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Reference: Detroit River International Crossing Study

Subject: Assessment of Practical Access Road Alternatives - Improve Regional Mobility

Results of Assessment of Improve Regional Mobility and Community Traffic Impacts

The assessment of the criteria "Improve Regional Mobility" involved the consideration of the degree to which the Practical Alternatives assist in efficient operation of the overall highway network, as well as providing redundancy in the access road system. The assessment of crossing and plaza alternatives is discussed under separate cover. In undertaking this assessment, the Study Team analyzed the alternatives under the following performance measures:

1. Highway Network Effectiveness – An indication of overall, day-to-day operations for the 2035 horizon year; and
2. Continuous/Ongoing River Crossing Capacity – An indication of the degree of redundancy provided by the alternatives.

Overall, the assessment concluded:

- All alternatives provide similar level of improvement over both the existing condition and the future no-build scenario in terms of Highway Network Effectiveness. This will enable the Huron Church Road/Highway 3 corridor to effectively serve its dual purpose as a high-order arterial road and the connecting route to the international border. This is achieved through the separation of local and international traffic with a service road-freeway system, which has sufficient capacity to meet future demand and effect improved capacity and traffic operations.
- In terms of Continuous/Ongoing River Crossing Capacity, all alternatives provide a similar level of redundancy to address interruptions and safety concerns within the international corridor, which may be expected in the future no-build scenario. This is achieved in each of the alternatives through the provision of a multi-lane, controlled access freeway from Highway 401 to a new crossing while maintaining a connection to and from the existing border crossing at the Ambassador Bridge, and through separation of local and international traffic to effect improved traffic flow and safety.
- The Parkway Alternative provides slight advantages over other alternatives in relation to both Highway Network Effectiveness and Continuous/Ongoing River Crossing Capacity. This alternative provides slightly more favourable traffic operations on the service road than the other alternatives. It also provides a slightly higher degree of mobility between the service road and the new freeway when compared with the other alternatives.

Detroit River International Crossing

- Consideration of community traffic impacts involved analyzing access to the service roads from existing crossing streets. While the intersection treatments of some alternatives require out-of-way travel, the amount of out-of-way travel would be 1.5 kilometres or less, and would result in slight increases (less than two minutes) in travel time to get to/from the corridor. These increases in travel time are significantly lower than the reductions in travel time within the corridor that would result from any Practical Alternative (between 5 and 7 minutes from Howard Avenue to College Avenue in the 2035 horizon year). No substantial differences between the alternatives were identified in terms of community traffic impacts.

More detailed discussion of the analysis is provided in the following sections. Additionally, a tabulated summary of the Analysis of Network Effectiveness and Continuous/Ongoing River Crossing Capacity is provided in Table 2 at the end of this memorandum.

Analysis of Highway Network Effectiveness

The Highway Network Effectiveness performance measure compares improvements in capacity and overall traffic operations in the access road Practical Alternatives. The *Draft Level 2 Traffic Operations Analysis of Practical Alternatives (URS Canada Inc., February 2008)* provides an examination of capacity and operations of the practical alternatives. Transportation service on the service roads and Highway 401 was analyzed by determining Level of Service (LOS), travel time and average speed from Howard Avenue to the E.C. Row Expressway interchange for the 2035 horizon year.

The analysis indicated that:

1. Each Practical Alternative effectively separates local and international traffic by providing separate service roads (for local) and controlled access freeway facilities (for international) within the Highway 3/Huron Church Road corridor;
2. The proposed cross section of the service roads and the new freeway facility is sufficient to meet anticipated traffic demand for the 2035 horizon year and beyond.

New Freeway

Practical Alternatives 1A, 1B, 2A, 2B and Parkway have very similar travel times of 7.0 minutes, average speeds of 97 km/h, and all operate at LOS C or better from North Talbot Road to Plaza B/B1 in the 2035 horizon year. While Practical Alternative 3 has a lower average speed of 89 km/h, the travel time is only slightly greater than the other alternatives at 7.6 minutes, and also operates at LOS C. These compare to a travel time of 19.7 minutes (from North Talbot Road to the Ambassador Bridge plaza) in the 2035 no-build scenario. The six-lane cross sections will have sufficient capacity to allow for free-flow speeds on the new freeway in all alternatives.

Service Roads

The operations on the service roads also differ slightly among the Practical Alternatives, with travel times (between Howard Avenue and E.C. Row Expressway) ranging from seven to ten minutes and average speeds ranging from 40 to 60 km/h. Practical Alternatives 1A, 1B, 3 and the Parkway have higher Levels of Service over Practical Alternatives 2A and 2B (LOS B or better versus LOS C or better), and travel times are slightly less (between 7.0 minutes and 8.3 minutes, versus between 7.6 and 9.6 minutes). These compare to a LOS D and travel time between 13.0 and 13.1 minutes in the 2035 no-build scenario. For Alternatives 2A and 2B, the service road is discontinuous north of Labelle Street. Through traffic on Huron Church Road/service road would need to make either a left turn to continue on the service road in the southbound direction, or a right turn to continue on Huron Church Road in the northbound direction. The configuration of this intersection and relatively short distance to the E.C. Row Expressway/Huron Church Road ramp terminals, is expected to result in poorer levels of service, longer traffic queues and longer travel times in comparison to Practical Alternatives 1A, 1B, 3 and Parkway, which provide for a continuous service road alignment.

Detroit River International Crossing

In general, the one-way service roads (typical of Alternatives 1A and 1B) provide flexibility in siting of access ramps to and from the freeway since grade separation or horizontal separation of the freeway and service road corridors are not required and therefore property constraints are less influential. However, one-way service roads are disadvantageous at crossing roads where closely spaced intersections are introduced which negatively impact traffic operations. Conversely, the two-way service roads (typical of Alternatives 2A, 2B and 3) are advantageous at crossing roads since only single intersections are created. However, with the exception of Alternative 3 where the service road is directly above the freeway, the two-way service roads are less flexible for siting access points as separation of the corridors is necessary to accommodate ramps and ramp terminals. The Parkway Alternative utilizes a combination of one-way service roads to facilitate freeway access and two-way service roads to minimize the number of closely spaced intersections.

Interchanges and Freeway Access

Satisfactory levels of service are anticipated at all ramp terminal intersections at the Huron Church Road interchange with the new freeway for all Practical Alternatives. There is a slight disadvantage with Practical Alternatives 2A and 2B, as queuing is expected on the Highway 401 E-N ramp to Huron Church Road. During peak periods, approximately half the length of the ramp would need to accommodate queuing vehicles.

For Practical Alternatives 1A, 1B and 3 slip-on/slip-off ramps in both northbound and southbound directions are provided in close proximity to the entrance to St. Clair College. This provides the most convenient access for St. Clair College, resulting in fewer vehicles on the service roads between Howard Avenue and Todd Lane/Cabana Road West. As St. Clair College is a major traffic generator, the slip-on/slip-off ramps will divert traffic away from the Todd Lane/Cabana Road West and Huron Church Road intersection. These slip-on/slip-off ramps at the St. Clair College entrance in Practical Alternatives 1A, 1B and 3 introduce unfavourable weave conditions for traffic entering/exiting the new freeway, service road traffic and traffic entering/exiting the college as the spacing between ramp bull-noses and intersections range approximately between 100 m and 300 m.

An interchange at Todd Lane/Cabana Road West is provided in Practical Alternatives 2A, 2B and Parkway. Direct access from/to Todd Lane/Cabana Road West in the Parkway Alternative is provided from the west and to the east on Highway 401. Ramps to and from Highway 401 are also provided from and to the service road in the vicinity of the partial interchange at Todd Lane/Cabana Road West. This interchange/access configuration diverts traffic away from the service road/Todd Lane/Cabana Road West intersection, resulting in improved traffic operations at this intersection. In comparison, on- and off-ramps to and from Highway 401 in Practical Alternatives 2A and 2B are provided from and to Todd Lane/Cabana Road West west of the service road. The northbound ramp terminal is located approximately 100 m west of the service road intersection and the southbound ramp terminal is located approximately 150 m west of the northbound ramp terminal, resulting in three intersections within a 250 m segment of Todd Lane/Cabana Road West. This configuration results in critical movements with poor traffic operations at the service road/Cabana Road West intersection during peak periods. With Todd Lane/Cabana Road West as a major east-west regional arterial road, and with the interchange providing access between the service road and a new plaza, local traffic accessing the service road and the new freeway via Todd Lane/Cabana Road West will find that it must compete with long distance and international traffic at this intersection.

For all alternatives, the intersections associated with the Highway 401/Highway 3/Howard Avenue interchange are expected to operate at good levels of service. It should be noted that the Parkway Alternative accommodates a connection to the future Laurier Parkway Extension between Howard Avenue and Highway 401/Highway 3. This connection provides an additional benefit to network effectiveness as it improves operations at the Howard Avenue interchange ramp terminals and reduces traffic on Howard Avenue by diverting traffic originating in (or destined to) LaSalle to Laurier Parkway. A connection between Highway 401 corridor and the Laurier Parkway corridor would also provide additional network flexibility.

Detroit River International Crossing

Conclusions

Due to the better anticipated service road operations and more enhanced access between the freeway and the service road at key locations, in terms of Highway Network Effectiveness, the Parkway Alternative is preferred, followed by Practical Alternatives 1A, 1B and 3. The operational advantages of Practical Alternatives 1A, 1B and 3 over Alternatives 2A and 2B are slight. Alternatives 2A and 2B could be potentially improved by a better connection to Huron Church Road near E.C. Row Expressway and by developing an interchange similar to the Parkway alternative at Highway 3.

All alternatives effectively separate international and local traffic and provide acceptable levels of service and mobility to accommodate future traffic demand for the 2035 horizon year.

Analysis of Continuous/Ongoing River Crossing Capacity

The Continuous/Ongoing River Crossing Capacity performance measure considers capacity and system connectivity. Unlike Highway Network Effectiveness, which measures the overall driving condition, Continuous/Ongoing River Crossing Capacity considers the “continuity” of the access road connection in terms of the potential for disruption to free flow of traffic and measures the ability of the practical alternative to address any interruptions in the border crossing system. Interruptions arising from traffic incidents and maintenance operations can lead to unacceptable delays in this important border transportation network.

Currently, operations on the Huron Church Road/Highway 3 corridor connecting to the Ambassador Bridge are constrained at certain intersections. In total, there are presently 17 signalized intersections along the corridor between Highway 401 and the Ambassador Bridge. These intersections create delays at critical locations, resulting in degraded traffic operations at intersections such as Tecumseh Road and Todd Lane/Cabana Road West¹. Delays are expected to increase in the future under the no-build scenario as traffic volumes increase with more intersections along the corridor at or approaching capacity. As traffic volumes increase, local and regional traffic may find it more desirable to use adjacent municipal arterial roads in an effort to avoid Huron Church Road congestion. The result is increased traffic infiltration to adjacent municipal streets and neighbourhoods and into other corridors. The corridor would break down as an international corridor, and fail to serve its role as defined by the City of Windsor, which is to carry high volumes of passenger and commercial traffic for intra-city travel at moderate speeds².

In an effort to provide for improved Continuous/Ongoing River Crossing Capacity, all practical access road alternatives were developed to include:

- The extension of Highway 401 as a multi-lane, controlled access freeway from the existing Highway 401/Highway 3 interchange to a new international crossing;
- A connection to maintain access from the new freeway to Huron Church Road and the existing border crossing at the Ambassador Bridge;
- Flexibility in the freeway design to accommodate designated lanes, which benefit border crossing operations (i.e. express lane programs, such as NEXUS and FAST for frequent users, can be accommodated by the practical alternatives);
- A parallel service road system that will provide a local and regional function with access to the new freeway at critical locations via an intermediate interchange(s) or other access points to allow for the separation of local and international traffic.

¹ Draft Level 2 Traffic Operations Analysis of Practical Alternatives, URS Canada Inc, February 2008.

² City of Windsor Official Plan

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New Freeway

Access to the new freeway was measured with an analysis of the access points (i.e. interchanges) provided in each alternative based on provincial design guidelines, discussions with municipal emergency services representatives and consideration of a road safety assessment.

Provincial Design Guidelines

Providing intermediate access between the new freeway and service roads enhances system connectivity and the ability of the access road alternatives to maintain continuous traffic flow, local and international, and in cases of incidents, emergency and maintenance. Greater mobility is also achieved with these access points providing the flexibility to accommodate a variety of travel patterns (i.e. local-to-local, local-to-long distance, long distance-to-local and long distance to long-distance traffic), as it is expected that this new section of freeway will accommodate a mix of long and short distance trips.

In developing the siting and spacing of interchanges in each of the practical access road alternatives, the Study Team considered guidelines available in the *Geometric Design Standards for Ontario Highways (GDSOH)*. These Guidelines suggest that for urban freeways where operating speeds are lower (than rural freeways), where there is a mix of short and long distance trips, where trip lengths are shorter and where drivers are accustomed to and anticipate the need for taking a variety of actions in rapid succession, interchange spacing between two and three kilometres is acceptable. If the spacing of arterial roads (where interchanges are typically located) are spaced less than two kilometres, it would be necessary to either omit some interchanges in favour of grade separations or adopt alternative means, including splitting interchange ramps or siting partial interchanges between successive arterials.

In the case of the Parkway Alternative, many access points have been sited to optimize mobility in the corridor and at several locations it is not appropriate to describe the access points as “interchanges”. As such, interchange spacing guidelines set forth in the *GDSOH* were not applied for site selection but, instead, guidelines for siting successive entrance and/or exit terminals were employed to ensure suitable operations. The access points and their spacing for each of the alternatives are summarized in Table 1. Individual access point locations for the Parkway Alternative are described by approximate geographic location as opposed to the nearest crossing road serviced by the ramp. All alternatives provide interchange/ramp spacing consistent with these provincial design guidelines and an acceptable degree of access. The Parkway Alternative provides the greatest degree of access as access points between the freeway and service road are strategically provided in the vicinity of key crossing roadways, resulting in the highest degree of access for the local road network.

Access for Municipal Emergency Services Representatives

The Study Team met with municipal staff and the municipal emergency services representatives to identify access requirements for local emergency services. These discussions identified that:

- A means of getting onto the new freeway eastbound and westbound at Todd Lane/Cabana Road West is very important. Windsor Fire has a station just east of Huron Church Road on Cabana Road West and LaSalle Municipal Emergency Services has a facility at Malden Road/Normandy Road. Services based at these facilities would require access to the new freeway primarily via Todd Lane/Cabana Road West to best respond to incidents on the freeway.
- A means of getting onto the new freeway westbound at Howard Avenue is also desirable. Such a connection would facilitate access to incidents in the westbound lanes between Howard Avenue and Cousineau Road/Sandwich West Parkway.

For Alternative 1A, an access point is provided at only at St. Clair College. There is no direct access at Todd Lane/Cabana Road West or Howard Avenue.

Detroit River International Crossing

TABLE 1 - INTERCHANGE SPACING AND TYPES OF ACCESS FOR PRACTICAL ACCESS ROAD ALTERNATIVES:

Highway Segments between Interchanges	1A	1B	2A	2B	3	Parkway	
Spring Garden Road			Partial Interchange	Partial Interchange			
Bethlehem Ave/Labelle Street	Partial Interchange	Partial Interchange			Partial Interchange	Partial Interchange	
Lambton Rd/Grand Marais Rd W	3.3	1.9	2.1	2.1	2.8	2.1	
Pulford Street							
Reddock Street							
Todd Lane/Cabana Road W		Partial Interchange	Full Interchange	Full Interchange			Partial Interchange
Huron Church Line Road		1.4				Eastbound off-ramp	
St. Clair College	Full Interchange	Full Interchange			Full Interchange	Eastbound on-ramp Westbound off-ramp	
Sandwich West Parkway	2.2	2.2	3.8	3.8	2.2	1.5	
Cousineau Road							
Montgomery Drive							Eastbound and Westbound on-ramps
Surrey Drive							0.7
Grosvenor Drive							
Howard Avenue	Partial Interchange	Partial Interchange	Partial Interchange	Partial Interchange	Partial Interchange	Partial Interchange	

	Access Points from/to service road
	Partial or Full Interchange Location
3.8	Distance between Interchanges

For Alternative 1B, a full intermediate interchange is provided at St. Clair College and a partial intermediate interchange is provided at Todd Lane/Cabana Road West. There is no direct access to Howard Avenue.

Alternatives 2A and 2B provide a full interchange at Todd Lane/Cabana Road West. There is no direct access at St. Clair College or Howard Avenue.

For Alternative 3, an access point is provided only at St. Clair College. There is no direct access at Todd Lane/Cabana Road West or Howard Avenue.

For the Parkway Alternative, there are no full interchanges within the corridor at any of the crossing roads, however, access points from and to the service road are strategically provided in the vicinity of key crossing roadways, resulting in the highest degree of access between Highway 401 and the local road network. The access point configuration of the Parkway Alternative provides both eastbound and westbound access to the freeway from Todd Lane/Cabana Road West as well as westbound access to the freeway from Howard Avenue.

The Parkway Alternative best meets access needs for local emergency services as it accommodates both eastbound and westbound access to the freeway from Todd Lane/Cabana Road West as well as westbound access to the freeway from Howard Avenue which are the desirable conditions expressed by municipal staff and municipal emergency services representatives.

Detroit River International Crossing

Road Safety Assessment

A safety assessment was undertaken for the Practical Alternatives (*Draft Road Safety Assessment, Intus Road Engineering Inc., May 2008*). With respect to separating local and international traffic, the study suggests that long-distance traffic using arterial roads is generally less safe than freeways and controlled-access facilities. The study cites that freeways have a lower crash risk than arterial roads. Transferring the long-distance traffic from Huron Church Road/Highway 3 to a new section of six-lane, controlled-access freeway would be a significant safety benefit. This alone could result in a 30 to 60 percent reduction in non-intersection crashes. Any of the proposed alternatives for a new six-lane controlled-access freeway, therefore, would be substantially safer than the current condition³ and would result in fewer delays caused by incidents and emergencies.

The Road Safety Assessment also provided insight in the siting and spacing of interchanges. It found that collision risk on freeways is typically highest in the vicinity of the interchange speed change lanes where merging and diverging create turbulence in the traffic stream. Safety would be enhanced on the new freeway by limiting the number of entrances and exits. However, site specific and contextual considerations also influence safety. The interchanges in the access road alternatives serve an urban area – in contrast to typical rural conditions, operating speeds are expected to be lower, trip lengths are shorter and drivers are accustomed to taking a variety of actions in rapid succession. The safety issues relating to freeway entrances and exits are addressed by siting the interchanges in the access road alternatives consistent with the provincial design guidelines.

The Road Safety Assessment also provided a discussion on safety in tunneled freeway sections. The study found that ramps in tunnels provided no advantage or disadvantage for this option in comparison to the others. In addition, based on studies researched as a part of the Road Safety Assessment, there is no notable difference in the safety performances between urban freeways in tunnels or in open air sections. The collision risk near portals is higher than elsewhere within the tunnel⁴, principally due to the changes in lighting and an increase in mental workload for the drivers as they begin to focus on the tunnel entrance/exit. There are also differences in how incidents are addressed in tunnels; the Intus Report notes that it is much more difficult to control events in a tunnel crash, motorist escape is not simple, and it is more difficult for emergency services to reach the crash site. Thus, while the likelihood of a crash in a tunnel may be comparable to at-grade or depressed roadways, the consequences of crashes are generally more severe. The study also indicated that the tunnel sections employed in the Parkway Alternative do not possess the same safety characteristics as the long tunnel of Alternative 3, due to their limited length. The method that incidents in these shorter sections of tunnel are addressed would not differ significantly from a typical depressed freeway.

In addition, there are opportunities to incorporate Intelligent Transportation Systems to improve both safety and traffic operations. With real time traffic information being shared between commuters, emergency services and traffic authorities, incidents could be reduced and traffic flow managed to promote improved Highway Network Effectiveness and Continuous/Ongoing River Crossing Capacity for all alternatives. Intelligent Transportation Systems will be examined in greater detail during subsequent design stages.

The Road Safety Assessment also discusses the safety concerns associated with all of the access road and plaza alternatives. The access road alternatives were designed to include a high-speed, 400-series freeway that terminates at the border plaza. Since a border plaza is a required element of the design, methods of mitigating this design element include:

- Slowing approach speeds on the new freeway by introducing physical elements that are known to achieve this result; and

³ Draft Road Safety Assessment, Intus Road Safety Engineering Inc, May 2008.

⁴ Draft Road Safety Assessment, Intus Road Safety Engineering Inc, May 2008.

Detroit River International Crossing

- Structuring the drivers' expectations concerning downstream traffic and physical conditions through advance warning/signing on the new freeway.

With respect to slowing approach speeds, the streaming of information/objects in peripheral vision or "optical flow" is the biggest influence on sense of speed. Therefore, introducing peripheral stimuli (such as trees) will increase the sense of speed and cause motorists to slow down.

Service Roads

All alternatives provide comparable access between the service roads and the local road network.

For all alternatives, the maximum out-of-way travel is 1.5 kilometres and is usually considerably less. At an average speed of 50 km/h, maximum travel time for any out-of-way travel would be less than two minutes. All alternatives offer shorter travel times (at least five minutes) over the future (2035) base case for a trip taken within the Huron Church Road/Highway 3 corridor with start and end points at E.C. Row Expressway and Howard Avenue⁵.

Practical Alternatives 1A and 1B provide only right-in, right-out access at the service road for Surrey Drive and Grosvenor Drive (these intersections allow for all moves in the base case condition). Furthermore, in the case of Practical Alternative 1A, direct access is not provided between the service road and Bethlehem and Labelle Streets. In addition, Practical Alternative 1A does not provide direct access between the service road and Huron Church Line.

For Practical Alternatives 2A and 2B, direct access is not provided between the service road and Bethlehem and Lamont Avenues. Additionally, neither option provides access between the service road and Surrey and Grosvenor Drives. Practical Alternative 2A also does not provide direct access to Montgomery Drive.

In the case of the Parkway Alternative, direct access is not provided between the service road and Lamont Avenue, Surrey Drive and Grosvenor Drive.

For Alternative 3, all existing intersections will require slight modifications to accommodate the construction of the new freeway and service road; however, access between the service road and local road network will be similar to that which exists between the crossing roads and Huron Church Road/Highway 3 presently. Intersection modifications will result in minor out-of-way travel (i.e. less than one kilometre), such as the relocation of the Huron Church Line/Highway 3 intersection.

Conclusions

The Parkway Alternative provides a greater degree of access between the service roads and the new freeway than the other alternatives.

There are no substantive differences in the safety performance between a tunnel and non-tunnel alternatives. While research suggests the frequency of crashes in a tunnel are similar to a non-tunnel, the consequences of crashes within a tunnel are generally more severe and challenging to deal with for emergency services. With separation of long distance and local traffic, the probability of incidents is reduced for all alternatives in comparison to the do-nothing alternative.

Practical Alternatives 1B, 3 and Parkway provide a slight advantage over the other alternatives in terms of access between the cross streets and the service roads, with Alternative 3 providing the greatest degree of access.

Therefore, in terms of Continuous/Ongoing River Crossing Capacity, the Parkway Alternative is preferred.

⁵ Draft Level 2 Traffic Operations Analysis of Practical Alternatives, URS Canada Inc, February 2008.

Detroit River International Crossing

Overall Conclusions

In the evaluation of the assessment criteria "Improve Regional Mobility" the Parkway alternative is the preferred alternative. The Parkway provides slight advantages over all other alternatives in relation to both Highway Network Effectiveness and Continuous/Ongoing River Crossing Capacity. All alternatives, however, provide a significant improvement to regional mobility by getting long distance truck traffic off local streets and providing full freeway access to and from the border. The local and regional function of the existing Highway 3/Huron Church Road corridor is improved by providing parallel service roads, which can be designed to meet the needs of the community.

Memorandum

Detroit River International Crossing Study

Table 2 – Summary of Local Access and Regional Mobility Impacts for Access Road Practical Alternatives

Performance Measure	Criteria/Indicator	Measurement/Units	Factor: Improve Regional Mobility				Parkway
			Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B	
Highway Network Effectiveness	Translocation service on access road (See Note 1)	Level of Service (LOS), Travel Time, Average Speed (peak direction/peak hour, North Talbot Road to Plaza B/E)	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Alternative 3
	Transportation service on service roads (See Note 1)	Level of Service, Travel Time, Average Speed (peak direction/peak hour)	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Alternative 3
Operations at interchanges and intersections	Subjective assessment based on analysis	Subjective assessment based on analysis	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Alternative 3
Continuing/ongoing river crossing in cases of incidents/emergency access road capacity (i.e. redundancy)	Assessment of access/egress/access road	Qualitative	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Alternative 3
Degree of separation of international and local traffic	Assessment of access/egress/access road capacity (i.e. redundancy)	Qualitative	Good separation of local and international traffic for all practical alternatives				Alternative 3
			Good separation of local and international traffic for all practical alternatives				

Factor: Protection of Community and Neighbourhood Characteristics

Performance Measure	Criteria/Indicator	Measurement/Units	Factor: Protection of Community and Neighbourhood Characteristics				Parkway
			Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B	
Traffic Impacts	Effect on Local Access	No. of streets crossed, closed, or connected with an interchange	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Alternative 3
	Effect on Local Access (out-of-way travel)	Subjective Assessment	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Option 1, Option 2	Alternative 3
Performance Measure	Criteria/Indicator	Measurement/Units	Good separation of local and international traffic for all practical alternatives				Alternative 3
			Good separation of local and international traffic for all practical alternatives				

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