



# Waterfront Design Review Panel

March 20, 2019



# Transit Reset: Union Station – Queens Quay Link Study

For Information

March 20, 2019

# Study Context: The Link

## Transit Reset: Union Station – Queens Quay Link Study

Proponent: City of Toronto

Design Team: ARUP

Review Stage: For Information



Source:  
Google Earth

# Study Context: Waterfront Transit



# Policy Context

- Crucial to realizing the Waterfront Secondary Plan and Precinct Plans' visions
- Sustainable mobility and sustainable development
- Unlocking potential
- Leveraging investment

# Goals for Today

1. For the Panel to become informed on the latest design, study findings and conclusions
2. For the Panel to provide comments for consideration as the design evolves

# Agenda

Transit Reset: Union Station – Queens Quay Link Study

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Design Team: ARUP

Review Stage: For Information

1. Study Background: Nigel Tahair, City of Toronto (5 minutes)
2. Study Findings: Marc-Paul Gauthier, ARUP (20 minutes)
3. Questions/Comments/Discussion (45 minutes)

# Transit Reset: Union Station – Queens Quay Link Study

Design Review Panel

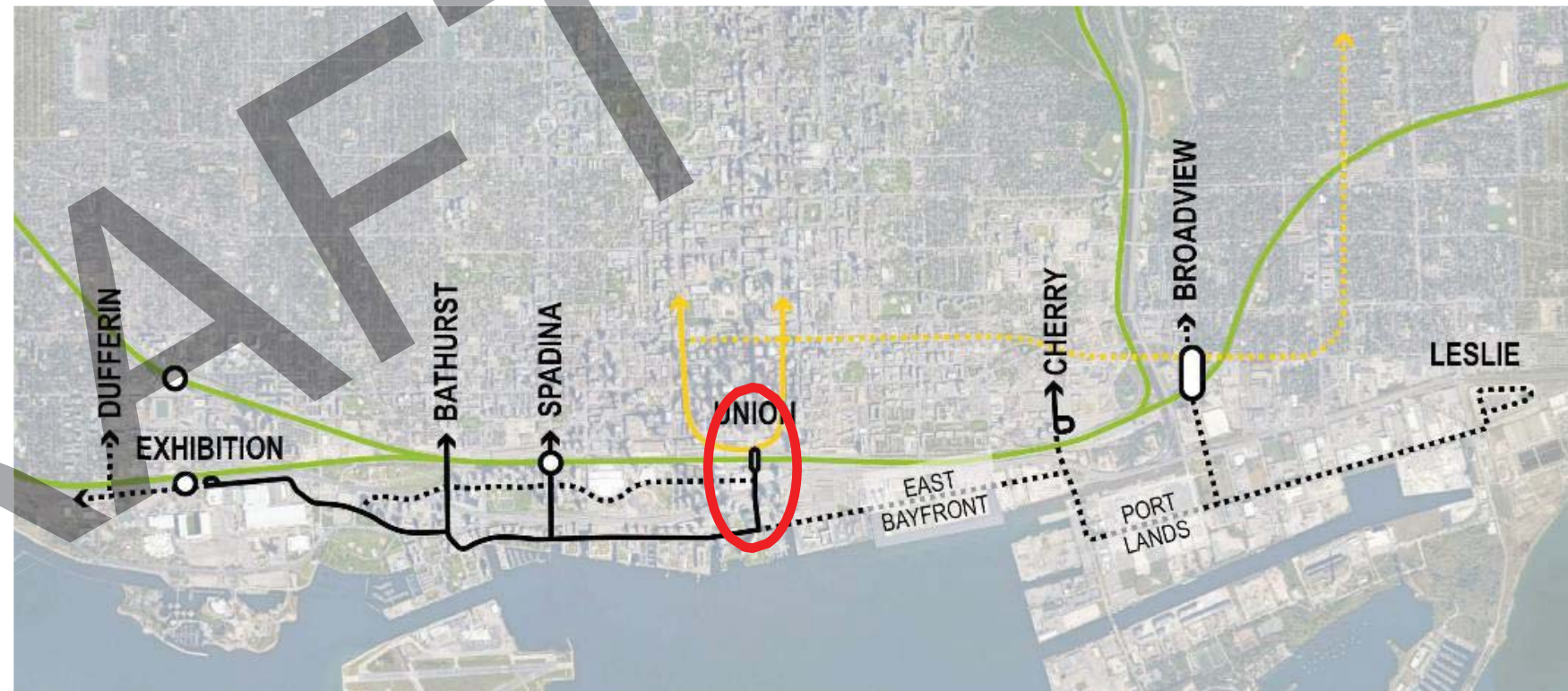
March 20, 2019



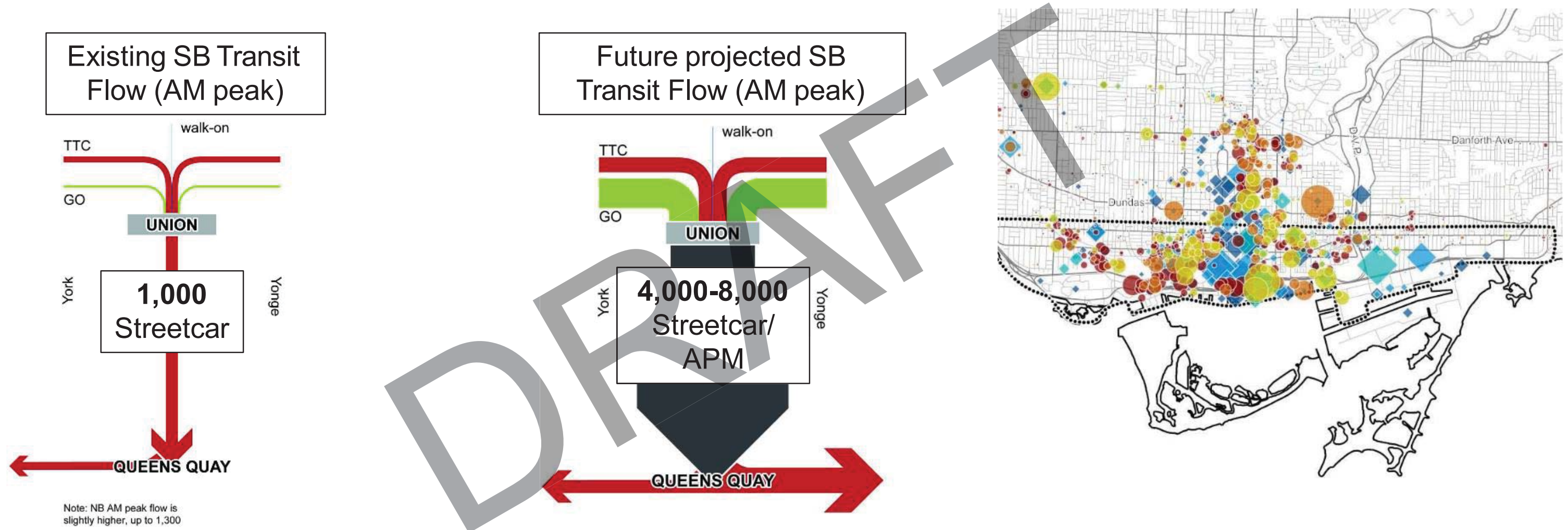


# Why it's important...

- The existing streetcar loop is inadequate to serve current ridership needs (to and from the west)
- The loop would not function effectively or safely considering future growth and if additional service from the east was added.

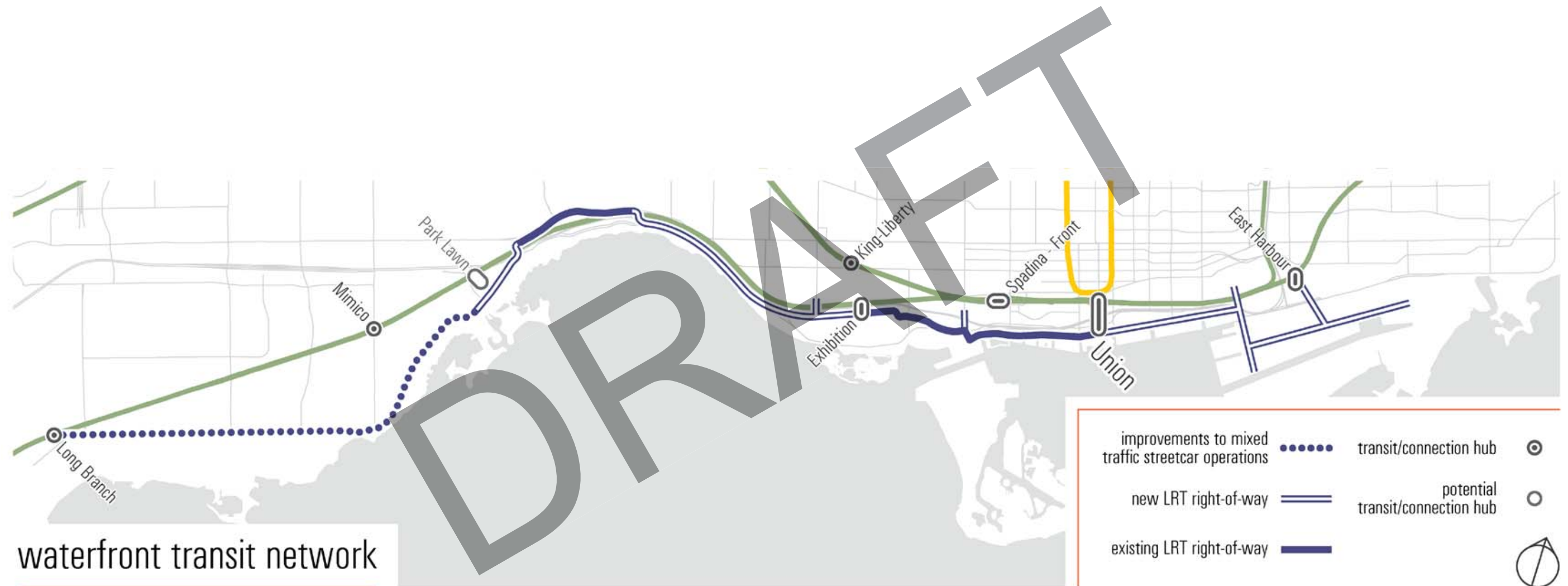


# Need for improvement



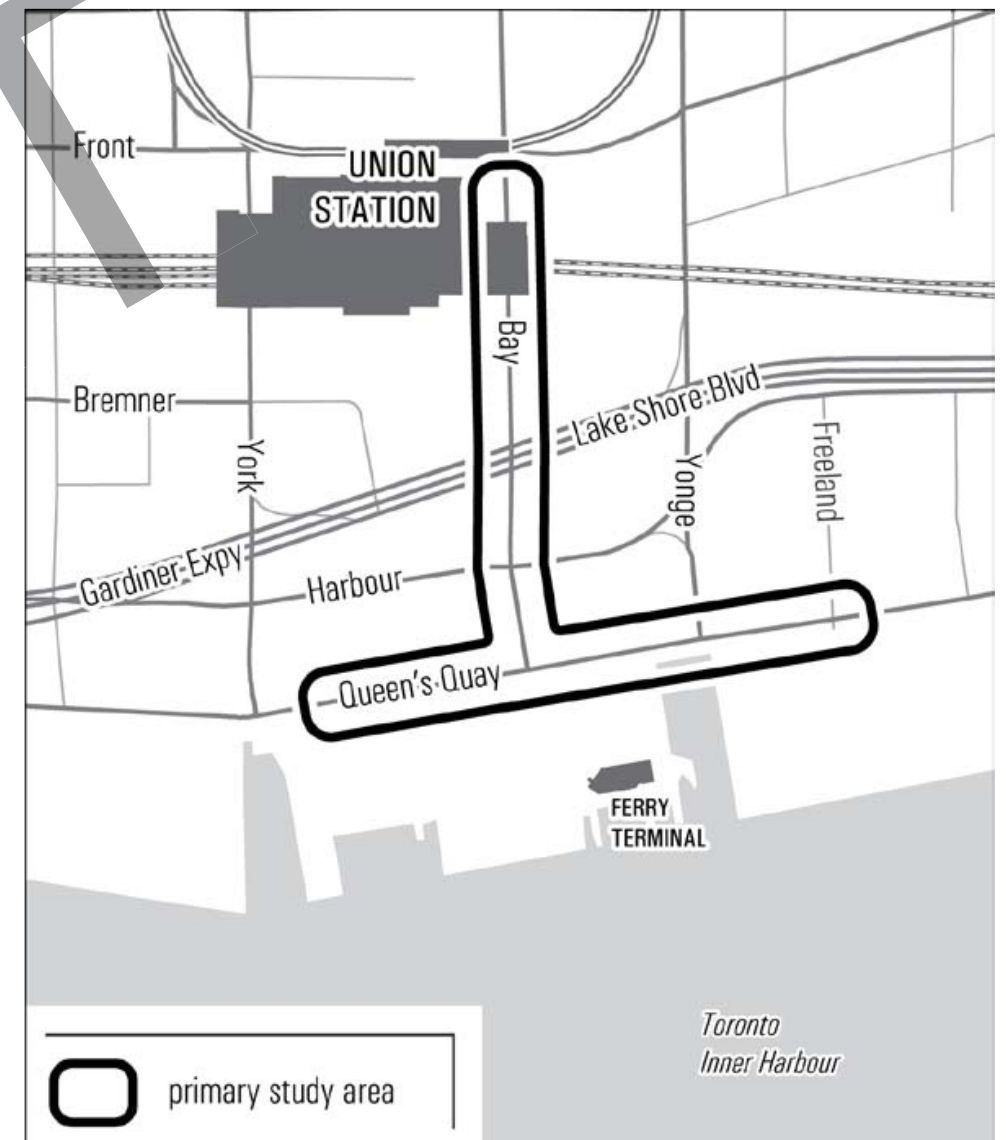
- Approximately 40% of AM peak hour trips are destined to QQ/Bay and the remaining 60% of trips are destined to the wider waterfront
- Not including special events and tourism, which is significant

# Council approved network plan

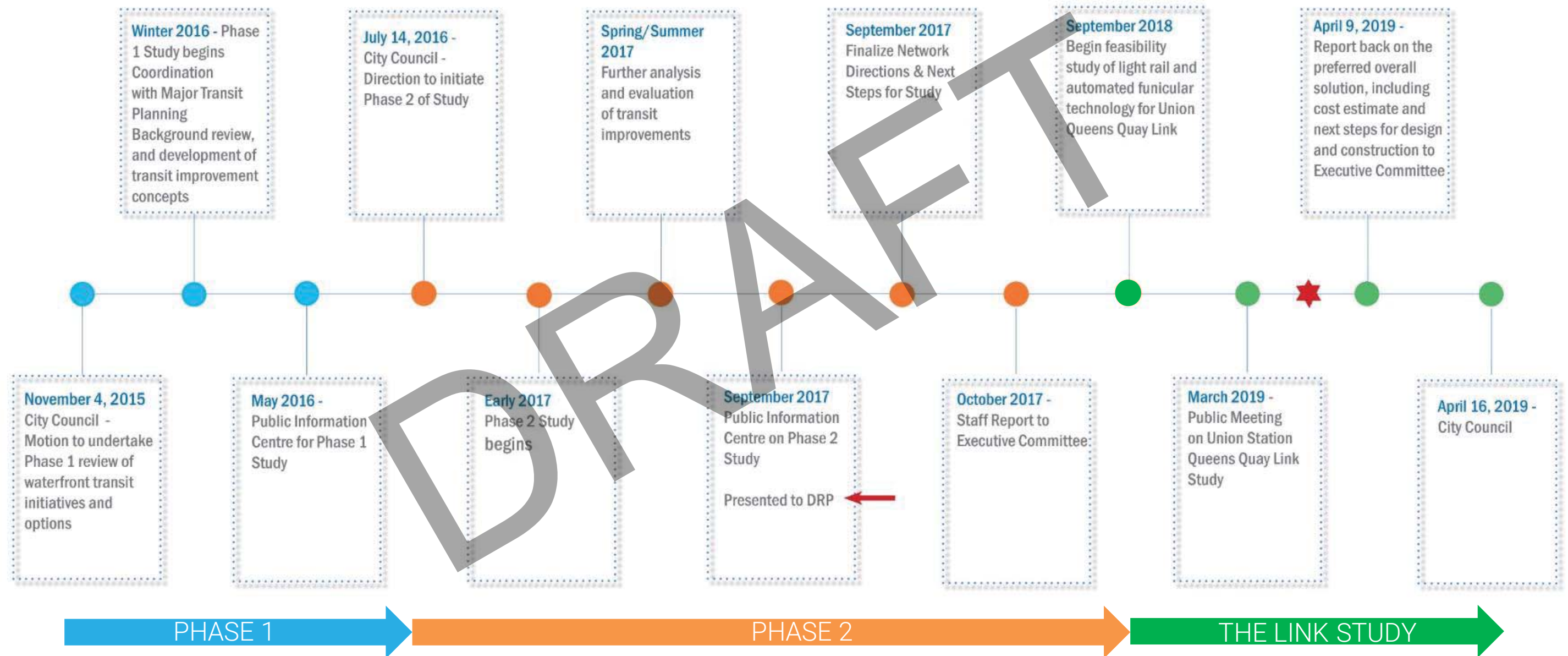


# Project background

- 1990 Union Station streetcar loop opens
- 2010 East Bayfront Transit EA: The need for the Union-Queens Quay Link and Queens Quay East LRT
- 2018 Waterfront Transit Reset Network Plan
- **2018 to 2019 Union Queens Quay Link Study**



# Transit Reset Timeline





# Union to Queens Quay Link Alternatives

# The technologies

## 1. Streetcar

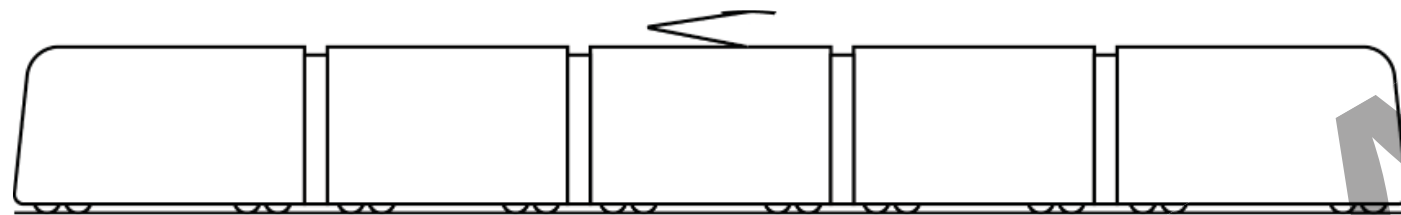


## 2. Automated People Mover



# The technologies

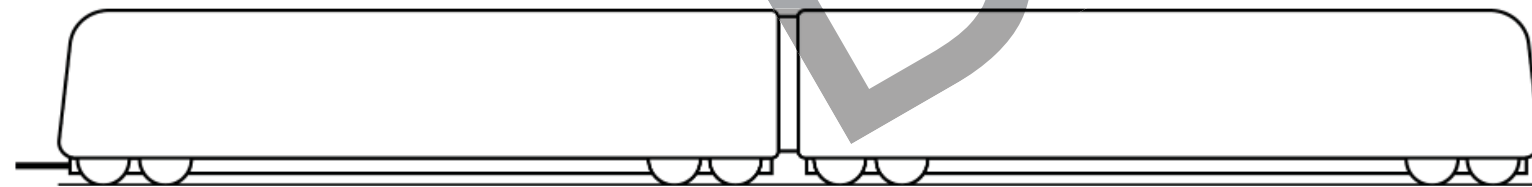
- Streetcar



## TTC Streetcar (Flexity)

Length	30m
Capacity (standard load)	130
Propulsion	Traction power

- APM (Automated People Mover)



## Automated People Mover

Length	36m
Capacity (standard load)	200
Propulsion	Cable-pulled



# Screening

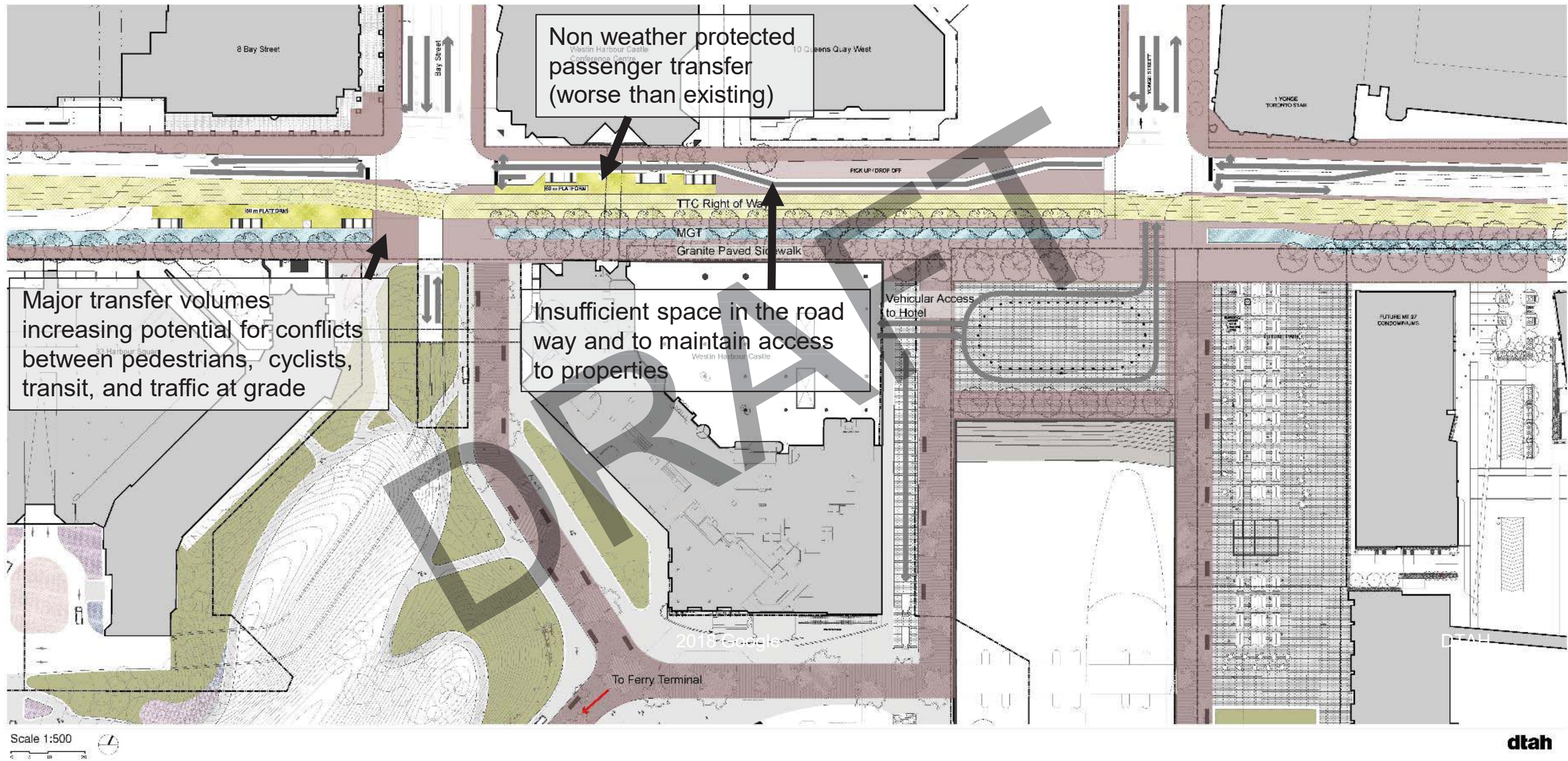
- 3 Alternatives initially considered:

- Streetcar loop expansion

- APM with underground streetcar at Queens Quay and Bay

- APM with surface streetcar connection at Queens Quay and Bay

# Screened Out: APM with surface streetcar along Queens Quay



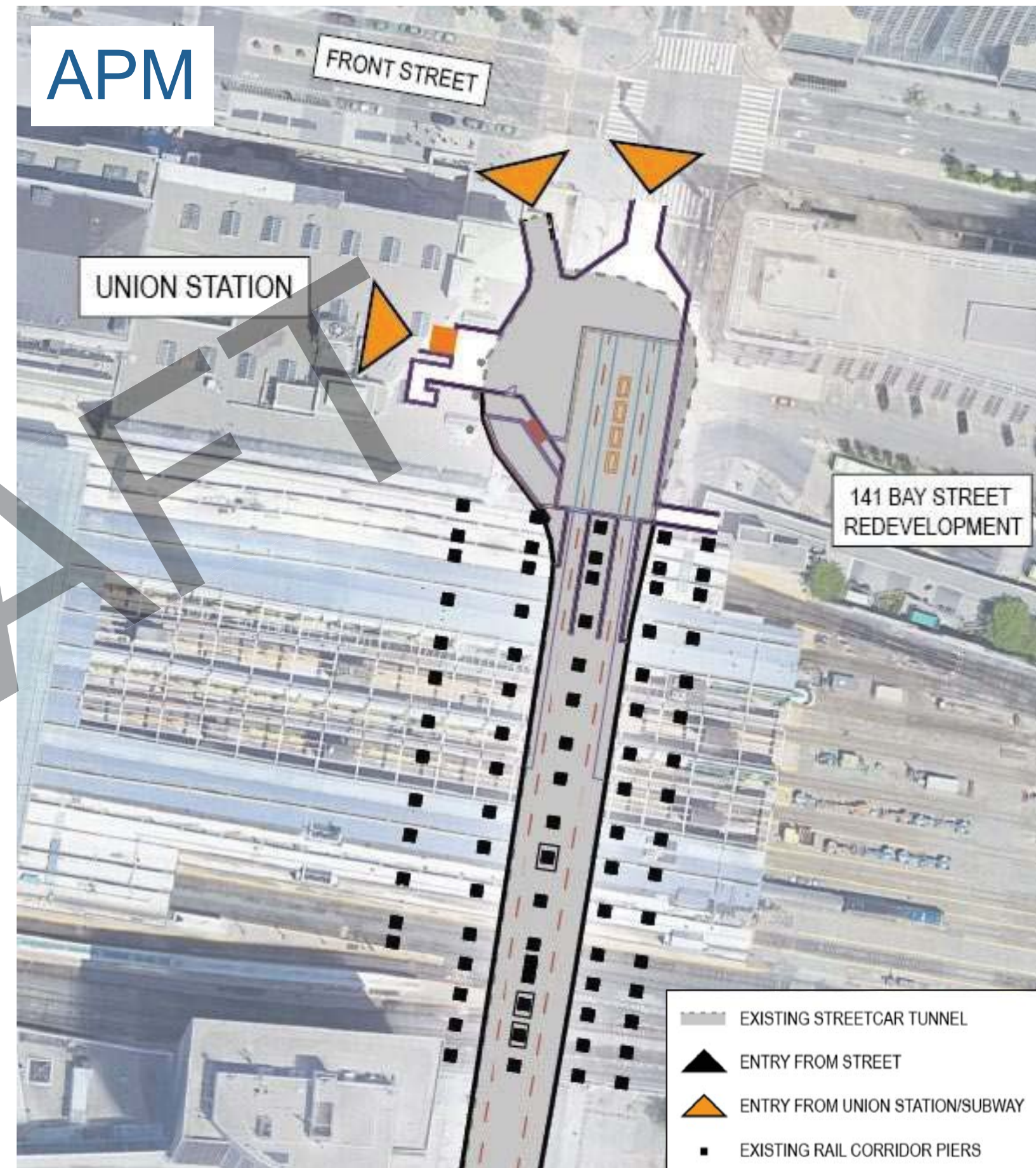
# Guiding design parameters

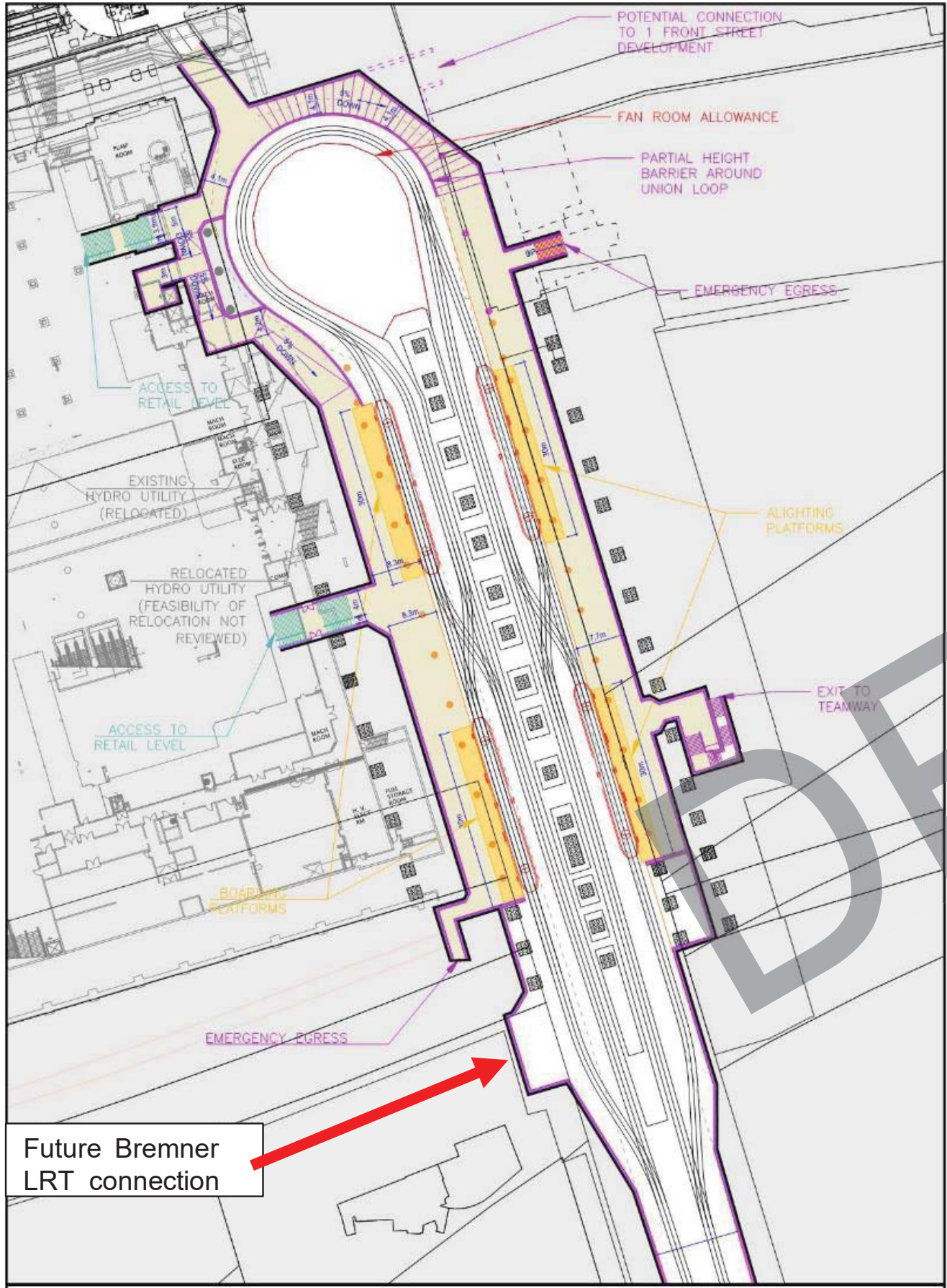
- No level crossings of streetcar tracks underground
- Underground connection to Jack Layton Ferry Terminal
- Ontario Building Code (OBC)
- Accessibility for Ontarians with Disabilities Act (AODA)
- National Fire Protection Association (NFPA) 130
- City of Toronto PATH guidelines

# Streetcar



# APM





**UNION - QUEENS QUAY LINK**

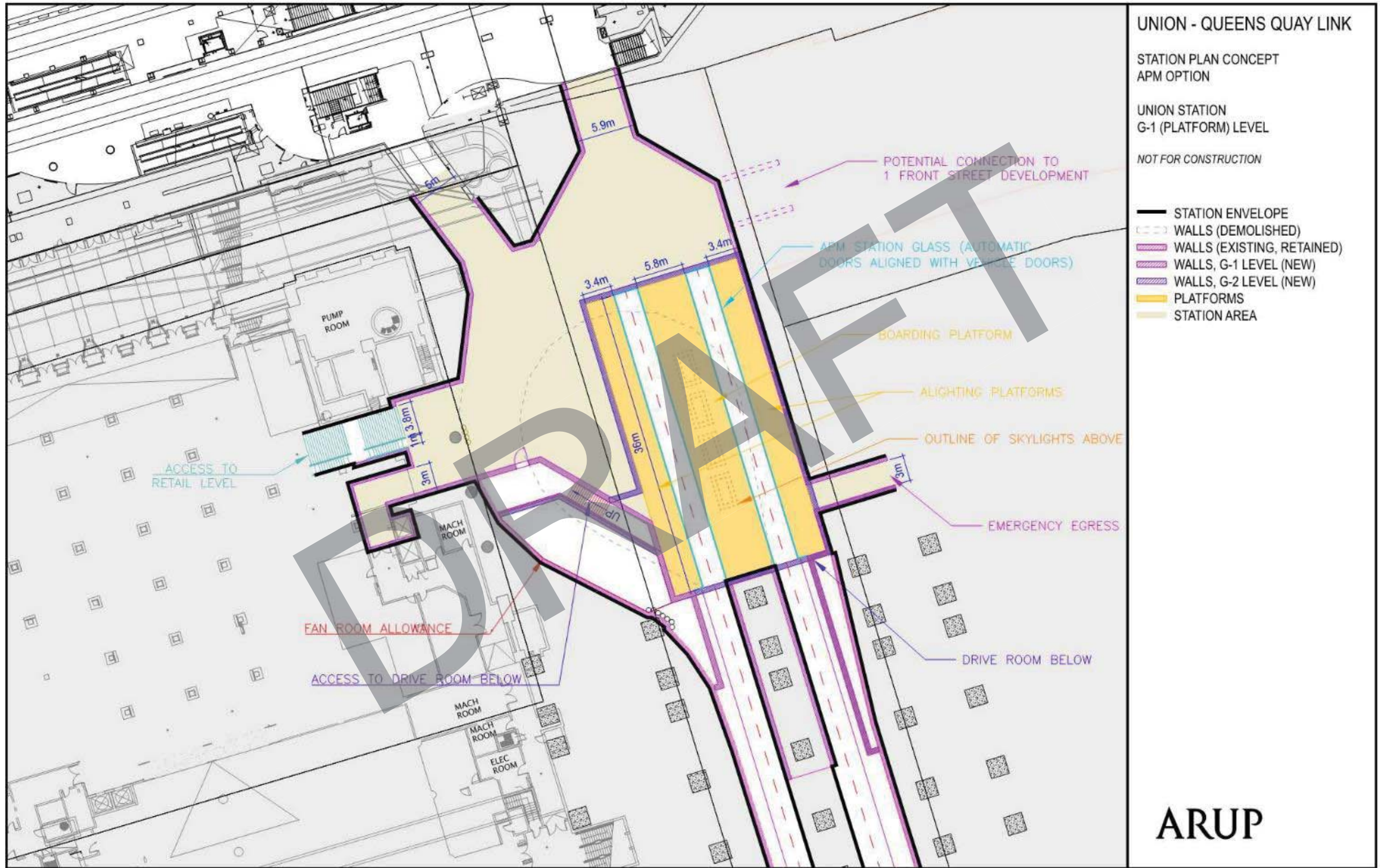
STATION PLAN CONCEPT  
STREETCAR OPTION

UNION STATION  
G-1 (PLATFORM) LEVEL

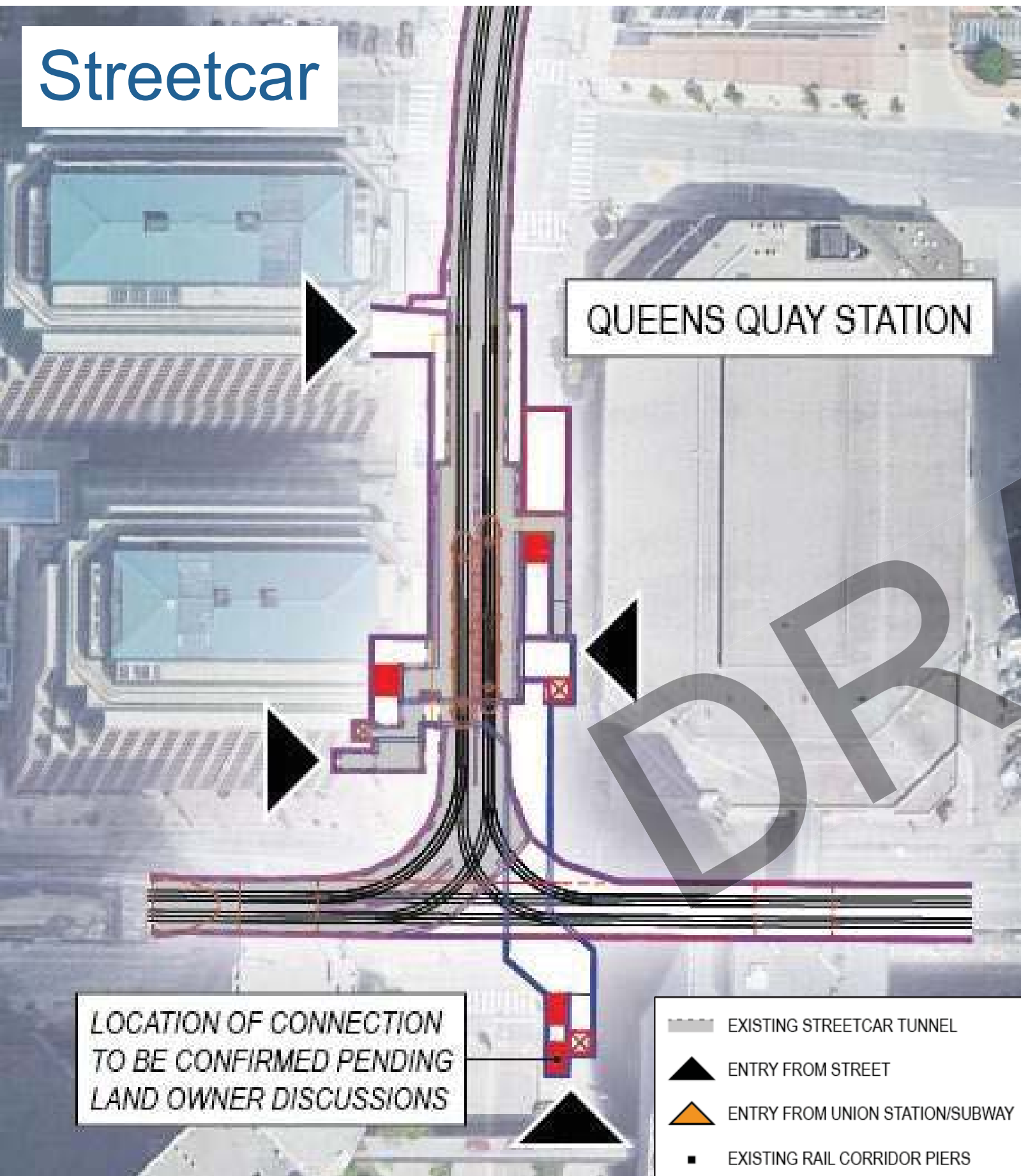
NOT FOR CONSTRUCTION

- STATION ENVELOPE
- WALLS (DEMOLISHED)
- WALLS (EXISTING, RETAINED)
- WALLS, G-1 LEVEL (NEW)
- WALLS, G-2 LEVEL (NEW)
- PLATFORMS
- STATION AREA

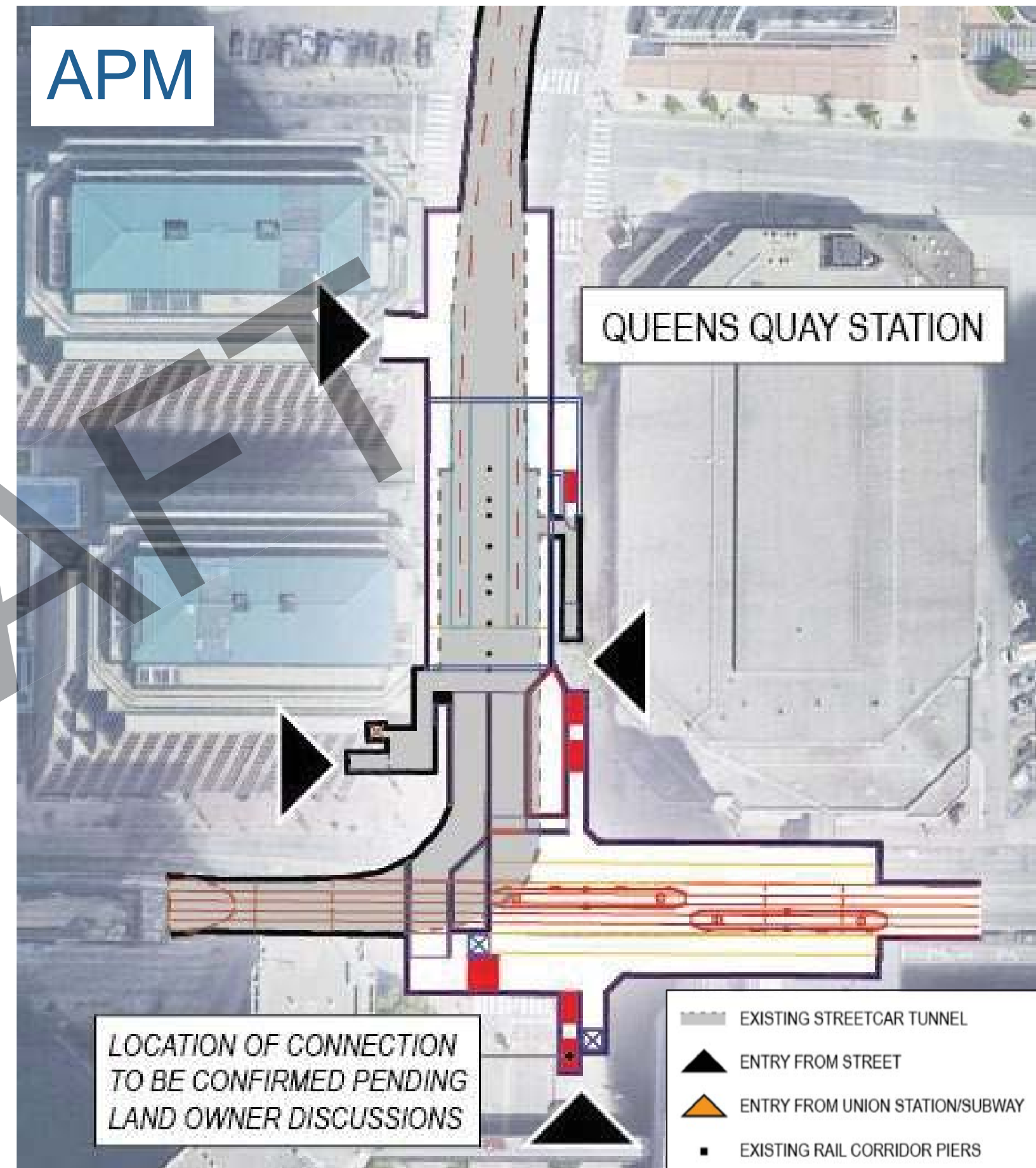
**ARUP**

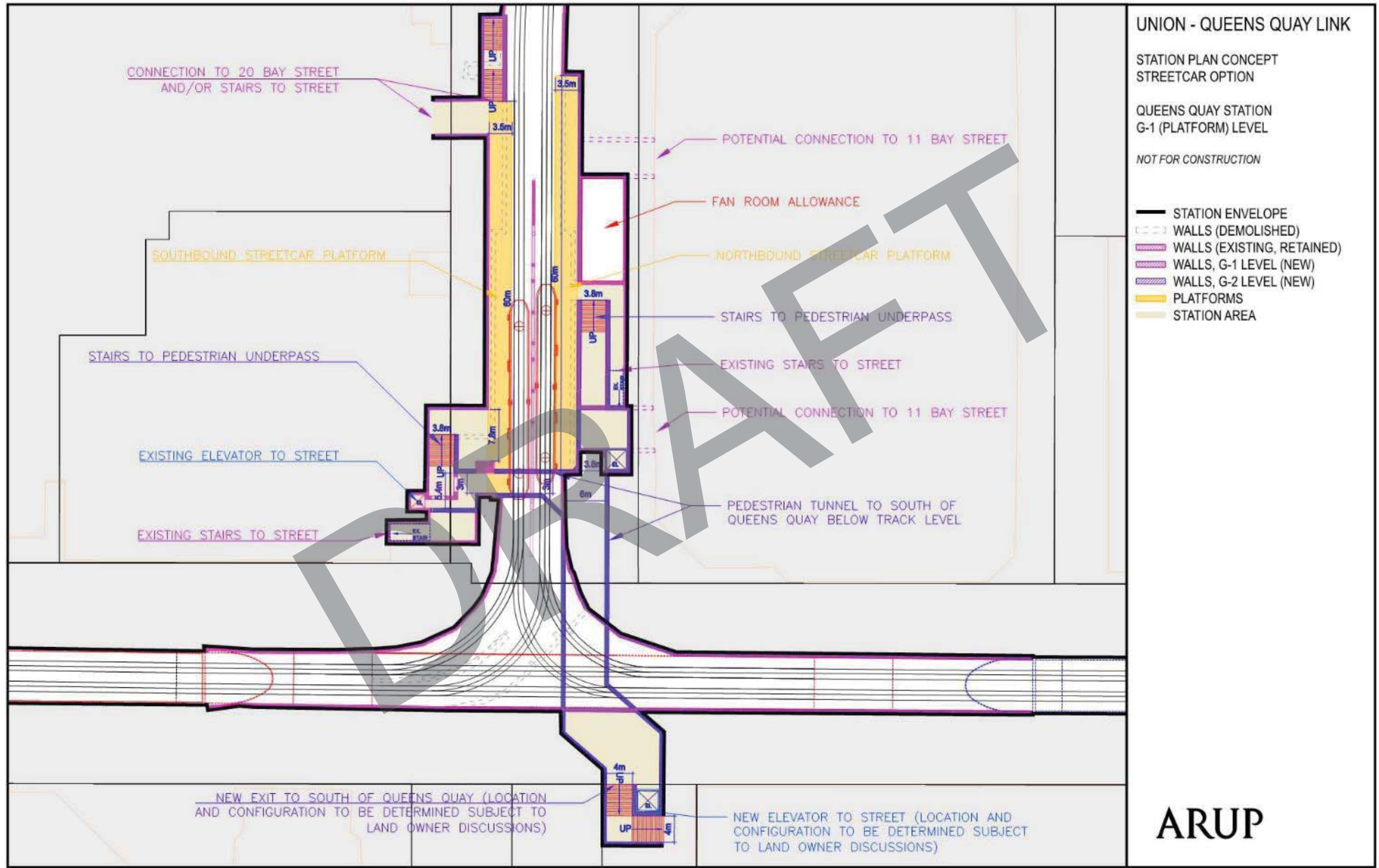


# Streetcar



# APM





UNION - QUEENS QUAY LINK

STATION PLAN CONCEPT  
STREETCAR OPTION

QUEENS QUAY STATION  
G-1 (PLATFORM) LEVEL

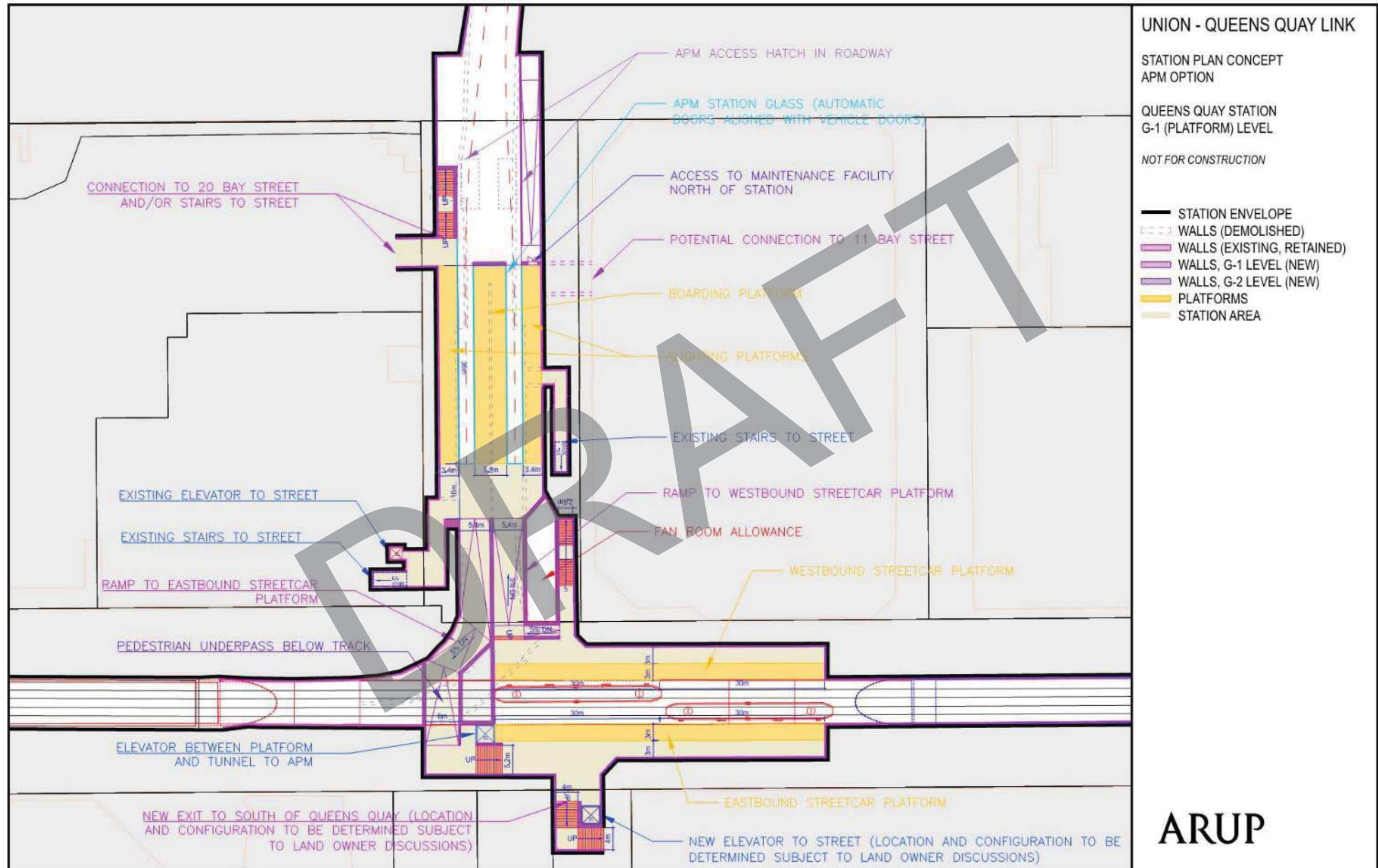
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- PLATFORMS
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ARUP

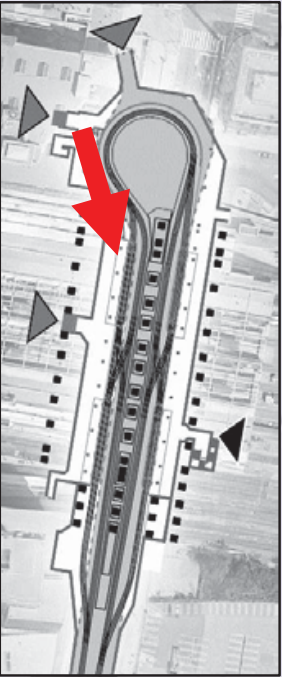








# Streetcar at Union Station



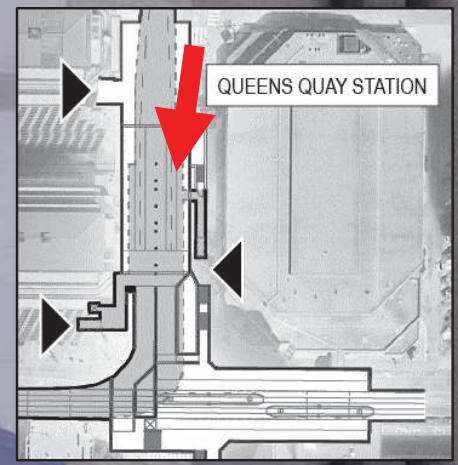
# Streetcar at Queens Quay Station



# APM Terminal at Union Station



# APM Terminal at Queens Quay Station





# Evaluate Alternatives

## Key criteria

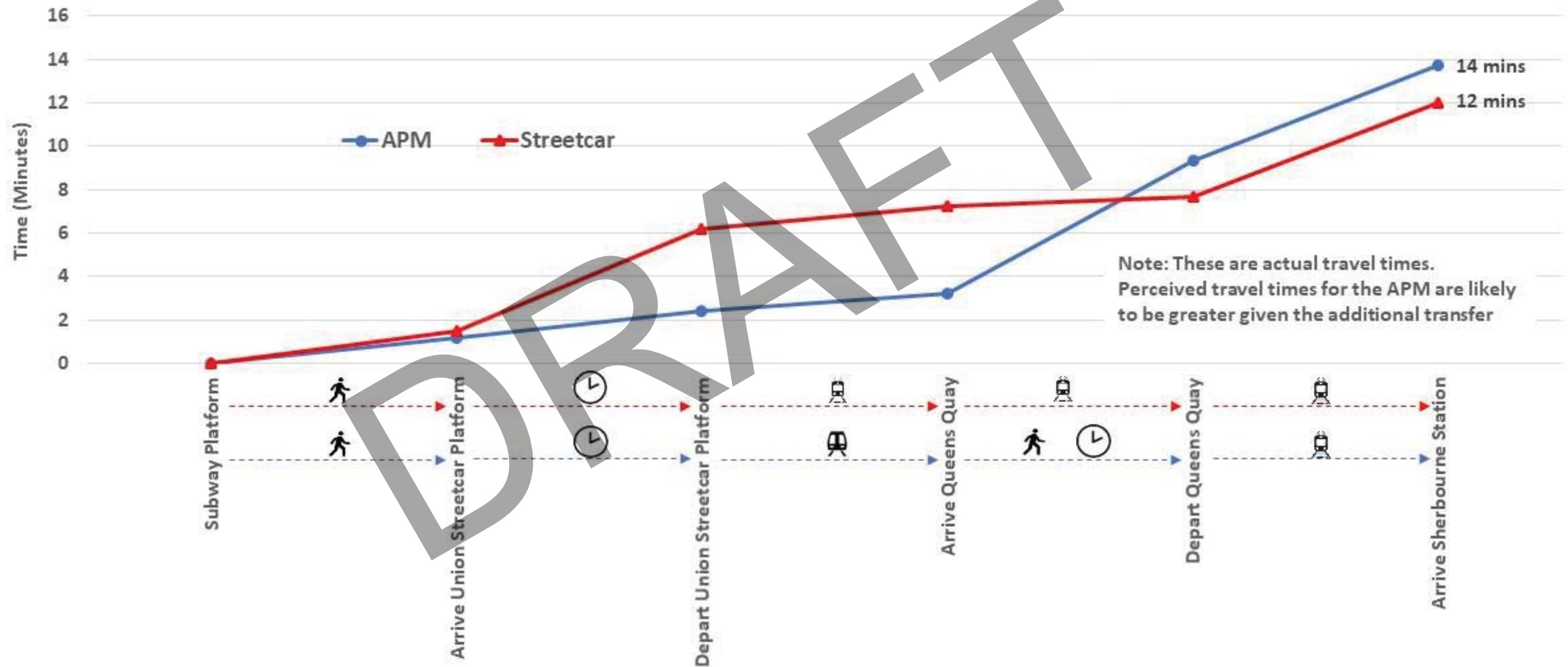
- User experience
- Transportation
- Costs
- Constructability



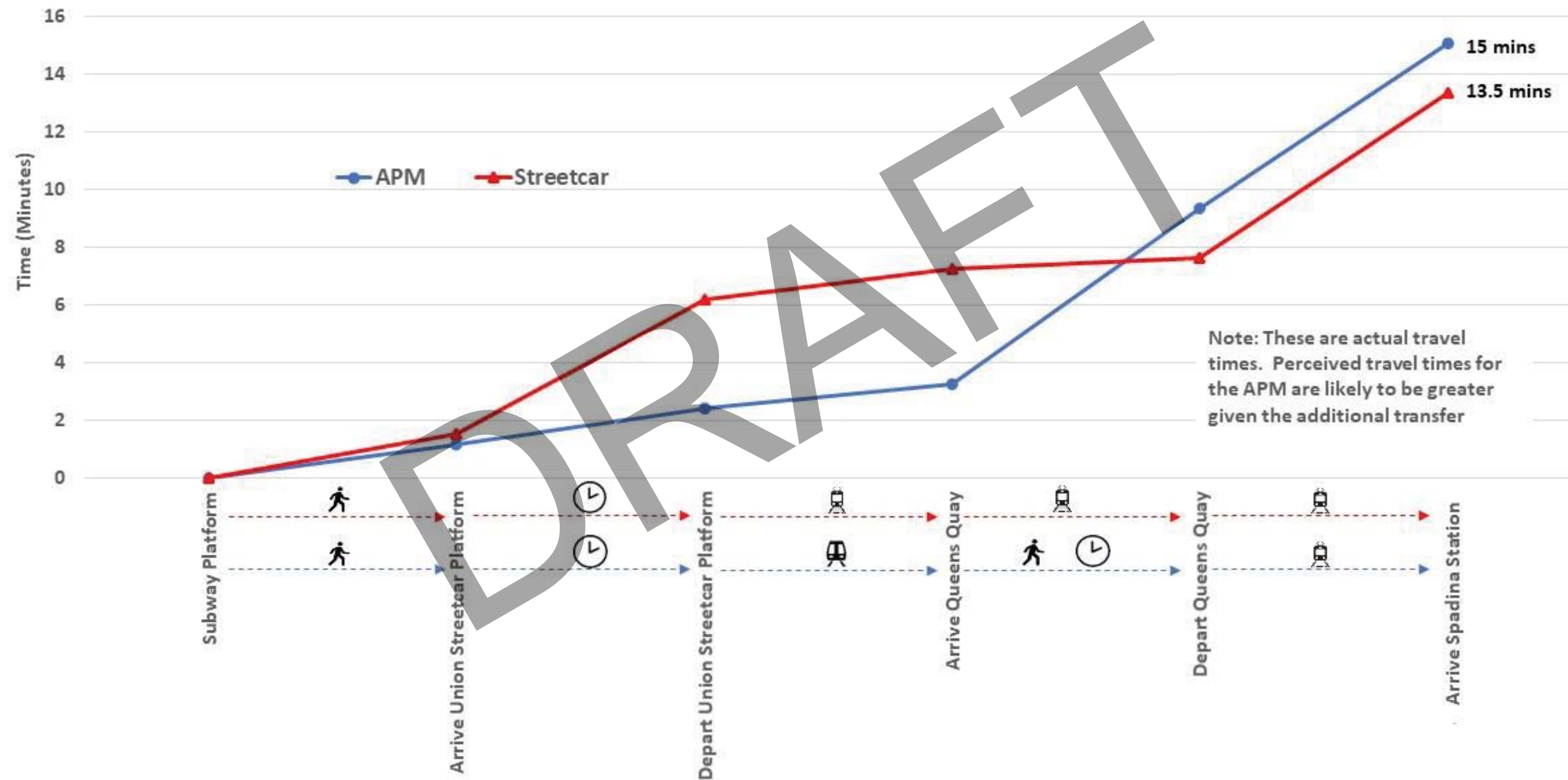
# User Experience Assessment

Criterion	Streetcar	APM
Travel time assessment	Medium/longer trips (QQ) faster	Short trips (Bay) faster
Service reliability	Union Loop subject to potential on-street delays	Higher headway reliability for Bay Street trips
Comfort/convenience/accessibility	Single ride to/from Union	Additional transfer to/from Union
<b>Conclusion</b>	<b>Preliminary preferred</b>	-

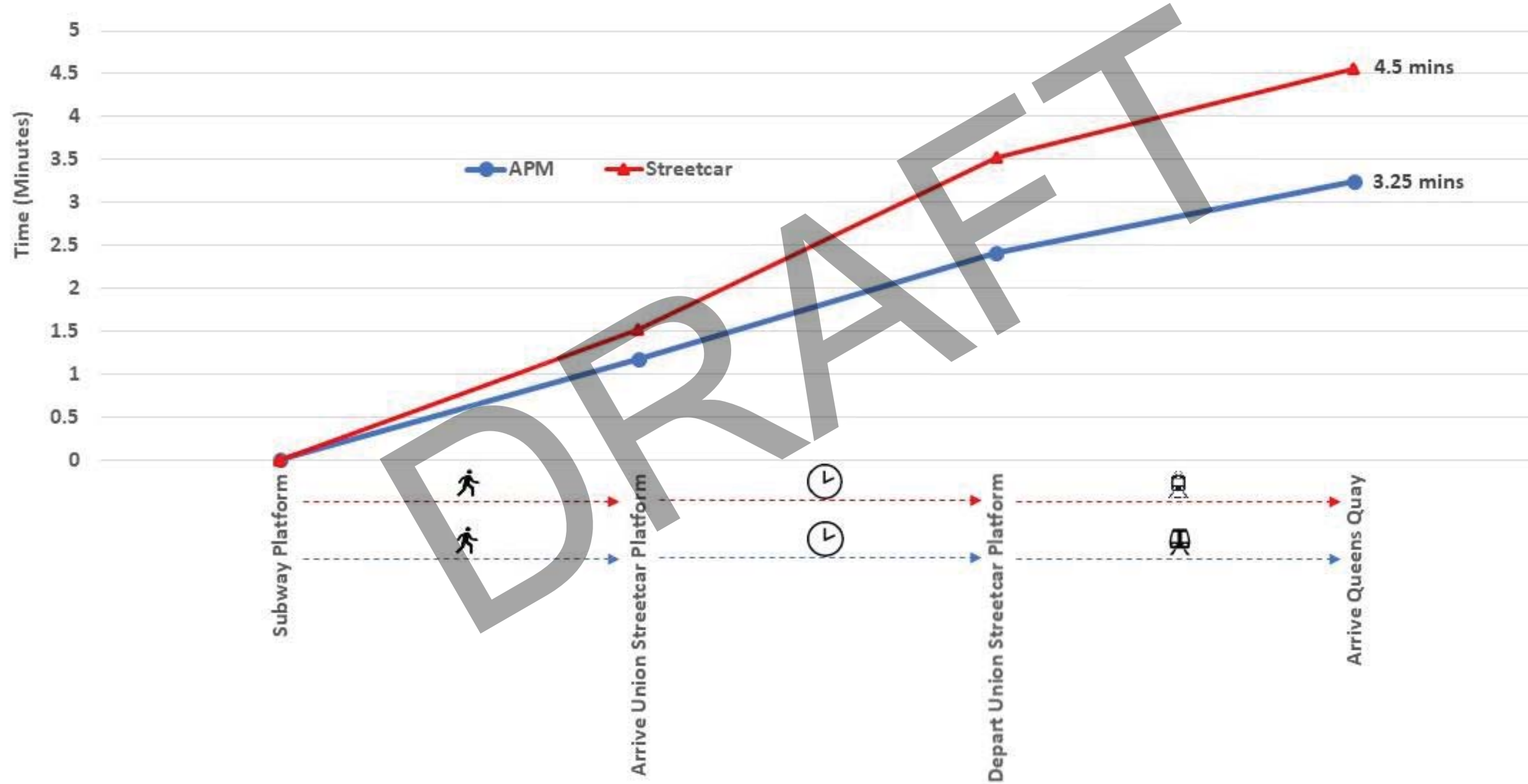
# Travel time to Sherbourne and Queens Quay



# Travel time to Spadina and Queens Quay

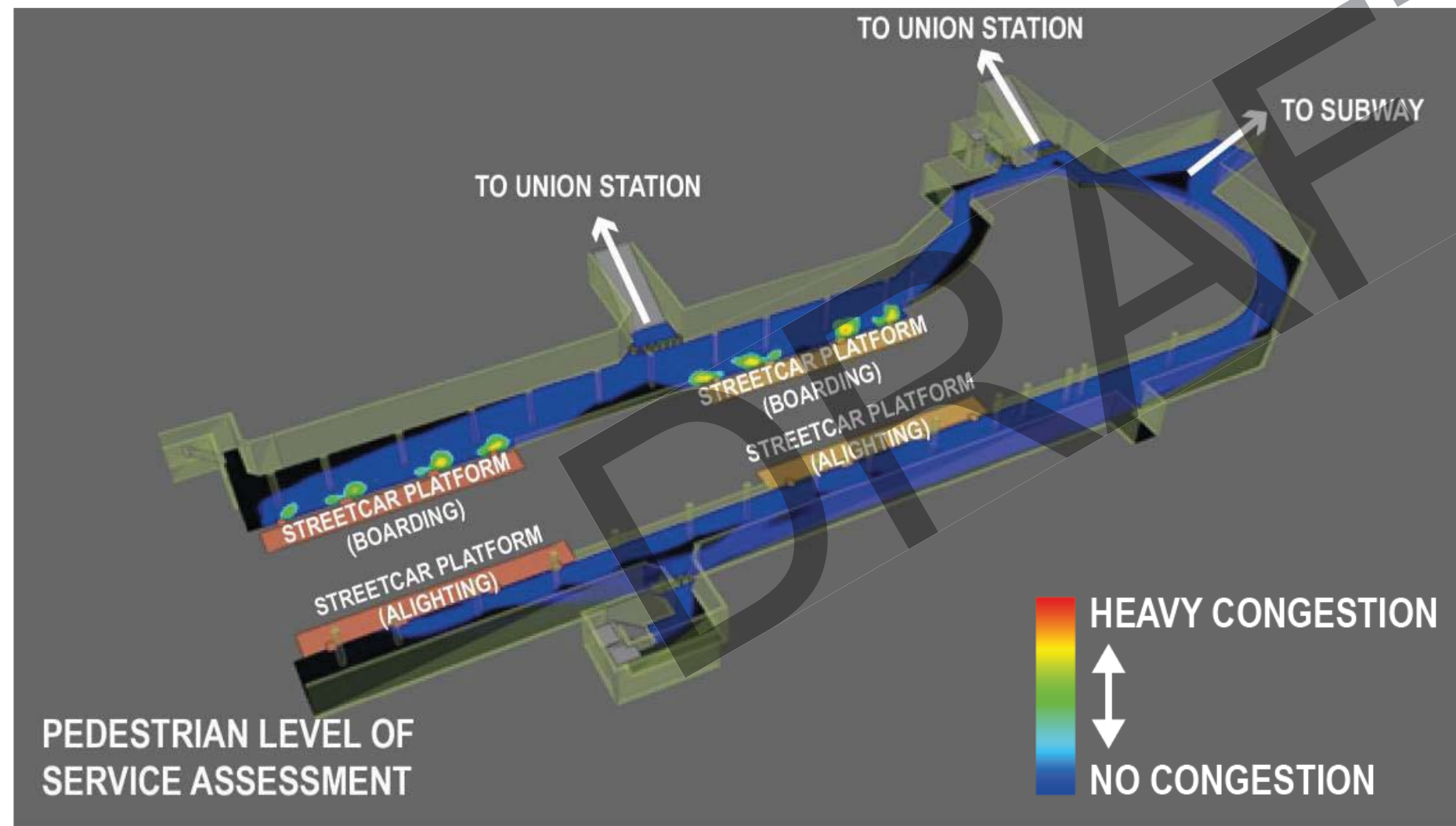


# Travel time to Bay and Queens Quay

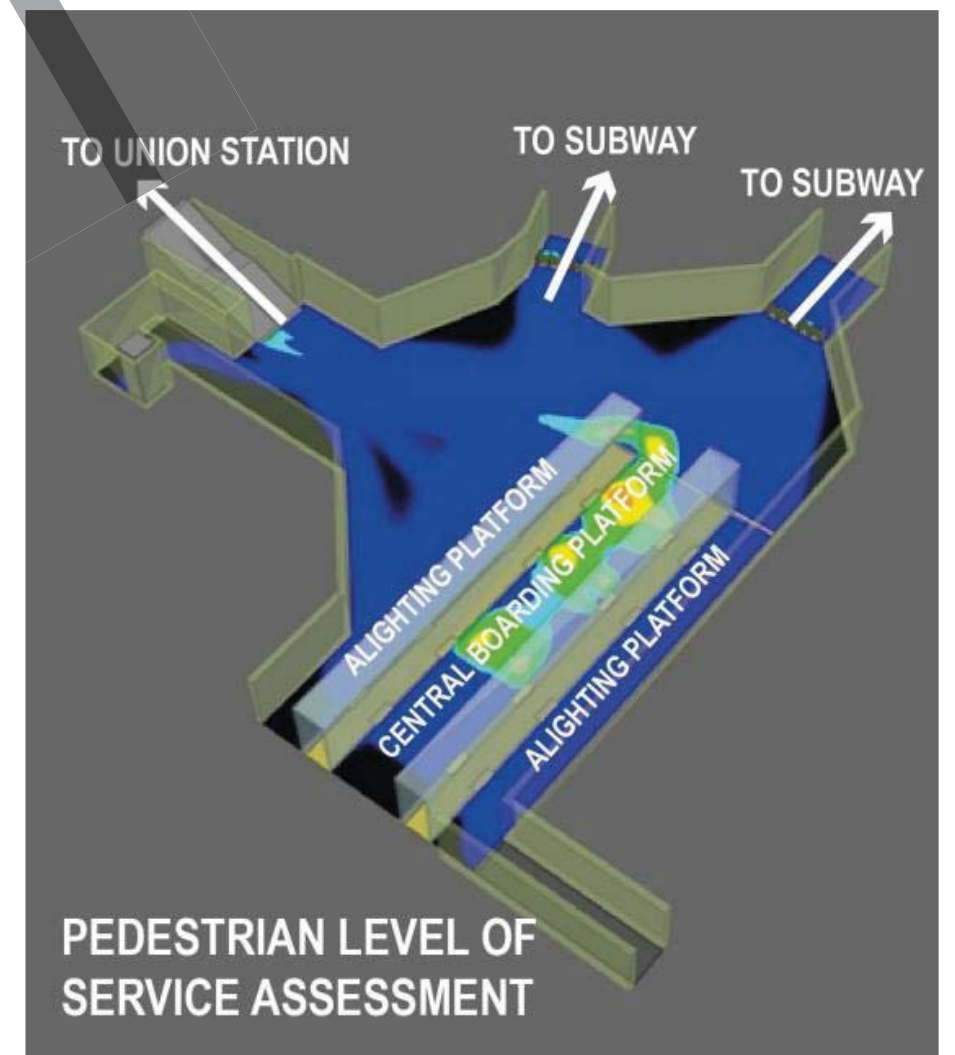


# User experience: comfort/crowding

Streetcar loop expansion – Union Station

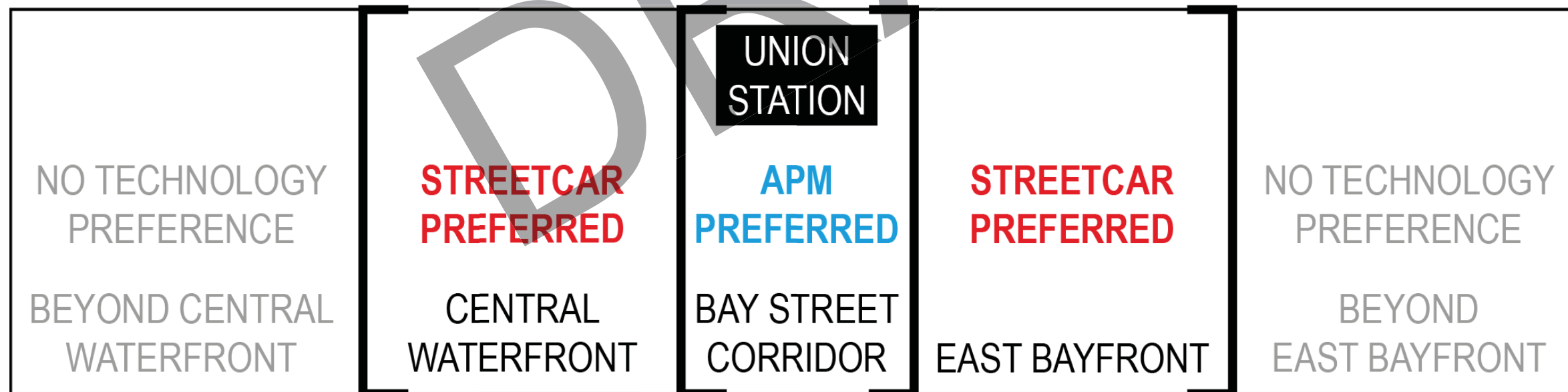


APM terminal – Union Station



# Transportation Ridership

- Within Bay Street corridor, APM is preferred
- East and West of Bay Street, streetcar is preferred
- Negligible difference beyond Central Waterfront and East Bayfront



# Construction impacts

Criterion	Streetcar	APM
Risk profile	Rail viaduct risks	No rail viaduct risks
Pedestrian teamways	Teamways closed and pedestrians rerouted due to construction	Teamways not closed for construction
Property impacts	141 Bay basement impacts and teamways	No significant impacts
Bay Street lane impacts	South of rail viaduct impacts	No significant impacts
Duration estimation	4-5 years	3-4 years
<b>Overall</b>	-	<b>Preliminary preferred</b>

# Construction management

- Streetcar service along Bay will be suspended during tunnel work for both options
- Streetcar service along Queens Quay may be suspended for some duration of construction for both options
- Replacement bus service required
- Phasing to mitigate impacts to transit to be evaluated in next phases, including options to minimize downtime for streetcar service along Queens Quay



# Construction management

- Pedestrian access in the corridor will be maintained and may require significant temporary improvements to accommodate anticipated flows
- One lane of traffic in each direction will also be maintained
- Significant concurrent projects to be coordinated
  - Numerous Metrolinx projects
  - Future developments under construction and planned/proposed
    - E.g. CIBC Square: 141 and 81/45 Bay Street
  - Gardiner ramp changes (e.g. removal of Bay Street on-ramp)



# Class 4 capital cost estimates

- Designs brought to current code (NFPA 130)

Criterion	Streetcar	APM
Capital costs (to Small St.)	\$650 - \$700 million*	\$650 - \$700 million*
Overall	No preliminary preferred	

\*subject to refinement

- Operating costs forthcoming

# Overall evaluation summary

Criterion	Streetcar	APM
User experience	Preliminary preferred	-
Transportation	Preliminary preferred	-
Construction impact	-	Preliminary preferred
Capital costs	No preliminary preferred	
<b>Overall</b>	<b>Preliminary preferred</b>	<b>-</b>

# Streetcar preferred



# Benefits to overall network

- Both options are viable
- Both options offer significant improvements to moving people
- Construction of both options is feasible
- Streetcar preferred for the overall TTC network

# Completing this study

- Finalize technical analysis and consider public feedback
- Executive Committee April 9<sup>th</sup>
- City Council April 16<sup>th</sup>

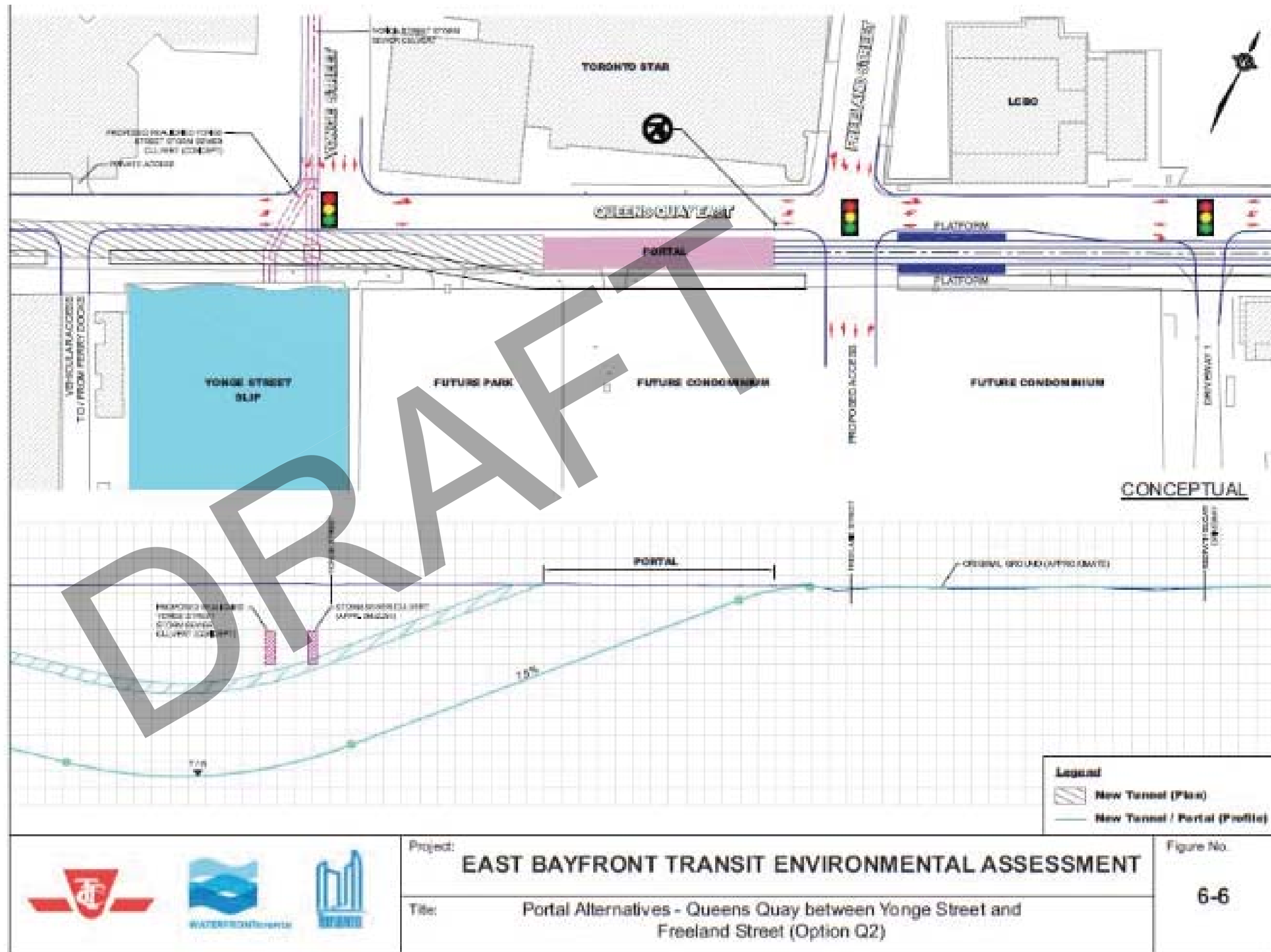
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# Next Steps

- Evaluate potential for new eastern portal location west of Yonge Street
- Seeking optimization in preferred solution
- Advance preliminary design

# Portal Location EA: Freeland Street





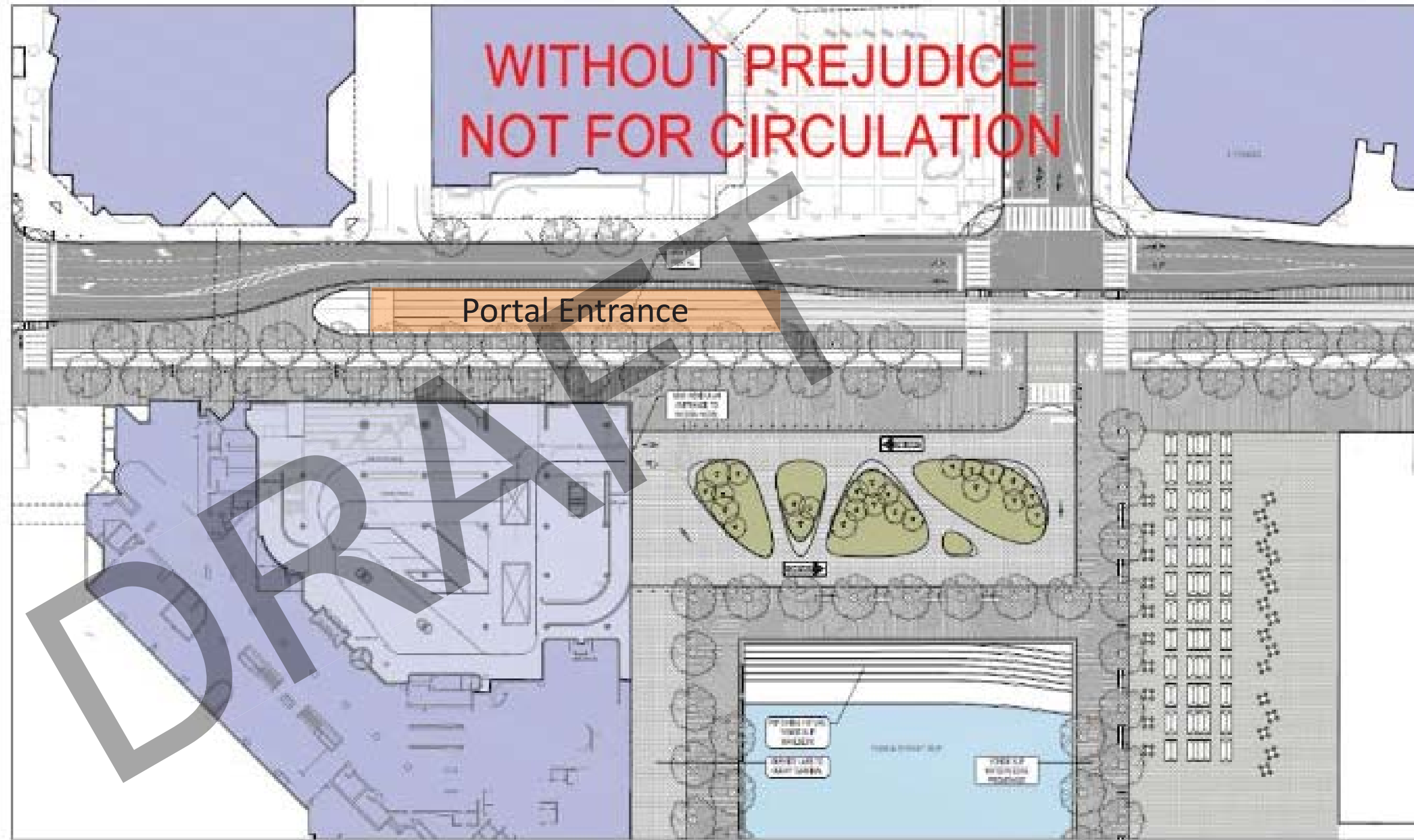
# Portal Location EA: Freeland Street



Street-level render of EA-approved portal location east of Yonge Street

*Artist's depiction subject to change and future design refinement*

# Portal Location Alternative: West of Yonge Street



Drawing Title: UNION - QUEENS QUAY LINK  
YONGE STREET INTERSECTION AND HEAD OF SLIP  
Scale: 1:500 Date: 2/16/2011

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# Portal Location Alternative: West of Yonge Street



Street-level render of alternate portal location west of Yonge Street

*Artist's depiction subject to change and future design refinement*