APPENDIX D

DETAILED ANALYSIS OF ALTERNATIVES

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
A) Land Use	A1) Local population / employment growth in the study area	A1.1) Supports future road and transit capacity requirements for forecasted development	1. Ability to meet forecast transit ridership (yes/no, with explanation)	BA	Yes	Yes	Yes	All options enable sufficient capacity to be provided to accommodate forecast ridership on Cherry. All options provide transit stops at Front, King and turn around loop.
			2. Ability to meet forecast vehicular demands (yes/no, with explanation)	BA	Yes - Some re-routing of turning traffic due to turn prohibitions	Yes	Yes - Some re-routing of turning traffic due to turn prohibitions	All options provide acceptable levels of traffic operation at signalized intersections on Cherry and can accommodate forecast 2021 traffic activity levels on Cherry and intersecting streets.
	A2) City, TWRC, and Provincial Policies	A 2.1) Supports City's Secondary Plan, EA Master Plans and standards for transportation planning and design	1. Provides all ROW amenities as per Master Plan (yes/no, with explanation)	URS	Yes	Yes	Yes	Provides for transit, pedestrian realm, Cyclists and Vehicular activity All options do not currently provide on-street parking. This could significantly impact opportunities for retail commercial activity at street level. Less of an issue with residential land uses
			2. Meets all design standards (yes/no)	URS	Yes	Yes	Yes	
		A 2.2) Supports TWRC's Sustainability Framework	1. Objectives: minimize car use, protect heritage resources, increase walking, cycling and public transit use.	URS	Yes	Yes	Yes	
			2. Vibrant, diverse and economically strong community (qualitative)	DTAH / URS	Unique condition Connects to the Waterfront' Queens Quay configuration Psychologically extends the space of the public realm	Typical Condition Similar to Queens Quay west of Spadina	Unique condition Psychologically expands the space of the public realm.	Options 3 and 8 provide for additional transit rider waiting space on the sidewalk This could lead to additional retail commercial activity.
			3. Extraordinary Design - street scale, built form and access to sunlight (qualitative)	DTAH	Provides for good enclosure and definition of the street, with adequate solar access and opportunities for good urban form	Provides for good enclosure and definition of the street, with adequate solar access and opportunities for good urban form	Provides for good enclosure and definition of the street, with adequate solar access and opportunities for good urban form	The consistency of the ROW along blocks provides the opportunity for good urban form and street enclosure by buildings fronting on Cherry
		A 2.3) Supports Central Waterfront Design	1. Meets with Community priority from Community Design Charrette (qualitative)	DTAH	Yes	No	Yes	The Cherry Street Charrette indicated strong opposition to any dedicated transit in the centre of the street alternative, as proposed by the Precinct Plan.
B) Urban Design	B1) Streetscaping	B1.1) Supports sustainable landscaping / urban forestry	1. Available space and planting conditions within ROW able to support tree growth (m2)	DTAH	Yes	Yes	Yes	The minimum sidewalk width criteria accommodates minimum space for street trees
			2. Opportunities for additional streetscaping		Opportunities for additional streetscaping in between transit and road without significantly increasing ROW width	Limited	Opportunities for some innovative treatements of transit/pedestrian realm	
	B2) Width of Transportation Facilities	B 2.1) Minimizes right-of-way width	1. Average ROW width at mid-block, Eastern to Mill (m)	URS	30.1	30.2	30.35	
			2. Average ROW width at intersections, Front st , Mill st. (m)	URS	32	31	31.2	
			3. Average curb to curb width at mid-block, Eastern to Mill (m)	URS	18.9	18.2	19.5	
			4. Average curb to curb width at intersections, Front st , Mill st. (m)	URS	21.2	22	19.6	
	B3) Public Spaces and the Pedestrian Realm	B 3.1) Maximizes potential to enhance public spaces and cultural opportunities including public art opportunities.	1. Pedestrian Realm as a percent of total right of way at Midblock	DTAH	38%	38%	38%	**TARGET: Boulevards should be 38% of the R.O.W.** The average percentage of the ROW that is pedestrian realm for all streets in the West Don Lands Public Realm Strategy between 20 and 30m is 47%, with sidewalks ranging from 5m to 6m. King, the only other transit street in the West Don Lands, has 38% of the ROW being pedestrian realm. In downtown Toronto, streets that are considered of a good pedestrian character, the percentage of pedestrian boulevard is approximately 40%.

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		B 3 2) Supports potential for sidewalk enhancement / improvements	1. Opportunity to improve pedestrian environment in between Eastern Avenue and King Street (qualitative)	URS	Yes	Yes	Yes	May include expanding/Widening to work around existing bridge piers. Capital improvements may also include increased illumination
			2. Opportunity to improve pedestrian environment through Rail underpass (qualitative)	URS	NO	NO	NO	Recognizing the significant capital cost of reconstructing/expanding the existing bridge, all solutions utilize the existing structure. Opportunities to improve underpass lighting can be considered
		B 3 3) Pedestrian and transit passenger environment	1. Relation between Transit and Pedestrian Realm	URS	Opportunity to integrate transit into pedestrian real	Transit isolated from pedestrian realm	Opportunity to integrate transit into pedestrian real	
			2. Location of Transit Stops	URS	Transit stops (NB) integrated into pedestrian realm for high quality service	Transit stops in middle of road	Transit stops (NB and SB) integrated into pedestrian realm for high quality service	
		B 3 4) Supports intimate human scale of total street	1. Relationship of built form to width of right-of-way: optimum ratio 1:1 or greater	DTAH	Average 1 1 23	Average 1 1 18	Average 1 1 17	None of the options can be considered intimate in scale, which would require a 1 1 ratio of building height to ROW width. What they do provide equally is spatial containment and definition of the street, defined as a minimum 1:1 65 ratio of building heigh to ROW width
C) Transportation	C1) Auto Dependence	C 1 1) Maximizes non-auto (transit, pedestrian and cycling) modal split for trips to, and within, the study area.	1. Provision for north/south pedestrian activity (% of Cherry Street corridor length)	URS	100	100	100	Entire north-south King to Overpass corridor available to pedestrians
			2. Provision for east/west pedestrian activity (% of Cherry Street corridor length)	URS	9%	9%	9%	Similar percentage of east -west corridor available to pedestrians
			3. Provision for cyclists (type and location)	URS	Medium	High	Low	Option 3 results in one bike lane adjacent to transit tracks. Option 5 Zero, and Option 8 results in both bike lanes adjacent to transit tracks
			4. Opportunities for additional transit stops along Cherry (type and location)	URS	Limited	No	Significant - can be anywhere	
		C 1 2) Maximizes non-auto (transit, pedestrian and cycling) modal splits for trips through the study area	1. Number of existing and future connections to other transit corridors	URS	2	2	2	All options provide connections at King and south of CN Overpass
			2. Provision of commuter style (on street) cycling facilities	URS	Yes	Yes	Yes	
			3. Number of existing and future connections to other pedestrian corridors	URS	All options yield similar results			All options provide access to Front Street Promenade
	C2) Transit	C 2 1) Provides attractive transit service (reliability, speed, few transfers)	1. Number of transfers from Cherry to King Street streetcar	URS	0	0	0	
			2. Number of signalized intersections along alignment	BA	4	4	4	Same number of intersections King to Mill for each option
			3. Ability to prioritize transit operations at intersections	BA	Yes	Yes	Yes	All options enable traffic signal phasing that allows transit to travel with NB / SB through movements. Turning movements across transit right-of-way operate in protected phases only.
			4. Number of right turning vehicles in streetcar lane					Dedicated transit right-of-way separates turning vehicles from transit Mill to King
			Mill	BA	n/a	n/a	n/a	
			Front	BA	n/a	n/a	n/a	

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			Eastern	BA	n/a	n/a	n/a	
			King	BA	n/a	n/a	n/a	
			5. Number of left turn vehicles in streetcar lane	BA	n/a	n/a	n/a	Dedicated transit right-of-way separates turning vehicles from transit Mill to King
			6. Number of through vehicles in streetcar lane					Dedicated transit right-of-way separates turning vehicles from transit Mill to King
			Mill	BA	n/a	n/a	n/a	
			Front	BA	n/a	n/a	n/a	
			Eastern	BA	n/a	n/a	n/a	
			King	BA	n/a	n/a	n/a	
			7. Quality of environment at transit stops (qualitative)	URS	High-Medium	Medium	High	Option 8 accesses both platforms from sidewalk, Option 3 one from sidewalk, Option 5 none from sidewalk.
		C 2 2) Maximizes population and employment within 300m of transit	1. Population (residential and employment) within 300 m of proposed transit stops	URS	5600	5600	5600	
		C 2 3) Provides flexibility and adaptability for staging and expansion by preserving opportunities for existing and future connections	2. Number of future transit connections available at streetcar loop (to and from north and south)	URS	2	2	2	
		C 2 4) Provides feasible transit operations at connecting points (i.e. King Street, Union Loop etc.)	1. Provides connection to EB and WB tracks on King Street	URS	Yes	Yes	Yes	
			2. Protects for connection to Port Lands and East Bayfront	URS	Yes	Yes	Yes	
		C 2 5) Provides for transit travellers wishing to travel through the study area but who are not destined for locations in the study area	1. Integration with East Bayfront Design (qualitative)	MRC	All options yield similar results			All options capable of connecting to proposed service south to CN Overpass
		C 2 6) Maximizes safety	1. Vehicles adjacent to platform (one side / both sides) (length of platform adjacent to vehicles in m)	URS	All options yield similar results			Platforms provided for all options
	C3) Vehicles	C 3 1) Connects to other planned Waterfront Precincts at boundaries of study area	1. Connection from West Don Lands to East Bayfront (number of connections)	URS	1	1	1	
			2. Connection from West Don Lands to Port Lands (number of connections)	URS	1	1	1	Although connection through CN Overpass will be provided in all cases, additional transit / auto conflict arises with Option 3 as streetcar tracks are not located symmetrically about centre-line.
		C 3 2) Provides access to blocks at identified intersections in precinct plans	1. Number of Turn Restrictions Required	BA	3 1 at each of Mill, Front, Eastern	0	6 2 at each of Mill, Front, Eastern	Assumes that turns across dedicated tracks operate from exclusive turn lane. Where no turn lane is provided, turning movement is prohibited
			2. Left turn storage considerations on Cherry (design queue in meters)					Design queue lengths calculated as average arrivals / cycle x 1.5 factor x 6.5m average vehicle length. If calculated queue length is less than 15.0m then minimum 15.0m distance reflected

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			Mill	BA	AM - NB - 15m, SB - 25m PM NB - 15m, SB - 40m (am+pm=95)	AM - NB - 15m, SB - 15m PM NB - 15m, SB - 15m (am+pm=60)	n/a - no left turn lane or prohibited (0)	
			Front	BA	n/a - no left turn lane or prohibited (0)	AM - NB - 15m, SB - 15m PM NB - 15m, SB - 15m (am+pm=60)	AM - NB - 20m, SB - 20m PM NB - 15m, SB - 40m (95)	
			Eastern	BA	n/a - no left turn lane or prohibited (0)	AM - NB - 35m, SB - 15m PM NB - 15m, SB - 35m (am+pm=100)	n/a - no left turn lane or prohibited (0)	Option 3 - Eastern intersection reflected in evaluation with SBLT prohibited (alternate arrangement). NBLT occurs from shared NB thru / left lane. Option 3 - Eastern intersection evaluation reflects no separate SBRT lane. SBRT lane would improve traffic operations
			King	BA	n/a - shared lane (0)	n/a - shared lane (0)	n/a - shared lane (0)	
			3. Right turn storage considerations on Cherry (design queue in meters)					Design queue lengths calculated as average arrivals / cycle x 1.5 factor x 6.5m average vehicle length. If calculated queue length is less than 15.0m then minimum 15.0m distance reflected.
			Mill	BA	n/a - no right turn lane or prohibited (0)	n/a - no right turn lane or prohibited (0)	AM - NB - 55m, SB - 15m PM NB - 95m, SB - 15m (180)	
			Front	BA	AM - NB - 55m, SB - n/a PM NB - 90m, SB - n/a (145)	n/a - no right turn lane or prohibited (0)	n/a - no right turn lane or prohibited (0)	
			Eastern	BA	AM - NB - 45m, SB - n/a PM NB - 75m, SB - n/a (120)	n/a - no right turn lane or prohibited (0)	AM - NB - 45m, SB - 75m PM NB - 75m, SB - 15m (210)	Option 3 - Eastern intersection reflected in evaluation with SBLT prohibited (alternate arrangement). NBLT occurs from shared NB thru / left lane. Option 3 - Eastern intersection evaluation reflects no separate SBRT lane. SBRT lane would improve traffic operations
			King	BA	n/a - shared lane (0)	n/a - shared lane (0)	n/a - shared lane (0)	
			4. Number of private access connections to Cherry Street limited to right turns only	URS	0	5	0	Option 3: 4 of 7 maintain full access (3 closed -see below). Option 5: 5 of 7 become right-in / right-out. Option 8: all are movements are maintained
			5. Number of existing private access connections to Cherry Street requiring closure	URS	3	0	0 (7) - see discussion	Option 3 potentially requires 3 access closures between Eastern and King (east side). Option 5 does not require access connection closures. Option 8 does not require access connection closures, but may result in vehicle / transit conflicts at all 7 access connections (3 east side, 1 west side between King and Eastern, Street F north of Mill, Tank House Lane and Parking lot access south of Front)
		C 3.3) Maximizes safety	1. Number of transit / general purpose traffic conflict points	BA	4 intersections	4 intersections	4 intersections	Option 5 - lowest traffic volumes crossing transit facility (i.e. NB / SB left turns)
		C 3.4) Provides for auto travellers needing to travel through the study area but who are not destined for locations in the study area	1. Overall intersections V/C Ratios					Note: If one of the values between AM and PM are greater than 0.9. Then it's "Critical" Path, otherwise it is "none-critical"
			Mill	BA	AM - 0.62, PM - 0.84 (Non-Critical)	AM - 0.67 PM - 0.82 (Non-Critical)	AM - 0.63, PM - 0.83 (None-Critical)	
			Front	BA	AM - 0.81, PM - 0.95 (Critical)	AM - 0.80, PM - 0.92 (Critical)	AM - 0.74, PM - 0.88 (None-Critical)	
			Eastern	BA	AM - 0.95*, PM - 0.89* (Critical)	AM - 0.95, PM - 0.95 (Critical)	AM - 0.80, PM - 0.80 (None-Critical)	Addition of SBR turn results in V/C 0.82/0.89
			King	BA	AM - 0.56, PM - 0.57 (None-Critical)	AM - 0.50, PM - 0.52 (None-Critical)	AM - 0.56, PM - 0.57 (None-Critical)	
			2. Key movements					

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			Mill	BA	none	none	none	
					none	PM: NBTR - 0.92	PM: NBR - 0.92	
			Front	BA	AM: WBTR-0.92	AM: WBTR-0.92	none	
					PM: EBTR-0.92, NBR-0.93	PM: NBTR-0.94, EBTR - 0.97	PM: EBTR-0.97, SBL-0.92	
			Eastern	BA	AM: SBTR-0.97, WBTR:WBT-0.91, EBTR:EBT-0.91	AM: NBL-0.94, SBTR-0.97, WBTR-0.91, EBTR:EBT -0.91	AM: WBTR:WBT-0.90, EBTR:EBT- 0.91, SBR 0.97	
					PM: EBTR:EBT- 0.94	PM: NBTR-0.59, EBTR:EBT -0.94	PM: NBR-0.95, EBT:EBTR-0.94	
			King	BA	none	none	none	
C4) Barrier Free Design	C 4.1) Provides barrier free access (Part of Design Standards)		1. Provides barrier free access (Yes/No)	URS	Yes	Yes	Yes	
C5) Cyclists	C 5.1) Provides connections to future cycling networks		Connections to Don Valley Trails (#)	URS	1	1	1	
	C 5.2) Provides for on-street and off-street cycling facilities as identified in the Secondary Plans and Precinct Plans		1. On-street bicycle lanes? (Yes / No)	URS	Yes	Yes	Yes	
			2. Wide curb lanes? (Yes / No)	URS	No	No	No	
	C 5.3) Maximizes safety		1. Potential conflicts with transit vehicles and on street cycling	URS	No	No	No	
C6) Pedestrians	C 6.1) Minimizes intersection waiting and crossing times		1. Pedestrian crossing facilities provided across all intersection approaches	BA	Yes	Yes	Yes	Every signal will be provided with callable pedestrian signals. Pedestrians will cross, as is typical, with east-west and north-south main traffic phases. Minimum pedestrian crossing times will be met or exceeded in all cases based upon pedestrian crossing distance and an average walking speed of 1.2 meters/second
			2. Provides callable pedestrian signals with at least minimum pedestrian crossing times that enable pedestrians to cross entire travelled roadway during north-south and east-west main signal phases	BA	Yes	Yes	Yes	
	C 6.2) Maximizes cross-street access by minimizing crossing distance		1. Intersection sidewalk to sidewalk crossing widths (m)	URS				Similar to Section B 2.1, therefore C 6.2 not considered in the evaluation
			at Mill Street		24	21	21	
			at Front Street		22	24	21	
			at Eastern		24	31	27	
			at King		31	31	43	
			2. Ability to provide central refuge spaces within travelled roadway	BA	Medium	High	Low	Option 3 allows for possible refuge on east side between transit and northbound travel lanes. Although all options have modest curb to curb distances, therefore central refuges likely not required
	C 6.3) Minimizes distance from transit stops to centres of interest		1. Average Distance from transit stops to centre of Distillery district (walking in m).	URS	160	160	160	
	C 6.4) Accommodates safe and pleasant pedestrian sidewalks of a sufficient width as identified in the Precinct Plans		1. Area of sidewalks provided (m2)	URS	7000	7000	6900	Can be modified or redefined to yield similar results

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		C 6 5) Provides Waterfront and Don Valley trail connections	1. Number of connections to Waterfront Precincts and Don Valley Trails	URS	1	1	1	
		C 6 6) Maximizes safety	1. Separation between vehicles and pedestrians (yes/no)	URS	No	Yes	No	
	C7) Emergency Vehicle Operations	C 7 1) Minimizes emergency response time	1. Percent of roadway available for EMS operations	URS	66%	73%	98%	
			2. Flexibility for EMS response	URS	High	Low	High	With consolidated road operation, EMS can better respond to and manage emergency situation.
D) Socio-Economic Environment	D1) Automobile use in and through the study area	D1 1) Minimizes through auto travel on local roads	1. Accommodates forecast area traffic volumes on Cherry and other main intersecting area streets (Eastern and King)	BA	Yes - Some re-routing of turning traffic due to turn prohibitions	Yes	Yes - Some re-routing of turning traffic due to turn prohibitions	Similar to section A 1.1.2, therefore D1 1 1 not considered in evaluation
	D2) Tourism and waterfront access	D 2 1) Provides transit stop access to attractions	1. Provides transit stops to Distillery District, Don Park and Waterfront (m)	URS	Yes	Yes	Yes	
	D3) Effects on existing and future businesses	D 3 1) Affects existing properties	1. Number of businesses impacted	URS	0	1	2	Impacts to Cat Hospital and Auto Body. Based on property requirements. Option3 has no impacts. Option 5 has impact on Cat Hospital and Option 8 has impacts on both businesses
			4. Number of private access connections to Cherry Street limited to right turns only	URS	0	5	0	Option 3: 4 of 7 maintain full access (3 closed -see below); Option 5: 5 of 7 become right-in / right-out; Option 8 all are movements are maintained
			5. Number of existing private access connections to Cherry Street requiring closure	URS	3	0	0 (7) - see discussion	Option 3 potentially requires 3 access closures between Eastern and King (east side) Option 5 does not require access connection closures. Option 8 does not require access connection closures, but may result in vehicle / transit conflicts at all 7 access connections (3 east side, 1 west side between King and Eastern, Street F north of Mill, Tank House Lane and Parking lot access south of Front)
			2. Area of property required (m2)	URS	7260	7000	6600	
		D 3 2) Affects parking for existing and future businesses and development	1. No of on street parking spaces - west side of Cherry	URS	0	0	0	
			2. No. of on street parking spaces - east side of Cherry	URS	0	0	0	
		D 3 3) Provides delivery and loading access	1. Number of businesses with no accommodation for delivery and loading access (front or rear)	URS	0	0	0	
		C 3 4) Minimizes adverse effects to Redpath freight rail spur	*From EA Terms of Reference - Not Relevant to West Don Lands*					
		D 3 5) Minimizes interference with rail service on the CN operations at the Cherry Street crossing	1. Modifications required to existing rail structure to accommodate option	URS	No	No	No	
		D 3 6) Minimizes EMI adverse effects (after construction)	1. Number of EMI sensitive uses adjacent to corridor	URS	All options yield similar results			
		D 3 7) Minimizes noise and vibration adverse effects (after construction) in order to consider those TV/film	1. Number of sensitive uses within zone of influence	RWDI	All options yield similar results			
	D4) Effects on existing and future residences	D 4 1) Minimizes adverse effects on existing residences (number of residences directly affected).	1. Number of existing residents displaced	URS	0	0	0	
		D 4 2) Minimizes noise adverse and vibration adverse effects (after construction)	1. Total length of curved streetcar track (m)	URS	740	760	720	
	D5) Effects on contaminated soils	D 5 1) Minimizes impacts on/of contaminated soils	1. Area of lands within proposed right of way with known contaminants (m2)	Golder	All options yield similar results			

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E) Natural Environment	E1) Air quality	E 1 1) Minimizes adverse effects to Air Quality	1. Relative impact to local air quality for each alternative (qualitative)	RWDI	All options yield similar results			
		E 1 2) Maximizes opportunities to improve Air Quality	1. Unique design elements that will improve air quality within the Cherry Corridor (qualitative)	RWDI	All options yield similar results			
		E 1 3) Minimizes emissions of greenhouse gases	1. Number of transit riders who would either use buses or cars if service was not provided	RWDI	All options yield similar results			
	E 2) Aquatic Habitats	E 2 1) Minimizes adverse effects to aquatic habitats	1. Area of existing aquatic habitat impacted (ha)	Ecoplans	All options yield similar results			No Aquatic features present
		E 2 2) Maximizes opportunity to enhance aquatic habitat	1. Ability to provide enhanced water quality treatment	Ecoplans	All options yield similar results			No Aquatic features present
	E 3) Vegetation	E 3 1) Minimizes adverse effects to vegetation	1. Area of existing vegetation removed (ha)	Ecoplans	All options yield similar results			No natural vegetation present
		E 3 2) Maximizes opportunity to enhance vegetation	1. Area of green space provided (ha)	Ecoplans	All options yield similar results			All options provide similar opportunities to provide landscape vegetation
	E 4) Water Quality	E 4 1) Maximizes potential for stormwater quality control	1. Need for supplemental treatment (over WDL service plan)	URS	No anticipated difference between designs			
		E 4 2) Minimizes adverse effects to existing storm water facilities	1. Impervious area (ha)	URS	All options yield similar results			
F) Cultural Environment	F1) Built Heritage Features	F 1 1) Minimizes built heritage features affected	1. Distance from edge of pavement to built heritage features (m)	URS	4 to 6 meters	4 to 6 meters	4 to 6 meters	Not decision relevant - all options subject to refinement to mitigate impacts
		F 1 2) Maximizes opportunities to enhance built heritage features	1. Transit access to heritage features	URS	Yes	Yes	Yes	
	F2) Cultural Landscapes	F 2 1) Minimizes cultural landscapes affected	1. Average distance to cultural landscapes (m)	URS	All options yield similar results			
		F 2 2) Maximizes opportunities to enhance cultural landscape features	1. Transit access to heritage features	URS	Yes	Yes	Yes	
	F3) Archaeological Features	F 3 1) Minimizes archaeological features affected	1. Footprint area of construction (ha)	URS	All options yield similar results			
	F4) First Nations peoples and activities	F 4 1) Minimizes adverse effects to lands and resources used for traditional purposes	1. Area of land used for traditional purposes (ha)	Ecoplans	All options yield similar results			All options result in no impacts as alternatives are fully within existing disturbed urban area
G) Cost	G1) Capital costs	G 1 1) Minimizes construction and transit vehicle acquisition costs	1. Construction Cost Estimate ($)	URS	All options yield similar results			Preliminary construction cost estimated at 25 M
	G2) Property acquisition	G 2 1) Minimizes property acquisitions	1. Property acquisition based on area (m2)	URS	7200	7600	8500	Similar to Section D 3.1.2, therefore G 2 1.1 not considered in the evaluation
	G3) Operating costs	G 3 1) Minimizes the net operating cost	1. Operating cost per seat-km ($)	URS	0.09	0.09	0.09	
		G 3 2) Minimizes winter maintenance costs	Qualitative	URS	All options yield similar results			

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A) Land Use	A1) Local population / employment growth in the study area	A1.1) Supports future road and transit capacity requirements for forecasted development	1. Ability to meet forecast transit ridership (yes/no, with explanation)	BA	All options yield similar results			All options enable sufficient capacity to be provided to accommodate forecast ridership on Cherry. All options provide transit stops at Front, King and turn around loop
			2. Ability to meet forecast vehicular demands (yes/no, with explanation)	BA	●	●	●	All options provide acceptable levels of traffic operation at signalized intersections on Cherry and can accommodate forecast 2021 traffic activity levels on Cherry and intersecting streets. Rerouting effects captured in C.3.2.1
	A2) City, TWRC, and Provincial Policies	A.2.1) Supports City's Secondary Plan, EA Master Plans and standards for transportation planning and design	1. Provides all ROW amenities as per Master Plan (yes/no, with explanation)	URS	All options yield similar results			Provides for transit, pedestrian realm, Cyclists and Vehicular activity All options do not currently provide on-street parking. This could significantly impact opportunities for retail commercial activity at street level. Less of an issue with residential land uses
			2. Meets all design standards (yes/no)	URS	All options yield similar results			
		A.2.2) Supports TWRC's Sustainability Framework	1. Objectives: minimize car use, protect heritage resources, increase walking, cycling and public transit use.	URS	All options yield similar results			
			2. Vibrant, diverse and economically strong community (qualitative)	WT / City	◕	◑	●	Options 3 and 8 provide for additional transit rider waiting space on the sidewalk. This could lead to additional retail commercial activity.
			3. Extraordinary Design - street scale, built form and access to sunlight (qualitative)	DTAH	All options yield similar results			The consistency of the ROW along blocks provides the opportunity for good urban form and street enclosure by buildings fronting on Cherry
		A.2.3) Supports Central Waterfront Design	1. Meets with Community priority from Community Design Charrette (qualitative)	DTAH	●	◕	●	The Cherry Street Charrette indicated strong opposition to any dedicated transit in the centre of the street alternative, as proposed by the Precinct Plan
A: Summary					◕	◑	●	
B) Urban Design	B1) Streetscaping	B1.1) Supports sustainable landscaping / urban forestry	1. Available space and planting conditions within ROW able to support tree growth (m2)	DTAH	All options yield similar results			The minimum sidewalk width criteria accommodates minimum space for street trees
	B2) Width of Transportation Facilities	B.2.1) Minimizes right-of-way width.	1. Average ROW width at mid-block, Eastern to Mill (m)	URS	All options yield similar results			
			2. Average ROW width at intersections, Front st., Mill st. (m)	URS	All options yield similar results			
			3. Average curb to curb width at mid-block, Eastern to Mill (m)	URS	All options yield similar results			
			4. Average curb to curb width at intersections, Front st., Mill st. (m)	URS	All options yield similar results			
	B3) Public Spaces and the Pedestrian Realm	B.3.1) Maximizes potential to enhance public spaces and cultural opportunities including public art opportunities	1. Pedestrian Realm as a percent of total right of way at Midblock	DTAH	All options yield similar results			**TARGET: Boulevards should be 38% of the R.O.W.** The average percentage of the ROW that is pedestrian realm for all streets in the West Don Lands Public Realm Strategy between 20 and 30m is 47%, with sidewalks ranging from 5m to 6m. King, the only other transit street in the West Don Lands, has 38% of the ROW being pedestrian realm. In downtown Toronto, streets that are considered of a good pedestrian character, the percentage of pedestrian boulevard is approximately 40%.
		B.3.2) Supports potential for sidewalk enhancement / improvements	1. Opportunity to improve pedestrian environment in between Eastern Avenue and King Street (qualitative)	URS	All options yield similar results			May include expanding/widening to work around existing bridge piers. Capital improvements may also include increased illumination
			2. Opportunity to improve pedestrian environment through Rail underpass (qualitative)	URS	All options yield similar results			Recognizing the significant capital cost of reconstructing/expanding the existing bridge, all solutions utilitize the existing structure. Opportunities to improve underpass lighting can be considered.

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
		B 3 3) Supports intimate human scale of total street	1. Relationship of built form to width of right-of-way: optimum ratio 1:1 or greater	DTAH	◕	●	●	None of the options can be considered intimate in scale, which would require a 1:1 ratio of building height to ROW width. What they do provide equally is spatial containment and definition of the street, defined as a minimum 1:1.65 ratio of building heigh to ROW width.
B: Summary					◕	●	●	
C) Transportation	C1) Auto Dependence	C 1 1) Maximizes non-auto (transit, pedestrian and cycling) modal split for trips to, and within, the study area	1. Provision for north-south pedestrian activity (% of Cherry Street corridor length)	URS	All options yield similar results			Entire north-south King to Overpass corridor available to pedestrians
			2. Provision for east/west pedestrian activity (% of Cherry Street corridor length)	URS	All options yield similar results			Similar percentage of east -west corridor available to pedestrians
			3. Provision for cyclists (type and location)	URS	◕	●	◑	Option 3 results in one bike lane adjacent to transit tracks. Option 5 Zero, and Option 8 results in both bike lanes adjacent to transit tracks
		C 1 2) Maximizes non-auto (transit, pedestrian and cycling) modal splits for trips through the study area	1. Number of existing and future connections to other transit corridors	URS	All options yield similar results			All options provide connections at King and south of CN Overpass
			2. Provision of commuter style (on street) cycling facilities	URS	All options yield similar results			
			3. Number of existing and future connections to other pedestrian corridors	URS	All options yield similar results			All options provide access to Front Street Promenade
			4. Minimize opportunities for through traffic in the community	URS	◕	◑	●	New Criteria - Number of restricted turns from cherry Street to be recorded
	C2) Transit	C 2 1) Provides attractive transit service (reliability, speed, few transfers)	1. Number of transfers from Cherry to King Street streetcar	URS	All options yield similar results			
			2. Number of signalized intersections along alignment	BA	◕	●	◕	Same number of intersections King to Mill for each option
			3. Ability to prioritize transit operations at intersections	BA	◕	●	◕	All options enable traffic signal phasing that allows transit to travel with NB / SB through movements. Turning movements across transit right-of-way operate in protected phases only
			4. Number of right turning vehicles in streetcar lane					Dedicated transit right-of-way separates turning vehicles from transit Mill to King
			Mill	BA	All options yield similar results			
			Front	BA	All options yield similar results			
			Eastern	BA	All options yield similar results			
			King	BA	All options yield similar results			
			5. Number of left turn vehicles in streetcar lane:	BA	All options yield similar results			Dedicated transit right-of-way separates turning vehicles from transit Mill to King
			6. Number of through vehicles in streetcar lane					Dedicated transit right-of-way separates turning vehicles from transit Mill to King

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
			Mill	BA	All options yield similar results			
			Front	BA	All options yield similar results			
			Eastern	BA	All options yield similar results			
			King	BA	All options yield similar results			
			7. Opportunities for additional transit stops along Cherry (type and location)	URS	◕	◑	●	
			8. Quality of environment at transit stops (qualitative)	URS	◕	◑	●	Option 8 accesses both platforms from sidewalk, Option 3 one from sidewalk, Option 5 none from sidewalk
		C 2 2) Maximizes population and employment within 300m of transit	1. Population (residential and employment) within 300 m of proposed transit stops	URS	All options yield similar results			
		C 2 3) Provides flexibility and adaptability for staging and expansion by preserving opportunities for existing and future connections	2. Number of future transit connections available at streetcar loop (to and from north and south)	URS	All options yield similar results			
		C 2 4) Provides feasible transit operations at connecting points (i.e. King Street, Union Loop etc.)	1. Provides connection to EB and WB tracks on King Street	URS	All options yield similar results			
			2. Protects for connection to Port Lands and East Bayfront	URS	All options yield similar results			
		C 2 5) Provides for transit travellers wishing to travel through the study area but who are not destined for locations in the study area	1. Integration with East Bayfront Design (qualitative)	MRC	All options yield similar results			All options capable of connecting to proposed service south to CN Overpass
		C 2 6) Maximizes safety	1. Vehicles adjacent to platform (one side / both sides) (length of platform adjacent to vehicles in m)	URS	All options yield similar results			Platforms provided for all options
	C3) Vehicles	C 3 1) Connects to other planned Waterfront Precincts at boundaries of study area	1. Connection from West Don Lands to East Bayfront (number of connections)	URS	All options yield similar results			
			2. Connection from West Don Lands to Port Lands (number of connections)	URS	All options yield similar results			Although connection through CN Overpass will be provided in all cases, additional transit / auto conflict arises with Option 3 as streetcar tracks are not located symmetrically about centre-line
		C 3 2) Provides access to blocks at identified intersections in precinct plans	1. Number of Turn Restrictions Required	BA	◕	●	◑	Assumes that turns across dedicated tracks operate from exclusive turn lane. Where no turn lane is provided, turning movement is prohibited
			2. Left turn storage considerations on Cherry (design queue in meters)					Design queue lengths calculated as average arrivals / cycle x 1.5 factor x 6.5m average vehicle length. If calculated queue length is less than 15.0m then minimum 15.0m distance reflected
			Mill	BA	All options yield similar results			
			Front	BA	All options yield similar results			

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
			Eastern	BA	All options yield similar results			Option 3 - Eastern intersection reflected in evaluation with SBLT prohibited (alternate arrangement) NBLT occurs from shared NB thru / left lane Option 3 - Eastern intersection evaluation reflects no separate SBRT lane SBRT lane would improve traffic operations.
			King	BA	All options yield similar results			
			3. Right turn storage considerations on Cherry (design queue in meters)					Design queue lengths calculated as average arrivals / cycle x 1.5 factor x 6.5m average vehicle length If calculated queue length is less than 15.0m then minimum 15.0m distance reflected
			Mill	BA	All options yield similar results			
			Front	BA	All options yield similar results			
			Eastern	BA	All options yield similar results			Option 3 - Eastern intersection reflected in evaluation with SBLT prohibited (alternate arrangement) NBLT occurs from shared NB thru / left lane Option 3 - Eastern intersection evaluation reflects no separate SBRT lane SBRT lane would improve traffic operations
			King	BA	All options yield similar results			
		C 3 3) Maximizes safety	1. Number of transit / general purpose traffic conflict points	BA	◕	●	◕	Option 5 - lowest traffic volumes crossing transit facility (i.e. NB / SB left turns)
		C 3 4) Provides for auto travellers needing to travel through the study area but who are not destined for locations in the study area	1. Overall intersections V/C Ratios					**Note:** If one of the values between AM and PM are greater than 0.9 Then it's 'Critical' Path, otherwise it is 'none-critical'
			Mill	BA	All options yield similar results			
			Front	BA	All options yield similar results			
			Eastern	BA	All options yield similar results			Add-tion of SBR turn results in V/C 0.87(0.89)
			King	BA	All options yield similar results			
			2. Key movements					
			Mill	BA	All options yield similar results			
					All options yield similar results			
			Front	BA	All options yield similar results			
					All options yield similar results			
			Eastern	BA	All options yield similar results			

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
					All options yield similar results			
			King	BA	All options yield similar results			
	C4) Barrier Free Design	C 4 1) Provides barrier free access (Part of Design Standards)	1. Provides barrier free access (Yes/No)	URS	All options yield similar results			
	C5) Cyclists	C 5 1) Provides connections to future cycling networks	Connections to Don Valley Trails (#)	URS	All options yield similar results			
		C 5 2) Provides for on-street and off-street cycling facilities as identified in the Secondary Plans and Precinct Plans	1. On-street bicycle lanes? (Yes / No)	URS	All options yield similar results			
			2. Wide curb lanes? (Yes / No)	URS	All options yield similar results			
		C 5 3) Maximizes safety	1. Potential conflicts with transit vehicles and on street cycling	URS	All options yield similar results			
	C6) Pedestrians	C 6 1) Minimizes intersection waiting and crossing times	1. Pedestrian crossing facilities provided across all intersection approaches	BA	All options yield similar results			Every signal will be provided with callable pedestrian signals. Pedestrians will cross, as is typical, with east-west and north-south main traffic phases. Minimum pedestrian crossing times will be met or exceeded in all cases based upon pedestrian crossing distance and an average walking speed of 1.2 meters second
			2. Provides callable pedestrian signals with at least minimum pedestrian crossing times that enable pedestrians to cross entire travelled roadway during north-south and east-west main signal phases	BA	All options yield similar results			
		C 6 2) Maximizes cross-street access by minimizing crossing distance	1. Intersection sidewalk to sidewalk crossing widths (m)	URS				Similar to Section B 2.1, therefore C 6 2 not considered in the evaluation
			at Mill Street		All options yield similar results			
			at Front Street		All options yield similar results			
			at Eastern		All options yield similar results			
			at King		All options yield similar results			
			2. Ability to provide central refuge spaces within travelled roadway	BA	◕	●	◑	Option 3 allows for possible refuge on east side between transit and northbound travel lanes. Although all options have modest curb to curb distances, therefore central refuges likely not required
		C 6 3) Minimizes distance from transit stops to centres of interest	1. Average Distance from transit stops to centre of Distillery district (walking in m)	URS	All options yield similar results			
		C 6 4) Accommodates safe and pleasant pedestrian sidewalks of a sufficient width as identified in the Precinct Plans	1. Area of sidewalks provided (m2)	URS	All options yield similar results			Can be modified or refined to yield similar results
		C 6 5) Provides Waterfront and Don Valley trail connections	1. Number of connections to Waterfront Precincts and Don Valley Trails	URS	All options yield similar results			
		C 6 6) Maximizes safety	1. Separation between vehicles and pedestrians (yes/no)	URS	◕	●	◕	
	C7) Emergency Vehicle Operations	C 7 1) Minimizes emergency response time	1. Percent of roadway available for EMS operations	URS	All options yield similar results			
			2. Flexibility for EMS response	URS	●	◕	●	With consolidated road operation, EMS can better respond to and manage emergency situation
C:Summary					◕	●	◑	
D) Socio-Economic Environment	D1) Automobile use in and through the study area	D1.1) Minimizes through auto travel on local roads	1. Accommodates forecast area traffic volumes on Cherry and other main intersecting area streets (Eastern and King)	BA	Considered in A 1.1.2			Similar to Section A 1.1.2, Therefore D 1.1.1 not considered in the evaluation

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
	D2) Tourism and waterfront access	D 2.1) Provides transit stop access to attractions	1. Provides transit stops to Distillery District, Don Park and Waterfront (m)	URS	All options yield similar results			
	D3) Effects on existing and future businesses	D 3.1) Affects existing properties	1. Number of businesses impacted	URS	●	◕	◑	
			4. Number of private access connections to Cherry Street limited to right turns only	URS	◑	◕	●	Option 3: 4 of 7 maintain full access (3 closed -see below), Option 5: 5 of 7 become right-in / right-out; Option 8 all are movements are maintained
			5. Number of existing private access connections to Cherry Street requiring closure	URS	◑	●	◕	Option 3 potentially requires 3 access closures between Eastern and King (east side). Option 5 does not require access connection closures. Option 8 does not require access connection closures, but may result in vehicle / transit conflicts at all 7 access connections (3 east side, 1 west side between King and Eastern, Street F north of Mill, Tank House Lane and Parking lot access south of Front)
			2. Area of property required (m2)	URS	●	◕	◑	Impacts to Cat Hospital and Auto Body. Based on property requirements, Option3 has no impacts, Option 5 has impact on Cat Hospital and Option 8 has impacts on both businesses
			3. Number of existing private driveways affected	URS	All options yield similar results			Option 5 results in right-in right-out for private residence and Auto Body, however, this is captured in C3.2.2
		D 3.2) Affects parking for existing and future businesses and development	1. No of on street parking spaces - west side of Cherry	URS	All options yield similar results			
			2. No. of on street parking spaces - east side of Cherry	URS	All options yield similar results			
		C 3.3) Provides delivery and loading access	1. Number of businesses with no accommodation for delivery and loading access (front or rear)	URS	All options yield similar results			
		C 3.4) Minimizes adverse effects to Redpath freight rail spur	*From EA Terms of Reference - Not Relevant to West Don Lands*					
		D 3.5) Minimizes interference with rail service on the CN operations at the Cherry Street crossing	1. Modifications required to existing rail structure to accommodate option	URS	All options yield similar results			
		D 3.6) Minimizes EMI adverse effects (after construction)	1. Number of EMI sensitive uses adjacent to corridor	URS	All options yield similar results			
		D 3.7) Minimizes noise and vibration adverse effects (after construction) in order to consider those TYdim	1. Number of sensitive uses within zone of influence	RWDI	All options yield similar results			
	D4) Effects on existing and future residences	D 4.1) Minimizes adverse effects on existing residences (number of residences directly affected)	1. Number of existing residents displaced	URS	All options yield similar results			
		D 4.2) Minimizes noise adverse and vibration adverse effects (after construction)	1. Total length of curved streetcar track (m)	URS	All options yield similar results			
	D5) Effects on contaminated soils	D 5.1) Minimizes impacts on/of contaminated soils	1. Area of lands within proposed right of way with known contaminants (m2)	Golder	All options yield similar results			
D:Summary					◕	●	◑	
E) Natural Environment	E1) Air quality	E 1.1) Minimizes adverse effects to Air Quality.	1. Relative impact to local air quality for each alternative (qualitative)	RWDI	All options yield similar results			
		E 1.2) Maximizes opportunities to improve Air Quality.	1. Unique design elements that will improve air quality within the Cherry Corridor (qualitative)	RWDI	All options yield similar results			
		E 1.3) Minimizes emissions of greenhouse gases.	1. Number of transit riders who would either use buses or cars if service was not provided	RWDI	All options yield similar results			

WEST DON LANDS TRANSIT EA- ANALYSIS OF DESIGN ALTERNATIVES

Alternative Designs for Right-of-Way

Objectives	Criteria	Indicators	Measure	Resp.	Alt. 3: Dedicated Transit East Side	Alt 5: Dedicated Transit Median	Alt. 8: Dedicated Transit Outside Lanes	Discussion
	E 2) Aquatic Habitats	E 2 1) Minimizes adverse effects to aquatic habitats	1. Area of existing aquatic habitat impacted (ha)	Ecoplans	All options yield similar results			No Aquatic features present.
		E 2 2) Maximizes opportunity to enhance aquatic habitat	1. Ability to provide enhanced water quality treatment	Ecoplans	All options yield similar results			No Aquatic features present
	E 3) Vegetation	E 3 1) Minimizes adverse effects to vegetation	1. Area of existing vegetation removed (ha)	Ecoplans	All options yield similar results			No natural vegetation present
		E 3 2) Maximizes opportunity to enhance vegetation	1. Area of green space provided (ha)	Ecoplans	All options yield similar results			All options provide similar opportunities to provide landscape vegetation
	E 4) Water Quality	E 4 1) Maximizes potential for storm water quality control	1. Need for supplemental treatment (over WDL service plan)	URS	No anticipated difference between designs			
		E 4 2) Minimizes adverse effects to existing stormwater facilities	1. Impervious area (ha)	URS	All options yield similar results			
E:Summary					●	●	●	
F) Cultural Environment	F1) Built Heritage Features	F 1 1) Minimizes built heritage features affected	1. Distance from edge of pavement to built heritage features (m)	URS	All options yield similar results			Not decision relevant - all options subject to refinement to mitigate impacts
		F 1 2) Maximizes opportunities to enhance built heritage features	1. Transit access to heritage features	URS	All options yield similar results			
	F2) Cultural Landscapes	F 2 1) Minimizes cultural landscapes affected	1. Average distance to cultural landscapes (m)	URS	All options yield similar results			
		F 2 2) Maximizes opportunities to enhance cultural landscape features	1. Transit access to heritage features	URS	All options yield similar results			
	F3) Archaeological Features	F 3 1) Minimizes archaeological features affected	1. Footprint area of construction (ha)	URS	All options yield similar results			
	F4) First Nations peoples and activities	F 4 1) Minimizes adverse effects to lands and resources used for traditional purposes	1. Area of land used for traditional purposes (ha)	Ecoplans	All options yield similar results			All options result in no impacts as alternatives are fully within existing disturbed urban area
F:Summary					●	●	●	
G) Cost	G1) Capital costs	G 1 1) Minimizes construction and transit vehicle acquisition costs	1. Construction Cost Estimate ($)	URS	All options yield similar results			Preliminary construction cost estimated at 25 M
	G2) Property acquisition	G 2 1) Minimizes property acquisitions	1. Property acquisition based on area (m2)	URS	Considered in D 3 1 2			Similar to Section D 3 1 2, therefore G 2 1 not considered in the evaluation
	G3) Operating costs	G 3 1) Minimizes the net operating cost	1. Operating cost per seat-km ($)	URS	All options yield similar results			
		G 3 2) Minimizes winter maintenance costs	Qualitative	URS	All options yield similar results			
G: Summary					●	●	●	

Discussion Paper:
Cherry Street "Transit Mall" Option Evaluation

Introduction

In February, 2007, the local community in the West Don Lands area held two workshops to generate design ideas for Cherry Street as input to the Waterfront East Transit Environmental Assessment Study ("the Transit EA"). A total of six design concepts were developed for Cherry Street and in a community vote, the "Transit Mall Variant", which incorporates transit within an extended sidewalk or plaza and no traffic lanes, ranked highest. A concept that includes "Transit on One Side (East)" and one lane of traffic in each direction was second highest ranked.

The key messages that emerged from the Charrette include:

- Strong support for a generous and green pedestrian realm, and;
- Alternatives that emphasize transit priority over vehicular capacity.

As noted in the Charrette summary document, in developing the design concepts the community also summarized a number of points considered important to the success of the Transit EA including:

- Cherry Street should fit within the Downtown context, where street rights-of-way (ROW) are typically 20m wide. Although the Charrette indicated that all the needs of Cherry Street can be addressed within a ROW of 30m or less—participants strongly support a narrower street, more in the range of 20m, particularly to reduce pedestrian crossing distances at intersections;

- If the solution for transit is to locate it within a dedicated ROW, it must also improve the pedestrian environment and not sacrifice it to accommodate traffic infrastructure, and;

- In options considering vehicular traffic, Cherry Street should only have one lane of travel in each direction if turning lanes are provided at key intersections.

Full details of the Charrette proceedings can be located at:
www.waterfrontoronto.ca/dynamic.php

The community's ongoing involvement in the Transit EA process has been invaluable. The preferred Transit Mall Variant concept presents a design option for Cherry Street that has not been recommended by City Council and Waterfront Toronto, as articulated in the Waterfront Secondary Plan, the West Don Lands Precinct Plan and the Class Environmental Assessment Master Plan. In all these plans, the new Cherry Street is envisaged as a connected element of the neighbourhood and surrounding streets and

blocks network, with emphasis on providing excellent transit service and a vibrant high quality pedestrian realm, and some allowance for traffic movement.

Given the community's preference for the Transit Mall Variant, this paper examines the suitability of a potential transit mall on Cherry Street from Eastern Avenue to Mill Street in the West Don Lands Precinct (i.e. Option 6 in the Transit EA).

The Transit Mall concept is reviewed in relation to four key themes:

- City policy and planning context;
- Experience in other jurisdictions;
- Experience in Toronto, and;
- Transit Mall suitability to Cherry Street.

City Policy and Planning Context

The promotion of transit and liveable communities are key elements of Toronto's Official Plan. In the Cherry Street environs, these elements have been carefully considered as part of the broader master planning exercise undertaken for the West Don Lands Plan. In this exercise, the Plan envisions a role and special character for each street within the precinct. Specifically, the street network has been designed to be consistent with the City of Toronto's transportation planning objectives, as stated in the Secondary Plan, which call for priority to be given to sustainable modes of transportation.

The new road system will create urban streets that allow safe and convenient movement for pedestrians as well as accommodating cyclists, transit vehicles, private automobiles, goods movement and emergency services. Many of the streets within the precinct are envisaged as being neighbourhood streets providing local access, while others – Cherry Street, Front Street, and Bayview Avenue – are intended to provide connections into and beyond the precinct. Work carried out for the Secondary Plan highlighted the importance of maintaining and enhancing connections between the City and the waterfront given the limited number of opportunities to cross the rail corridor south of Front Street.

This framework of street patterns and typology has an important relationship with other aspects of proposed revitalization, including land use, built form and public realm, in that they are all interrelated.

When considering the characteristics of City streets, the City's Official Plan (OP) policy (Section 3.3) states that:

"(5) City streets are a significant public open space that serve pedestrians and vehicles, provide space for public utilities and services, trees and landscaping, building access, amenities such as view corridors, sky view and sunlight, and are public gathering places. Streets will be designed to perform their diverse roles, balancing the spatial needs of existing and future users within the right-of-way. This includes pedestrians, people with mobility aids, transit, bicycles, automobiles, utilities and landscaping.

(14) New streets will be designed to:

a) provide connections with adjacent neighbourhoods, and promote a connected grid of streets that offers travel options and extends sight lines;
b) divide larger sites into smaller development blocks;
c) provide access and addresses for new development;
d) allow the public to freely enter without obstruction;
e) create adequate space for pedestrians, bicycles and landscaping as well as transit, vehicles, utilities and utility maintenance;
f) improve the visibility, access and prominence of unique natural and human-made features; and
g) provide access for emergency vehicles."

The Central Waterfront Secondary Plan is consistent with the OP in that it emphasizes connectivity and provision for all users. Both plans also contain policies aimed at reducing auto dependence and encouraging alternate modes of transportation.

It is within this broader planning context that the proposal for a Cherry Street transit mall, operating between Eastern Avenue and Mill Street, has to be assessed.

Experience in Other Jurisdictions – Case Studies

Transit Malls are areas where transit vehicles are the exclusive, or at least the dominant, form of transportation, in association with walking, possibly bicycling, emergency services and varying degrees of private automobile access in certain cases. Successful transit malls can be beneficial for pedestrians, as they provide an enhanced street ambiance over a regular roadway without auto activity. The basic transit mall can take a number of forms including:

- restricting entry to an area during peak periods to transit vehicles, delivery vehicles and private autos bearing a sticker proving they have a reserved parking space in the area;
- charging a fee for private auto entry into an area, and;
- the outright banning of automobiles during certain periods or at all times.

In a comparative analysis of all malls types - pedestrian, shared and transit - Rubenstein (1992: 223) concluded that transit malls seem to be the most successful, stating that the transit mall can help improve transit while also providing a place for people and an identifiable image for a city[1].

A number of North American transit mall examples are briefly discussed below. Except for the City of Portland and Vancouver, the examples discussed are located within cities that generally exhibit similar climatic patterns to Toronto.

Chicago, Illinois

[1] Pedestrian Malls, Streetscapes, and Urban Spaces. Rubenstein, H. 1992: p223

State Street is a traditional retail corridor in downtown Chicago. In the late 1970s, the street was transformed into a two lane transit mall, designed for busses and pedestrians only. The purpose of the mall was to promote revitalization of the retail area. However, the transit mall failed in this regard and after only 10 years of operation, plans to reopen the street to automobile traffic were made. The transit mall was eventually removed, and by the mid 1990's the street had returned largely to its original composition.

Buffalo, New York

Main Street, Buffalo was closed to private automobiles and converted to a transit mall in the early 1970s. At this time, a new Metro Rail line was built along the street. The purpose of this transit mall was to promote the retail area as destination that was easily accessible without the need to drive. However, the loss of vehicular traffic gave the street a sense of abandonment, and many shops and stores subsequently closed. The revitalization never materialized, and the City of Buffalo is currently (2007) undertaking an Environmental Assessment to examine options of re-opening Main Street to vehicular traffic.

Portland, Oregon

The Portland Transit Mall is located on 5th and 6th Avenues in downtown Portland. Constructed in the early 1970s, the mall has helped to revitalize the downtown and has been a catalyst for development. The mall's success has led transportation planners to introduce a streetcar service along its length; this work is presently being implemented and is expected to be completed in 2009. Although referred to as a transit mall, the facility does provide for private automobile and bicycle use. In conjunction with the new design, six new blocks will be added for these travel modes in order to provide continuous travel along the mall.

Vancouver, B.C.

Granville Mall is located in Vancouver, BC. Prior to the mall, Granville Street had six lanes of traffic with 1200 vehicles per hour. This was reduced to two lanes of traffic with construction of the mall, providing a pedestrian and transit mall which served Vancouver's trolley bus service in addition to pedestrians. The design was to act as a framework for redevelopment, along with creating a safe and comfortable pedestrian environment (sidewalks were widened to as much as 10m in some places). The transit mall has been relatively successful in terms of encouraging revitalization, however portions of the mall have been reopened to private automobiles. Today the Granville transit mall is serviced by the Granville Station SkyTrain subway, which is the busiest route in the system. Recent changes to the transit mall include a proposed two-block long plaza; this plaza is envisaged to be the centre of commercial street life in the downtown.

Calgary, Alberta

In downtown Calgary, 7th Avenue acts as a transit mall, with street operations shared between streetcars (LRT), buses and emergency vehicles only. The 7th Avenue transit mall is among the busiest transit routes in Calgary - it was designed to provide the service levels of a subway without incurring the infrastructure costs of subway construction. The transit mall restricts pedestrian crossings to signalized intersections only, which allows trains to operate at up to 40 kmh. It is estimated that peak hour travel by LRT entering the downtown is equivalent to the capacity of about 16 free flow traffic lanes.

Ottawa, Ontario

Rideau Street (Ottawa) developed as a major gateway to the city from trading routes along the Ottawa River and Montreal to the east. As early as 1845 it received the first plank sidewalk in the city to accommodate the many pedestrians plying the shops. In the 1920's and 30's it was the focus of retail trade with the heyday of the Caplan's and Ogilvy's department stores.

In the early 1980s, along with the construction of the Rideau Centre Mall, Rideau Street was converted to a bus mall, with continuous glass and steel shelters running along the entire ground floor frontage of the buildings. However, this structure and the exclusion of other modes of transportation, proved to be a failed design as it removed pedestrians from the stores, became populated by vagrants, and generally limited retail traffic only to those in transit through the bus mall. The structures were removed in the mid-1990s and the street was refurbished, including the reintroduction of vehicular and bicycle traffic.

European Experience

"Europe" is often referenced in discussions about transit, from general issues relating to efficiency and reliability, to broader ones of public attitude and lifestyle. This is because, in very general terms, transit usage in European cities is high when compared with North American cities. Correspondingly, many European transit services provide a higher quality product – modern fleets; frequent reliable service; and implementation of innovative technologies - in comparison with their North American counterparts.

While it is interesting to examine these transit systems for these reasons, there are a number of distinct differences in the urban environments and transportation policies of European and North American cities that can skew the outcome of a direct system-to-system comparison. For instance:

- Many European residents live in densely developed communities within reach of transit corridors that were established long before widespread use of the automobile;
- Fuel prices in many European cities are three to five times higher than in North America, and many other government taxes, parking regulations, and traffic policies encourage the use of transit while deterring use of the automobile[2], and;

[2] Making Transit Work: Insight from Western Europe, Canada, and the United States Transportation Research Board, 2001.

- Narrow streets in historic European cities are poorly suited to automobile use, thereby compelling government action to discourage their use and promote public transit.

Consequently, European experience does not permit a direct comparison to North American efforts, and some caution should be applied when referencing these examples. Nevertheless, the European experience indicates the type of economic, legislative, lifestyle and city-building factors that need to be in place in North American cities for pedestrianized/transit priority streets to succeed.

Experience in Toronto

The closest Toronto has come to implementing a transit mall was in 2001, when the TTC proposed constructing a phased transit mall along King Street, closing it to automobiles during rush hour, between Dufferin Street and Parliament Street. The proposal received significant opposition from local merchants however, and was never implemented. More recently (March 2007), the TTC revived this proposal, requesting City Council approval to install a temporary reserved right-of-way along King Street West as a demonstration project. One option in this case would eliminate on-street parking and permit vehicular access on alternating blocks.

Toronto has been more experimental with pedestrian malls, closing portions of streets to the automobile and opening them to pedestrians since the 1960's. One of the first pedestrian malls implemented in the city was Market Lane Park, located between King Street East and Front Street East. The lane was first closed to vehicular traffic in 1967 as part of the St. Lawrence Hall Centennial project work. This closure was a trial to determine the feasibility of a permanent pedestrian mall in this location. The trial was deemed a success and the mall was made permanent in 1970.

Around this same time, Yonge Street was also being examined for its suitability as a pedestrian mall. Between 1971 and 1974, a temporary pedestrian mall was set up in the summer months on a downtown portion of Yonge Street in order to test the feasibility of a permanent mall in that location. Recommendations from these tests were that a permanent pedestrian mall should be created on Yonge Street between Wellington Street and Queen Street West, and extended north to Dundas West upon completion of the Eaton Centre.

Factors taken into consideration in the study recommendations included positive survey results from mall users and merchants along Yonge Street, positive environmental impacts (less air pollution), and positive economic impacts. Despite this, City Council debated and deferred the recommendation on and off for nearly twenty years, before deferring it indefinitely in 1993 for reasons largely related to cost. At this same time (1993), Council considered additional recommendations to pedestrianize other streets within the City including:

- Roy's Square located in the southeast quadrant of the Yonge and Bloor intersection (currently pedestrianized, but being removed in the overall redevelopment of the adjacent block);
- Front Street East between Jarvis Street and Church Street (weekends only), and;
- Market Street between Front Street East and The Esplanade (weekends only).

Regent Park

The City of Toronto undertook an ambitious project of street closures during the construction of Regent Park, which started in 1948. Before this project, the area of Regent Park was well integrated with the surrounding city fabric through a network of streets. The Regent Park development was intended to replace a degraded neighbourhood condition with a modern, car free, spacious and pleasant environment. As part of the creation of a "garden city", streets were replaced by super-blocks, and buildings were placed in park-like settings. However, the lack of through streets contributed to residents' sense of being cut off from the rest of the city, and the lack of "street life" created an isolated and unsafe environment. A renewal project for the area started in 2006, and one of the cornerstones of revitalization addresses these issues by reconnecting the neighbourhood to the city and re-opening the streets that were closed more than 50 years ago.

Pedestrian Sundays

Since 2004, residents and some businesses of Toronto's Kengsington Market have organised a series of "Pedestrian Sunday" events. Held on the last Sunday of each month (between May to October from 1pm till 7 pm; total of 6 events / year), stretches of Augusta Street, Baldwin Street and Kensington Avenue within the market are closed to motorized traffic, effectively turning them into a pedestrian mall. Live music, dancing, street theatre and games are among the special events held during the street closure. To support the pedestrian environment, vehicle deliveries to stores are not permitted during the event. Merchants are, however, permitted to use the entire sidewalk in front of their store to display their merchandise during the pedestrian Sunday event.

The events have received mixed reviews, with some groups celebrating Pedestrian Sundays as a streets-reclaiming initiative that will ideally become a permanent arangement. Other groups – particularly some local businesses – dislike the initiative, arguing that the streets are essential for vehicles to make deliveries and for stores to receive goods as well as customers travelling by car. Nevertheless, the initiative is now in its third year of operation, and other areas of the city are also trialing similar schemes, including Baldwin Village and Mirvish Village.

In summary, the Toronto experience suggests pedestrian malls are most successful when implemented as a temporary condition, to take advantage of periods when large volumes of pedestrians can be expected, for example, at certain times of the day, or on weekends or in the summer season.

Transit Mall Suitability to Cherry Street

The case studies outlined above show that the overall experience of transit malls in North America has been mixed. From those that are successful (Portland, Calgary and Granville) it is possible to identify several common elements that contribute to this success. These elements, which include high ridership levels, central downtown locations, and higher order connectivity with alternate transit routes, can be used to assess the suitability of the Cherry Street transit mall proposal.

High ridership levels

On weekdays, the Granville transit mall is used by over 1,900 buses and 47,500+ transit riders. This is roughly equivalent to the busiest Toronto bus route (#29 Dufferin carries 44,600 daily weekdays riders) and is marginally less than the 501 Queen streetcar route (49,100 daily weekday riders)[3]. Projected ridership for the Cherry Street transit route is less than this, ranging up to 15,000 projected daily weekday riders.

Central Downtown Location

A central downtown location ensures the transit mall has an active street life that extends beyond regular business hours. One of the key elements of success of a "full-time" pedestrian mall, from an economic and public realm perspective is the ability to generate a healthy street life at all times and in all seasons including winter, providing eyes on street, demand for businesses etc. Creation of malls that cannot generate these conditions tends to reduce overall activity on the street (i.e. no taxis, no vehicle drop-offs, and no passing traffic) and create an isolated environment. The resulting perception that these areas are uninviting and unsafe can have a significant impact on business and use of the space. This is important to consider in order to avoid conditions that arose in the case of the Buffalo and Chicago transit malls, where the loss of traffic during off-peak hours gave the area a sense of abandonment.

In Vancouver, the success of the retail activity preceded the transit mall, providing a receptive and supportive environment for the switch to transit only operations. In Toronto, the levels of commercial success and street life required for a transit mall would more likely be found along existing portions of Yonge Street, King Street West, Queen Street West or Bloor Street West. The Gooderham and Worts site provides the potential to generate this level of activity in the future, but there is no way of predicting if or how this might translate to a "full time" transit mall on Cherry Street.

Connectivity with Alternate Transit Routes

The Transit Supportive Land Use Planning Guide (Ontario Ministry of Municipal Affairs and Housing, 1992: p91) indicates that transit malls should be located along a major transit route or at a point where several transit routes intersect. Reflecting this standard, the Portland transit mall is the hub of a regional transit system; the Granville transit mall

[3] Reducing Car Dependence: Transportation Options for the City of Toronto. UDS, March 2001.

is serviced by the busiest transit route in Vancouver; and the Calgary transit mall is one of the busiest transit routes in Calgary. Conversely, the Cherry Street streetcar, while servicing an important line function within a network, is not anticipated to accommodate comparable ridership levels.

Traffic Implications

Historically, Toronto's street grid has allocated traffic in a logical heirarchy. This principle has been extended to the planned waterfront precincts to ensure, among other things, that local access and circulation is provided and that no particular link is overloaded.

An assessment of the traffic impacts related to the Transit Mall Variant concept and potential closure of Cherry Street has been undertaken. The results indicate that the closure could generally be accommodated from a traffic operations perspective, but there are other implications.

The redistribution of traffic on Cherry Street would increase the volume on other roads. Most significant would be a potential increase of 50 percent in volumes along Mill Street east of Cherry Street (up to 5,000 additional vehicles per day). The planned community school, playground and park will be located adjacent to this section of Mill Street and would be exposed to this increase in diverted traffic. Detailed evaluation of traffic routing for the River Street Environmental Assessment indicated there are few opportunities to redirect traffic diverted from Cherry Street. From a traffic planning and safety perspective, this degree of incremental increase in potential exposure should be avoided if at all possible.

The closure of Cherry Street would also result in some circuitous traffic routing to adjacent development blocks, and for access to the waterfront from this part of the City. While the inconvenience is not insurmountable, it increases automobile circulation in the immediate area, which is counter to several City policies and generally not representative of good planning principles.

Conclusion

Waterfront revitalization requires the application of innovative leading edge, proven technologies and practices including those that have worked well in other jurisdictions and are likely to succeed here. These measures must minimize risk to city building, development opportunity, and related technical and financial matters in order to provide some assurance of success.

On balance, a successful transit mall on Cherry Street poses many challenges. The difficulty is ensuring the success – in terms of securing the key elements that typify other successful North American malls. These elements generally include high ridership levels (potentially three-times the projected Cherry Street ridership), central downtown locations, sustained commercial/retail activity, and higher order connectivity with

alternate transit routes. Solutions would also be required to manage the impact of redistributed traffic on sensitive land uses and links to the waterfront.

The results of this review have led City Planning staff and Waterfront Toronto representatives to the conclusion that the Cherry Street Transit Mall Variant concept presents too many risks to achieving success, and too few benefits that cannot otherwise be achieved by other concepts, to warrant being carried forward in the Transit EA evaluation.

Removing this option from further consideration does not preclude important objectives from the Charrette from still being achieved. Several of the options that are proposed for further study in the Transit EA are concepts from the community workshop, including the community's second ranked "Transit on One Side (East)" concept.

Furthermore, the ongoing provision of some vehicular activity on Cherry Street would not preclude temporary street closings for local events. The detailed design that will be undertaken for Cherry Street will incorporate pedestrian friendly measures, including consideration for special paving treatments and curb treatments. Similar efforts are already underway to design River Square and intersections along Bayview Avenue in the West Don Lands. This approach will provide the opportunity to readily turn the street into a temporary mall for summer festival events or to compliment special activities at the Gooderham and Worts site.

In the longer term, the pre-conditions for a full-time transit mall on Cherry Street may become established but, at this stage, it would be premature to design and build for this outcome.

Transportation Planning
City Planning Division
City of Toronto
June 2007

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - SHORT LISTED CORRIDORS ANALYSIS TABLE

CORRIDORS

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Cherry Street	Cherry / Front / Parliament	Cherry and Parliament	Discussion
A) Land Use	A1) Local population / employment growth in the study area	A1.1) Supports future road and transit capacity requirements for forecasted development.	C & T	ROW width able to accommodate required infrastructure	Yes	No	No	Ability to fit typical sections within available ROW width. Constrained corridors will require trade off of one mode of transportation vs. other (e.g. narrower sidewalks to accommodate on street bike lanes). Existing constraints on Parliament and Front Street corridors.
	A2) City, TWRC, and Provincial Policies	A 2.1) Supports the City's Secondary Plan and EA Master Plan objectives	C & T	In accordance with 'rapid transit first objectives' prescribed in documents, namely MP (pg 104). For Design Alternatives 'improve public realm' objectives prescribed in documents, namely MP (pg 104), SP A2, C10, and Policies P4, P5, P18 and P20.	Yes	No	No	Refer to Secondary Plan Policy P4 and West Don Lands EA Master Plan Pg 104 No indication in the Official Plan that there should be a transit ROW on Parliament north of King or south of Front.
		A 2.2) Supports the TWRC's Precinct Plan and Sustainability Framework.	C & T	Consistency with Precinct planning to Date	Yes	Yes	No	Exclusive Streetcar line on Cherry Street; provision for same on Berkeley/Parliament/Front and Cherry (Refer to West Don Lands Precinct Plan Pg 24)
		A 2.3) Supports Provincial growth management plans, policies, and objectives.	C & T	Ability to increase modal share for transit	Yes	Yes	Yes	Refer to Places to Grow Pg 14.
B) Transportation	B1) Auto Dependence	B 1.1) Maximizes non-auto (transit, pedestrian and cycling) modal split for trips to, and within, the study area.	C	Non-auto Modal Split for trips to and within the study area	52 %	52 %	52 %	*Based on GTA model*
		B 1.2) Maximizes non-auto (transit, pedestrian and cycling) modal splits for trips through the study area.	C	Non-auto Modal Split for trips originating from the study area.	60 %	60 %	60 %	*Based on GTA model*
	B2) Transit	B 2.1) Provides attractive transit service (few transfers).	T	No. of transfers required	Not a determining factor in evaluating Corridors - considered in evaluating Technology / ROW			-
		B 2.2) Provides attractive transit service (reliability, speed).	C & T	No. of turns required.	2	4	4	Regardless of the technology, turns at intersections (left or right) reduces operating speed and increases potential for delay, especially if movement is shared with other traffic or must compete with other movements with right of way (e.g. pedestrians). The extra turns on the Cherry/Front option makes this slower and less reliable than the Cherry St. option.
		B 2.3) Maximizes population and employment within 300m of transit.	C	Population and employment at full build out within 300m (persons)	5600	5300	8700	300m offset about the CL = 600m swath. Based on City Model.
		B 2.4) Provides flexibility and adaptability for staging and expansion by preserving opportunities for existing and future connections.	C & T	No. of existing and future connection opportunities	2	2	4	Tie in points at ends of alignments.
		B 2.5) Provides for transit travellers wishing to travel though the study area but who are not destined for locations in the study area	C & T	Average distance of corridor's) from Keating channel to King and Parliament (m)	1150	835	820	Considering possible through transit riders from the Port Lands. Cherry Street corridor measured from CN overpass to King/Parliament; Cherry /Front/ Parliament; Ave Length Cherry Corridor and Parliament Corridor
	B3) Vehicles	B 3.1) Provides for local auto access.	T	Left turn access permitted at mid-block.	Not a determining factor in evaluating Corridors - considered in evaluating Technology			-
		B 3.2) Provides for auto travellers needing to travel through the study area but who are not destined for locations within the study area.	T	Ability to maximize auto capacity.	Not a determining factor in evaluating Corridors - considered in evaluating Technology			-
		B 3.3) Connects to other planned Waterfront Precincts at boundaries of the study area.	C	No. of connections with Waterfront Precincts	1	1	2	Waterfront precinct south of CNR connects with Portland's at Cherry and East Bayfront corridor at Cherry and/or Parliament.

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - SHORT LISTED CORRIDORS ANALYSIS TABLE CORRIDORS

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Cherry Street	Cherry / Front / Parliament	Cherry and Parliament	Discussion
C) Socio-Economic Environment	C1) Automobile use in and through the study area	C1.1) Minimizes through auto travel on local roads.	T	Ability to maximize auto capacity.	Not a determining factor in evaluating Corridors - considered in evaluating Technology			-
	C2) Tourism and waterfront access	C 2.1) Provides transit stop access to attractions.	C	Ability to service areas of interest	Yes	Yes	Yes	Areas of interest identified and service by alignments reviewed.
	C3) Existing and future businesses	C 3.1) Affects existing buildings.	C	No. of existing non-residential buildings immediately adjacent to the ROW	11	14	17	Existing non-residential buildings immediately adjacent to ROW potentially affected
		C 3.2) Encourages commercial activity.	C & T	Planned Commercial blocks adjacent to corridor (m^2)	24800	35700	28100	From Precinct Plans.
		C 3.3) Minimizes adverse effects to Redpath freight rail spur.	n.a.	Not applicable to WDL	-	-	-	-
		C 3.4) Minimizes interference with rail service on the CN operations at the Cherry Street crossing.	C	No. of junctions with CN Overpass	1	1	2	Corridors focus on solutions with existing grade separations with rail operations: Cherry Street underpass and Parliament Street underpass.
		C 3.5) Maximizes services within 300 m of concentrated commercial activity within precinct plans.	C	m^2 of mixed use space within 300m of corridor	84000	84000	84000	300m offset of CL = 600m swath. All area within 600m swath quantified (assumed all buildings commercial)
		C 3.6) Minimizes EMI adverse effects (after construction).	T	Potential to impact EMI sensitive receptors	Not a determining factor in evaluating Corridors			-
	C4) Existing and future residences	C 4.1) Affects existing properties.	C	No. of existing residential buildings adjacent to ROW	-	-	-	Commercial buildings present
		C 4.2) Minimizes noise adverse effects (after construction).	C & T	No. of Streetcar turns required	2	4	4	Intersections where streetcars would initiate a turn: Cherry Corridor (King and turnaround loop), King:Cherry/Parliament (King, Front/Parliament, Front:Cherry, and turnaround loop), and Cherry and Parliament (4).
		C 4.3) Minimizes vibration adverse effects (after construction).	T	Vibration effects on adjacent development	Not a determining factor in evaluating Corridors			
	C5) Effects on contaminated soils	C 5.1) Minimize impacts on/of contaminated soils.	C	Length of corridor required through contaminated lands (m)	650	835	1140	Given historical context of West Don Lands, the potential for contaminants is throughout the entire study area. Therefore, the potential to encounter contaminated soils is directly proportional to the corridor length.
D) Natural Environment	D1) Air quality	D 1.1) Minimizes adverse effects to Air Quality.	T	Impact of technology on local air quality	Not a determining factor in evaluating Corridors			
		D 1.2) Maximizes opportunities to improve Air Quality.	T	Ability to improve transit modal split	Not a determining factor in evaluating Corridors			
E) Cultural Environment	E1) Built Heritage Features	E 1.1) Minimizes built heritage features affected.	C	No. of built heritage features within 100 m	3	3	3	Tankhouse, CN Police building, Canary Restaurant
		E 1.2) Maximizes opportunities to enhance built heritage features.	C	Transit access to heritage features	Yes	Yes	Yes	

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - SHORT LISTED CORRIDORS ANALYSIS TABLE CORRIDORS

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Cherry Street	Cherry / Front / Parliament	Cherry and Parliament	Discussion
	E2) Cultural Landscapes	E 2.1) Minimizes cultural landscapes affected.	C	No. of cultural landscape features within 100 m	-	-	-	Existing cultural landscapes not present.
		E 2.2) Maximizes opportunities to enhance cultural landscape features	C & T	Transit access to heritage features	Yes	Yes	Yes	
	E3) Archaeological Features	E 3.1) Minimizes archaeological features affected.	C	No. of archaeological features within 100 m	1	2	2	Parliament Building site, Gooderham site.
	E4) First Nations peoples and activities	E 4.1) Minimizes adverse effects to lands and resources used for traditional purposes.	C	Area of Land Used for traditional purposes (m2)	0	0	0	
F) Cost	F1) Capital costs	F 1.1) Minimizes construction costs.	C & T	Total length (m)	650	835	1140	Lengths of each alignment measured
		F 1.2) Minimizes transit vehicle acquisition costs	C & T	Total length (m)	650	835	1140	
	F2) Property acquisition	F 2.1) Minimizes property acquisitions.	C	[O.P. ROW - Existing ROW width] x length in m²	10000	8800	10000	Net additional land required beyond Official Plan dedication.
	F3) Operating costs	F 3.1) Minimizes the net operating cost.	C & T	Annual vehicle operating cost to carry forecast ridership (dependent on total length)	650	835	1140	

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WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES DECISION RELEVANT CORRIDORS EVALUATION TABLE

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	CORRIDORS: Cherry Street	Cherry / Front / Parliament	Cherry and Parliament	Discussion
A) Land Use	A1) Local population / employment growth in the study area	A1.1) Supports future road and transit capacity requirements for forecasted development	C & T	ROW width able to accommodate required infrastructure	●	◑	◑	
	A2) City, TWRC, and Provincial Policies	A 2.1) Supports the City's Secondary Plan and EA Master Plan objectives	C & T	In accordance with rapid transit first objectives prescribed in documents, namely MP (pg 104-5 for Design Alternatives, improve public realm objectives prescribed in documents, namely MP (pg 104), SP A2, C19, and Policies P4, P5, P18 and P20	●	◑	◑	
		A 2.2) Supports the TWRC's Precinct Plan and Sustainability Framework	C & T	Consistency with Precinct planning to Date	●	●	◑	
	Summary for Land Use				●	◑	○	From a Land Use perspective, the Cherry Street corridor is preferred over the others because it's right-of-way is not constrained by existing land use on either of it's sides, the preference for this corridor is consistent with the land use planning done to date through the City's Central Waterfront Secondary Plan, the West Don Lands Transportation Master Plan, as well as TWRC's West Don Lands Precinct Plan
B) Transportation	B2) Transit	B 2.2) Provides attractive transit service (reliability, speed)	C & T	No. of turns required	●	◑	◑	
		B 2.3) Maximizes population and employment within 300m of transit	C	Population and employment at full build out within 300m (persons)	◑	○	●	
		B 2.4) Provides flexibility and adaptability for staging and expansion by preserving opportunities for existing and future connections	C & T	No. of existing and future connection opportunities	◑	◑	●	
		B 2.5) Provides for transit travellers wishing to travel though the study area but who are not destined for locations in the study area	C & T	Average distance of corridor's from Keating channel to King and Parliament (m)	○	◑	●	
	B3) Vehicles	B 3.3) Connects to other planned Waterfront Precincts at boundaries of the study area	C	No. of connections with Waterfront Precincts	◑	◑	●	
	Summary for Transportation				◑	○	●	From a Transportation perspective, the Cherry and Parliament corridor is preferred. The combined Cherry and Parliament corridor provides additional coverage of service (measured in terms of population and employment), and provides greater connection opportunities to the East Bayfront and Port Lands Precincts
C) Socio-Economic Environment	C3) Existing and future businesses	C 3.1) Affects existing buildings	C	No. of existing non-residential buildings immediately adjacent to the ROW	●	◑	○	

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES DECISION RELEVANT CORRIDORS EVALUATION TABLE

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	CORRIDORS: Cherry Street	Cherry / Front / Parliament	Cherry and Parliament	Discussion
		C 3 2) Encourages commercial activity	C & T	Planned Commercial blocks adjacent to corridor (m²)	○	●	◑	
		C 3 4) Minimizes interference with rail service on the CN operations at the Cherry Street crossing	C	No. of junctions with CN Overpass	●	●	◑	
	C4) Existing and future residences	C 4 2) Minimizes noise adverse effects (after construction)	C & T	No. of Streetcar turns required	●	◑	◑	
	C5) Effects on contaminated soils	C 5 1) Minimize impacts on of contaminated soils	C	Length of corridor required through contaminated lands (m)	●	◑	○	
	Summary for Socio-Economic Environment				●	◑	○	From a Socio-Economic perspective, the Cherry Street corridor is preferred. The Cherry, Front Parliament corridor encourages the most commercial activity (based on planned commercial blocks identified in the West Don Lands Precinct Plan adjacent to each of the corridors), but results in an alignment requiring additional turning movements at intersections which is less desirable from a noise perspective
E) Cultural Environment	E1) Built Heritage Features	E 1 1) Minimizes built heritage features affected	C	No. of built heritage features within 100 m	●	●	●	
		E 3 1) Minimizes archaeological features affected	C	No. of archaeological features within 100 m	●	◑	◑	
	Summary for Cultural Environment				●	◑	◑	From a Cultural Environment perspective, the Cherry Street corridor is preferred as it minimizes potential conflicts with identified Cultural Heritage Resources
F) Cost	F1) Capital costs	F 1 1) Minimizes construction costs	C & T	Total length (m)	●	◑	○	
		F 1 2) Minimizes transit vehicle acquisition costs	C & T	Total length (m)	●	◑	○	
	F2) Property acquisition	F 2 1) Minimizes property acquisitions	C	[(2* ROW - Existing ROW width) x length in m²]	◑	●	◑	
	F3) Operating costs	F 3 1) Minimizes the net operating cost	C & T	Annual vehicle operating cost to carry forecast ridership (dependent on total length)	●	◑	○	
	Summary for Cost				●	◑	○	From a Cost perspective, the Cherry Street corridor is preferred, based on minimizing construction, vehicle acquisition and net operating costs

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES DECISION RELEVANT CORRIDORS EVALUATION TABLE

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	CORRIDORS: Cherry Street	Cherry / Front / Parliament	Cherry and Parliament	Discussion
		OVERALL			●	◑	○	The coverage of proposed transit service needs to be weighed against construction and operating costs. From a Transportation perspective, the Cherry and Parliament corridor provides approximately 35 %+ more coverage of service, however, construction costs and vehicle acquisition costs each are approximately 75%+ more than the Cherry Street corridor alone. Cherry Street is the preferred corridor.

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WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - SHORT LISTED TECHNOLOGY/ROW OPTIONS ANALYSIS TABLE

TECHNOLOGY / ROW

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Buses In Mixed Traffic	Streetcar In Mixed Traffic	Streetcar in Dedicated Right-of-way	Bus in Dedicated Right-of-way	DISCUSSION
A) Land Use	A1) Local population / employment growth in the study area	A1.1) Supports future road and transit capacity requirements for forecasted development	C & T	Capability of accommodating forecast transit demand	Yes	Yes	Yes	Yes	For transit based on Peak demand of 1,000 TO 2500 passengers per hour (pph), (for roads, see B 3 2)
	A2) City, TWRC, and Provincial Policies	A 2 1) Supports the City's Secondary Plan and EA Master Plan objectives	C & T	Consistent with previous planning	Low	Medium	High	Medium	In accordance with rapid transit first objectives prescribed in documents, namely MP (pg 104). For Design Alternatives improve public realm objectives prescribed in documents, namely MP (pg 104), SP A2, C19, and Policies P4, P5, P18 and P20
		A 2 2) Supports the TWRC's Precinct Plan and Sustainability Framework	C & T	Attractive to Developers-Permanence	Low	Medium/High	High	Medium/Low	Streetcars in mixed traffic,or the need to transfer, provides less reliable and slower transit service, which reduces the likelihood of people choosing transit over other modes. The City and the TWRC have development concepts and business plans based on achieving higher transit mode splits which allow for higher development densities
		A 2 3) Supports Provincial growth management plans, policies, and objectives	C & T	Ability to increase modal share for transit	No	No	Yes	Yes	Places to Grow (pg 14)
B) Transportation	B1) Auto Dependence	B 1 1) Maximizes non-auto (transit, pedestrian and cycling) modal split for trips to, and within, the study area	C	Transit Mode Split	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		B 1.2) Maximizes non-auto (transit, pedestrian and cycling) modal splits for trips through the study area	C	Transit Ridership	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
	B2) Transit	B 2 1) Provides attractive transit service (few transfers)	T	Ease of connectivity	Low	High	High	Low	Bus technology would require a transfer at King 504 Streetcar
		B 2 2) Provides attractive transit service (reliability, speed)	C & T	Ability to minimize Delays resulting from left / right turning autos.	Medium	Medium	High	High	Based on design charette, left turn / transit conflicts can be avoided through design
				Forecasted operating speeds at peak times.	Medium	Medium	High	High	For three block section, designs can be developed for each that maximize delays
				passenger ride quality (smooth, quiet)	Medium	High	High	Medium	Based on new streetcar track construction technology
				overall B2 2	Low	Medium/Low	High	Medium/High	Summary of B2 2
		B 2 3) Maximizes population and employment within 300m of transit	C	Area of residential and employment space within 300 m (m^2)	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		B 2.4) Provides flexibility and adaptability for staging and expansion by preserving opportunities for existing and future connections	C & T	Integration with existing streetcar network in adjacent communities	Low	High	High	Low	Based on network connectivity to existing streetcar system in downtown

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - SHORT LISTED TECHNOLOGY/ROW OPTIONS ANALYSIS TABLE

TECHNOLOGY / ROW

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Buses In Mixed Traffic	Streetcar In Mixed Traffic	Streetcar In Dedicated Right-of-way	Bus In Dedicated Right-of-way	DISCUSSION
		B 2.5) Provides for transit travellers wishing to travel though the study area but who are not destined for locations in the study area	C & T	Ability to accommodate through transit travellers	High	High	High	High	Based on demand model
	B3) Vehicles	B 3 1) Provides for local auto access	T	Left turn access permitted at mid-block	Yes	Yes	Partial	Partial	A dedicated ROW may result in restrictions to mid-block left turns
		B 3 2) Provides for auto travellers needing to travel through the study area but who are not destined for locations within the study area	T	Ability to maximize auto capacity	Yes	Yes	Yes	Yes	Can be accommodated as part of the design alternatives
		B 3 3) Connects to other planned Waterfront Precincts at boundaries of the study area	C	No. of connections with Waterfront Precincts	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
C) Socio-Economic Environment	C1) Automobile use in and through the study area	C1 1) Minimizes through auto travel on local roads	T	Ability to maximize auto capacity	Yes	Yes	Yes	Yes	Can be accommodated as part of the design alternatives
	C2) Tourism and waterfront access	C 2 1) Provides transit stop access to attractions	C	Ability to service areas of interest	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
	C3) Existing and future businesses	C 3 1) Affects existing buildings.	C	No. of existing non-residential buildings within 50 m	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		C 3 2) Encourages commercial activity	C & T	Ability to maximize sidewalk widths	High	High	Medium	Medium	Maximizing sidewalk widths improves pedestrian comfort and encourages commercial activity; transit in mixed traffic vs dedicated ROW requires additional space within the public realm (ie sidewalks)
		C 3 3) Minimizes adverse effects to Redpath freight rail spur.	n.a	Not applicable to WDL					
		C 3 4) Minimizes interference with rail service on the CN operations at the Cherry Street crossing	C	No. of junctions with CN Overpass	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		C 3 5) Maximizes services within 300 m of concentrated commercial activity within precinct plans.	C	m^2 of mixed use space within 300m of corridor	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		C 3 6) Minimizes EMI adverse effects (after construction)	T	Potential to impact EMI sensitive receptors	Yes	Yes	Yes	Yes	Considering Hybrid or Hydrogen Buses, relative EMI effects are considered similar
	C4) Existing and future residences	C 4 1) Affects existing properties	C	No. of existing residential buildings adjacent to ROW	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		C 4 2) Minimizes noise adverse effects (after construction).	C & T	Noise levels on adjacent sidewalks	High	Medium	Medium	High	Noise from engine acceleration not present with electric technology
		C 4 3) Minimizes vibration adverse effects (after construction).	T	vibration effects on adjacent development	Low	Medium	Medium	Low	
	C5) Effects on contaminated soils	C 5 1) Minimize impacts on/of contaminated soils	C	Length of corridor required through contaminated lands (m)	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
D) Natural Environment	D1) Air quality	D 1 1) Minimizes adverse effects to Air Quality	T	Impact of technology on local air quality	None	None	None	None	Considering Hybrid or Hydrogen Buses, relative emissions are considered similar to streetcars
		D 1 2) Maximizes opportunities to improve Air Quality	T	Ability to improve transit modal split	Low	Medium	High	Medium	Improving transit modal split reduces auto travel, proxy for improving air quality is increasing transit modal split. Transit vehicles mixed traffic are less reliable than transit vehicles in dedicated ROW. Buses incur transfer penalty
E) Cultural Environment	E1) Built Heritage Features	E 1.1) Minimizes built heritage features affected	C	No. of built heritage features within 100 m	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		E 1.2) Maximizes opportunities to enhance built heritage features.	C	Average distance to built heritage features (m)	Not a determining factor in evaluating Technology - considered in evaluating Corridors				

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - SHORT LISTED TECHNOLOGY/ROW OPTIONS ANALYSIS TABLE

TECHNOLOGY / ROW

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Buses in Mixed Traffic	Streetcar in Mixed Traffic	Streetcar in Dedicated Right-of-way	Bus in Dedicated Right-of-way	DISCUSSION
	E2) Cultural Landscapes	E 2 1) Minimizes cultural landscapes affected	C	No. of cultural landscape features within 100 m	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
		E 2 2) Maximizes opportunities to enhance cultural landscape features	C & T	Enhanced cultural landscapes possible	Yes	Yes	Yes	Yes	Streetscaping features may be included for all options
	E3) Archaeological Features	E 3 1) Minimizes archaeological features affected	C	No. of archaeological features within 100 m	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
	E4) First Nations peoples and activities	E 4 1) Minimizes adverse effects to lands and resources used for traditional purposes	C	Area of land used for traditional purposes (m^2)	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
F) Cost	F1) Capital costs	F 1 1) Minimizes construction costs	C & T	Cost $/m for built infrastructure	Low/ None	Medium	High	Low	Streetcars require trackwork and traction power. Median / ROW separators add slightly to overall project cost (buses and streetcars)
		F 1 1) Minimizes transit vehicle acquisition costs	C & T	Capital Cost of vehicles required to address demand ($ M)	Low	Medium	Medium	Low	
	F2) Property acquisition	F 2 1) Minimizes property acquisitions	C	(O.P. ROW - Existing ROW width) * Length in m2	Not a determining factor in evaluating Technology - considered in evaluating Corridors				
	F3) Operating costs	F 3 1) Minimizes the net operating cost	C & T	Operating cost per seat-km ($)	0.15	0.12	0.09	0.12	

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WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - DECISION RELEVANT TECHNOLOGY/ROW OPTIONS EVALUATION TABLE

TECHNOLOGY / ROW

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Bus in Mixed Traffic	Streetcar in Mixed Traffic	Streetcar in Dedicated Right-of-way	Bus in Dedicated Right-of-way	DISCUSSION
A) Land Use	A2) City, TWRC, and Provincial Policies	A 2 1) Supports the City's Secondary Plan and EA Master Plan objectives	C & T	Consistency with City's Secondary Plan	◑	◕	●	◕	
		A 2 2) Supports the TWRC's Precinct Plan and Sustainability Framework	C & T	Attractive to Developers Participation	◔	◕	●	◑	
		A 2 3) Supports Provincial growth management plans, policies and objectives	C & T	Ability to increase modal share for transit	◕	◕	●	●	
	Summary for Land Use				◑	◕	●	◕	From a Land Use perspective, a streetcar in a dedicated right-of-way is preferred because it provides a high degree of permanency in infrastructure in support of the City's and TWRC's transit first objectives
B) Transportation	B2) Transit	B 2 1) Provides attractive transit service (low transfers)	T	Ease of connectivity	◕	●	●	◕	
		B 2 2) Provides attractive transit service (reliability, speed)	C & T	Ability to minimize delays resulting from left turning autos. Forecasted operating speeds at peak times, passenger ride quality (smooth, quiet)	◔	◑	●	◕	
		B 2 4) Provides flexibility and adaptability for staging and expansion by preserving opportunities for existing and future connections	C & T	Integration with existing streetcar network and adjacent communities	◕	●	●	◕	
	B3) Vehicles	B 3 1) Provides for local auto access	T	Left turn access permitted at most block	●	●	◕	◕	
	Summary for Transportation				◔	◕	●	◑	From a Transportation perspective, a streetcar in a dedicated right-of-way is preferred to provides a more reliable service than transit in mixed traffic as well as faster travel time since a transfer is not required when connecting to streetcar service on King Street (bus technology would require a transfer at King Street)
C) Socio-Economic Environment	C3) Existing and Future Businesses	C 3 2) Encourages commercial Activity	C & T	Ability to maximize sidewalk widths	●	●	◕	◕	
	C4) Existing and Future Residences	C 4 2) Minimizes noise adverse effects (after construction)	C & T	Noise levels on adjacent sensitives	◕	●	●	◕	
		C 4 3) Minimizes vibration adverse effects (after construction)	T	Vibration effects on adjacent development	●	◕	◕	●	
	Summary for Socio-Economic Environment				●	●	◕	◕	From a Social-economic perspective, streetcars or buses in mixed traffic are preferred because these technology/ROW options allow for a greater amount of the available right-of-way to be dedicated to the public realm including sidewalk widths
D) Natural Environment		D 1 2) Maximizes opportunities to improve Air Quality	T	Ability to encourage transit ridership	◑	◕	●	◕	
	Summary for Natural Environment				◑	◕	●	◕	From a natural environment perspective, effects are noted as slightly different, however the difference is not considered to be a major issue in deciding on technology or right-of-way

WEST DON LANDS TRANSIT EA - ANALYSIS OF PLANNING ALTERNATIVES - DECISION RELEVANT TECHNOLOGY/ROW OPTIONS EVALUATION TABLE

TECHNOLOGY / ROW

Objectives	Criteria	Indicators	Corridor (C) or Technology (T) or both	Measure	Bus in Mixed Traffic	Streetcar in Mixed Traffic	Streetcar in Dedicated Right-of-way	Bus in Dedicated Right-of-way	DISCUSSION
E1 Cultural Environment		E 1.1 Maximizes opportunities to enhance cultural landscape features	C & T	Enhanced cultural landscapes possible	●	●	●	●	
	Summary for Cultural Environment				●	●	●	●	From a Cultural Environment perspective, all options are equally preferred based on the ability to enhance cultural features (where cultural features are understood to include any man made or modified objects or on the ground structures, buildings, street furniture, engineering works, plantings or landscaping)
F1 Cost	F1.1 Capital costs	F 1.1.1 Minimizes construction costs	C & T	Cost/km for fixed infrastructure	●	◑	◔	◕	
		F 1.1.2 Minimizes transit vehicle acquisition costs	C & T	Capital Cost of vehicles required to address demand ($ M)	●	◕	◕	●	
	F1.2 Operating costs	F 1.2.1 Minimizes the net operating cost	C & T	Operating cost per seat km ($)	◑	◕	●	◕	
	Summary for Cost				●	◕	◕	●	From a Cost perspective, although for buses both vehicle and right of way construction costs are lower than streetcar, the operating costs for streetcar are lower. Therefore, it was determined that cost is not a significant deciding factor
Overall					◔	◕	●	◑	

TORONTO TRANSIT COMMISSION

TO West Don Lands Transit EA Project Team

FROM Bill Dawson

DATE June 12, 2007

SUBJECT Screening of Cherry St Design Options

Members of the project consultant team met with TTC technical staff on June 11, 2007 to review the results of their initial screening of design alternative, as summarised in Mark Nykoluk's memo of June 8, 2007. Subsequently, TTC Service Planning and Operational Planning staff undertook a transit-specific detailed review of the screening results.

TTC staff have concluded that one of the options being proposed for retention through the consultant review process, option 2a "Transit in Outside Lanes", does not meet the pass/fail criteria of providing priority for transit vehicles from a TTC perspective. For this reason we recommend that it be dropped from further consideration as a design option. This memo documents the reasons for this conclusion. In addition comments are provided to clarify TTC's assumptions regarding option 3b "Dedicated Transit East Side".

Option 2b "Transit in Outside Lanes"

This option involves the operation of streetcars in the curb lanes of a four-lane Cherry St., with automobile through/left turn lanes in the centre of the roadway. It also provides for right-turn lanes at intersections to help reduce transit vehicles delays

The fundamental concern of TTC staff is that the proposed design will be worse, from a transit service perspective, than the design used for existing streetcar services through the downtown area – services that have already been identified by passengers, and many in the local community, as unacceptably slow and unreliable. With current streetcar operations there is no concern that motorists will stop on the tracks to make a 'quick' delivery, or that a vehicle experiencing mechanical trouble which is pulled over against the curb will result in a blockage to streetcar operation. With a "transit in outside lanes" option these situations would affect transit operations.

Diamond Lane Concept

At the June 11 meeting a number of concepts were suggested related to the treatment of curb transit lanes to provide a "diamond lane" type of operation to encourage other traffic to stay off the streetcar tracks. Further review by TTC staff has concluded that physical design treatments to strongly discourage other vehicles from using the streetcar lanes are impractical from a traffic operations and safety perspectives. For example, separating the transit lanes in some physical way from the auto lanes between intersections (barriers between the lanes, raised track bed etc.)

would create significant merging hazards when other vehicle are eventually required to cross the streetcar tracks to reach a right turn lane at the end of the physical separation. Recent TTC/City experience on Spadina Avenue in attempting to separate traffic from transit lanes demonstrated that it is unrealistic to expect drivers to always understand the intent of such barrier/signage systems and respond in a safe way.

The dilemma is that the more successful any such treatment is at discouraging auto use of the transit lane, the greater the potential for confusion amongst drivers concerning what is really intended and the resulting unpredictable (and periodically unsafe) vehicle movements crossing the transit tracks. For this reason TTC staff concluded that, for this option to function safely, the "diamond lane" treatment would need to be regulatory only, or be eliminated altogether.

The TTC has extensive experience with regulatory "diamond lane" operations on bus and streetcar routes. Enforcement is extremely difficult and typically they provide little or no benefit to transit vehicles as the busier the roadway becomes, the more frequent the violations of the lane regulations become.

In busy, mixed-use, downtown settings, which is what is hoped-for with Cherry St., commercial, retail and residential activity will result in vehicles stopping at the curb for taxi pickups, courier drop offs, private vehicle stops etc. On bus routes with "diamond lanes" these events can be accommodated by the bus pulling out around the stopped vehicle, however, streetcars do not have this flexibility. For this reason it is expected that there would be regular occurrences of a streetcar (carrying 100+ transit passengers) being delayed behind a single stopped vehicle in the curb lane, potentially for extended periods of time. Even if such events are relatively infrequently they would be clearly unacceptable from a transit passenger perspective and would be seen as unreliable service caused by giving autos priority over transit services. TTC staff can see no practical way to prevent this type of situation occurring periodically, and the frequency of the situation will increase as the area becomes busier and more successful.

Right Turn Delays

The proposed design does address the issue of streetcars being delayed behind left-turning vehicles but this is replaced with concerns about streetcars being delayed by right-turners. The design provides for right-turn lanes, but the traffic analysis indicates that these lanes would need to be longer than shown in the plan to accommodate all of the forecast right-turners from Cherry St to the east. Making the right turn lanes longer would affect the right-of-way width and weaken the benefits of this option with respect to a narrow right-of-way. Leaving the right turn lanes as they are, would result in right-turners waiting in the streetcar lane waiting to make their turn, thereby delaying streetcars and making transit service less reliable. The option of banning right turns at some times of the day (as is currently done with left turns on existing streetcar routes), would be difficult to implement effectively given the mixed messages that would result where a separate right turn lane had been provided.

Vehicles Using the Transit Lanes to Avoid Left-turning Vehicles

The option is based on the assumption that autos in the through lane who find themselves behind

a left turning vehicle will be able to enter the streetcar lane to get around the left-turning vehicle. This will result in autos weaving into the streetcar tracks in front of streetcars which do not have good emergency stopping capability. To ensure safe operation, streetcars services would need to be slowed down to reduce the risk of hitting automobiles weaving into the streetcar lane. Through vehicles queuing in the streetcar lane because of left turning vehicles stopped at the stop line will also delay streetcars and lead to more of a mixed-traffic operation than a dedicated right-of-way.

Conclusion

With the combined impact of the factors listed above, the option of operating streetcars in the outside lanes on Cherry St. would result in poorer streetcar service than is currently provided elsewhere in the downtown area - service which is already unacceptable from a passenger quality of service perspective and which we are looking for ways to improve. On this basis, this option does not meet the pass/fail screening criteria of providing "transit priority" service that encourages increased transit use. For these reasons option 2b should be dropped from further consideration in the West Don Lands Transit EA.

Option 3b "Dedicated Transit East Side"

As discussed at the June 11 meeting, TTC agreement that this option meets the minimum requirement for "transit priority" is on the assumption that the signal timing plan allows transit vehicles to travel on the same green phase as north-south through traffic. Experience with the alternative "transit only phase" signal operation on Queens Quay West has been very poor from a transit perspective, and results in excessively slow transit operations. To allow transit vehicles to operate at the same time as through traffic, all turning movement crossing the tracks will either require separate turn lanes and signal phases or be prohibited.

Project Manager – TWRC-TTC Waterfront Transit EAs
Service Planning Department

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cc Gary Carr, Chief Engineer - Operations Planning, TTC
Jim Sinikas, Senior Project Engineer, Operations Planning, TTC