



## **AGENDA**

### **Environmental Assessments for Transit Projects in the Eastern Waterfront**

#### **Technical Advisory Committee Meeting #3**

**1:30 – 3:00 pm**

**Friday, June 15, 2007**

**Waterfront Toronto – Main Boardroom  
20 Bay Street, Suite 1310**

#### **1:30 pm**

1. Overview of Project Status B.Dawson/P. Di Mascio
  - a. Project Schedule
  - b. Other Related Waterfront Projects
    - i. Central Waterfront Design – West8/DTAH
    - ii. Lower Don Lands – Port Lands Concept

#### **1:45 pm**

2. East Bayfront EA Progress Update D. Callan
  - a. Assessment of transit technologies and selection of the preferred alternative
  - b. Potential tunnel portal locations to be carried to the next stage of study for further detailed analysis

#### **2:30 pm**

3. West Don Lands EA Progress Update S. Thorburn
  - a. Review of short-list of design alternatives being evaluated on Cherry Street

#### **3:00 pm**

4. Other Business
5. Next Meeting



# Minutes of Meeting

Project:	EAs for Transit Projects in the Eastern Waterfront	Meeting No.																																										
Project No.	33015532	Date: June 15, 2007																																										
Location:	20 Bay Street	Time: 1:30 PM																																										
Purpose:	WDL Transit EA – TAC Meeting																																											
Present:	<table><tbody><tr><td>Scott Thorburn</td><td>URS Canada Inc.</td></tr><tr><td>Pina Mallozzi</td><td>Waterfront Toronto</td></tr><tr><td>Antonio Medeiros</td><td>Waterfront Toronto</td></tr><tr><td>James Roche</td><td>Waterfront Toronto</td></tr><tr><td>Jacqueline White</td><td>City – Transportation</td></tr><tr><td>Gwen McIntosh</td><td>City – Planning</td></tr><tr><td>Jamie McEwan</td><td>City – Waterfront Sec.</td></tr><tr><td>Michael Gerrard</td><td>Toronto Fire Services</td></tr><tr><td>Nigel Tahair</td><td>City Planning – Transportation</td></tr><tr><td>Bill Lashbrook</td><td>City Planning – Transportation</td></tr><tr><td>Alex Blasko</td><td>Toronto and Region Conservation Authority</td></tr><tr><td>Girma Tewolde</td><td>Toronto Hydro</td></tr><tr><td>Mike Carriere</td><td>Toronto Hydro</td></tr><tr><td>Ken Dion</td><td>Toronto and Region Conservation Authority</td></tr><tr><td>Bill Dawson</td><td>Toronto Transit Commission</td></tr><tr><td>Dan Francey</td><td>GO Transit</td></tr><tr><td>Bob Leek</td><td>Toronto Fire Services</td></tr><tr><td>Nitti Subramanian</td><td>Waterfront Toronto</td></tr><tr><td>Alun Lloyd</td><td>BA Group</td></tr><tr><td>Roger duToit</td><td>duToit Allsopp Hillier</td></tr><tr><td>John Hillier</td><td>du Toit Allsopp Hillier</td></tr></tbody></table>		Scott Thorburn	URS Canada Inc.	Pina Mallozzi	Waterfront Toronto	Antonio Medeiros	Waterfront Toronto	James Roche	Waterfront Toronto	Jacqueline White	City – Transportation	Gwen McIntosh	City – Planning	Jamie McEwan	City – Waterfront Sec.	Michael Gerrard	Toronto Fire Services	Nigel Tahair	City Planning – Transportation	Bill Lashbrook	City Planning – Transportation	Alex Blasko	Toronto and Region Conservation Authority	Girma Tewolde	Toronto Hydro	Mike Carriere	Toronto Hydro	Ken Dion	Toronto and Region Conservation Authority	Bill Dawson	Toronto Transit Commission	Dan Francey	GO Transit	Bob Leek	Toronto Fire Services	Nitti Subramanian	Waterfront Toronto	Alun Lloyd	BA Group	Roger duToit	duToit Allsopp Hillier	John Hillier	du Toit Allsopp Hillier
Scott Thorburn	URS Canada Inc.																																											
Pina Mallozzi	Waterfront Toronto																																											
Antonio Medeiros	Waterfront Toronto																																											
James Roche	Waterfront Toronto																																											
Jacqueline White	City – Transportation																																											
Gwen McIntosh	City – Planning																																											
Jamie McEwan	City – Waterfront Sec.																																											
Michael Gerrard	Toronto Fire Services																																											
Nigel Tahair	City Planning – Transportation																																											
Bill Lashbrook	City Planning – Transportation																																											
Alex Blasko	Toronto and Region Conservation Authority																																											
Girma Tewolde	Toronto Hydro																																											
Mike Carriere	Toronto Hydro																																											
Ken Dion	Toronto and Region Conservation Authority																																											
Bill Dawson	Toronto Transit Commission																																											
Dan Francey	GO Transit																																											
Bob Leek	Toronto Fire Services																																											
Nitti Subramanian	Waterfront Toronto																																											
Alun Lloyd	BA Group																																											
Roger duToit	duToit Allsopp Hillier																																											
John Hillier	du Toit Allsopp Hillier																																											

- 
- | <u>Items</u> | <u>Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>Action by:</u> |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1.           | <p>Pina provided overview.</p> <p>Utilities can be a major issue. What has been done?</p> <ul style="list-style-type: none"><li>▪ <i>Haven't got there yet but will start soon.</i></li><li>▪ <i>Toronto Hydro willing to meet now.</i></li></ul> <p>What sort of connections between GO and TTC are being explored?</p> <ul style="list-style-type: none"><li>▪ <i>None to date but preliminary concept does include a connection.</i></li><li>▪ <i>Tim Laspa of City Planning and GO Transit.</i></li><li>▪ <i>What are the O.D.'s for the movements at Union.</i></li></ul> |                   |

PLEASE NOTE: If your records of this meeting do not agree with this document, or if there are any omissions, please advise the writer at once, otherwise the contents of this document shall be assumed accurate and correct.
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

URS Canada Inc.  
75 Commerce Valley Drive East  
Markham, ON Canada L3T 7N9  
Tel: 905.882.4401  
Fax: 905.882.4399  
www.urs.ca

<u>Items</u>	<u>Description</u>	<u>Action by:</u>
--------------	--------------------	-------------------

- *TTC will supply.*

EA process – will boundary be expanded?

- *There will be flexibility to address overlap with Lower Don.*

Is this based on new LRT vehicles?

- *No, must accommodate both.*
- *Capacity calculations are based on larger vehicles.*
- *Volumes are full build out #'s not opening year.*

Portals can't be shortened as the gradient is fixed.

What will be the criteria for locating?

- *A number of criteria:*
  - *cost*
  - *traffic*
  - *transit ops*
  - *crowd levels from ferry docks*

Existing portal has a knock out panel to go to the east but doesn't allow move from East to West.

- *Evaluation framework is in place from ToR. Refinement of measures [REDACTED].*

Existing rail spur in the east

- *To be addressed during next phase.*

10 – 20% transfer penalty for a walking corridor

- *Closest example is Spadina transfer – unused.*

Amending formula for spur vs. no spur?

- *Probably not for the portal.*
- *Maybe for surface component.*

Waterfront steering committee

- *Pedestrian oriented*

Criteria – public domain is an important consideration.

Roger's recap from yesterday's meeting.

<u>Items</u>	<u>Description</u>	<u>Action by:</u>
--------------	--------------------	-------------------

What about the bridge?

- *“The Loop”*
  - *loop*
  - *SWM*
  - *park*
- Loop will stay in the longer term

Peter Langdon for information

- *Capital program*
- *Sam Speers ITR*

What about the connection to EBF?

- *Will be addressed at a later date.*
- *TRCA EA won’t have a decision for several months.*
- *Lower Don Lands Precinct Plan just started.*

Need to meet with MOE to discuss how we address all these issues.

GO Transit station in WDL is not in current plans but is not precluded.

PIC to be determined.

Recommendations and meeting will be set up at a later date.

Submitted by: \_\_\_\_\_ Scott Thorburn, P.Eng.

Distribution:     Attendees

# **TTC –Waterfront Toronto Transit Environmental Assessments**

East Bayfront / West Don Lands

## **Technical Advisory Meeting #3**

**June 15, 2007**



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**



## **TAC Agenda**

- Introduction B.Dawson
- Other Related Waterfront Projects Pina Malozzi
  - Central Waterfront Design – West8/DTA
  - Don Lands South – Port Lands Concept
- East Bayfront EA Progress Update D. Callan
  - o Assessment of transit technologies and selection of the preferred alternative
  - o Potential tunnel portal locations to be carried to the next stage of study for further detailed analysis
- West Don Lands EA Progress Update S. Thorburn
  - o Review of short-list of design alternatives being evaluated on Cherry Street



WATERFRONToronto

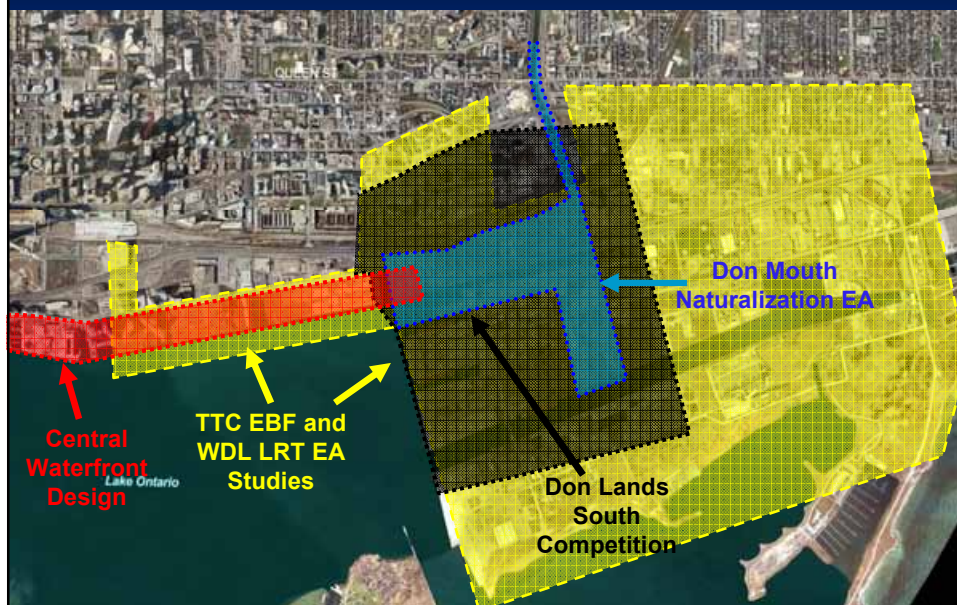
**TTC-TWRC East Bayfront  
Environmental Assessment**



### 3 Terms of Reference Approved by MOE



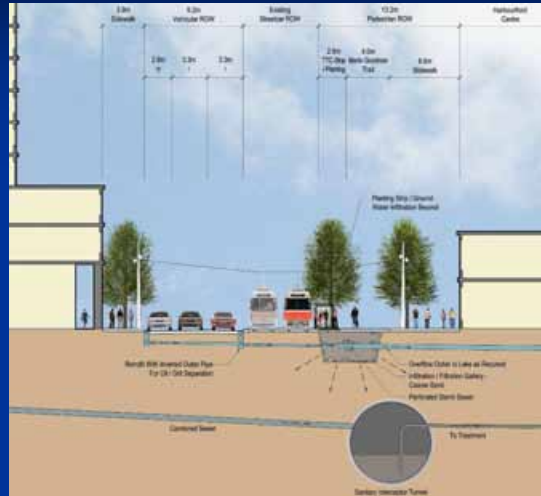
### Concurrent Studies





## Central Waterfront Design

- Central Waterfront Road Class EA is proceeding west of Bay
- Coordinated with East Bayfront EA
- Cross-section will be developed as one of the EBF EA alternatives



TTC-TWRC East Bayfront  
Environmental Assessment



TTC-TWRC East Bayfront  
Environmental Assessment



# Don Lands South Competition

# East Bayfront EA Study



## East Bayfront EA Study Area



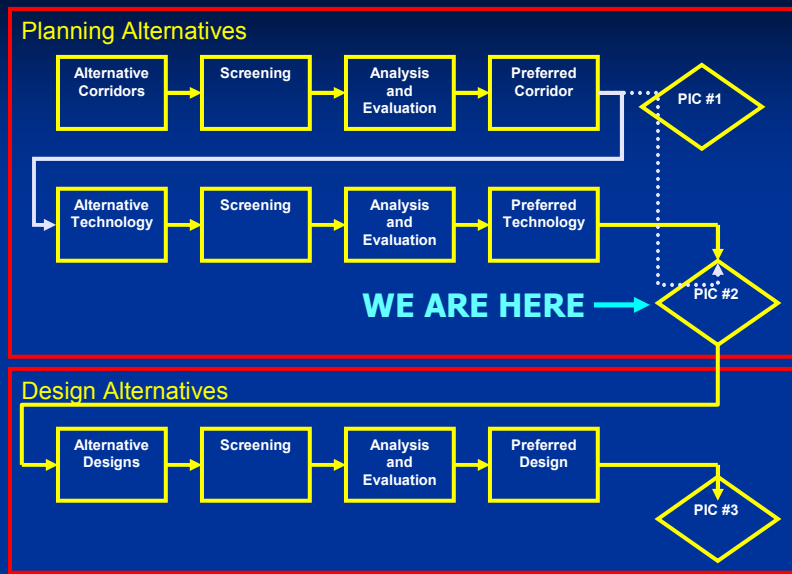
## East Bayfront Area Today



## East Bayfront Area – Future



## EA Decision Making Process



WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Community Consultation

- Terms of Reference, March 2006 to July 2006
  - Four Community Liaison Committee (CLC) meetings
  - Two Workshops/Public Information Centres
  - First Nations and Technical Advisory Committee (TAC) input
- Initiated Individual EA studies, Sept 2006 to date
  - Nine CLC meetings (5 East Bayfront + 4 West Don Lands)
  - Two TAC meetings
  - One Public Information Centre



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**



## Summary of PIC/Public Workshop #1



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**



## PIC #1 Recommendations

### CORRIDOR

- Carry Queens Quay as the “preferred corridor” to the design alternatives stage

### TECHNOLOGY/ROW (s)

- Carry streetcar and bus (in dedicated right-of-way) forward to the design alternatives stage



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Updated Ridership Forecast



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Ridership Forecast (AM Peak Hour)



TTC-TWRC East Bayfront  
Environmental Assessment



## Technology Selection

(Need to consider Bay Street underground shuttle connection first )



TTC-TWRC East Bayfront  
Environmental Assessment





## Queens Quay/Ferry Docks to Union Station

- First, discuss connection issues between Queens Quay and Union Station
- Original concept: streetcar or bus along Queens Quay East and north to Union Station loop via Bay Street tunnel
- Requested to consider a shuttle or moving walkway under Bay Street – in conjunction with streetcar or bus along Queens Quay East
- Suggested Benefit: improved streetscape and urban design
  - Removes the existing tunnel portal at Queens Quay/Bay
  - Avoids the need for a second portal



WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Queens Quay/Ferry Docks to Union Station

### Original Concept (Single Technology):

Transit (streetcar or bus) to Union Station loop, underground via Bay Street tunnel – *direct connection*



WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment

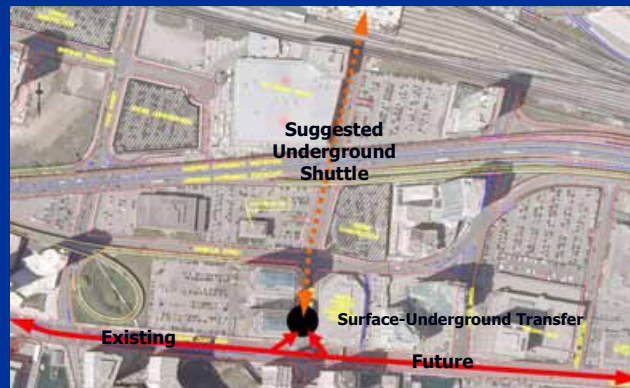




## Queens Quay/Ferry Docks to Union Station

### Suggested Alternative (Bay Street Shuttle):

Replace transit with an underground shuttle or moving walkway to Union Station loop – *transfer required*



WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Shuttle/Moving Walkway Fundamentals

### Basic concept:

- Connects Queens Quay with the Union Station Loop
- Underground, utilizes the Bay Street tunnel
- Must provide capacity to accommodate forecast demand
- Requires a new surface-to-underground transfer terminal at Queens Quay end



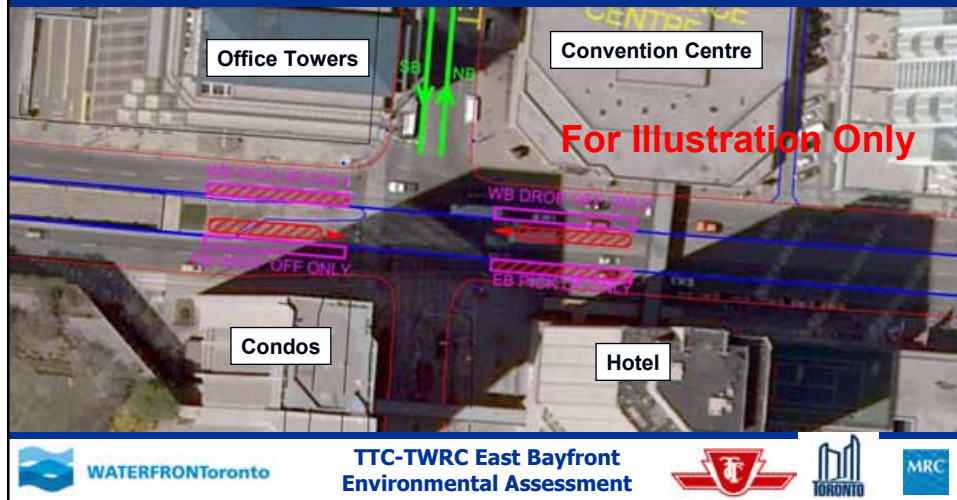
WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment

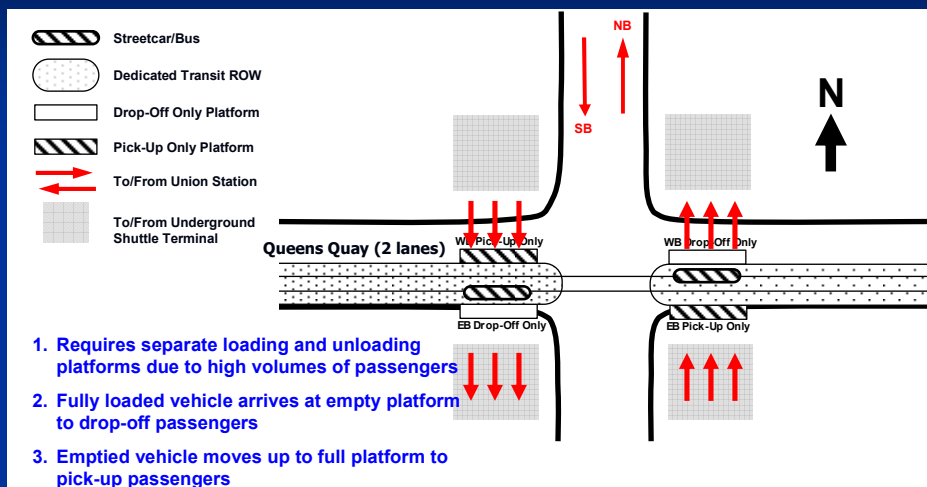


## Surface-Underground Transfer Concept

- On-street terminal transfer platforms on Queens Quay



## Surface-Underground Transfer Concept



## Peak Hour Passenger Volumes (1)

- Passengers to/from surface transit on Queens Quay:
  - QQE (4200 inbound plus 2500 outbound)
  - QQW (1200 inbound plus 1700 outbound)
  - Total of 5400+ inbound and 4200+ outbound peak hour passengers that must transfer between surface transit and shuttle/moving walkway at the Queens Quay/Bay intersection
- For comparison, busiest peak hour streetcar-to-subway transfer today:
  - 1150 at King and Yonge
  - 1400 at College and Yonge



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Peak Hour Passenger Volumes (2)

- In addition to passengers from QQE and QQW, the shuttle or moving walkway must also carry passengers heading to/from the Queens Quay/Ferry Docks Station only
- Therefore, total volume of passengers boarding the shuttle during the peak hour:
  - Approx. 5600 inbound plus 5100 outbound
  - 10700+ in both directions
- Requires an underground terminal with sufficient platform space to accommodate peak volumes



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Union Station Loop Expansion

- Existing loop requires expansion – part of this study and to be analyzed at a later stage
- Expansion required as a result of inadequate capacity to accommodate existing as well as future passenger volumes



WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment



WATERFRONTToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Shuttle Would Require a Similar Terminal at South End

- Boarding and alighting volumes at Union Station are similar to those who got on/off at Queens Quay after transfer from QQE and QQW
- Therefore, a similar high-capacity passenger terminal would be required at the south end



## Shuttle/Moving Walkway Assessment (1)

### Quality of Service:

- Would reduce transit ridership from QQW and QQE
  - Estimated 10% to 20% reduction in attraction because of forced transfer – counter-intuitive to the project's purpose
- Creates a major inconvenience for passengers heading to/from QQW and QQE – would not be considered a good transit service
- In the event of walkway breakdown or maintenance, all passengers would have to walk to/from Union Station



## Shuttle/Moving Walkway Assessment (2)

### Shuttle Infrastructure Needs :

- Requires construction of a second underground terminal (at Queens Quay) comparable in size to an expanded Union Station Loop
- Requires modifications to the Bay Street tunnel currently in use for streetcars
- Access for shuttle vehicles is a major challenge
  - Require a portal to get shuttle and maintenance vehicles underground



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Shuttle/Moving Walkway Evaluation (1)

### Shuttle/Moving Walkway:

- A shuttle/moving walkway option could improve streetscape and urban design by eliminating the existing portal on Queens Quay West and avoiding the need for an additional tunnel portal
- But, forcing 5400+ (inbound) and 4200+ (outbound) peak hour passengers to transfer from surface transit to shuttle/moving walkway underground is poor service from user's point of view
- Poor quality of service results in ridership reduction



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment





## Shuttle/Moving Walkway Evaluation (2)

### Shuttle:

- In addition to tunnel modifications, shuttle requires a surface-to-underground vehicle access for maintenance purposes
- High capital costs related to tunnel modifications, vehicle access, and maintenance facilities



TTC-TWRC East Bayfront  
Environmental Assessment



## Shuttle/Moving Walkway Conclusion

### Moving Walkway:

- Poor transit service with forced transfer
- Significant infrastructure costs required to convert Bay Street tunnel into a safe and accessible environment for transit pedestrians
- Still requires some sort of portal access

### CONCLUSION:

Shuttle/moving walkway not carried forward for further analysis



TTC-TWRC East Bayfront  
Environmental Assessment



## Technology Selection

(Streetcar/LRV or Bus in Dedicated ROW)



TTC-TWRC East Bayfront  
Environmental Assessment



## Streetcar/LRV in Dedicated Right of Way



TTC-TWRC East Bayfront  
Environmental Assessment



## Bus in Dedicated Right of Way



## Vehicle Assumptions

- To handle demands we are assuming
  - 18 m buses (articulated) or
  - 28 m new streetcar/LRV
- Propulsion
  - Streetcars – electric
  - Buses – clean diesel, hybrid, fuel-cell, trolley (electric)
- Vehicle service loads
  - Articulated bus - 80 passengers/vehicle
  - Streetcar/LRV - 125 passengers/vehicle
- Passenger demand to/from Union Station controls headways



## Forecast Ridership Demands



## Total Vehicle Demand at Union Station (From Both East and West)

- 6800 passengers per peak hour northbound at Union Station requires:
  - For streetcar only: approx. **55 vehicles** per hour  
 $\text{> } 10 \text{ (QQW)} + 10 \text{ (Bremner)} + 35 \text{ (QQE)} = 55$
  - For streetcar plus bus: approx. **74 vehicles** per hour  
 $\text{> } 10 \text{ (QQW)} + 10 \text{ (Bremner)} + 54 \text{ buses (QQE)} = 74$

## Vehicles from Queens Quay East

- Arriving headways of vehicles from Queens Quay East:
  - o Streetcars: 35 veh/hr = 1 vehicle every 106 sec.
  - o Buses: 54 veh/hr = 1 bus every 67 sec



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Gap Between Stopped and Arriving Vehicles

- **Headway** is the time between 2 moving vehicles
- **Gap** is the time between a moving vehicle arriving at a platform and the preceding vehicle (from a stopped position) vacating the platform
- Gap is what controls service reliability and the need for additional station passing lane(s)
- TTC generally starts to experience service reliability problems when there are 30 or more vehicles per hour at a platform without a passing lane



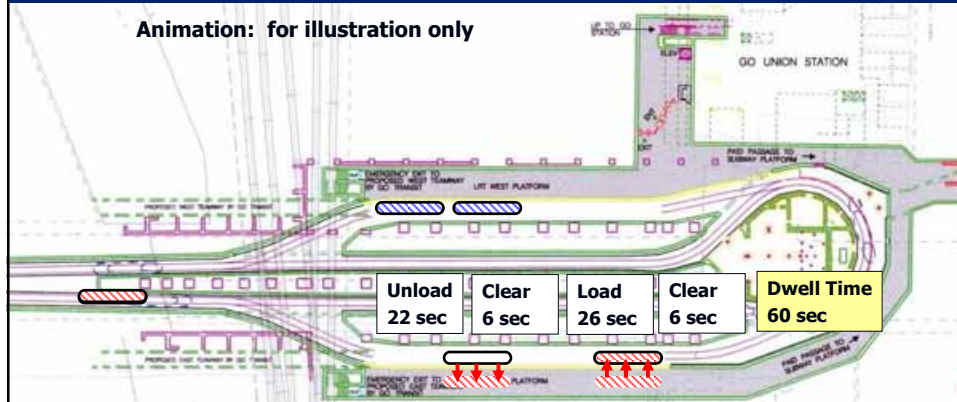
WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Gap (QQE Buses)

Animation: for illustration only



Bus Gap = Headway – Dwell Time = 67 – 60 = 7 sec before next QQE bus arrives

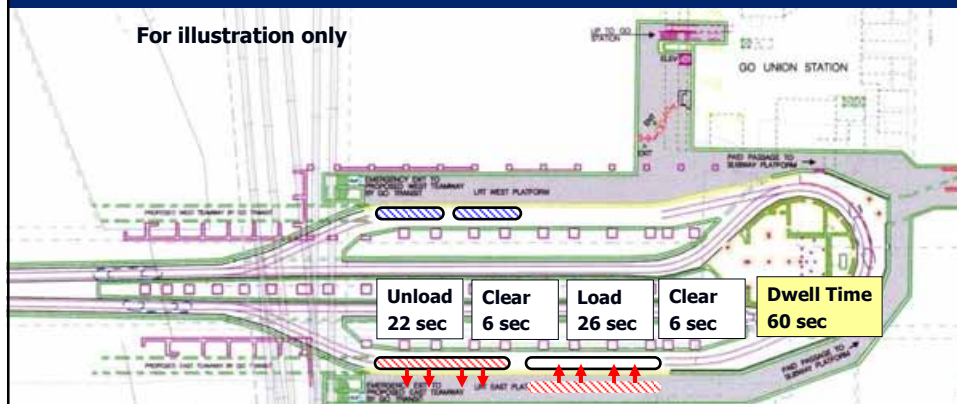


TTC-TWRC East Bayfront  
Environmental Assessment



## Gap (QQE Streetcars)

For illustration only



Streetcar Gap = Headway – Dwell Time = 106 – 60 = 46 sec before next QQE car arrives



TTC-TWRC East Bayfront  
Environmental Assessment





## Gap and Passing Track

- Gap
  - QQE streetcars: approx. 46 seconds before next car arrives
  - QQE buses: approx. 7 seconds before next bus arrives
- Passing track
  - 54 buses per hour (over 30) requires a second passing lane in order to provide a reliable service



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Bus vs Streetcar Service Reliability

- 54 buses per hour arriving at Union Station
- Theoretical gap of only 7 seconds between buses will result in continuous delays, platooning and unreliable service
- Once delay occurs in part of line, entire service will be impacted
- Bus headways of 67 seconds required for this service with no passing lane in the tunnel or at station
- Shortest existing bus headway on any TTC route today is 90 seconds (Finch East – Yonge to Don Mills) but these buses can pass each other in the bus terminal
- **Conclusion** - Not possible to reliably provide this level of service using buses in the underground tunnel/loop



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## A photograph of a tunnel interior, showing tracks and walls. The tunnel is dimly lit with warm, yellowish light. On the left, there is a wall made of large, light-colored rectangular blocks. On the right, the wall is made of concrete and features several vertical yellow and black striped safety markings. In the center, a set of tracks runs along the floor of the tunnel, receding into the distance. The ceiling is low and appears to be made of concrete or a similar material. The overall atmosphere is somewhat somber and industrial.



## Tunnel Clearance

- Streetcars and Buses are the same width (2.59 m excluding mirrors)
- Existing streetcar tunnel is 3.25 m driving width plus .665 m clearance for evacuation (includes open vehicle door)
- Buses require extra width for manoeuvrability



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Lawrence Bus Terminal

- TTC's narrowest bus tunnel
  - Approx 4.5 m per lane at the narrowest point
  - Poor bus operation (slow speed and difficult to manoeuvre)

Lawrence Subway



Lawrence Subway



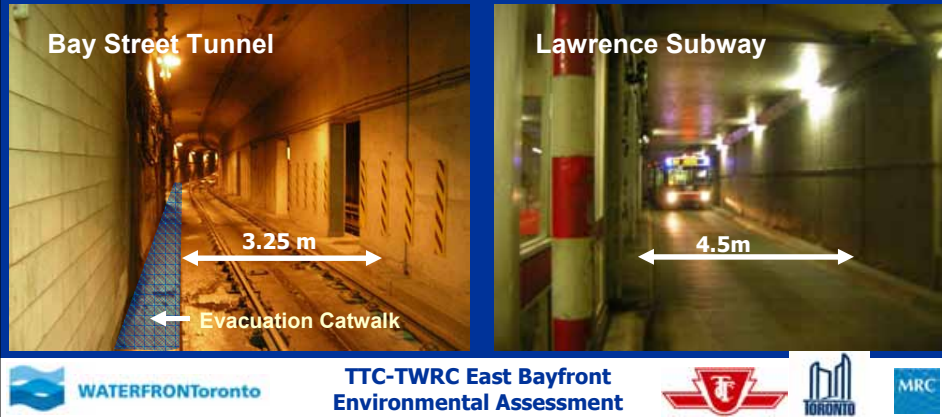
WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Bay Street Tunnel

- Bay Street tunnel would require widening and paving in order to accommodate buses
- For a desirable bus operation, tunnel lane has to be wider than 4.5 m plus extra width for an evacuation catwalk



## Don Mills Bus Terminal

- Wider tunnel provides better bus manoeuvrability and improves operation



## Cost of Tunnel Widening

- Cost of widening/reconstructing the existing tunnel will be comparable to building a whole new tunnel
- Approx. length of tunnel requiring widening/reconstruction
  - 500 m
- Estimated costs of tunnel widening/reconstruction
  - Approx. \$40 M to \$50 M



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Technology Assessment Summary

### Bus versus Streetcar :

- Shorter bus headways will result in low service reliability – **not possible** in practice to maintain reliable **bus service** operation and carry the required ridership
- Significantly more expensive than streetcar due to the need to both widen/rebuild and pave the entire Bay Street tunnel to support bus operation
- Lack of network continuity/connectivity with the Harbourfront LRT to the west and the future West Don Lands streetcar to the north-east



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Technology Conclusion

- **Streetcar/LRV selected as the Preferred Technology**
  - o Carried forward in conjunction with assessment/evaluation of portals and ROW design for Queens Quay East



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**



## Potential Portal Locations



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**





## Potential Locations Considered

- Portal is a key element of alignment design



## Portal Screening

- High-level analysis to screen out options that are less feasible
- York Street and Yonge Street were screened out as they share 3 major issues:
  - Neither can accommodate the proposed portal adequately – would result in an undesirable traffic or transit operation
  - Both would require extensive tunnelling within close proximity of heritage and existing residential buildings
  - Both would result in a circuitous route to Union Station – resulting in longer travel time



## Portal Screening

### York Street:

- (1) Portal would block the Harbour/York intersection and effectively shut down eastbound traffic from Lake Shore and Gardiner



## Portal Screening

### York Street:

- (2) Would require extensive tunnelling and re-routing of the Bay Street tunnel within close proximity of two heritage buildings



## Portal Screening

### York Street:

(3) Circuitous route for Queens Quay East streetcars



## Portal Screening

### York Street:

**CONCLUSION** – York Street screened out





## Portal Screening

### Yonge Street:

- (1) Would require a loop curve to connect Yonge Street with Harbour Street – undesirable from a transit operation perspective



## Portal Screening

### Yonge Street:

- (2) Would require extensive tunnelling and re-routing of the Bay Street tunnel within close proximity of existing condominiums



## Portal Screening

### Yonge Street:

(3) Circuitous route for Queens Quay West streetcars



## Portal Screening

### Yonge Street:

**CONCLUSION** – Yonge Street screened out



## Portal Screening Conclusion

- Carry forward options on Bay and Queens Quay East into the next phase for further analysis
- May consider Harbour Street if options on Bay are not possible



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**



## Next Steps

- Public Workshop - June 21 Novotel Hotel
  - Receive comments from the TAC, public
- Detail analysis of short-listed portal options
- Selection of the preferred portal location and development of Queens Quay East design alternatives
- Assess and evaluate QQE design alternatives with the Community Liaison Committee and Technical Advisory Committee
- Hold a third public workshop in Fall – assessment of design alternatives and recommendation on the Preferred Alternative



WATERFRONToronto

**TTC-TWRC East Bayfront  
Environmental Assessment**





# Questions



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



## Bay Street Option A



WATERFRONToronto

TTC-TWRC East Bayfront  
Environmental Assessment



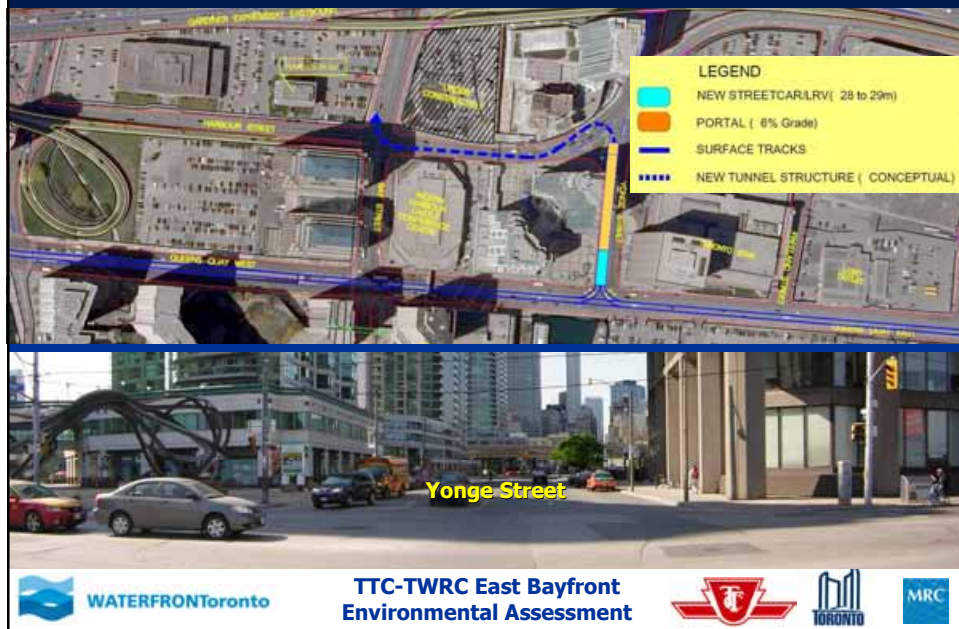
## Bay Street Option B



## York Street



## Yonge Street



## Harbour Street





# Queens Quay

