moderate impacts to community features and natural areas; however, both options offer only low benefits to regional mobility; **Slight preference in favour of CC-CD-SD-SG-SJ-SK-SN were identified in the assessment of Regional Mobility as well as the assessment of impacts to natural and cultural features; in the other factor areas, the two options had similar performance. Therefore CC-CD-SD-SG-SJ-SK-SN is preferred.**

Route Segment Evaluation Best Way to X1	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	52	61	
Factor Summary:	No substantial differences in terms of air quality impacts or benefits with either option. Both options would reduce international traffic in the populated areas of Windsor/LaSalle and both pass through lightly populated rural areas.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X1	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
Traffic Impacts	Volume by vehicle type	PM Peak International Volumes on Key Network Links, Autos/Commercial (2-way)	**CC-CD-SD-SG-SJ-SK-SN** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 1000 20; Trucks 840 370 -470 Talbot Road — Cars 390 400 10; Trucks 680 340 -340 EC Row Expressway — Cars 410 410 0; Trucks 30 50 20 Ouellette Avenue — Cars 290 260 -30; Trucks 140 30 -110 Dougall Avenue — Cars 250 220 -30; Trucks 210 20 -190	**CC-CD-SD-SG-SJ-SL-SN** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 1000 20; Trucks 840 370 -470 Talbot Road — Cars 390 400 10; Trucks 680 340 -340 EC Row Expressway — Cars 410 410 0; Trucks 30 50 20 Ouellette Avenue — Cars 290 260 -30; Trucks 140 30 -110 Dougall Avenue — Cars 250 220 -30; Trucks 210 20 -190	Both alternatives provide benefit to the local network by reducing international truck traffic on key local network links (Huron Church Road, Talbot Road, Ouellette Avenue and Dougall Avenue); no significant change in international traffic on ECR for both alternatives; Changes in car volumes are slight; No significant difference between alternatives.
	Local Access	No of streets crossed/closed	**11 crossed** (401, Dougall, North Talbot, Talbot Rd, South Talbot, Hwy 8, Howard, Concession Roads 4, 5 & 6, North Side Rd) / **2 closures** (Outer Dr, Smith Industrial Dr)	**11 crossed** (401, Dougall, North Talbot, Talbot Rd, South Talbot, Hwy 8, North Side Rd, Howard, Concession Roads 4, 5 & 6) / **2 closures** (Outer Dr, Smith Industrial Dr)	No significant difference among the alternatives; both options will affect local access by closing/crossing existing roads; given the rural nature of the community, the out-of-way travel impacts are not considered significant; Access opportunities (via interchanges) to new route are comparable for both alternatives.
		Assessment of effect on existing crossing roads	All existing concession and county roads crossed with grade separations or interchanges; Out-of-way travel for Outer Drive will need to be addressed.	All existing concession and county roads crossed with grade separations or interchanges; Out-of-way travel for Outer Drive will need to be addressed.	
		Number of interchanges	**3**	**3**	
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors within 500m (250m of centre line) of ROW.	52	61	
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	52	61	Relatively equal number of disruptions.
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	2	2	Equal number of disruptions.
		Qualitative assessment and community cohesion, character and function.	The proposed ROW cuts through a predominantly rural area characterized primarily by rural residences, agricultural operations and fields. The proposed facility would only have a minor impact on community cohesion, character and function.	The proposed ROW cuts through a predominantly rural area characterized primarily by rural residences, agricultural operations and fields. The proposed facility would only have a minor impact on community cohesion, character and function.	These two routes are comprised of exactly the same segments except for a deviation at the western portion of the proposed ROW, namely SJ - SN versus SJ-SL-SN. Both routes are rural in nature. As such, these two options are relatively comparable in terms of their impacts on community cohesion and character because the replicate each other except for the extreme western portion of the ROW. In comparing the SJ - SN versus SJ-SL-SN, there is little to differentiate community cohesion and character as both segments are rural and comprised of rural residences, farm operations and fields.
Acquisitions (Whole or Partial)	**RESIDENTIAL**				
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW.	6	3	Slightly larger number of home displacements with CC-CD-SD-SG-SJ-SN alternative
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW.	1	1	**Best SK-SN:** Displacement of small industrial **Best SL-SN**: Displacement of small industrial use.
		Number of businesses disrupted./ No. with partial property taking.	3	2	**Best SK-SN:** Minor disruption to industrial properties. **Best SL-SN**: Minor disruption to industrial properties.
	INSTITUTIONAL				

Route Segment Evaluation Best Way to X1	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals).	0	0	No displacements under either option.
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW.	6	3	More farm displacements with CC-CD-SD-SG-SJ-SN alternative.
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW.	18	10	More farm displacements with CC-CD-SD-SG-SJ-SN alternative.
		Qualitative assessment of agricultural operations effected.	Moderate impacts on agricultural operations.	Minor to moderate impacts on agricultural operations.	Generally slightly more impact associated with CC-CD-SD-SG-SJ-SN alternative.
Factor Summary:	With respect to residential and business impacts there are no significant impacts to differentiate between routes. Slightly higher impacts on agricultural operations associated with CC-CD-SD-SG-SJ-SN, but this is not considered a significant difference between the alternatives. Overall, both alternatives have a low impact to community and neighbourhood characteristics.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X1	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Land Use (Existing and Planned)	Compatible with Provincial Policy Statement	Qualitative assessment	Not compatible.	Not Compatible. Planned eastwardly (Under link SJ to SL) expansion of Gravel Pit Operation, Provincial Policy Statement requires that Natural Resources such as Gravel Pits be protected from all Development that would preclude use in the future.	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Limited land use impact and therefore generally compatible as this route passes through rural and agricultural areas of Tecumseh and Amherstburg.	Limited land use impact and therefore generally compatible as this route passes through rural and agricultural areas of Tecumseh and Amherstburg.	Alternatives are largely equal.
	Compatibility with any other federal, provincial or municipal initiatives	Qualitative assessment	Generally compatible.	Generally compatible.	Alternatives are largely equal.
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No large scale development plans impacted	No large scale development plans impacted	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	No sites affected by either option
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	Generally there are no discernable differences with respect to land-use planning for both alternatives. CC-SJ-SK-SN preferred as it has less effects on land use (Quarry expansion). Both will have equal but low impact on planned land uses.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X1	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	No difference between segments
		b) Number of listed built heritage features disrupted	0	0	
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage inventories for Illustrative Route Segments.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	2	None	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	2 pre-contact campsites [Renaud (AbHr-1) and Girard (AbHr-2)]	3 pre-contact campsites [Renaud, Costa (AaHr-1) and Shaw (AaHs-5)] and 1 pre-contact village [Dime (AaHs-6)]	
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 25% impacts area of potential	up to 25% impacts area of potential	No difference between segments
Factor Summary:	CC-CD-SD-SG-SJ-SN route contains TWO archaeological sites, while CC-CD-SD-SG-SJ-SL-SN route includes four archaeological sites. Both routes do not have any inventoried built heritage features along the route, and both have similar estimated amounts of archaeological site potential (>25%). CC-CD-SD-SG-SJ-SK-SN route is slightly preferred due to fewer known and potential cultural impacts.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X1	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	CC-SK-SN is in close proximity to Green Dragon Woods ESA and Canard River Scout Camp ESA.
		Area in ha within 500m of ROW	15.19	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	1.3	1.3	
	Impacts to PNHF	Area in ha impacted by ROW	1.36	3.23	CC-SL-SN impacts a greater number of PNHFs.
		Area in ha within 500m of ROW	22.17	29.45	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0	CC-SK-SN is in close proximity to an off-line pond.
		Area in ha within 500m of ROW	0.54	0	
	Impacts to drains	Area in ha impacted by ROW	3.02	3.09	Both routes impact a similar number of drains.
		Area in ha within 500m of ROW	12.99	13.58	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	3.57	3.92	Both routes impact a similar floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	28	33	CC-SL-SN crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0.8) SSH(0.8)	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0.8) SSH (0.8)	Both routes directly impact Canard River, home to Spotted Sucker (Special Concern and SARA Schedule 1).
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	Pit/Quarry (10.97)	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	126.19	146.39	slightly greater impact to good soils with SL-SN option
		good to fair	2.65	2.65	
		fair to poor	5.18	5.18	
		TOTAL AREA OF IMPACT	134.02	154.22	

Route Segment Evaluation Best Way to X1	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Factor Summary:	CC-CD-SD-SG-SJ-SK-SN has fewer direct impacts, but is in close proximity to two ESAs. There is no significant difference between these alternatives, however, because the SL-SN option has slightly greater direct impacts to natural features and impacts a greater area of good soils, the SJ-SK-SN option is slightly preferred. Slight preference to SJ-SL-SN due to crossing of Canard River.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X1	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Highway Network Effectiveness	Network operations during peak travel periods	Service Levels on key roadway links	HCL - AMB to Tecumseh 1.05/0.90/-	HCL - AMB to Tecumseh 1.05/0.90/-	Some improvement to service levels on local road network with either option vs. do-nothing; key links to existing crossings operating at or over capacity; Both new segments operate well below capacity; no significant difference between segments; assessment based on X1 connection
			HCL - ECR to Tecumseh 1.18/1.04/-	HCL - ECR to Tecumseh 1.18/1.04/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/1.04/+	Talbot - HCR to 401 1.00/1.04/+	
			Ouellette - Tunnel to Tecumseh 0.89/0.85/-	Ouellette - Tunnel to Tecumseh 0.89/0.85/-	
			Dougall - Tecumseh to ECR 1.30/1.19/-	Dougall - Tecumseh to ECR 1.30/1.19/-	
			Dougall - ECR to 401 1.44/1.29/-	Dougall - ECR to 401 1.44/1.29/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.62/+	401 - Dougall to Manning 0.60/0.62/+	
			New Segment 401 to Cty Road 8 NA/0.40/NA	New Segment 401 to Cty Road 8 NA/0.40/NA	
			New Segment Cty Rd 8 to Plaza NA/0.32/NA	New Segment Cty Rd 8 to Plaza NA/0.32/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build.	(10700)/(5800)	(10700)/(5800)	Increase in travel distance reflects some out-of-way travel due to crossings, closings access to interchanges.
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build.	460/70	460/70	Minor savings in travel time across the network with these options.
	Directness of route for through traffic	Distance traveled between common points.	16.0	17.3	Measured from 401 @ CC to SN.
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing.	1.22/0.77	1.22/0.77	AMB has a significant improvement to level of service vs. do nothing with either alternative.
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing.	1.15/0.94	1.15/0.94	D-W Tunnel service levels reduced from over capacity to near capacity; no significant change in service levels with either option.
		Peak Hr V/C at New Crossing; do nothing/with new crossing.	NA/0.40	NA/0.40	New crossing operates well below capacity during peak periods.
Operational considerations of crossing system (crossing and	Plaza/crossing operations during peak travel periods	Service levels of crossing system .	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified.

Route Segment Evaluation Best Way to X1	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
plazas)	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection.	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified.
Factor Summary:	Low benefit to regional mobility with either alternative. Both alternatives provide additional links/capacity in highway network, with limited improvement in overall network performance. SJ--SK-SN alternative is shorter, and is slightly preferred.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

* HCL- Huron Church Line

Route Segment Evaluation Best Way to X1	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
Cost	Length of Alternative	km	16.0	17.3	No substantial difference in length between the alternatives (less than 10 percent)
	Remediation	$ millions CAD (2005)	7.4	7.53	
	Preliminary Construction Costs	$ millions CAD (2005)	392.2	403.5	No substantial differences in cost between the alternatives (less than 2.5 percent)
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC-CD**: The existing interchange at Highway 401 / Highway 3 will be reconstructed and modified to a freeway-to-freeway type interchange. This will require traffic staging and detour. Proposed underpass structure at South Talbot Road will probably require traffic staging and detour. Proposed 6-lane freeway will be constructed at grade. Minor relocation of Bell Canada utility lines may be required. **CD-SD**: No special constructability issues are anticipated. BP Gas and Union Gas pipelines and Hydro One transmission lines may need to be relocated. **SD-SG**: No special constructability issues are anticipated. **SG-SJ:** No special constructability issues are anticipated. **SJ-SK**: Traffic staging and detour will be required at the proposed County Road 9 (Howard Road) interchange.	**CC-CD**: The existing interchange at Highway 401 / Highway 3 will be reconstructed and modified to a freeway-to-freeway type interchange. This will require traffic staging and detour. Proposed underpass structure at South Talbot Road will probably require traffic staging and detour. Proposed 6-lane freeway will be constructed at grade. Minor relocation of Bell Canada utility lines may be required. **CD-SD**: No special constructability issues are anticipated. BP Gas and Union Gas pipelines and Hydro One transmission lines may need to be relocated. **SD-SG**: No special constructability issues are anticipated. **SG-SJ**: No special constructability issues are anticipated. **SJ-SL**: Traffic staging and detour will be required at the proposed County Road 9 (Howard Road) interchange. Traffic staging and detour could be required to construct proposed underpass at North Side Road or this road could be closed for traffic during the construction.	Overall, both alternatives are comparable in terms of constraints to construction and no out of the ordinary constructability issues are anticipated. Reconstruction of Highway 401 / Highway 3 interchange, however, will be a significant and complex undertaking for both alternatives.

Route Segment Evaluation Best Way to X1	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CD-SD-SG-SJ-SK-SN	CC-CD-SD-SG-SJ-SL-SN	
			SK-SN: Traffic staging and detours could be required to construct proposed underpasses at Concession Roads 5, 6, and North Side Road or these roads could be closed for traffic during the construction.	**SL-SN** Traffic staging and detours could be required at Concession Roads 4, 5, and 6, or these roads could be closed for traffic during the construction.	
	Brine wells	Proximity (metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock.	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock.	
Factor Summary:	No significant differences in length, cost or constructability. Both routes are equally preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

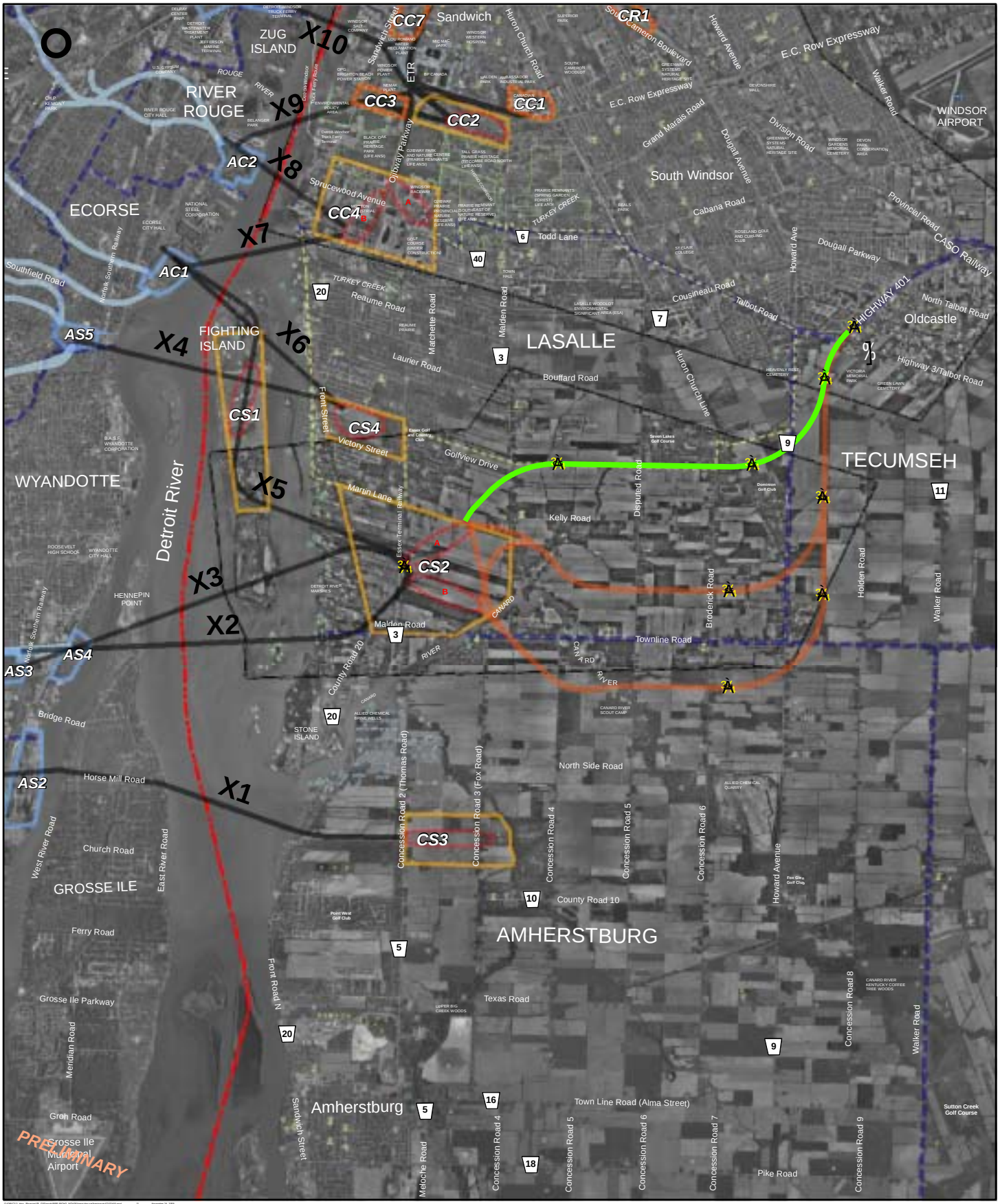
Route Segment Evaluation Best Way to X1	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting						Public Weighting						CCG Weighting*				
	Weighting	Best SK-SN		Best SL-SN			Weighting	Best SK-SN		Best SL-SN			Weighting	Best SK-SN		Best SL-SN	
		Score	Weight x Score	Score	Weight x Score			Score	Weight x Score	Score	Weight x Score			Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17		17.32	3	51.96	3	51.96		17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	3	47.79		15.49	3	46.47	3	46.47		13.88	3	41.64	3	41.64
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17		12.89	3	38.67	3	38.67		13.69	3	41.07	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17		13.14	3	39.42	3	39.42		13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	3	47.79		16.34	3	49.02	3	49.02		17.11	3	51.33	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50		15.28	5	76.40	5	76.40		14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	3	39.81		9.54	3	28.62	3	28.62		10.07	3	30.21	3	30.21
Total Weighted Score	100.00		335.40		335.40		100.00		330.56		330.56		100.00		329.66		329.66
Ranking			***1***		***1***				***1***		***1***						

COMMENT: The Reasoned Argument evaluation method concluded that both of these segments had similar impacts with many of the evaluation criteria studied. However, there was slight preference given to best SK-SN due to slightly lower cultural, environmental, and mobility impacts with this alternative. The Arthimetic Evaluation method resulted in the equal score of both segments as the best way to crossing X1. Therefore, the Best SK-SN alternative was carried forward.

* Does not imply a consensus of weighting/scoring

BEST WAY TO X2, X3, X5



Illustrative Alternative Route Segment Evaluation

Best Way To X2 X3 X5

CC – CD – CF –CG – SM vs. CC – CD – SD – SE – SM vs. CC - CD – SD – SG – SH – SM

The Best Way To Crossings X2/X3/X5 is a comparison of routes CC – CD – CF –CG – SM, CC – CD – SD – SE – SM, and CC - CD – SD – SG – SH – SM. These routes are depicted on the attached figure.

Seven performance measures were evaluated for each Illustrative Alternative Segment and include: Changes in Air Quality, Community/Neighbourhood Characteristics, Consistency with Existing and Planned Land Use, Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost.

There are no substantial differences or benefits in terms of air quality or noise affects as all segments are in rural areas. With respect to residential and business affects, there are no significant impacts to differentiate between routes. On a comparative basis, Route CC-CD-CF-CG-SM has the lowest community impact and it has the fewest number of displacements and disruptions. There is no difference between routes in terms of business impacts. While all three alternatives have similar impacts, Route CC-CD-SD-SH-SM does have the possibility of affecting planned land uses in the hamlet of Loiselleville.

Route CC-CD-SD-SE-SM has the lowest likelihood to impact potential archaeological sites. From a natural environmental perspective, Route CC-CD-SD-SE-SM and Route CC-CD-SG-SH-SM both involve crossings of the Canard River in wider locations with direct impacts to the Canard River Marshes. In addition, Route CC-CD-SG-SH-SM involves direct impacts to the Canard River Scout Camp ESA, which is home to a Federally Endangered plant species.

All routes provide low benefits to regional mobility; some improvements to highway network, but key links to existing crossings continue to operate at or over capacity during peak periods. New crossing and links operate well below capacity during peak periods. Route CC-CD-CF-CG-SM is preferred over other segments because, while it has similar constructability issues as the other routes, it has the lowest cost and is the shortest distance.

Illustrative Alternatives
Route Segment Evaluation

BEST WAY TO X2 X3 X5

Route Segment Evaluation
Best Way to X2/X3/X5

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	No substantial differences in terms of air quality impacts or benefits with any of these options. All options would reduce international traffic in the populated areas of Windsor/LaSalle and both pass through lightly populated rural areas.
Protect Community/ Neighborhood Characteristics	On a comparative basis, the CC-CD-CF-CG-SM alternative has the lowest community impact and is therefore slightly preferred. It has the fewest number of displacements and disruptions. No difference between routes in terms of business impacts.
Maintain Consistency with Existing and Planned Land Use	While all three alternatives have similar impacts, alternative CC-CD-SD-SH-SM is less preferred owing to possible impact on planned land uses of hamlet of Loiselleville.
Protect Cultural Resources	Alternative CC-CD-SD-SE-SM is slightly preferred due to the lower estimated amount of archaeological site potential.
Protect the Natural Environment	CC-CD-SD-SE-SM and CC-CD-SG-SH-SM both involve crossings of the Canard River in wider locations with direct impacts to Canard River Marshes PSW. In addition, CC-CD-SG-SH-SM involves direct impacts to Canard River Scout Camp ESA, which is home to the Federally Endangered plant species. **CC-CD-CF-CG-SM is preferred over CC-D-SD-SE-SM and CC-CD-SG-SH-SM.**
Improve Regional Mobility	All options provide low benefits to regional mobility; some improvements to highway network, but key links to existing crossings continue to operate at or over capacity during peak periods. New crossing and links operate well below capacity during peak periods. **CC-CD-CF-CG-SM is notably shorter than the other options and is therefore slightly preferred over the other options.**
Minimize Cost	Route segment CC-CD-CF-CG-SM preferred over other segments because, while it has similar constructability issues as the other options, it has the lowest cost.
Trade-Off Summary:	All options pass through lightly populated agricultural areas in LaSalle and Amherstburg and result in similar benefits to regional mobility and have similar impacts. A slight preference for CC-CD-CF-CG-SM was identified in the assessment of regional mobility as well as the assessment of impacts to community characteristics and natural features and cost. **The assessment of archaeological impacts identified a slight preference for CC-CD-SD-SE-SM over CC-CD-CF-CG-SM on the basis of lower proximity to area of potential impacts. The advantages of CC-CD-CF-CG-SM in the other factor areas outweigh the higher proximity to areas of archaeological potential. Therefore, CC-CD-CF-CG-SM is preferred.**

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	N/A	
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	80	94	139	
Factor Summary:	No substantial differences in terms of air quality impacts or benefits with either option. Both options would reduce international traffic in the populated areas of Windsor/LaSalle and both pass through lightly populated rural area.					
Factor Score:			3	3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X2/X3/X5

Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment												Comments
			CC-CD-CF-CG-SM					CC-CD-SD-SE-SM					CC-CD-SD-SG-SH-SM				
			NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	NETWORK LINK	VEHICLE TYPE	BASE CASE	WITH ALTERNATIVE	CHANGE (+/-)	
Traffic Impacts	Volume by vehicle type	PM Peak International Volumes on Key Network Links, Autos/Commercial (2-way)	Huron Church Road	Cars	980	980	0	Huron Church Road	Cars	980	980	0	Huron Church Road	Cars	980	980	0	All three options provide benefits to local road network by reducing international truck/auto volumes on key local road links (Huron Church Road, Talbot Road, Ouellette Avenue and Dougall Avenue); No significant change in international traffic on ECR for both alternatives; Notable decrease in international car volumes on Ouellette Avenue and Dougall Avenue; No significant difference among the alternatives; used crossing X3 in assessment.
				Trucks	840	310	-530		Trucks	840	310	-530		Trucks	840	310	-530	
			Talbot Road	Cars	390	420	30	Talbot Road	Cars	390	420	30	Talbot Road	Cars	390	420	30	
				Trucks	680	260	-420		Trucks	680	260	-420		Trucks	680	260	-420	
			EC Row Expressway	Cars	410	420	10	EC Row Expressway	Cars	410	420	10	EC Row Expressway	Cars	410	420	10	
				Trucks	30	60	30		Trucks	30	60	30		Trucks	30	60	30	
			Ouellette Avenue	Cars	290	230	-60	Ouellette Avenue	Cars	290	230	-60	Ouellette Avenue	Cars	290	230	-60	
				Trucks	140	20	-120		Trucks	140	20	-120		Trucks	140	20	-120	
			Dougall Avenue	Cars	250	170	-80	Dougall Avenue	Cars	250	170	-80	Dougall Avenue	Cars	250	170	-80	
				Trucks	210	20	-190		Trucks	210	20	-190		Trucks	210	20	-190	
	Local Access	No of streets crossed/closed	**11 Crossed** (401, Dougall, North Talbot, Highway3/Talbot, South Talbot, Howard, Huron Church Line, Broderick, Disputed, Malden, Golfview) / **2 Closures** (Outer Dr, Martin Lane)					**9 Crossed** (401, Dougall, North Talbot, Highway3/Talbot, South Talbot, Howard, Broderick, Disputed, Malden) / **3 Closures** (Outer Dr, Short Snake, Snake)					**13 Crossed** (401, Dougall, North Talbot, Highway3/Talbot, South Talbot, Townline, Howard, 6th Concession, 5th Concession, 4th Concession, North Townline, Malden, Malden(2nd)) / **1 Closures** (Outer Dr)					All three options will affect local access by closing/crossing existing roads; given the rural nature of the community, the out-of-way travel impacts are not considered significant; CC-CD-SD-SG-SH-SM is slightly less preferred as the other alternatives have greater opportunites (due to more interchanges) for local access to the new route.
		Assessment of effect on existing crossing roads	All existing concession and county roads crossed with grade separatons or interchanges; Out-of-way travel for Outer Dr. will need to be addressed.					All existing concession and county roads crossed with grade separatons or interchanges; Out-of-way travel for Outer Dr. will need to be addressed.					All existing concession and county roads crossed with grade separatons or interchanges;Out-of-way travel for Outer Dr. will need to be addressed.					
		Number of interchanges	**3**					**3**					**2**					
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW.	80					94					139					
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	80					94					139					Alternatives are largely comparable however CC-CD-SG-SH-SM alternative has somewhat higher disruptions associated with disruptions in the SH-SM segment around the hamlet of Loiselleville.
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	3					1					6					Alternatives are largely comparable however CC-CD-SG-SH-SM alternative has somewhat higher disruptions associated with disruptions in the SH-SM segment around the hamlet of Loiselleville.
		Qualitative assessment and community cohesion, character and function.	Minor impact on community cohesion and character.					Minor impact on community cohesion and character.					Significant impact on the community cohesion of Loiselleville (segment SH-SM) as numerous homes and features will be disrupted, altering the charcter of the area.					Alternatives are largely comparable however, the community of Loiselleville in the SH-SM segment will be more significantly disrupted.
Acquisitions (Whole or Partial)	**RESIDENTIAL**																	
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	4					11					5					Slightly larger number of displacments associated with the SE-SM segment (Snake Road)
	BUSINESS																	
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	1					0					0					Driving range displaced on CC-CD-CF-CG-SM.
		Number of businesses disrupted./ No. with partial property taking.	2					2					2					All business disruptions are minor. The disruption to the Seven Lakes Golf & C.C. on CC-CD-CF-CG-SM is avoidable through minor redesign.
	INSTITUTIONAL																	

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools, hospitals).	0	0	0	
	FARM PROPERTY/STRUCTURES					
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW.	0	5	7	CC-CD-CF-CG-SM has the least impact.
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW.	9	14	21	CC-CD-CF-CG-SM has the least impact.
		Qualitative assessment of agricultural operations effected.	Minor impact on agricultural operations.	Fairly significant impact on agricultural operations, although this is primarily owing to the length of the route.	Fairly significant impact on agricultural operations, although this is primarily owing to the length of the route.	CC-CD-CF-CG-SM has the least impact.
Factor Summary:	On a comparative basis, the CC-CD-CF-CG-SM alternative has the lowest community impact and is therefore slightly preferred. It has the fewest number of displacements and disruptions and represents the shortest distance to the plaza. It has the lowest amount of agricultural impacts. No significant business impacts to differentiate between routes.					
Factor Score:			3	2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
Land Use (Existing and Planned)	Compatible with the Provincial Policy Statement	Qualitative assessment	Compatible	Compatible	Compatible	
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	Limited land use impact and therefore generally compatible as this route occurs in the rural and agricultural areas of Tecumseh and La Salle. Runs along the LaSalle future urban boundary; generally compatible	Limited land use impact and therefore generally compatible as this route occurs in the rural and agricultural areas of Tecumseh and La Salle. Some portion of wetland crossed at River Canard.	Disruption to the rural hamlet of Loiselleville, which is identified as a Settlement Area in the Amherstburg OP.	CC-CD-SD-SG-SH-SM is the least preferred owing to the impact on the rural hamlet of Loiselleville which is identified as a Settlement Area in the Amherstburg OP.
	Compatibility with any other federal, provincial or municipal initiatives	Qualitative assessment	Generally compatible.	Generally compatible.	Generally compatible.	No discernable difference.
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	No displacement and/or disruption to future committed land uses. Route located along LaSalle future Urban Boundary	No displacement and/or disruption to future committed land uses	No displacement and/or disruption to future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	2, unknown area	2, unknown area	Haz 47 listed as a closed landfill and haz 59 as a former car graveyard - exact location could not be confirmed during site visit estimated area of impact currently not known and can not be estimated
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	0	
Factor Summary:	While all three alternatives have similar impacts, alternative CC-CD-SD-SH-SM is less preferred owing to possible impact on planned land uses of hamlet of Loiselleville.					
Factor Score:			3	3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced/disrupted	0	0	0	No difference between segments
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	This impact reflected in assessment of Built Heritage inventories for Illustrative Route Segments.			
		b) Number of cultural landscapes disrupted				
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	0	0	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	0	No difference between segments
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	up to 50% in proximity to area of potential	up to 25% in proximity to area of potential	up to 50% in proximity to area of potential	CC-CD-SD-SE-SM route is slightly preferred due to less site potential
Factor Summary:	Although all three routes have no known archaeological sites nor inventoried heritage features, CC-CD-SD-SE-SM is slightly preferred due to the lower estimated amount of archaeological site potential.					
Factor Score:			3	3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	0	
		Area in ha within 500m of ROW	0	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	2.1	CC-SH-SM directly impacts Canard River Scout Camp ESA.
		Area in ha within 500m of ROW	0	0	56.32	
	Impacts to wetlands	Area in ha impacted by ROW	0	0.64	0.24	CC-SE-SM and CC-SH-SM directly impact Canard River Marshes, a Provincially Significant Wetland (PSW).
		Area in ha within 500m of ROW	0	2.9	12.75	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	0	1.1	0	CC-SE-SM directly impacts CNHS CA8.
		Area in ha within 500m of ROW	1.3	10.8	1.3	
	Impacts to Potential Natural Heritage Feature (PNHF)	Area in ha impacted by ROW	0.63	0	0	CC-CG-CM directly impacts a small forest block (PNHF).
		Area in ha within 500m of ROW	1.56	10.64	7.85	
	Impacts to waterbodies	Area in ha impacted by ROW	0.26	0.66	1.71	CC-SH-SM crosses the Canard River at a wider point than CC-SE-SM. CC-CG-SM does not cross the Canard River.
		Area in ha within 500m of ROW	2.36	8.66	18.74	
	Impacts to drains	Area in ha impacted by ROW	2.27	1.43	2.55	CC-SH-SM directly impacts a greater number of drains.
		Area in ha within 500m of ROW	7.23	8.85	10.86	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.28	1.8	4.37	CC-SH-SM directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	19	16	27	CC-SH-SM crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(0) Water(0) SSH(1.67)	ANSI(0) ESA(0) Wetland(0.64) CNHS(1.1) Water(0.66) SSH(0)	ANSI(0) ESA(2.10) Wetland(0.24) CNHS(0) Water(1.71) SSH(3.45)	CC-SH-SM and CC-SE-SM directly impact the Canard River, home to Spotted Sucker (Threatened, SARA Schedule 1), and Canard River Marshes PSW, home to Least Bittern (THR, SARA(1)) and Swamp Rose Mallow (Special Concern). CC-SH-SM directly impacts Canard River Scout Camp ESA, home to Prairie Rose (SC, SARA(1) and American Ginseng (Endangered, SARA(1)). CC-SE-SM directly impacts CNHS CA8, home to Shumard Oak (SC) and Prairie Rose.
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	82.49	120.43	114.8	CC-CD-CF-CG-SM has least impacts to good soils; CC-CD-SD-SE-SM has greatest impact; given the availablilty of good soils in the area, all are low impacts from a soils perspective
		good to fair	0	16.83	6.85	
		fair	5.83	0	0	

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
		fair to poor	0	2.88	5.04	
		TOTAL AREA OF IMPACT	88.32	140.14	126.69	
Factor Summary:	CC-SE-SM and CC-SH-SM both involve crossings of the Canard River in wider locations with direct impacts to Canard River Marshes PSW. In addition, CC-SH-SM involves direct impacts to Canard River Scout Camp ESA, which is home to the Federally Endangered plant species. CC-CG-SM is preferred over CC-SE-SM and CC-SH-SM.					
Factor Score:			3	2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X2 X3 X5	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
Highway Network Effectiveness	Network operations during peak travel periods	Volume to Capacity ratios in peak direction on key roadway links during PM peak hour	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - AMB to Tecumseh 1.05/0.88/-	HCL - AMB to Tecumseh 1.05/0.88/-	Minor improvement to service levels on local road network during peak periods with either option vs. do-nothing; key links to existing crossings operating over capacity; All new segments operate well below capacity; assessment based on X3 connection to I-75
			HCL - ECR to Tecumseh 1.18/1.03/-	HCL - ECR to Tecumseh 1.18/1.03/-	HCL - ECR to Tecumseh 1.18/1.03/-	
			HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	HCL - Cabana to ECR 0.99/0.82/-	
			Talbot - HCR to 401 1.00/1.00/	Talbot - HCR to 401 1.00/1.00/	Talbot - HCR to 401 1.00/1.00/	
			Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	
			Dougall - Tecumseh to ECR 1.30/1.17/-	Dougall - Tecumseh to ECR 1.30/1.17/-	Dougall - Tecumseh to ECR 1.30/1.17/-	
			Dougall - ECR to 401 1.44/1.24/-	Dougall - ECR to 401 1.44/1.24/-	Dougall - ECR to 401 1.44/1.24/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment 401 to HCL NA/0.45/NA	New Segment 401 to HCL NA/0.45/NA	New Segment 401 to HCL NA/0.45/NA	
			New Segment HCL to Plaza NA/0.34/NA	New Segment HCL to Plaza NA/0.34/NA	New Segment HCL to Plaza NA/0.34/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; auto/truck	(3800)/(3900)	(3800)/(3900)	(3800)/(3900)	Increase in veh-km reflects some new out-of-way travel associated with road crossings/closings and interchange locations.
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; auto/truck	620/100	620/100	620/100	Minor savings in travel time with either option
	Directness of route for through traffic	Distance traveled between common points	10.7	13.2	16.1	Common points = Hwy 401 @ CC and SM
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.77	1.22/0.77	1.22/0.77	Significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.94	1.15/0.94	1.15/0.94	Minor improvement to level of service vs. do nothing; continues to operate near capacity
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.4	NA/0.4	NA/0.4	New crossing operates well below capacity during peak periods;
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection	Not Determined	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
Factor Summary:	All options provide low benefits to regional mobility; some improvements to highway network, but key links to exisiting crossings continue to operate at or over capacity during peak periods. New crossing and links operate well below capacity during peak periods. CC-CD-CF-CG-SM is notably shorter than the other options and is therefore slightly preferred over the other options.					
Factor Score:			5	5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

*HCL- Huron Church Line

Route Segment Evaluation Best Way to X2/X3/X5	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CD-CF-CG-SM	CC-CD-SD-SE-SM	CC-CD-SD-SG-SH-SM	
Cost	Length of Alternative	km	10.7	13.2	16.1	
	Remediation	$ millions CAD (2005)	5.87	7.62	7.91	
	Preliminary Construction Costs	$ millions CAD (2005)	353.8	352.8	371.1	CC-CD-CF-CG-SM and CC-CD-SD-SE-SM are comparable in cost and less costly than CC-CD-SD-SG-SH-SM.
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC-CD:** The existing interchange at Highway 401 / Highway 3 will be reconstructed and modified to a freeway-to-freeway type interchange. This will require traffic staging and detour. Proposed underpass structure at South Talbot Road will probably require traffic staging and detour. Minor relocation of Bell Canada utility lines may be required. **CD-CF:** Traffic staging and detours will be required at proposed interchange at Huron Church Line and County Road 9 (Howard Road). BP Gas and Union Gas pipelines and Hydro One transmission lines may need to be relocated. **CF-CG:** Traffic staging and detours will be required at proposed interchange at County Road 3 (Malden Road), and at proposed underpass structures at Disputed Road and Broderick Road. ENWIN and Essex Power utility lines may need to be relocated. **CG-SM:** Detours could be required at Malden Road and Martin Lane while proposed structures are being constructed. Overhead Hydro and Bell services may need to be relocated.	**CC-CD:** The existing interchange at Highway 401 / Highway 3 will be reconstructed and modified to a freeway-to-freeway type interchange. This will require traffic staging and detour. Proposed underpass structure at South Talbot Road will require traffic staging and detour. Minor relocation of Bell Canada utility lines may be required. **CD-SD:** No special constructability issues are anticipated. BP Gas and Union Gas pipelines and Hydro One transmission lines may need to be relocated. **SD-SE:** Traffic staging and detour will be required at proposed interchange at County Road 9 (Howard Road). Union Gas pipelines may need to be relocated. **SE-SM:** Traffic staging and detour will be required at the proposed County Road 3 (Malden Road) interchange. Also, traffic staging and detours could be required to construct proposed underpasses at Disputed Road and Broderick Road, or these roads could be closed during the construction. ENWIN and Bell Canada utility lines may need to be relocated.	**CC-CD:** The existing interchange at Highway 401 / Highway 3 will be reconstructed and modified to a freeway-to-freeway type interchange. This will require traffic staging and detour. Proposed underpass structure at South Talbot Road will probably require traffic staging and detour. Minor relocation of Bell Canada utility lines may be required. **CD-SD:** No special constructability issues are anticipated. BP Gas and Union Gas pipelines and Hydro One transmission lines may need to be relocated. **SD-SG:** No special constructability issues are anticipated. **SG-SH:** Traffic staging and detour will be required at the proposed County Road 8 (Townline Road) interchange.Also, traffic staging and detour will be required to construct proposed underpass structure at County Road 9 (Howard Road).Proposed 6-lane freeway will be constructed at grade. **SH-SM:** Traffic staging and detours could be required to construct proposed underpasses at Concession Roads 4, 5, and 6, or these roads could be closed during the construction.. ENWIN and Bell Canada utility lines may need to be relocated.	Overall, all alternatives are comparable in terms of constraints to construction and special constructability issues are anticipated. Reconstruction of Highway 401 / Highway 3 interchange, however, will be a significant and complex undertaking for both alternatives.
	Brine wells	Proximity (metres); age	None	None	None	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock.	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils may be very soft and organic near Canard River requiring removal/replacement, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock.	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils may be very soft and organic near Canard River requiring removal/replacement, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock.	
Factor Summary:	Route segment CC-CD-CF-CG-SM preferred over other segments because of the lower cost and the shortest distance.					
Factor Score:			3	3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

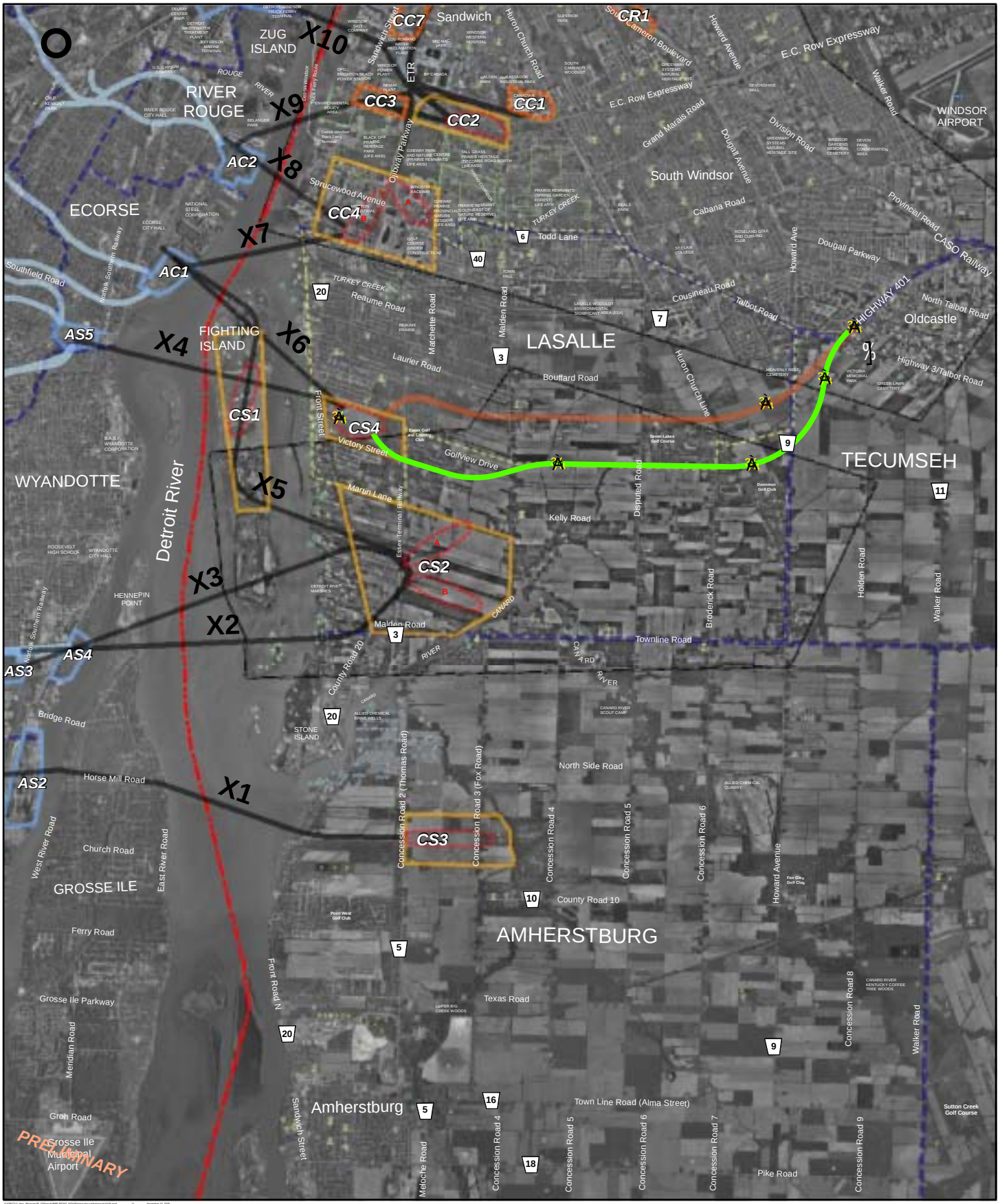
Route Segment Evaluation Best Way to X2/X3/X5	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting							Public Weighting							CCG Weighting*						
	Weighting	Best CF		Best SE		Best SH		Weighting	Best CF		Best SE		Best SH		Weighting	Best CF		Best SE		Best SH	
		Score	Weight x Score	Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	3	37.17	17.32	3	51.96	3	51.96	3	51.96	17.30	3	51.90	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	3	47.79	2	31.86	2	31.86	15.49	3	46.47	2	30.98	2	30.98	13.88	3	41.64	2	27.76	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	3	37.17	3	37.17	3	37.17	12.89	3	38.67	3	38.67	3	38.67	13.69	3	41.07	3	41.07	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17	3	37.17	13.14	3	39.42	3	39.42	3	39.42	13.12	3	39.36	3	39.36	3	39.36
Protect the Natural Environment	15.93	3	47.79	2	31.86	2	31.86	16.34	3	49.02	2	32.68	2	32.68	17.11	3	51.33	2	34.22	2	34.22
Improve Regional Mobility	17.70	5	88.50	5	88.50	5	88.50	15.28	5	76.40	5	76.40	5	76.40	14.83	5	74.15	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	3	39.81	3	39.81	9.54	3	28.62	3	28.62	3	28.62	10.07	3	30.21	3	30.21	3	30.21
Total Weighted Score	100.00		335.40		303.54		303.54	100.00		330.56		298.73		298.73	100.00		329.66		298.67		298.67
Ranking			***1***		***2***		***2***			***1***		***2***		***2***			***1***		***2***		***2***

COMMENT: The Reasoned Argument evaluation method concluded that the preferred route segment to crossings X2/X3/X5 is CC-CD-CF-CG-SM, based fewer impacts to the social and natural environment, has the lowest constructability cost and benefits to regional mobility. The Arithmetic Evaluation method resulted in the same conclusion; CC-CD-CF-CG-SM had the highest total weighted score; which indicated it was the preferred way to Crossings X2/X3/X5. The total weighted scores for the two other routes to Crossings X2/X3/X5 were the same, which indicates that one route was clearly preferred over the other two using this evaluation methodology. CC-CD-CF-CG-SM was carried forward.

*Does not imply a consensus of weighting/scoring

BEST WAY TO X4/X6



Illustrative Alternative Route Segment Evaluation

Best Way To X4 X6
CC – CE – CH vs. CC – CD – CF – CG – CH

The Best Way To Crossing X4 and X5 analysis is a comparison of two routes, Route CC – CE – CH and Route CC – CD – CF – CG – CH. The attached figure depicts each route segment from Highway 401 to crossing X4/X6.

Seven performance measures were evaluated for each Illustrative Alternative and include: Change in Air Quality, Community/Neighbourhood Characteristics, Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost. There are no substantial differences in terms of air quality impacts or benefits with either Route CC – CE – CH or Route CC – CD – CF – CG – CH. Both routes would reduce international traffic in the more heavily populated areas of Windsor/LaSalle. Both routes will affect land uses in future urban Town of LaSalle.

These two routes are largely considered equal from a community affects perspective. The impacts to the future Town Centre urban area along Laurier Drive are considered more significant than the impacts to the residential area on Victory Street. Refinements to the alignment may be possible to reduce the number of direct displacements, however there will be a large number of residences displaced. The impacts to the existing residences do not outweigh the impacts to the future urban Town Centre of LaSalle. Route CC - CE - CH has a greater impact on the future urban area expansion of LaSalle as this is considered more important than the impact to existing land use.

Neither route contains any registered Archaeological Sites or Inventoried Built Heritage Features, but both have similar amounts of estimated archaeological site potential. Route CC - CE - CH has fewer direct impacts to watercourses and water bodies, but has direct affects on features containing significant species and habitats

Both routes offer some benefit to regional mobility including minor improvements to levels of service on the area road network and some improvement at existing crossings, but the new the facility operates well below capacity during peak travel periods. Route CC - CE - CH is slightly shorter and lower in cost but is more complex in terms of constructability. The differences in cost and length are not significant but the complexity of relocating and addressing services is greater with Route CC - CE - CH.

In conclusion, the two routes affect the future urban area of LaSalle. Route CC - CE - CH has a much greater disruption to the community by directly affecting a substantial amount of lands inside the future urban boundary, while Route CC - CD - CF - CG - CH is generally along the boundary. Route CC - CE - CH is considered more disruptive to the community and less consistent with planned land use. CC-CD-CF-CG-CH is the preferred alignment.

Illustrative Alternatives
Route Segment Evaluation

BEST WAY TO X4/X6

Route Segment Evaluation
Best Way to X4/X6

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	No substantial differences in terms of air quality impacts or benefits with either option. Both options would reduce international traffic in the more heavily populated areas of Windsor/LaSalle. Both options may have impact land uses in future urban area of LaSalle.
Protect Community/ Neighborhood Characteristics	These two alternatives are largely considered equal from a community perspective. The impacts to the future Town Centre area along Laurier Drive are considered more significant than the impacts to the residential area on Victory Street. Refinements to the alignment may be possible to reduce number of direct displacements, however there will be a large number of residences displaced. The impacts to the existing residences do not outweigh the impacts to the future Town Centre of LaSalle. **There is a slight preference given to CC-CD-CF-CG-CH.**
Maintain Consistency with Existing and Planned Land Use	CC-CE-CH is less preferred because it has a greater impact on the future urban area expansion of La Salle. This is considered more important than the impact to existing land use.
Protect Cultural Resources	Neither route contains any registered Archaeological Sites or Inventoried Built Heritage Features, but both have similar amounts of estimated archaeological site potential. Neither route is preferred.
Protect the Natural Environment	CC-CE-CH has fewer direct impacts to watercourses and waterbodies, but has direct impacts on features containing significant species and habitats. **CC-CD-CF-CG-CH is preferred.**
Improve Regional Mobility	Both alternatives offer some benefit to regional mobility; minor improvements to levels of service on area road network and some improvement at existing crossings; but new facility operates well below capacity during peak travel periods.
Minimize Cost	CC-CE-CH is slightly shorter and lower in cost but is more complex in terms of constructability. The differences in cost and length are not significant but the complexity of relocating and addressing services is greater for CC-CE-CH. **CC-CD-CF-CG-CH is therefore slightly preferred.**
Trade-Off Summary:	The two options impact the future urban area of LaSalle; CC-CE-CH has a much greater disruption to the community by directly impacting a substantial amount of lands inside the future urban boundary, while CC-CD-CF-CG-CH is generally along the boundary. CC-CE-CH is considered more disruptive to the community and less consistent with planned land use. As well, CC-CE-CH has greater impacts to natural features and greater constructability concerns. In other factor areas, the performance of these two options is comparable. **Therefore, CC-CD-CF-CG-CH is preferred.**

Route Segment Evaluation Best Way to X4/X6	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	216	156	
Factor Summary:	No substantial differences in terms of air quality impacts or benefits with either option. Both options will reduce international traffic in the more heavily populated areas of Windsor/LaSalle. Both options may have impact land uses in future urban area of LaSalle.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4/X6	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS .

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment	Comments
Traffic Impacts	Volume by vehicle type	PM Peak International Volumes on Key Network Links, Autos/Commercial (2-way)	**CC-CE-CH** NETWORK LINK / Int'l VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 900 -80; Trucks 840 280 -560 Talbot Road — Cars 390 380 -10; Trucks 680 210 -470 EC Row Expressway — Cars 410 430 20; Trucks 30 50 20 Outlette Avenue — Cars 290 210 -80; Trucks 140 20 -120 Dougall Avenue — Cars 250 150 -100; Trucks 210 20 -190	**CC-CD-CF-CG-CH** NETWORK LINK / VEHICLE TYPE / BASE CASE / WITH ALTERNATIVE / CHANGE (+/-) Huron Church Road — Cars 980 900 -80; Trucks 840 280 -560 Talbot Road — Cars 390 380 -10; Trucks 680 210 -470 EC Row Expressway — Cars 410 430 20; Trucks 30 50 20 Outlette Avenue — Cars 290 210 -80; Trucks 140 20 -120 Dougall Avenue — Cars 250 150 -100; Trucks 210 20 -190	Both alternatives provide benefit to the local network by reducing international truck traffic on key local network links (Huron Church Road, Talbot Road, Ouellette Avenue and Dougall Avenue); no significant change in international traffic on ECR for both alternatives; Notable changes in international car volumes on Huron Church Road, Ouellette Avenue and Dougall Avenue; No significant difference between alternatives; Assessment based on X6 Crossing.
	Local Access	No of streets crossed/closed	**10 Crossed** (401, Dougall, North Talbot, Highway 3/Talbot, Howard, Huron Church Line, Broderick, Disputed, Malden, Matchette) / **1 Closure** (Meagan)	**12 Crossed** (401, Dougall, North Talbot, Highway 3/Talbot, South Talbot, Howard, Huron Church Line, Broderick, Disputed, Malden, Golfview, Matchette) / **3 Closures** (Outer, Oakland, Victory)	Impacts of 3 closures associated with CC-CD-CF-CG-CH have greater significance. CC-CE-CH is therefore preferred.
		Assessment of effect on existing crossing roads	All existing concession and county roads crossed with grade separatons or interchanges; Insignificant out-of-way travel and access to local network	All existing concession and county roads crossed with grade separatons or interchanges; Out-of-way travel for Outer and Victory will need to be addressed	
		Number of interchanges	**3**	**3**	
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors wiithin 500m (250m of centre line) of ROW	216	156	CC-CE-CH is less preferred
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	216	156	Slightly higher disruption effect associated with CC-CE-CH alternative as it is in vicinity of existing homes that have developed on the rural/urban fringe.
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	9	4	Higher disruption effects associated with CC-CE-CH alternative.
		Qualitative assessment and community cohesion, character and function.	The major impact of this segment is on the Town's future urban development as this is proposed to bisect the Town Centre and new community centre and recreation complex. The Town will have a significant amount of community investments by the time the EA would be approved. Will dislocate a number of residences on Meagan off of Malden. May have minor dislocational effects on the Seven Lakes Golf Course and the Essex Golf and Country Club. Results in loss of some agricultural land on the urban fringe. Significant number of rural residences will be disrupted.	Generally the impact is minor except for the CG-CH segment where there is significant impact on the existing "subdivision in a rural setting". A large number of homes would be dislocated along Victory but also some on Oakland, Golfview and Malden. There are also some apartments along Victory that would be dislocated (3-storey walk-ups). Pushing this alternative between Victory and Martin would prevent this large number of dislocations. Minor dislocational but more significant disruptional effects to the Essex Golf and Country Club which is a nationally rated course.	Current impact is higher with CC-CD-CF-CG-CH alternative, but future impact is likely greater with CC-CE-CH alternative as it will be in future urban area of La Salle.
Acquisitions (Whole or Partial)	**RESIDENTIAL**				

Route Segment Evaluation Best Way to X4/X6	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS .

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	28	76	Significantly higher dislocation effects owing to large number of homes in CG-CH segment.
	BUSINESS				
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	1	1	There is little difference from a business perspective given the nature of the businesses affected. **CC-CE-CH**: Possible displacement of business use. **CC-CD-CF-CG-CH:** Displacement of driving range, and various highway commercial.
		Number of businesses disrupted./ No. with partial property taking	2	2	**For both routes:** Disruption to 7 Lakes Golf & CC avoidable, while other disruption very minor to unused portion of property.
	INSTITUTIONAL				
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW	2	2	Generally comparable.
	FARM PROPERTY/STRUCTURES				
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	0	1	Generally comparable.
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	8	11	Generally comparable.
		Qualitative assessment of agricultural operations effected.	Minor impact, small number of farm operations impacted and this is in future urban area boundary expansion of La Salle.	Minor impact on rural area. While there are no urban area expansion plans at this point, the urban area will eventually be extended in this direction.	Generally comparable.
Factor Summary:	These two altematives are largely considered equal from a community perspective. The impacts to the future Town Centre area along Laurier Drive are considered more significant than the impacts to the residential area on Victory Street. Refinements to the alignment may be possible to reduce number of direct displacements, however there will be a large number of residences displaced. Given that the Town of LaSalle is developing new residential areas, there is a slight preference given to CG-CH.				
Factor Score:			2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4/X6	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Land Use (Existing and Planned)	Compatibe with Provinicial Policy Statement	Qualitative assessment	Not compatible	Compatible	Link EC to CH not compatible with LaSalle planned and approved future urban community.
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	This segment is located in the future urban area boundary of La Salle. Very significant negative impact on the Town's planned $20 million Community Culture and Recreation Complex and the approved Laurier Town Centre. Community centre complex could be built before the EA is approved. Development on Town Centre (commercial) may occur within next five years. Some movement on residential development in the area.	This route segment generally lies in the rural/agricultural area. Portion west of the rail line in segment CG-CH is in the future urban area boundary of La Salle. The balance of the segment is in the rural area. Only moderate impact on future land use.	CC-CE-CH is less preferred as it more greatly impacts future urban area expansion of La Salle.
	Compatibility with any other federal, provincial or municipal inititatives	Qualitative assessment	Not compatible with La Salle vision for the area.	Partially compatible	CC-CE-CH is less preferred.
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	Yes, Displacement and disruption to future committed land uses, LaSalle Urban growth Area	Yes, displacement and disruption to future committed land uses. Most of route located along LaSalle future Urban Boundary with expection of river end of route which is in the LaSalle Urban area.	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	0	
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	0	0	
Factor Summary:	CC-CE-CH is less preferred because it is less consistent with the planned land use in LaSalle. CC-CE-CH would impact on future Town Centre and related developments; CC-CD-CF-CG-CH is largely outside of the future urban area of LaSalle, and threfore has less impact on future planned land use.				
Factor Score:			2	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4/X6	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI .

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced	0	0	No difference between segments
		b) Number of listed built heritage features disrupted	0	0	No difference between segments
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced	Considered in Built Heritage Features assessment for illustrative alternatives.		
		b) Number of cultural landscapes disrupted			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	0	0	
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	0	No difference between segments
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	>50% in proximity to area of potential	>50% in proximity to area of potential	No difference between segments
Factor Summary:	Neither route contains any registered Archaeological Sites or Inventoried Built Heritage Features, but both have similar amounts of estimated archaeological site potential. Neither route is preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4/X6	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to Candidate Natural Heritage Site (CNHS)	Area in ha impacted by ROW	8.77	0.6	CC-CE-CH directly impacts a greater number of CNHSs.
		Area in ha within 500m of ROW	55.76	42.77	
	Impacts to Potential Natural Heritage Feature (PNHF)	Area in ha impacted by ROW	0	0	
		Area in ha within 500m of ROW	0	0	
	Impacts to waterbodies	Area in ha impacted by ROW	0	0.26	CC-CD-CF-CG-CH directly impacts an off-line pond.
		Area in ha within 500m of ROW	0.73	2.36	
	Impacts to drains	Area in ha impacted by ROW	1.58	2.35	CC-CD-CF-CG-CH directly impacts a greater number of drains.
		Area in ha within 500m of ROW	10.04	7.75	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	0.23	0.28	Both routes directly impact a similar floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	16	21	CC-CD-CF-CG-CH crosses a greater number of watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	

Route Segment Evaluation Best Way to X4/X6	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(0) ESA(0) Wetland(0) CNHS(8.77) Water(0) SSH(8.77)	ANSI(0) ESA(0) Wetland(0) CNHS(0.60) Water(0) SSH(0.60)	CC-CE-CH directly impacts five CNHSs, all of which are home to significant communities and species. Significant communities include, tallgrass prairies, pin oak savannahs, black oak savannahs, pin oak-white oak swamps, black oak-white oak-sassafras savannahs and pin oak-shellbark hickory-pumpkin ash-pignut hickory stands. Significant species include Massassauga (Threatened, SARA Schedule 1), Spiked Blazing Star (THR, SARA(1)), Grey Fox (THR, SARA(1)), Prairie Rose (Special Concern) and Fox Snake (THR, SARA(1)).
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	0	0	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	53.35	76.64	
		good to fair	32.26	13.96	
		fair	7.43	13.27	
		TOTAL AREA OF IMPACT	93.04	103.87	
Factor Summary:	CC-CE-CH has fewer direct impacts to watercourses and waterbodies, but has 8.77 ha of direct impacts on features containing significant species and habitats. CC-CD-CF-CG-CH is preferred.				
Factor Score:			2	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4 and X6	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Highway Network Effectiveness	Network operations during peak travel periods	Service Levels on key roadway links	HCL - AMB to Tecumseh 1.05/0.85/-	HCL - AMB to Tecumseh 1.05/0.85/-	Minor improvement to service levels on local road network with either option vs. do-nothing; links on ECR operating near capacity; key links to existing crossings continue operating at or over capacity; New segment operates well below capacity during peak periods; No significant difference between segments; assessment based on connection to X6 crossing connecting to I-75
			HCL - ECR to Tecumseh 1.18/1.01/-	HCL - ECR to Tecumseh 1.18/1.01/-	
			HCL - Cabana to ECR 0.99/0.79/-	HCL - Cabana to ECR 0.99/0.879/-	
			Talbot - HCR to 401 1.00/0.9/-	Talbot - HCR to 401 1.00/0.9/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.84/-	Ouellette - Tunnel to Tecumseh 0.89/0.84/-	
			Dougall - Tecumseh to ECR 1.30/1.16/-	Dougall - Tecumseh to ECR 1.30/1.16/-	
			Dougall - ECR to 401 1.44/1.22/-	Dougall - ECR to 401 1.44/1.22/-	
			EC Row - HCL to Dougall 0.69/0.66/-	EC Row - HCL to Dougall 0.69/0.66/-	
			EC Row - Dougall to Walker 0.89/0.91/+	EC Row - Dougall to Walker 0.89/0.91/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.38/NA	New Segment NA/0.38/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build;auto/truck	(2500)/(2900)	(2500)/(2900)	Increase in veh-km reflects some out-of-way travel associated with road closings/crossings and interchange locations
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; auto/truck	690/120	690/100	Minor savings in travel time with either option
	Directness of route for through traffic	Distance traveled between common points	11.2	12.3	
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.72	1.22/0.72	Significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.89	1.15/0.89	Improvement to level of service vs. do nothing;
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.45	NA/0.45	New crossing operates well below capacity during peak periods;
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified.
	Potential impacts to network during periods of congestion at border	Qualitative assessment based on storage capacity at plazas and to freeway connection.	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified.
Factor Summary:	Both alternatives offer some benefit to regional mobility; minor improvements to levels of service on area road network and some improvement at existing crossings; but new facility operates well below capacity during peak travel periods.				
Factor Score:			5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4/X6	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	
Cost	Length of Alternative	km	11.2	12.3	Less than 10% difference in costs
	Remediation	$ millions CAD (2005)	1.12	1.23	
	Preliminary Construction Costs	$ millions CAD (2005)	386.6	378.3	Less than 10% difference in costs
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC-CE:** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. Detours could be required at Howard Avenue while proposed grade separation structure is being constructed. The Town of LaSalle has established considerable land services in the area. Significiant disruption and relocation efforts will need to be addresed. **CE-CH:** Traffic staging and detours will be required at two proposed interchanges at Huron Church Line and County Road 3 (Malden Road). Also, traffic staging and detours could be required to construct proposed underpasses at Disputed Road and Matchette Road, or these roads could be closed during the construction. The Town of LaSalle has established considerable land services in the area. Significiant disruption and relocation efforts will need to be addressed. ENWIN, Essex Power and Bell Canada utility lines may need to be relocated.	**CC-CD:** Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. Detours could be required at South Talbot Road while the proposed grade separation structure is being constructed. **CD-CF:** Detours could be required at Howard Avenue while the proposed grade separation structure is being constructed. **CF-CG:** Traffic staging and detours will be required at proposed interchange at County Road 3 (Malden Road), and at proposed underpass structures at Disputed Road and Broderick Road. ENWIN and Essex Power utility lines may need to be relocated. **CG-CH:** Traffic staging and detour could be required to construct proposed underpass structure at Matchette Road, or this road could be closed for traffic during the construction. ENWIN and Bell Canada utility lines may need to be relocated.	Reconstruction of Highway 401 / Highway 3 interchange, however, will be a significant and complex undertaking for both alternatives; Addressing relocation/disruption to existing/planned land services in the future LaSalle urban area that would result from route CC-CE-CH will be significant undertaking; Therefore, CC-CE-CH is less preferred.
	Brine wells	Proximity (metres); age	None	None	
	Soil Conditions (geotechnical)	Qualitiative	Soft soils between 15 m and 20 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	Soft soils between 20 m and 25 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	
Factor Summary:	CC-CE-CH is slightly shorter but is slightly higher in cost and is more complex in terms of constructability. The differences in cost and length are not significant but the complexity of relocating and addressing services is greater for CC-CE-CH. CC-CD-CF-CG-CH is therefore slightly preferred.				
Factor Score:			3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X4/X6	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment		Comments
			CC-CE-CH	CC-CD-CF-CG-CH	

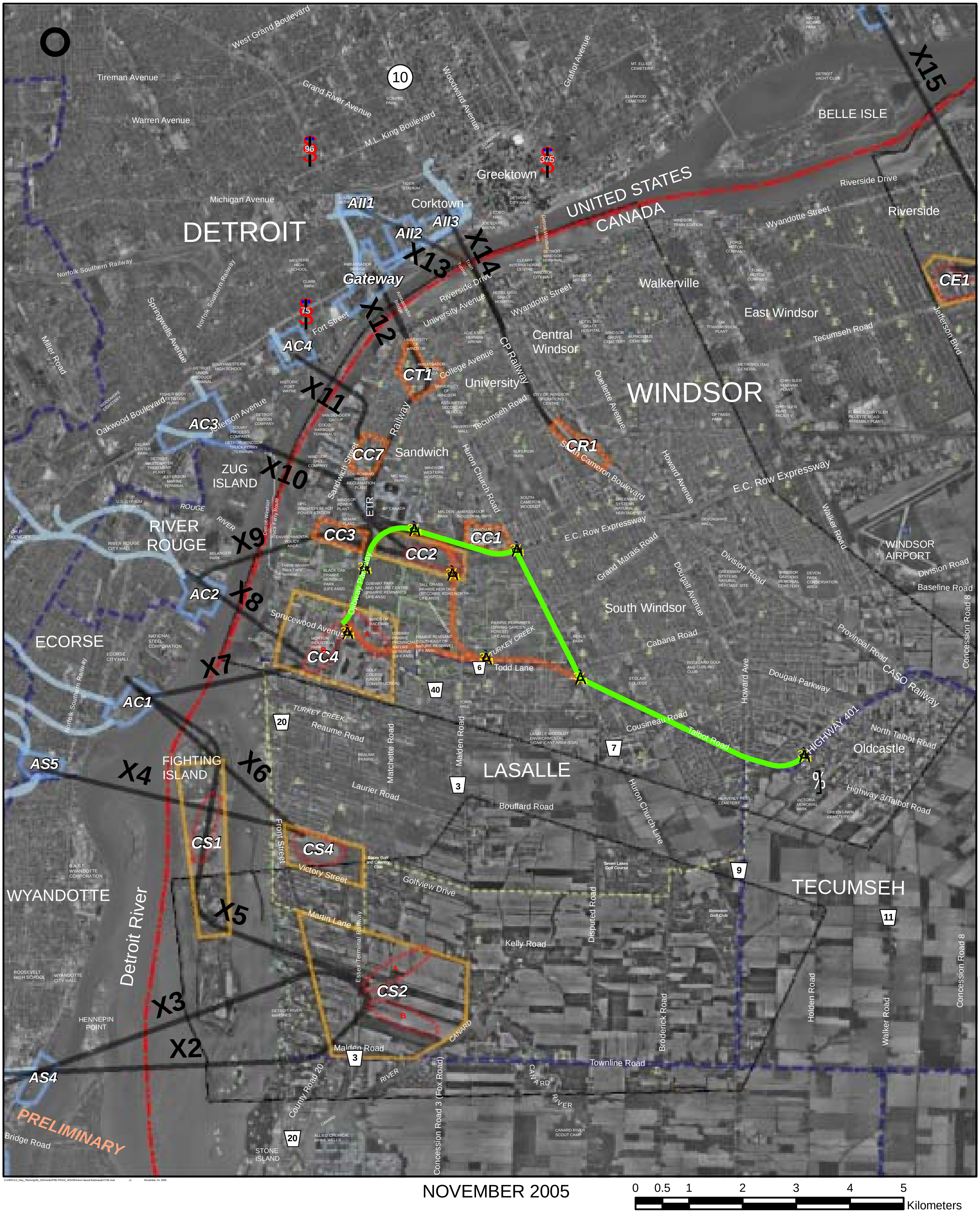
Route Segment Evaluation Best Way to X4/X6	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting					Public Weighting					CCG Weighting*				
	Weighting	CC-CE-CH		CC-CD-CF-CG-CH		Weighting	CC-CE-CH		CC-CD-CF-CG-CH		Weighting	CC-CE-CH		CC-CD-CF-CG-CH	
		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	17.32	3	51.96	3	51.96	17.30	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	2	31.86	2	31.86	15.49	2	30.98	2	30.98	13.88	2	27.76	2	27.76
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	3	37.17	12.89	2	25.78	3	38.67	13.69	2	27.38	3	41.07
Protect Cultural Resources	12.39	3	37.17	3	37.17	13.14	3	39.42	3	39.42	13.12	3	39.36	3	39.36
Protect the Natural Environment	15.93	2	31.86	3	47.79	16.34	2	32.68	3	49.02	17.11	2	34.22	3	51.33
Improve Regional Mobility	17.70	5	88.50	5	88.50	15.28	5	76.40	5	76.40	14.83	5	74.15	5	74.15
Minimize Cost	13.27	3	39.81	3	39.81	9.54	3	28.62	3	28.62	10.07	3	30.21	3	30.21
Total Weighted Score	100.00		291.15		319.47	100.00		285.84		315.07	100.00		284.98		315.78
Ranking			***2***		***1***			***2***		***1***			***2***		***1***

COMMENT: The Reasoned Argument method concluded that segment CC-CD-CF-CG-CH had less disruption to the community; fewer natural feature impacts; less complexity of construction than CC-CE-CH; and was therefore preferred. The Arithmetic Method evaluation method resulted in the same conclusion; CC-CD-CF-CG-CH total weighted score was higher compared to the weighted score of CC-CE-CH. CC-CD-CF-CG-CH was carried forward.

* Does not imply a consensus of weighting/scoring

BEST WAY TO X7/X8



NOVEMBER 2005

Illustrative Alternative Route Segment Evaluation

Best Way To X7 X8

CC – CI – CJ – CK vs. CC – CI – CM – CN – CR – CK vs. CC – CI –CJ – CO – CN – CR –CK

The Best Way To Crossings X7 X8 analysis is a comparison of three routes, Route CC – CI – CJ – CK vs. Route CC – CI – CM – CN – CR – CK vs. Route CC – CI –CJ – CO – CN – CR –CK. The attached figure depicts each route segment from Highway 401 to crossing X7/X8.

Seven performance measures were evaluated for each Illustrative Alternative and include: Change in Air Quality, Community/Neighbourhood Characteristics, Consistency with Existing and Planned Land Use, Protect Cultural Resources, Protect the Natural Environment, Improve Regional Mobility and Minimize Cost.

All routes are located within the more heavily populated areas of Windsor and LaSalle. CC – CI – CM – CN – CR - CK represents use of an existing transportation corridor, so impacts to air quality would be incremental vs. the no-build scenario. Routes CC – CI – CJ – CO – CN – CR - CK and CC – CI – CM – CN – CN – CR – CK represent a combination of existing and new transportation corridors. With new transportation corridors, impacts to nearby receivers may have a more substantial change in air quality vs. the no-build scenario.

Route CC - CI – CM – CN – CR - CK is preferred owing to the fact that the other routes will have significantly greater community cohesion impacts along the CI – CJ segment. As well, a major high traffic volume roadway already divides the existing residential community along Huron Church Road. Routes that include the Huron Church Road corridor will have the greatest impact on businesses. The affects on businesses are not significant enough to outweigh impacts on the community and social features. Route CC – CI – CM – CN – CR – CK does not disrupt the residential and natural heritage areas in the CI - CK segments and furthermore take advantage of existing infrastructure (E.C. Row Expressway).

Route CC – CI – CM – CN – CR – CK affect two sites of high potential archeological significance. From a natural environment perspective, all route alternatives have major direct impacts on designated natural areas and natural heritage features. Route CC - CI – CJ - CK has the lowest affect in term of linkages between designated natural features, Route CC – CI - CM - CN - CR – CK is slightly preferred as it has a smaller area of direct affects. Route CC – CJ – CO - CR – CK is least preferred as it would not only disrupt the linkages between designated natural features, but it has a greater area of direct affects.

All routes provide benefits to regional mobility as all result in some improvement to operations on local network, but key links operate at or near capacity during peak periods. There are higher costs and staging difficulties with routes CC – CI – CM – CN – CR – CK and CC – CI –CJ – CO – CN – CR – CK as these utilize a greater length of key existing roadways that will require traffic management. Route CC – CI – CJ – CK is preferred as it is shorter, least costly and entails less disruptions (less staging difficulties and avoids complex interchange at E.C. Row Expressway/Huron Church Road) during construction

In conclusion route CC – CI – CM – CN – CR – CK has lower impacts to the community and greater consistency with land uses. This route is also slightly preferred over the other two routes based on lower affects on natural features. Although this route has more impacts to cultural resources, greater costs and greater complex staging, these impacts, cost and constructability issues were considered to be of less significance than the other advantages associated with route CC – CI – CM – CN – CR – CK. As well, this option is comparable to the other options in improving mobility and changes in air quality. Route CC – CI – CJ – CO – CN – CR – CK is the least preferred of these routes primarily because it results in two severances through the Ojibway/Spring Garden natural area.

Illustrative Alternatives
Route Segment Evaluation

BEST WAY TO X7/X8

Route Segment Evaluation
Best Way to X7/X8

Date: November 28, 2005

Summary of Evaluation	
Changes in Air Quality	All options are located within the more heavily populated areas of Windsor and LaSalle. CC-CI-CM-CN-CR-CK represents use of an existing transportation corridor, so impacts to air quality would be incremental vs. the no-build scenario. CC-CI-CJ-CK and CC-CI-CJ-CO-CN-CR-CK represent a combination of existing and new transportation corridors. With new transportation corridors, impacts to nearby receivers may have a more substantial change in air quality vs. the no-build scenario. All options considered to have similar performance (to be verified).
Protect Community/ Neighborhood Characteristics	CC-CI-CM-CN-CR-CK is preferred owing to the fact that the other alternatives will have more significant community cohesion impacts on the CI-CK link. As well, the existing residential community along Huron-Church is already segmented by the high traffic volumes. Segments that include the Huron Church corridor will have the greatest impact on businesses but are not significant enough to outweigh the impact on the community and social features. Overall a **preference would be given to CC-CI-CM-CN-CR-CK.**
Maintain Consistency with Existing and Planned Land Use	**CC-CI-CM-CN-CR-CK is preferred** as it does not disrupt the residential and natural heritage areas in the CI-CK segments and furthermore takes advantage of existing infrastructure (EC Row).
Protect Cultural Resources	CC-CI-CM-CN-CR-CK has severe concerns due to two sites with potentially high significance. **CC-CI-CJ-CK is preferred due to lowest potential impacts to cultural resources.**
Protect the Natural Environment	All route alternatives have major direct impacts on designated natural areas and natural heritage features. While CC-CJ-CK least impacts the maintenance of linkages between these designated natural features, **CC-CM-CN-CR is slightly preferred** as it has a smaller area of direct impacts. CC-CJ-CO-CR is least preferred as it would not only disrupt the linkages between designated natural features, but it has a greater area of direct impacts.
Improve Regional Mobility	All options provide benefits to regional mobility; all result in some improvement to operations on local network, but key links operate at or near capacity during peak periods. All options are equally preferred.
Minimize Cost	There are higher costs and staging difficulties with the CC-CI-CM-CN-CR-CK and CC-CI-CJ-CO-CN-CR-CK options as these options utilize a greater length of key existing roadways that will require traffic management; **CC-CI-CJ-CK is preferred as it is shorter**, least costly and entails less disruptions (less staging difficulties; avoids complex interchange at EC Row / HCR) during construction.

Route Segment Evaluation
Best Way to X7/X8

Date: November 28, 2005

Summary of Evaluation	
Trade-Off Summary:	CC-CI-CM-CN-CR-CK has lower impacts to the community and greater consistency with land use. This option is also slightly preferred over the other two options on the basis of lower impacts to natural features. Although this option has more impacts to cultural resources, greater costs and more complex staging, these impacts, cost and constructability issues were considered to be of less significance than the other advantages associated with CC-CI-CM-CN-CR-CK. As well, this option is comparable to the other options in improving mobility and changes in air quality. CC-CI-CJ-CO-CN-CR-CK is least preferred of these alternatives, primarily because it results in two severances through the Ojibway/Spring Garden natural areas. (The CC-CI-CM-CN-CR-CK option impacts two archaeological features in the Huron Church/EC Row area. Additional information is being obtained to verify the extent of potential impact to these features. If it is determined that the potential impact to these features is highly significant and not readily avoided/mitigated, the Project Team may need to revisit this assessment.) **CC-CI-CM-CN-CR-CK is therefore preferred.**

Route Segment Evaluation Best Way to X7/X8	Factor: Changes in Air Quality

Date: November 28, 2005
Firm/Consultant: SENES

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segments			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Regional Burden	Change in pollutant burden vs. No-build scenario	Tons of emissions, concentrations (PPM)	N/A	N/A	N/A	
Dispersion (CO and $PM_{2,5}$ other Green House Gases/pollutants)	Change in pollutant burden vs. No-build scenario	Number of sensitive receptors within 250 m of ROW centre line	1168	1376	1272	
Factor Summary:	All options are located within the more heavily populated areas of Windsor and LaSalle. CC-CI-CM-CN-CR-CK represents use of an existing transportation corridor, so impacts to air quality would be incremental vs. the no-build scenario. CC-CI-CJ-CK and CC-CI-CJ-CO-CN-CR-CK represent a combination of existing and new transportation corridors. With new transportation corridors, impacts to nearby receivers may have a more substantial change in air quality vs. the no-build scenario. All options considered to have similar performance (to be verified).					
Factor Score:			3	3	3	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X7/X8

Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment: CC-CI-CJ-CK	Route Segment: CC-CI-CM-CN-CR-CK	Route Segment: CC-CI-CJ-CO-CN-CR-CK	Comments
Traffic Impacts	Volume by vehicle type	PM Peak International Volumes on Key Network Links, Autos/Commercial (2-way)	NETWORK LINK, VEHICLE TYPE, BASE CASE, WITH ALTERNATIVE, CHANGE (+/-) Huron Church Road: Cars 980 690 -290; Trucks 840 270 -570 Talbot Road: Cars 390 760 370; Trucks 680 1090 410 EC Row Expressway: Cars 410 500 90; Trucks 30 110 80 Ouellette Avenue: Cars 290 180 -110; Trucks 140 20 -120 Dougall Avenue: Cars 250 120 -130; Trucks 210 0 -210	NETWORK LINK, VEHICLE TYPE, BASE CASE, WITH ALTERNATIVE, CHANGE (+/-) Huron Church Road: Cars 980 690 -290; Trucks 840 270 -570 Talbot Road: Cars 390 760 370; Trucks 680 1090 410 EC Row Expressway: Cars 410 500 90; Trucks 30 110 80 Ouellette Avenue: Cars 290 180 -110; Trucks 140 20 -120 Dougall Avenue: Cars 250 120 -130; Trucks 210 0 -210	NETWORK LINK, VEHICLE TYPE, BASE CASE, WITH ALTERNATIVE, CHANGE (+/-) Huron Church Road: Cars 980 690 -290; Trucks 840 270 -570 Talbot Road: Cars 390 760 370; Trucks 680 1090 410 EC Row Expressway: Cars 410 500 90; Trucks 30 110 80 Ouellette Avenue: Cars 290 180 -110; Trucks 140 20 -120 Dougall Avenue: Cars 250 120 -130; Trucks 210 0 -210	All alternatives would convert Talbot Road to a freeway leading to new/expanded crossing; int'l auto/truck trips on EC Row noticeably increased with all options; this reflects greater use of EC Row by int'l auto/trucks with origin-destination in Windsor; this is a benefit to community access as it reflects a reduction of such trips on the minor street system; as well, volume of int'l autos/trucks on other key links (Huron Church Road, Ouellette Avenue and Dougall Avenue) noticeably reduced; overall moderate benefit to local access; Assessment based on X8 Crossing
	Local Access	No of streets crossed/closed	**16 Crossed** (401, Dougall, North Talbot, Talbot Rd, Howard, Grosvenor, Surrey, Montgomery, Cousineau, Sandwich W, St. Clair Entrance, Anastasia St, Huron Church Line, Todd, Malden, Matchette) / **1 closed** (10th St)	**29 Crossed** (401, Dougall, North Talbot, Talbot Rd, Howard, Grosvenor, Surrey, Montgomery, Cousineau, Sandwich W, St. Clair Entrance, Anastasia St, Huron Church Line, Todd, Cabana, Huron Church Rd, Reddock(Beacon), Lansing, Pulford, Gratiot, Lambton, Grand Marais W, Lamont, Spring Garden, Labelle, EC Row Expwy, Malden, Matchette, Ojibway) / **1 Closed** (Broadway)	**18 Crossed** (401, Dougall, North Talbot, Talbot Rd, Howard, Grosvenor, Surrey, Montgomery, Cousineau, Sandwich W, St. Clair Entrance, Anastasia St, Huron Church Line, Todd, Malden, EC Row Expwy, Matchette, Ojibway) / **5 Closed** (10th, Rickard, Armanda, Chappus, Broadway)	CC-CI-CM-CN-CR-CK crosses more roads and results in closure of Labelle (a crossing road) at HCR but provides greater opportunity for local access to the new route. No significant difference between the other two options. All routes are equally preferred.
		Assessment of effect on existing crossing roads	All existing concession and county roads crossed with grade separations or interchanges; Out-of-way travel will be addressed by service roads on Huron Church Road	All existing concession and county roads crossed with grade separations or interchanges; One Crossing Road (LaBelle) closed; Out-of-way travel will be addressed by service roads on Huron Church Road	All existing concession and county roads crossed with grade separations or interchanges; Out-of-way travel will be addressed by service roads on Huron Church Road	
		Number of interchanges	**3**	**5**	**4**	
Noise	Potential increases in noise detected in sensitive receptors	Number of sensitive receptors within 500m (250m of centre line) of ROW	1168	1376	1272	Generally comparable.
Community Cohesion/Character	Encroachment/severance on neighbourhood	Qualitative assessment of the total number of homes or households disrupted (e.g. nuisance impacts) within 500 metre study area (250 metres of centre line) (note homes and households will depend on study area and data employed-physical count versus census).	1168	1376	1272	Generally comparable.
		Quantitative and qualitative assessment of the total number of social features (social features include recreation facilities, school, community facilities, churches, aesthetic features etc.) disrupted within the 500 metre study area (250 metres of centre line).	7	10	9	Generally comparable.
		Qualitative assessment and community cohesion, character and function.	This would be a significant disruption to the cohesion, character and function of the residential area and the community in a natural setting along Todd Lane. A symbolic relationship has been developed between the residential uses and the natural areas in this setting.	Minor to moderate impact on community cohesion, character and function. Huron-Church already is pedestrian unfriendly area and carries high volume of trucks. Impact is the incremental addition of more traffic and new infrastructure. In many areas, residential development is not immediately adjacent to the road, providing some opportunities for mitigating some nuisance impacts (i.e.. noise).	Moderate impact on community cohesion and function owing to impacts along CI-CJ and CJ-CO segment. This would be a significant disruption to the residential area and the community in a natural setting along Todd Lane and EC Row.	CC-CI-CM-CN-CR-CK is preferred. CI-CK will have more significant impact on the residential area and its current cohesion and function. CI-CM is already lacking in community cohesion and function and takes advantage of the limited impacts beyond CM.
Acquisitions (Whole or Partial)	**RESIDENTIAL**					
		The total number of households and/or dwellings (all housing formats) directly affected by the proposed ROW	123	131	122	Generally comparable.
	BUSINESS					
		Quantitative assessment of the total number of businesses displaced./ No. within proposed ROW	10 - Displaces retail uses, private rec., and auto service station along Talbot Rd and 2 fast food outlets near Windsor Raceway.	37 - Displacement of highway commercial, hotels, motels, restaurants retail along Huron Church and Talbot.	9 - Displaces retail uses, private rec., and auto service station along Talbot Rd.	

Route Segment Evaluation Best Way to X7/X8	Factor: Protection of Community and Neighborhood Characteristics

Date: November 28, 2005
Firm/Consultant: SENES/Hemson/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
		Number of businesses disrupted./ No. with partial property taking	5 - Major disruption to the Windsor Raceway that involves property undertaking affecting parking and possible access impact, disruption to uses associated with rail line and disruption to Outlet Mall on Talbot Road.	7 - Disruption to Outlet Mall on Talbot Road and 2 industrial uses along Ojibway.	3 - Disruption to Outlet Mall on Talbot Road. and one industrial use on Ojibway.	
		Qualitative assessment of business affected.	Amount of business impacts along CC-CI-CM-CN-CR-CK suggest that it is the least preferred, however the nature of business and the amount of employment affected would suggest that the impact would be moderate relative to other areas in the broader study area. There is very little difference between CC-CI-CJ-CK and CC-CI-CJ-CO-CN-CR-CK.			
	INSTITUTIONAL					
		Quantitative assessment of the total number of institutional uses displaced/ No. within proposed ROW (e.g. schools,	1	1	1	Generally comparable.
	FARM PROPERTY/STRUCTURES					
	Agricultural Operations	Number of farm building complexes within the 100 metre ROW	0	0	0	Generally comparable.
		Number of farm building complexes within the 500 metre (250 metres of centre line) of proposed ROW	0	0	0	Generally comparable.
		Qualitative assessment of agricultural operations effected.	No impact.	No impact.	No impact.	Generally comparable.
Factor Summary:	CC-CI-CJ-CK and CC-CI-CJ-CK-CR have higher impacts on community character and function of low density residential neigbourhoods. [Best CM-CR-CK] has the greatest business impacts due to displacements along Talbot Rd. and Huron Church; the businesses are primarily highway-oriented and the relatively low level of employment affected would not have a substantial impact on local economy. The effects on community cohesion and character are considered greater with [Best CC-CO and CC-CR], as these represent a new transportation corridor through the residential areas. The slightly higher displacements of businesses and residents with [HCL/ECR] do not outweigh the greater impacts to character and function of the residential neighbourhoods.				
Factor Score:			1	2	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X7/X8	Factor: Maintain Consistency with Existing and Planned Land Use

Date: November 28, 2005
Firm/Consultant: SENES/URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Land Use (Existing and Planned)	Compatibility with the Provincial Policy Statement	Qualitative assessment	Not compatible	Compatible	Not compatible	CC-CI-CJ-CK and CI-CJ-C0-CR-CK all of these links impact Natural Features. Links CC-CI and CI-CM impact commercial and residential area.
	Compatibility with local Official Plans and zoning by-laws (including planned and proposed land uses)	Qualitative assessment	CI-CJ portion is not very compatible. This alternative is in Windsor and not La Salle, although it is located slightly north of Todd Lane. The segment impacts natural heritage and land use designations and small commercial corridor section at Huron Church and Talbot. The area between Huron-Church and Malden is within the Spring Garden Planning Area (OPA #5). The general purpose of the Secondary Plan is to implement the findings of the Malden Planning Area Development Plan (1997), of which is the recognition of the importance of the natural heritage of this area and integrating low density residential into it. Highway use would not be compatible with the objectives of the secondary plan nor with the nature of the residential development in this area.	Not incompatible. Land use on Huron Church is both open space and commercial corridor, with residential development off of the immediate adjacent area. Huron-Church already functions with large volumes of vehicles including transport trucks.	CI-CJ portion is not very compatible. This alternative is in Windsor and not La Salle, although it is located slightly north of Todd Lane. The segment impacts natural heritage and land use designations and small commercial corridor section at Huron Church and Talbot. The area between Huron-Church and Malden is within the Spring Garden Planning Area (OPA #5). The general purpose of the Secondary Plan is to implement the findings of the Malden Planning Area Development Plan (1997), of which is the recognition of the importance of the natural heritage of this area and integrating low density residential into it. Highway use would not be compatible with the objectives of the secondary plan nor with the nature of the residential development in this area.	
	Compatibility with any other federal, provincial or municipal initiatives	Qualitative assessment	Not very compatible with natural heritage objectives established by the City.		Not very compatible with natural heritage objectives established by the City	
Development Plans	Displacement and/or disruption to future committed land uses	Qualitative assessment	Yes, Displacement and disruption to development plans and future committed land uses in General block (Race Track site)	No, Displacement or disruption to future committed land uses	No, Displacement or disruption to future committed land uses	
Contaminated Sites/ Disposal Sites	Displacement and/or disruption to known contaminated sites/disposal sites.	No. impacted, area in ha.	0	4, 25.05	4, 25.05	Roadway may intersect portions of a closed landfill (Malden Park) and require offsite disposal of buried debris - possible restriction on land re-use if landfill not closed for more than 25 years. At the 50 metre mark is an inert fill site - aerial extent not designated and could require off-site disposal of material and may be classified as a "landfill" with 25 year restriction. Dome BP wastewater lagoons at 50 m. border - potential for impacts to groundwater from improper lining of lagoons or historical usage. Portions may cross the racetrack which is a potential contaminant source from diesel spills or historical waste management practices requiring offsite disposal of impacted soils during development.
	Displacement and/or disruption to areas of high potential for contamination.	No. impacted, area in ha.	1, 0.02	3, 25.04	2, 25.02	
Factor Summary:	CC-CI-CM-CN-CR-CK is preferred as it does not disrupt the residential and natural heritage areas north of Todd Lane and furthermore takes advantage of existing infrastructure (EC Row).					
Factor Score:			2	3	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X7/X8	Factor: Protect Cultural Resources

Date: November 28, 2005
Firm/Consultant: ASI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Built Heritage Features	Displacement or disruption of built heritage features	a) Number of listed built heritage features displaced b) Number of listed built heritage features disrupted	0	0	1 [Windsor inventory -- 4688 Malden Rd (Unknown 93)]	First two routes have no inventoried heritage features.
Cultural Landscape Units	Displacement or disruption of built cultural landscape features	a) Number of cultural landscapes displaced b) Number of cultural landscapes disrupted	This impact reflected in assessment of Built Heritage Inventories for Illustrative Route Segments			
Parklands	Impacts to National, Provincial and local parks/recreation areas	Number of known sites affected; area	High impact to recreation areas of Ojibway/ Spring Garden as well as an impact to Ambassador Golf Course	Low impact to recreation areas of Ojibway/Spring Garden	High impact to recreation areas of Ojibway/ Spring Garden	All alternatives impact local recreation areas but to varying degrees.
Archaeological Features	Disturbance or destruction of known significant archaeological sites	Number of known sites affected	0	3 [2 pre-contact village sites with burials -- Lucier (AbHs--1) and E.C.Row (AhGs-7); and 1 Euro-Candian homestead -- Ojibway 1 (AbHs-17)]	1 [Euro-Candian homestead -- Ojibway 1 (AbHs-17)]	CC-CI-SJ-CK route has fewest impacts to known archaeological sites
	Disturbance of areas of archaeological potential	Impacts to areas of archaeological potential	over 50% of this option encroaches on area of high potential	over 50% of this option encroaches on area of high potential	over 50% of this option encroaches on area of high potential	no difference between segments
Factor Summary:	CC-CI-CM-CN-CR-CK has severe concerns due to two sites with potentially high First Nations sensitivity. CC-CI-CJ-CK route is preferred due to lowest potential impacts to cultural resources.					
Factor Score:			3	2	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X7/X8	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Environmentally Significant Areas	Impacts to Areas of Natural and Scientific Interest (ANSI)	Area in ha impacted by ROW	21.44	2.19	19.13	Two of these three options have significant direct impacts to ANSIs including Ojibway Prairie Provincial Nature Reserve ANSI, Ojibway Park Prairie Remnants ANSI, Spring Garden Road Prairie Remnants ANSI, Titcombe Road Prairie Remnants ANSI and Prairie Remnants Southeast of the Reserve ANSI.
		Area in ha within 500m of ROW	137.55	91.92	200.98	
	Impacts to Environmentally Significant Areas (ESA)	Area in ha impacted by ROW	27.95	4.73	26.74	Two of these three options have significant direct impacts to ESAs including Ojibway Prairie Complex ESA and Spring Garden Road Prairie ESA. All options have a direct impact on St. Clair College Prairie ESA.
		Area in ha within 500m of ROW	159.49	112.54	226.87	
	Impacts to wetlands	Area in ha impacted by ROW	0	0	0	
		Area in ha within 500m of ROW	0	0	0	
	Impacts to Candidate Natural Heritage Sites (CNHS)	Area in ha impacted by ROW	21.7	10.1	26.75	All options have direct impacts on CNHSs including TC2, W31 and W33. In addition, CC-CJ-CO-CR directly impacts CNHS W34 and CC-CM-CN-CR directly impacts CNHSs W35 and W36.
		Area in ha within 500m of ROW	131.86	214.9	235.67	
	Impacts to Potential Natural Heritage Features (PNHF)	Area in ha impacted by ROW	0	1.32	4.98	CC-CM-CN-CR and CC-CJ-CK directly impact undesignated vegetated lands (PNHFs).
		Area in ha within 500m of ROW	0.01	46.35	38.2	
	Impacts to waterbodies	Area in ha impacted by ROW	0.14	0	0.14	CC-CJ-CK and CC-CJ-CO-CR both directly impact off-line ponds.
		Area in ha within 500m of ROW	1.8	6.35	8.69	
	Impacts to drains	Area in ha impacted by ROW	2.98	2.87	2.95	Impacts to drains are similar between routes.
		Area in ha within 500m of ROW	6.4	7.97	8.46	
Surface Water Quality/Groundwater	Floodplains affected	Number of hectares within 100m of ROW	14.8	9.92	13.97	CC-CJ-CO-CR directly impacts a greater floodplain area.
	Impacts to water crossings	No. within 100m of proposed ROW	19	18	21	CC-CJ-CO-CR crosses the most watercourses.
	Impacts to fresh water intakes	No. within 500m of proposed ROW	0	0	0	
Environmentally Significant Species/Habitat	Impacts to species and habitat areas	Area in ha by type of feature and species affected	ANSI(21.44) ESA(27.95) Wetland(0) CNHS(21.7) Water(0) SSH(33.24)	ANSI(2.19) ESA(4.73) Wetland(0) CNHS(10.10) Water(0) SSH(13.18)	ANSI(19.13) ESA(26.74) Wetland(0) CNHS(26.75) Water(0) SSH(35.51)	CC-CJ-CO-CR and CC-CJ-CK both directly impact a greater area of land containing significant species and communities. Significant communities include prairie and savannah communities. Significant species include four Endangered species, 13 Threatened species and three Special Concern species, most of which are listed on SARA Schedule 1.

Route Segment Evaluation Best Way to X7/X8	Factor: Protect the Natural Environment

Date: November 28, 2005
Firm/Consultant:LGL/URS/Golder

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Other Natural Resources	Impacts to mineral, petroleum, granular (quarry) lands/easements	Area in ha within ROW	Mined/Mining Lease (23.07) Pit/Quarry (0.35)	Mined/Mining Lease (10.99) Pre-1980 Brine Wells (14.91)	Mined/Mining Lease (16.89) Pre-1980 Brine Wells (14.83)	
Farmland/Prime Agricultural Soils	Soil type/impacts in ha	good	21.5	21.5	21.5	Soils impacts of these options do not affect lands designated for farming and/or are in urban areas; impact is considered of low significance.
		good to fair	12.56	12.56	12.56	
		fair	37.52	73.78	76.74	
		fair to poor	19.9	9.21	19.82	
		TOTAL AREA OF IMPACT	91.48	117.05	130.62	
Factor Summary:	All route alternatives have major direct impacts on designated natural areas and natural heritage features. CC-CJ-CK is slightly preferred for the maintenance of linkages between these designated natural features. CC-CM-CN-CR is slightly preferred as it has a smaller area of direct impacts. CC-CJ-CO-CR is least preferred as it would not only disrupt the linkages between designated natural features, but it has a greater area of direct impacts.					
Factor Score:			1	1	1	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best X7 X8	Factor: Improve Regional Mobility

Date: November 28, 2005
Firm/Consultant: URS/IBI

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Highway Network Effectiveness	Network operations during peak travel periods	PM Peak Hr Peak Direction Service Levels on key roadway links; do nothing/with new crossing/change (-ve change = improvement)	HCL - AMB to Tecumseh 1.05/0.81/-	HCL - AMB to Tecumseh 1.05/0.81/-	HCL - AMB to Tecumseh 1.05/0.81/-	Moderate improvement to service levels on local road network with either option vs. do-nothing; key links to AMB operating essentially at capacity; key links to D-W Tunnel operating over capacity. Talbot Road upgraded to freeway with all options. New segment operates well below capacity during peak travel periods; Assessment based on X9
			HCL - ECR to Tecumseh 1.18/0.91/-	HCL - ECR to Tecumseh 1.18/0.91/-	HCL - ECR to Tecumseh 1.18/0.91/-	
			HCL - Cabana to ECR 0.99/0.56/-	HCL - Cabana to ECR 0.99/0.56/-	HCL - Cabana to ECR 0.99/0.56/-	
			Talbot - HCR to 401 1.00/0.52/-	Talbot - HCR to 401 1.00/0.52/-	Talbot - HCR to 401 1.00/0.52/-	
			Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	Ouellette - Tunnel to Tecumseh 0.89/0.82/-	
			Dougall - Tecumseh to ECR 1.30/1.16/-	Dougall - Tecumseh to ECR 1.30/1.16/-	Dougall - Tecumseh to ECR 1.30/1.16/-	
			Dougall - ECR to 401 1.44/1.07/-	Dougall - ECR to 401 1.44/1.07/-	Dougall - ECR to 401 1.44/1.07/-	
			EC Row - HCL to Dougall 0.69/0.75/+	EC Row - HCL to Dougall 0.69/0.75/+	EC Row - HCL to Dougall 0.69/0.75/+	
			EC Row - Dougall to Walker 0.89/0.94/+	EC Row - Dougall to Walker 0.89/0.94/+	EC Row - Dougall to Walker 0.89/0.94/+	
			EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	EC Row - Walker to Lauzon 0.87/0.88/+	
			401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	401 - Dougall to Manning 0.60/0.63/+	
			New Segment NA/0.43/NA	New Segment NA/0.43/NA	New Segment NA/0.43/NA	
	Change in travel distance	Savings in total vehicle-kilometres of travel vs. no-build; Autos/Trucks	(800)/(3000)	(800)/(3000)	(800)/(3000)	Increase in veh-km reflects some new out-of-way travel to cross facility/access new interchanges
	Change in travel time	Savings in total vehicle-hours of travel vs. no-build; Autos/Trucks	710/120	710/120	710/120	Minor savings in travel time with either option.
	Directness of route for through traffic	Distance traveled between common points	11.1	13.6	13.8	CC-CI-CJ-CK slightly less than others; common points = CC @401 to CK
Continuous/ongoing river crossing capacity (i.e. redundancy)	Degree of improvement to reliability/choice in network for international traffic	Peak Hr V/C at AMB; do nothing/with new crossing	1.22/0.53	1.22/0.53	1.22/0.53	Significant improvement to level of service vs. do nothing;
		Peak Hr V/C at D-W Tunnel; do nothing/with new crossing	1.15/0.81	1.15/0.81	1.15/0.81	Improvement to level of service vs. do nothing;
		Peak Hr V/C at New Crossing; do nothing/with new crossing	NA/0.59	NA/0.59	NA/0.59	New crossing operates below capacity during peak periods;
Operational considerations of crossing system (crossing and plazas)	Plaza/crossing operations during peak travel periods	Service levels of crossing system	Not Determined	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
	Potential impacts to network during periods of congestion at border		Not Determined	Not Determined	Not Determined	To be assessed in conjunction with plaza impacts, once route to plaza is identified
Factor Summary:	All options provide benefits to regional mobility; all result in some improvement to operations on local network, but key links operate at or near capacity during peak periods. All options are equally preferred.					
Factor Score:			5	5	5	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best Way to X7/X8	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
Cost	Length of Alternative	km	11.1	13.6	13.8	
	Remediation	$ millions CAD (2005)	6.31	11.28	7.68	
	Preliminary Construction Costs	$ millions CAD (2005)	577.2	822.6	723.2	
	Total		583.51	833.88	730.88	
	Constraints to construction, Construction Staging/ Duration; Traffic Maintenance; Risk Assessment	Subjective Assessment	**CC-CI:** Traffic staging and detour will be required on Talbot Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified.A detour will be constructed at Todd Lane / Cabana Road while an interchange is being constructed.Detours could be required at Howard Avenue and Cousineau Road while proposed grade separation structures are being constructed. Minor relocation of Bell Canada utility lines may need to be required. CI-CJ: Detours could be required at Malden Road while the proposed grade separation structure is being constructed.ENWIN and Bell Canada utility lines would be probably relocated.There could be an impact on Malden Road transformer station. CJ-CK: Detour could be required at Matchette Road while the proposed grade separation structure is being constructed.ENWIN utility lines, Bell Canada utility and sanitary sewer may need to be relocated.	**CC-CI:** Traffic staging and detour will be required on Talbot Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. A detour will probably be constructed at Todd Lane / Cabana Road while an interchange is being constructed. Detours could be required at Howard Avenue and Cousineau Road while proposed grade separation structures are being constructed. Minor relocation of Bell Canada utility lines may need to be required. CI-CM: Traffic staging and detour will be required on Huron Church Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at E.C. ROW Expressway / Huron Church Road will be reconstructed and modified to a freeway-to-freeway style interchange. Traffic staging and detour will be required while the interchange is being modified. Detour could be required at Lambton Street / Grand Marais Road West while proposed grade separation structure is being constructed. Relocation of ENWIN and Bell Canada utilities may be required. Also, sanitary and storm sewers running along Huron Church Road may need to be relocated. CM-CN: Will require reconstruction of ECR and detours could be required at Malden Road and Matchette Road while proposed grade separation structures are being reconstructed. CN-CR: Will require reconstruction of ECR and detours will probably be constructed at Ojibway Parkway while a partial interchange is being constructed. Interchange construction will be complex in nature. CR-CK: A detour will probably be constructed at Ojibway Parkway / Sprucewood Avenue while an interchange is being constructed. Interchange construction will be complex in nature. ENWIN and Bell Canada utility lines, Union Gas pipeline, watermains, storm and sanitary sewers may need to be relocated.	**CC-CI:** Traffic staging and detour will be required on Talbot Road while it is being reconstructed to a 6-lane freeway section with service roads. Existing interchange at Highway 401 and Highway 3 will be reconstructed. Traffic staging and detour will be required while the interchange is being modified. A detour will probably be constructed at Todd Lane / Cabana Road while an interchange is being constructed. Detours could be required at Howard Avenue and Cousineau Road while proposed grade separation structures are being constructed. Minor relocation of Bell Canada utility lines may need to be required. CI-CJ: Detours could be required at Malden Road while the proposed grade separation structure is being constructed. ENWIN and Bell Canada utility lines would be probably relocated. There could be an impact on Malden Road transformer station. CJ-CO:No out of ordinary constructability issues are anticipated. Hydro One transmission line and BP gas pipeline would probably be relocated. CO-CN: Detours could be required at E.C. ROW Expressway while it is being reconstructed. Overhead ENWIN Hydro utility lines may need to be relocated. CN-CR: Will require reconstruction of ECR and detours will probably be constructed at Ojibway Parkway while a partial interchange is being constructed. The interchange construction will be complex in nature. CR-CK: A detour will probably be constructed at Ojibway Parkway / Sprucewood Avenue while an interchange is being constructed. The interchange construction will be complex in nature. ENWIN and Bell Canada utility lines, Union Gas pipeline, watermains, storm and sanitary sewers may need to be relocated.	There will be more constructability issues for the 2nd alternative as it requires four complex interchanges; the 3rd option will require three complex interchanges; and the 1st option will require one. The 2nd and 3rd options will also require reconstruction of the west end of ECR. The 1st option is simplest in terms of constructability and is therefore preferred.
	Brine wells	Proximity (metres); age	none	traverses 600 m buffer of pre1980 wells	traverses 600 m buffer of pre1980 wells	

Route Segment Evaluation Best Way to X7/X8	Factor: Minimize Cost

Date: November 28, 2005
Firm/Consultant: URS

Performance Measure	Criteria/Indicator	Measurement/Units	Route Segment			Comments
			CC-CI-CJ-CK	CC-CI-CM-CN-CR-CK	CC-CI-CJ-CO-CN-CR-CK	
	Soil Conditions (geotechnical)	Qualitative	Soft soils between 20 m and 30 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	Soft soils between 20 m and 30 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	Soft soils between 20 m and 30 m deep at west end will require deep foundations for structures, settlement mitigation measures may be required for high embankments, soils are more competent in east/north end near Hwy 401, shallow foundations may be feasible for lightly loaded structures, if deep foundations are required at east end or central section of route, soils are 30 m or more deep over bedrock	
Factor Summary:	There are higher costs and staging difficulties with the 2nd and 3rd options; The 1st option is preferred as it is shorter, least costly and entails more 'greenfield' (no staging difficulties; avoids complex interchange at EC Row / HCR) construction. Therefore CC-CI-CJ-CK is preferred.					
Factor Score:			2	1	2	

1-High Impact 2-Medium Impact 3-Low Impact 4-Neutral/No Impact 5-Low Benefit 6-Medium Benefit 7-High Benefit

Route Segment Evaluation Best X7/X8	ARITHMETIC EVALUATION	Date: November 28, 2005

Summary of Evaluation	Project Team Weighting							Public Weighting							CCG Weighting*						
	Weighting	CC-CI-CJ-CK		CC-CI-CM-CN-CR-CK		CC-CI-CJ-CO-CN-CR-CK		Weighting	CC-CI-CJ-CK		CC-CI-CM-CN-CR-CK		CC-CI-CJ-CO-CN-CR-CK		Weighting	CC-CI-CJ-CK		CC-CI-CM-CN-CR-CK		CC-CI-CJ-CO-CN-CR-CK	
		Score	Weight x Score	Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score	Score	Weight x Score		Score	Weight x Score	Score	Weight x Score	Score	Weight x Score
Changes in Air Quality	12.39	3	37.17	3	37.17	3	37.17	17.32	3	51.96	3	51.96	3	51.96	17.30	3	51.90	3	51.90	3	51.90
Protect Community/ Neighborhood Characteristics	15.93	1	15.93	2	31.86	1	15.93	15.49	1	15.49	2	30.98	1	15.49	13.88	1	13.88	2	27.76	1	13.88
Maintain Consistency with Existing and Planned Land Use	12.39	2	24.78	3	37.17	2	24.78	12.89	2	25.78	3	38.67	2	25.78	13.69	2	27.38	3	41.07	2	27.38
Protect Cultural Resources	12.39	3	37.17	2	24.78	2	24.78	13.14	3	39.42	2	26.28	2	26.28	13.12	3	39.36	2	26.24	2	26.24
Protect the Natural Environment	15.93	1	15.93	1	15.93	1	15.93	16.34	1	16.34	1	16.34	1	16.34	17.11	1	17.11	1	17.11	1	17.11
Improve Regional Mobility	17.70	5	88.50	5	88.50	5	88.50	15.28	5	76.40	5	76.40	5	76.40	14.83	5	74.15	5	74.15	5	74.15
Minimize Cost	13.27	2	26.54	1	13.27	2	26.54	9.54	2	19.08	1	9.54	2	19.08	10.07	2	20.14	1	10.07	2	20.14
Total Weighted Score	100.00		219.48		248.68		233.63	100.00		244.47		250.17		231.33	100.00		243.92		248.30		230.80
Ranking			***3***		***1***		***2***			***2***		***1***		***3***			***2***		***1***		***3***

COMMENT: The Reasoned Argument evaluation method concluded that route CC-CI-CM-CN-CR-CK has lower impacts to the community, greater consistency with land use, lower impacts to natural features and improves mobility than CC-CI-CJ-CK and CC-CI-CJ-CO-CN-CR-CK, and therefore was the preferred route. The Arithmetic Evaluation method resulted in the same alignment receiving the highest total weighted score. Therefore, the Reasoned Argument and Arithmetic Evaluation method produced the same conclusions in determining that CC-CI-CM-CN-CR-CK was best way to crossing X7/X8. CC-CI-CM-CN-CR-CK was carried forward.

* Does not imply a consensus of weighting/scoring