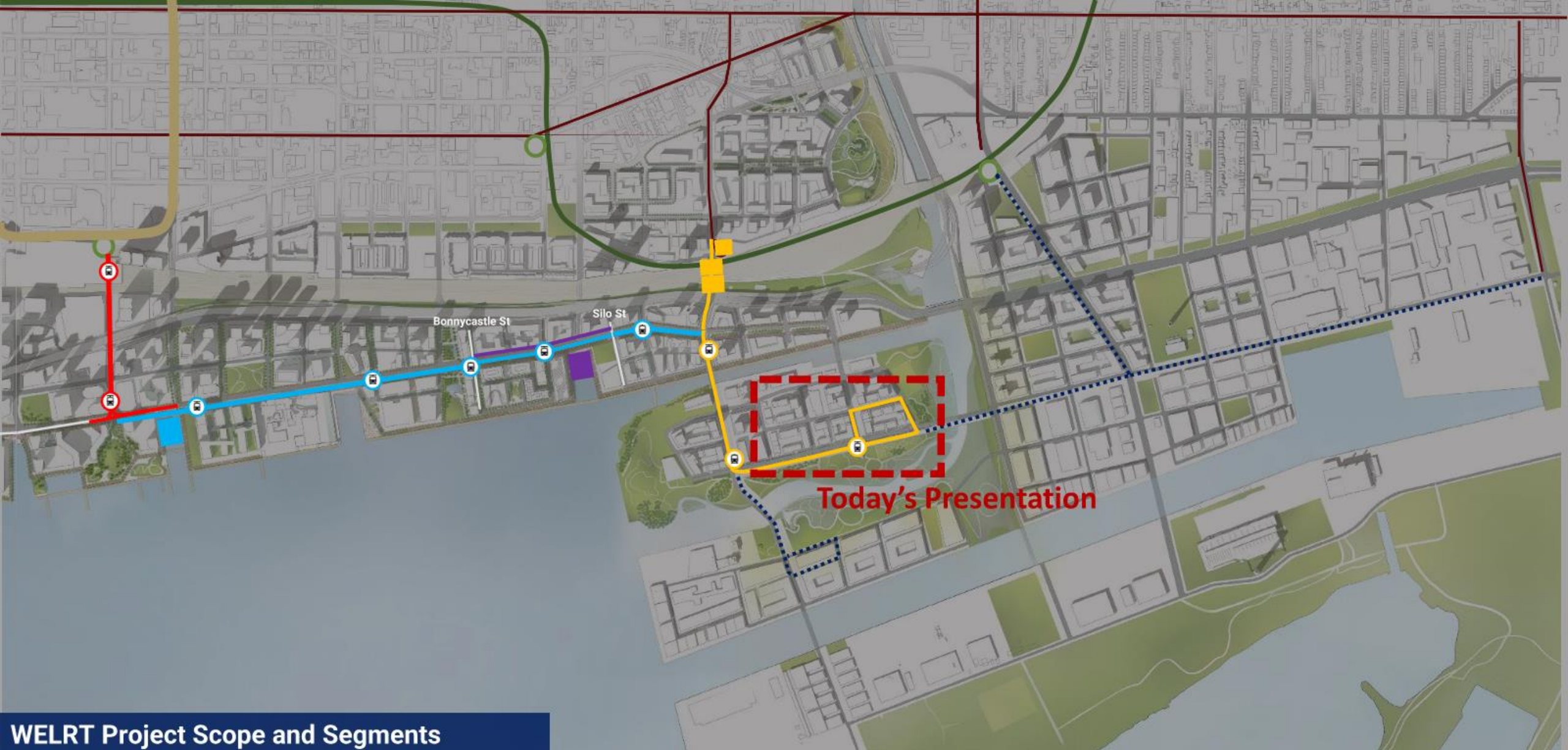




Waterfront East LRT (WELRT) Commissioners St and Villiers Loop
Schematic Design – Jan. 25, 2023



WELRT Project Scope and Segments

- Segment 1 (Underground Works)
- Segment 2 (Queens Quay Surface Works)
- Segment 3 (Cherry North and Villiers Island)
- Other Projects (Quayside)
- Future Extensions

Project Description & Background

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

Background

- 30% Preliminary Design and Engineering and Class 3 Costing for all project segments is required to report to council with an updated business case to secure implementation funding for the Waterfront East LRT (WELRT)
- Transit Project Assessment Process (TPAP) is required to update previous East Bayfront Transit Class EA

Scopes of Work

- Segment 1:
 - Union Station upgrades
 - Tunnel under Queens Quay to Portal west of Yonge Street and rebuild of existing Western Portal
- Segment 2:
 - Queens Quay East Reconstruction Bay to Silo
 - Extension of Queens Quay East from Silo St. to Cherry St.
- Segment 3 :
 - Cherry St North : Addition of LRT infrastructure on Cherry St. from Queens Quay to Mill St., including transit connection under rail corridor, removal of Distillery Loop and plaza conversion, and relocation of Cherry signals Tower
 - **Villiers Island: Addition of LRT infrastructure on Cherry St and Commissioners St, and a new terminus transit loop in the Port Lands**

Project Status & Anticipated Timeline

- Completing 30% design and Class 3 costing for all project components for council report in 2023
- Reviewing modifications to segment 3 at January DRP session

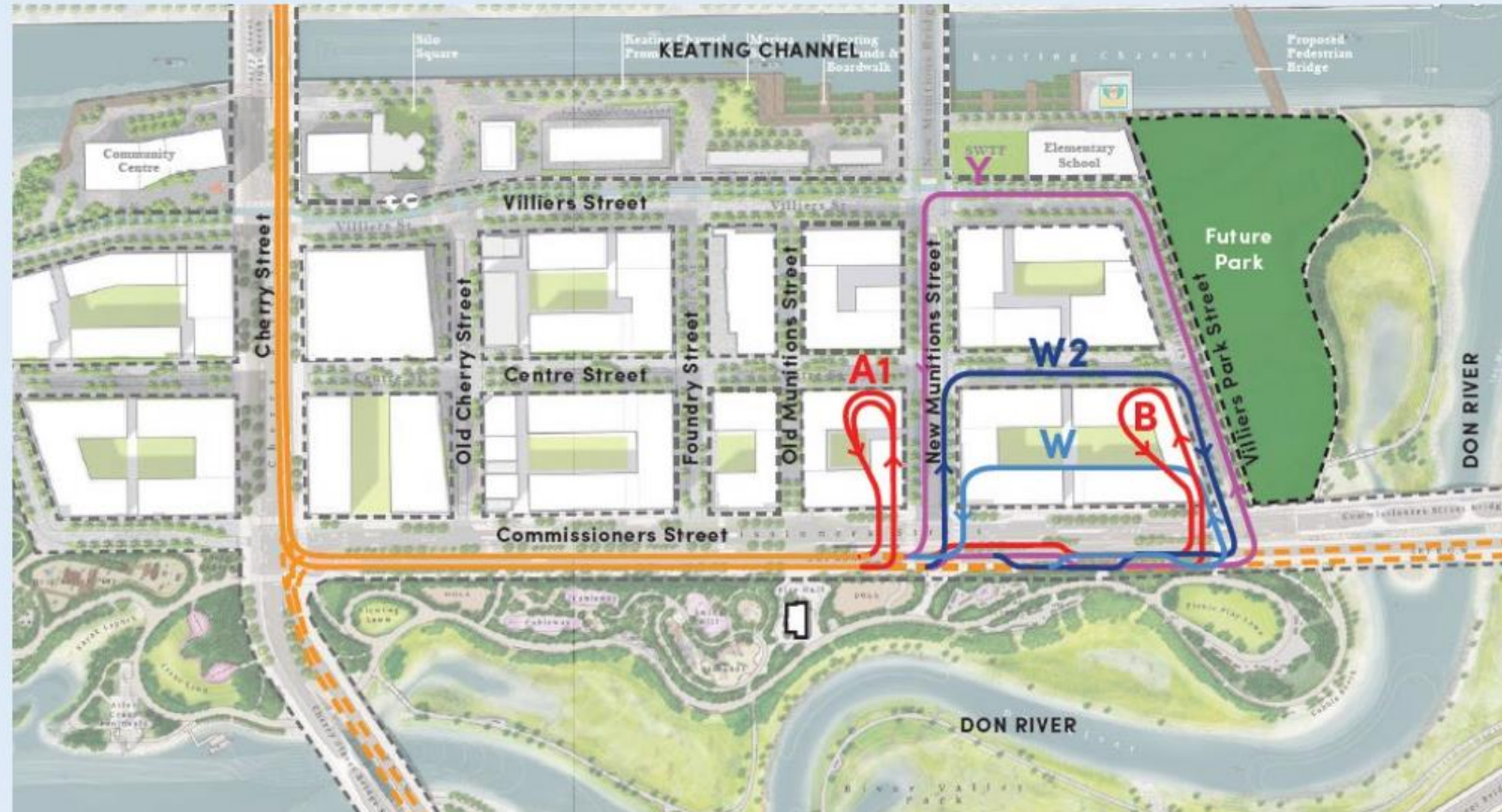
Villiers Loop Alignment Selection

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

Loop Alignment Options Evaluation

- Loop location was modified from Polson to Villiers Island to improve park access and mitigate construction impacts
- Several alignment options were considered for the Villiers Loop, including on-street and off-street alignments in various configurations
- Two preferred options were identified: Option B (off-street) and Option W2 (on-street)
- Potential alignments were assessed based on review of preliminary functional design drawings and street cross-sections, as well as an evaluation of technical and operational, and development coordination and project delivery implications of each option.
- Option W2 was selected as the preferred alignment to proceed with preliminary design



Villiers Loop Alignment Selection

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

Loop Alignment Options Evaluation

- Loop location was modified from Polson to Villiers Island to improve park access and mitigate construction impacts
- Several alignment options were considered for the Villiers Loop, including on-street and off-street alignments in various configurations
- Two preferred options were identified: Option B (off-street) and Option W2 (on-street)
- Potential alignments were assessed based on review of preliminary functional design drawings and street cross-sections, as well as an evaluation of technical and operational, and development coordination and project delivery implications of each option.
- Option W2 was selected as the preferred alignment to proceed with preliminary design



WELRT Design Criteria

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

1/ Integrating with Urban Ecology:

Design for ecological performance

- Expanded tree canopy and planting
- Integrated green infrastructure
- More permeable ground surface
- Enhanced user comfort
- Habitat and eco-corridors for biodiversity
- Resilient species selection for waterfront
- Customized details for variable lake levels
- Low-maintenance landscape
- Monitoring and adaptive maintenance

2/ Moving People:

Design for safety, convenience and flexibility

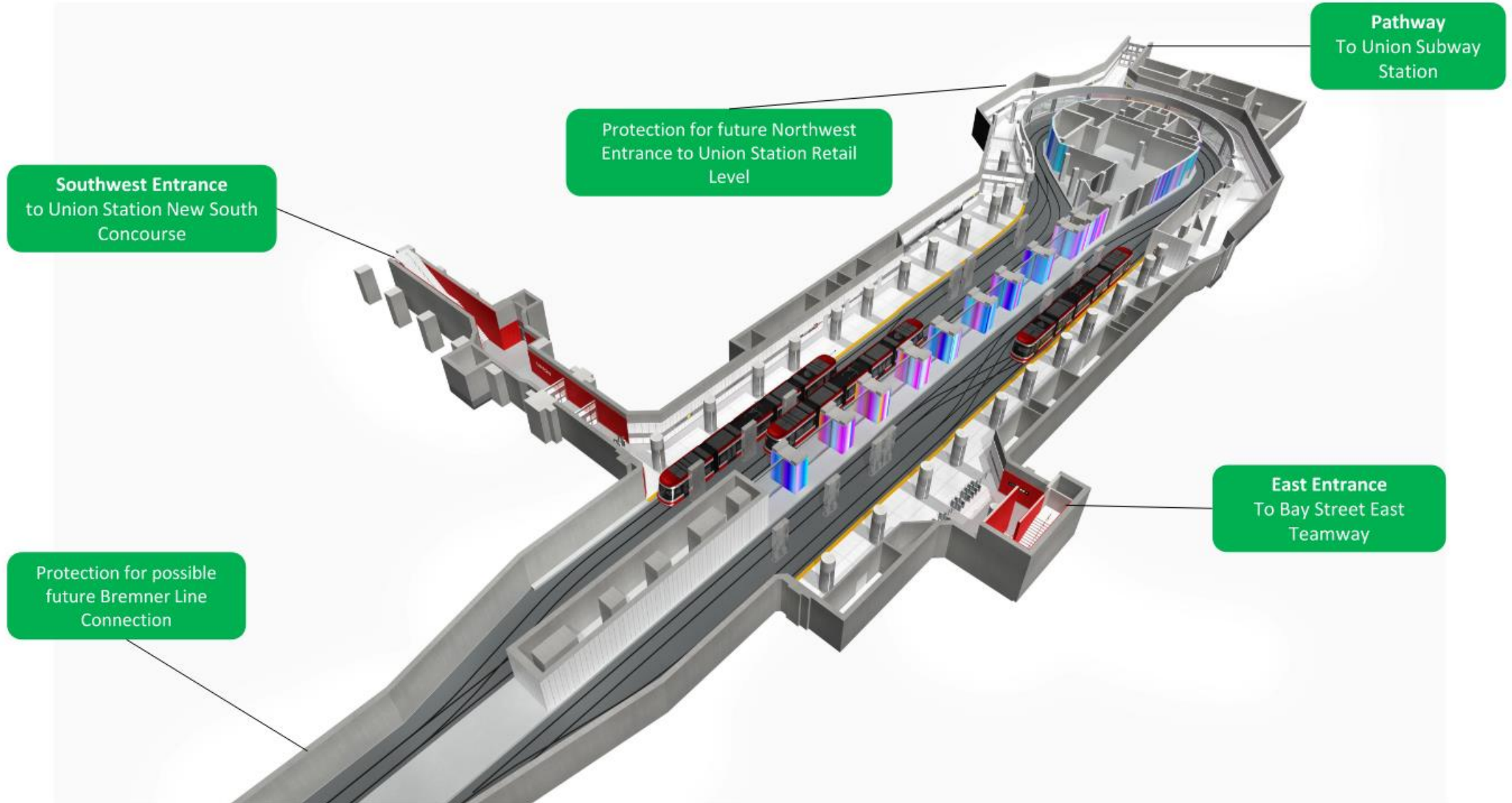
- Improve clarity at intersections
- Improve pedestrian crossings
- Safe intermodal interactions
- More convenient cycling environment
- Accommodate new micro-mobility
- Flexibility to accommodate new trends
- Performance review & adaptive management

3/ Building a Destination:

Design for character and experience

- Continuity of design language
- Greater coherence of paving materials
- Durable materials and craftsmanship
- Slips and intersections as destinations
- Flexibility for closures & programming
- Consistent palette of furniture, lighting, etc.
- Integrated infrastructure for programming
- Encourage social interaction

Segment 1: Union Station and Queens Quay Portals



Future Union Station Loop: Draft rendering subject to further design updates and refinement

Segment 2: Queens Quay East Redesign



Segment 2: Queens Quay East at East Bayfront

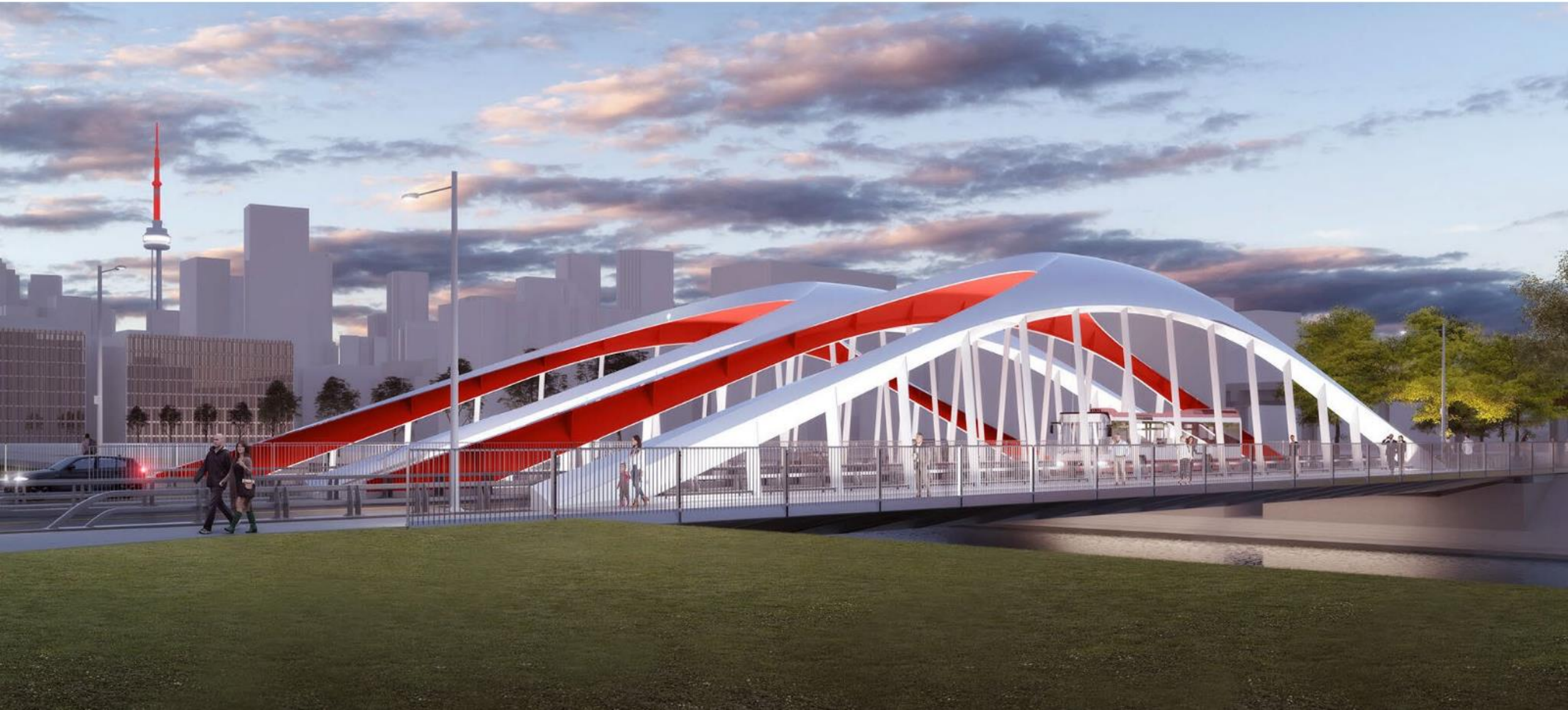


Design by West8 / DTAH, WSP, Arup

Segment 3 (North): Cherry Portal



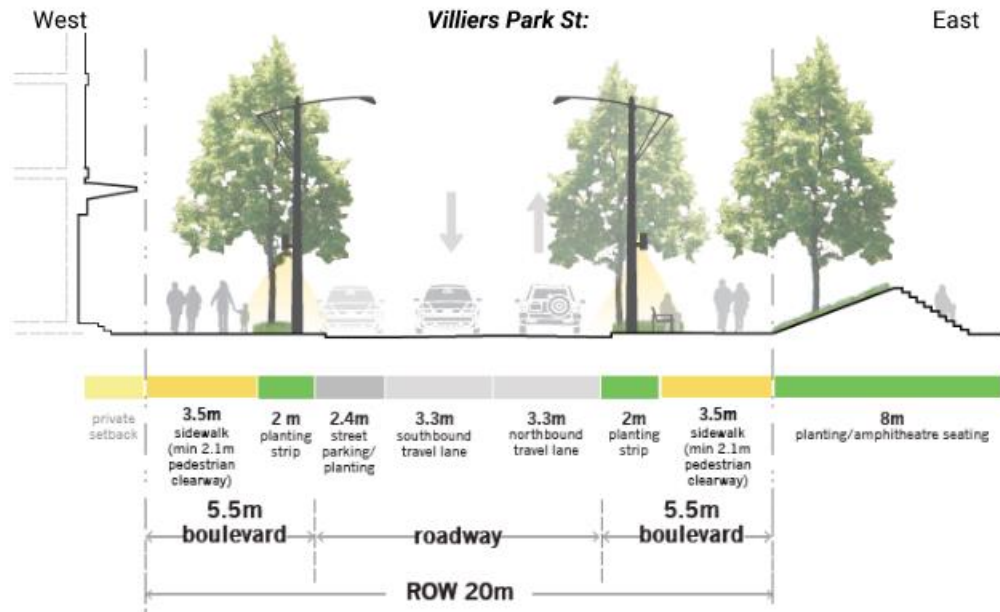
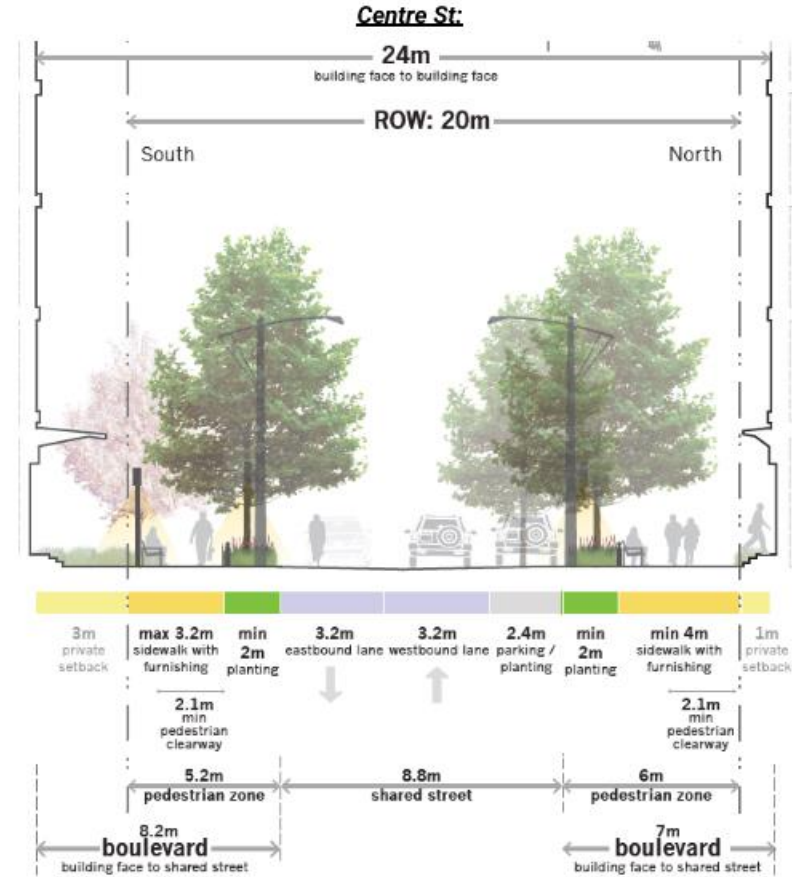
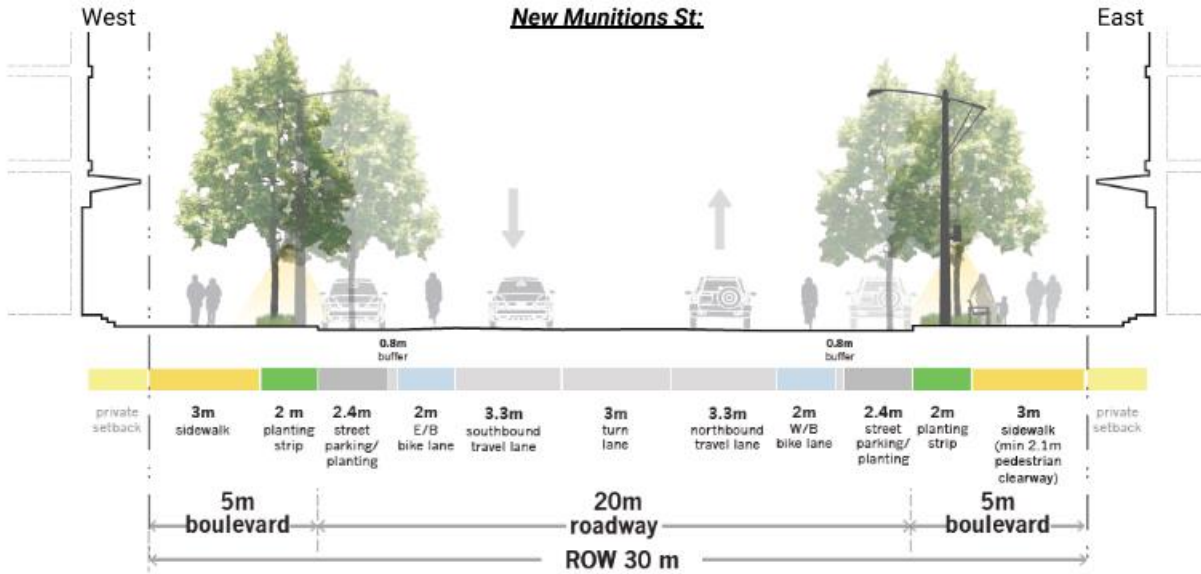
Cherry Bridge at Keating Channel (PLFP)



Villiers Island Public Realm Design



Sections of Relevant Streets (Villiers Island Precinct Plan)



Cherry Street Design - North of Keating (PLFP)



**Sandblasted
Concrete
Sidewalks**

**Asphalt
Trail**

**Meadow Landscape
(Placeholder for LRT)**

Cherry Street Design – North of Keating (WELRT)



Waterfront
Granite
Mosaic

Asphalt
Trail

Bioswales

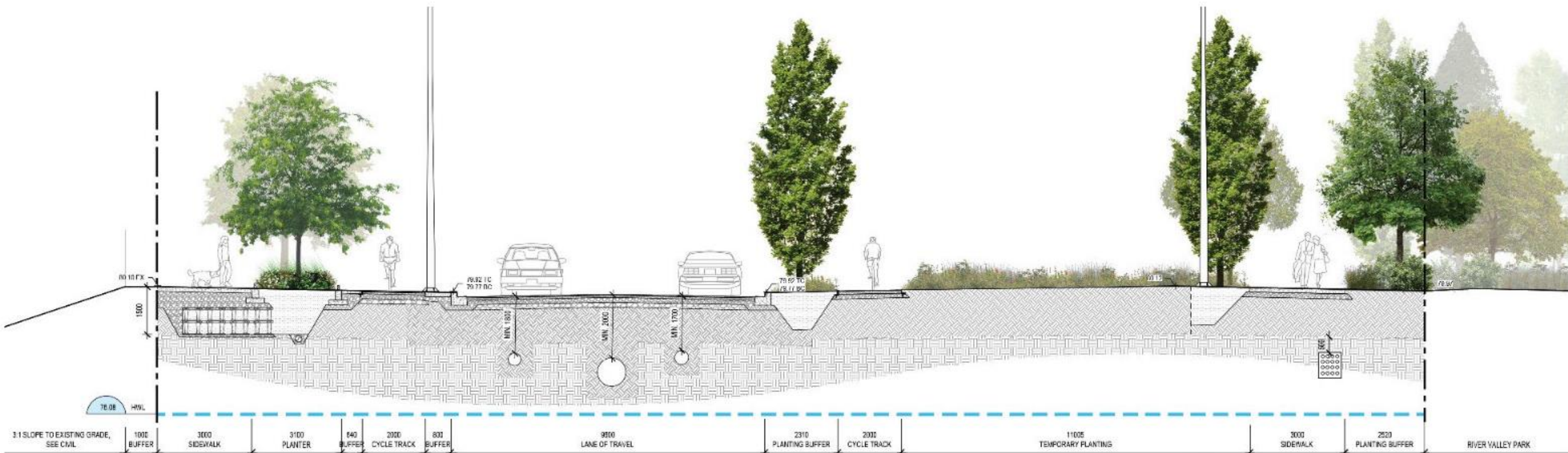
Paleotech
Roadbed

LRT Greenway

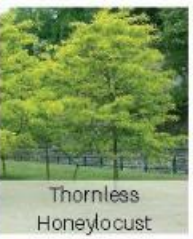
Waterfront
Granite
Mosaic

(*). Green Track proposal is under discussion and not yet finalized

Commissioners Street Design (PLFP)



Freemah Maple



Thornless Honeylocust



English Pyramidal Oak



English Pyramidal Oak



Swamp White Oak



Basswood



Side Oat Grama



Little Bluestem



Carolina Rose



Abbotswood Potentilla



Native Pollinator Meadow Seed Mix



Red Osier Dogwood



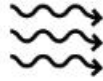
Northern Bayberry



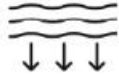
Native Pollinator Meadow Seed Mix

Green Track Pilot Project

Stormwater Benefits



Conveyance
Open flows excite pedestrians and encourage children to play, provide a viable link between management systems educating viewers.

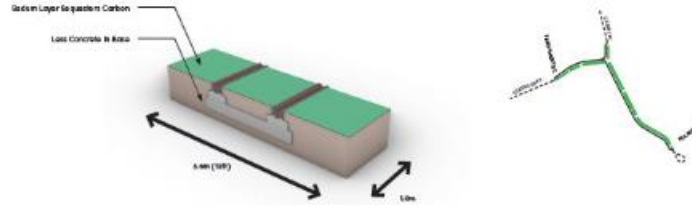


Infiltration
Water on the ground surface enters the soil - zones and trenches with concentrated planting for rapid infiltration.

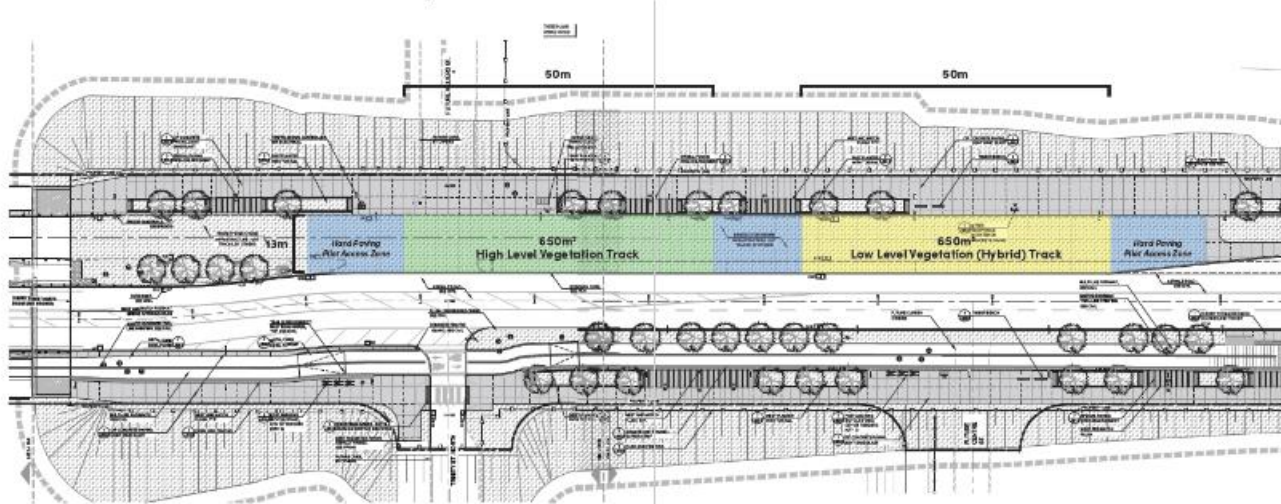


Detention
Rainwater is detained to low of flooding, reduce surface flow, restore natural hydrology.

Embodied Carbon Reduction



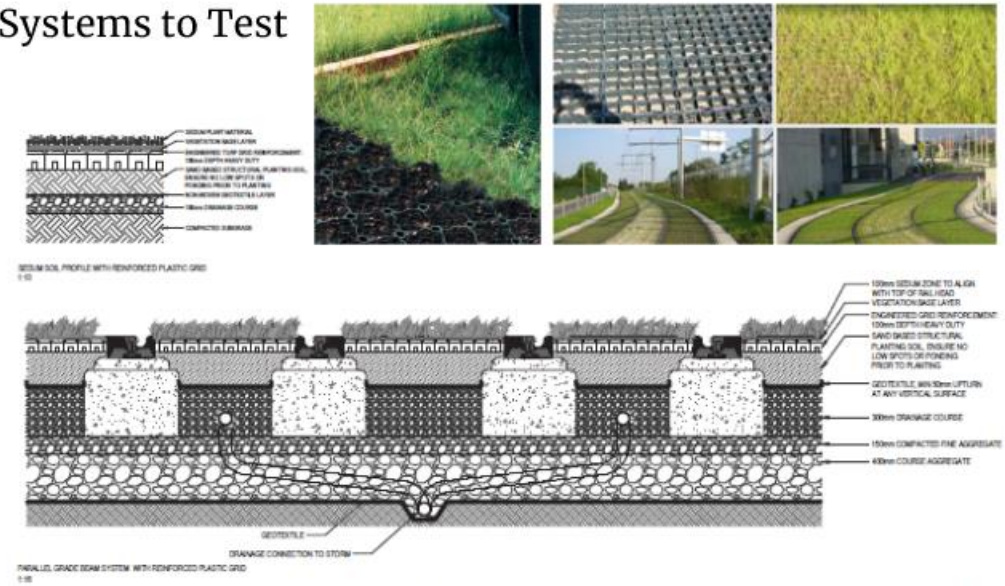
Potential Site on Chery St. at Villiers Island



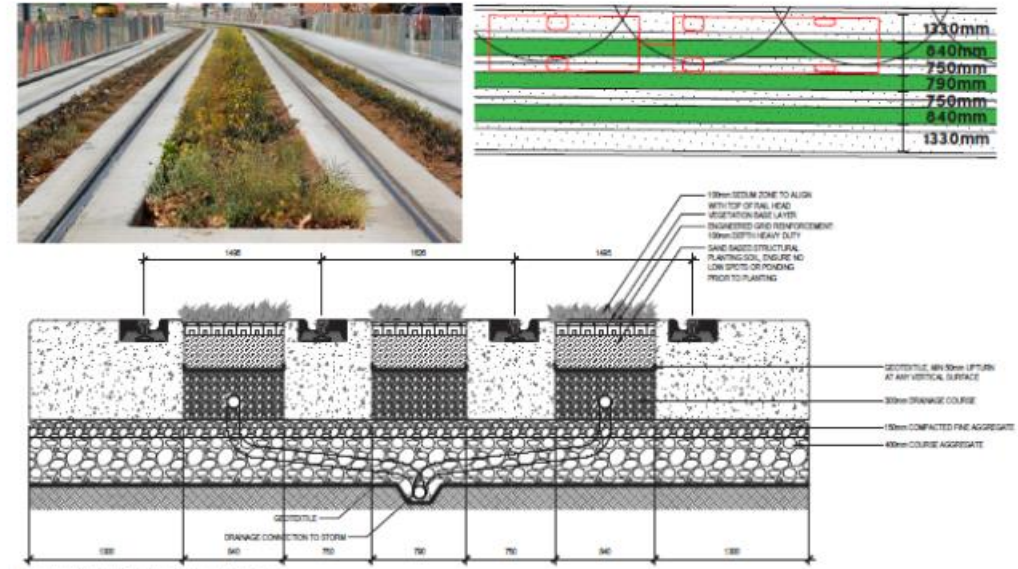
Images: The Green Track Pilot proposes testing two green track systems with a 100m x 10m strip of the A1715 urban meadow landscape.
Pilot Test System 1: High Level Vegetation Track with Reinforced Plastic Grid - planting extends to rail head.
Pilot Test System 2: Low Level Vegetation (Hybrid) Track with Reinforced Plastic Grid - planting in strip between concrete slabs at rails to maintain navigable space for wheelset vehicles.

**PORTLAND'S FLOOD PROTECTION AND DAMAGING INFRASTRUCTURE
NEW CHERRY STREET, STA #428 TO STA #436**

Systems to Test



Images: Pilot Test System 1: High Level Vegetation Track with Reinforced Plastic Grid - planting extends to rail head.



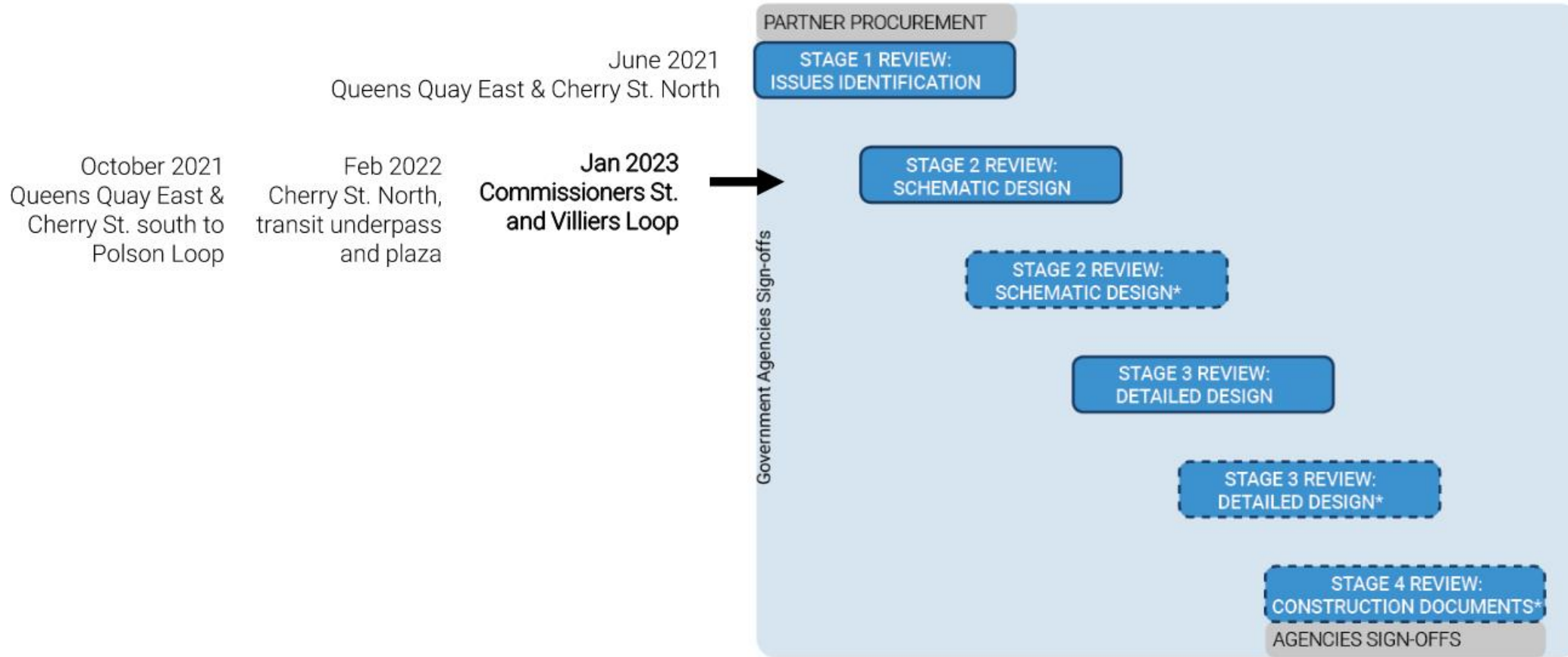
WIDE PARALLEL GRADE BEAM SYSTEM WITH REINFORCED PLASTIC GRID

DRP Stream 2: Public land

Project Approval Stage

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design



QQE Extension & Cherry St. WELRT

Oct. 2021 Consensus Comments Recap

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

General

- Appreciated the detailed and comprehensive presentation.
- **The project is an excellent example of leading with landscape.**
- The project is an important “hinge” that connects the city to the waterfront, ensure the design signifies to visitors that you are entering the waterfront.
- **The integration of green infrastructure with transit should be studied beyond this corridor, possibly down Cherry St. through Commissioners St. – the city becomes well connected with the waterfront via green transit corridors.**
- **Appreciated Metrolinx and TTC’s use of green tracks at Eglinton Crosstown, strong support for this to be implemented here.**
- Ensure the pedestrian crossing under the railway bridge will have an opportunity for improvement - important to address this segment of the public realm.
- **The project is demonstrative of the importance of transit from the city to the waterfront - from urban to nature - and this should be emphasized as a priority for the future.**

QQE Extension & Cherry St. WELRT

Oct. 2021 Consensus Comments Recap

Waterfront East LRT (WELRT) Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

Landscape

- Supported the concept of flowering and fruit trees at the cherry plaza.
- Supported the **stormwater capture** and monitoring strategies.
- Ensure the streetscape design is well coordinated with street furniture and development frontages in the next phase of design, consider:
 - breaking up the length of benches
 - be bold and continue to refine the design of the planters and landscape while maintaining an unimpeded pedestrian right-of-way - **some Panel members felt that the proposed planting to circulation ratio strikes a good balance.**
 - laybys without bollards

Sustainability

- Consider **low carbon concrete mix** in the specification to reduce overall project emissions.
- Encouraged Waterfront Toronto to examine establishing a specification for low carbon concrete for waterfront projects.

Areas for Panel Consideration

Waterfront Toronto

Waterfront East LRT (WELRT)
Commissioners St and Villiers Loop

Proponent: Waterfront Toronto
Design Team: Public Work, Stantec
Review Stage: Schematic Design

Is the LRT loop successfully integrated with the public realm and adjacent land uses, including streetscape, future development, and parks? Does the potential for Green Track further this integration?

Does the Villiers segment reinforce the design language of segments 1 and 2, and together create a cohesive waterfront transit experience?

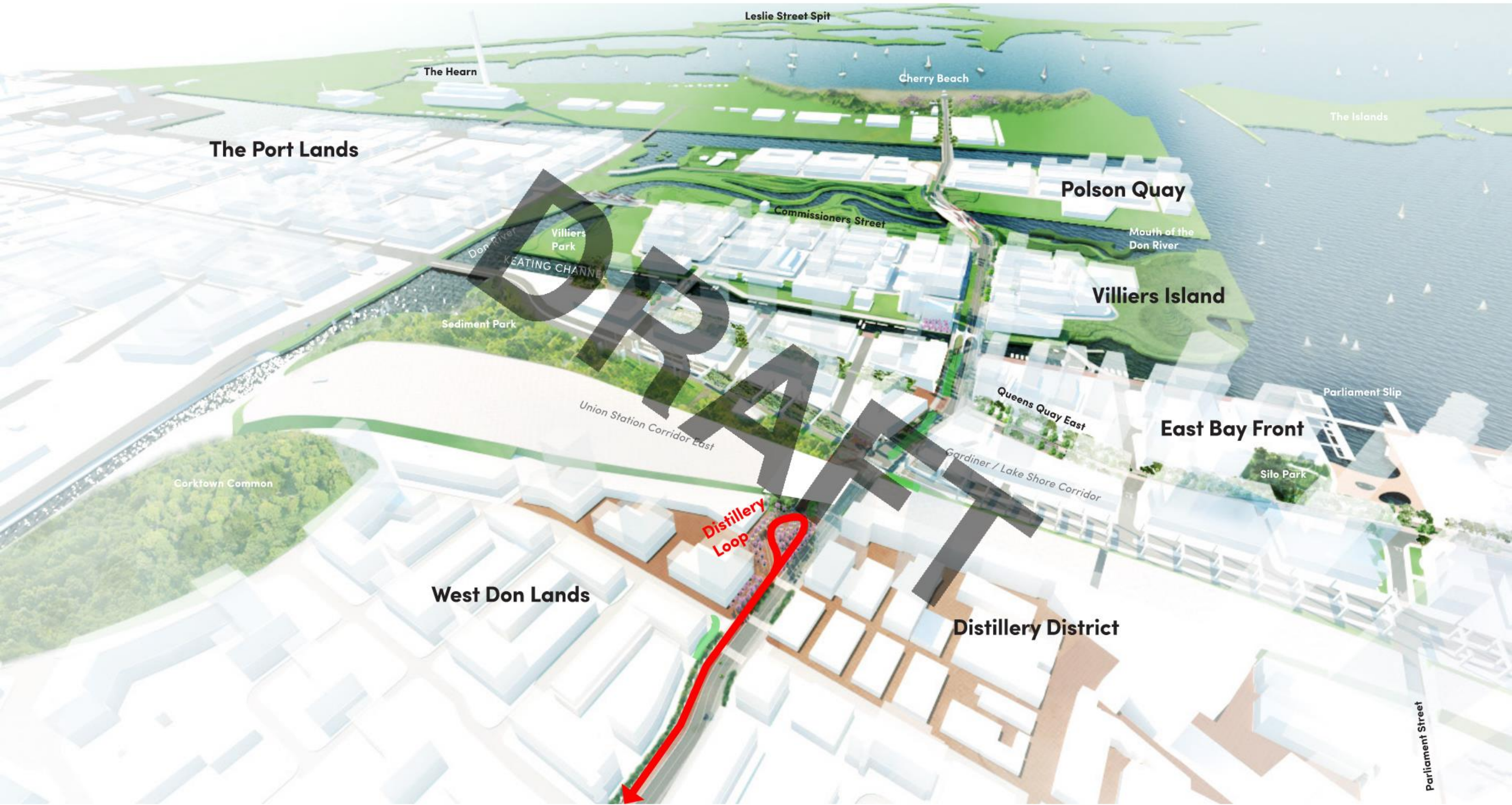
Commissioners–Villiers Loop

Design Review Panel
2023.01.25

**PUBLIC
WORK**



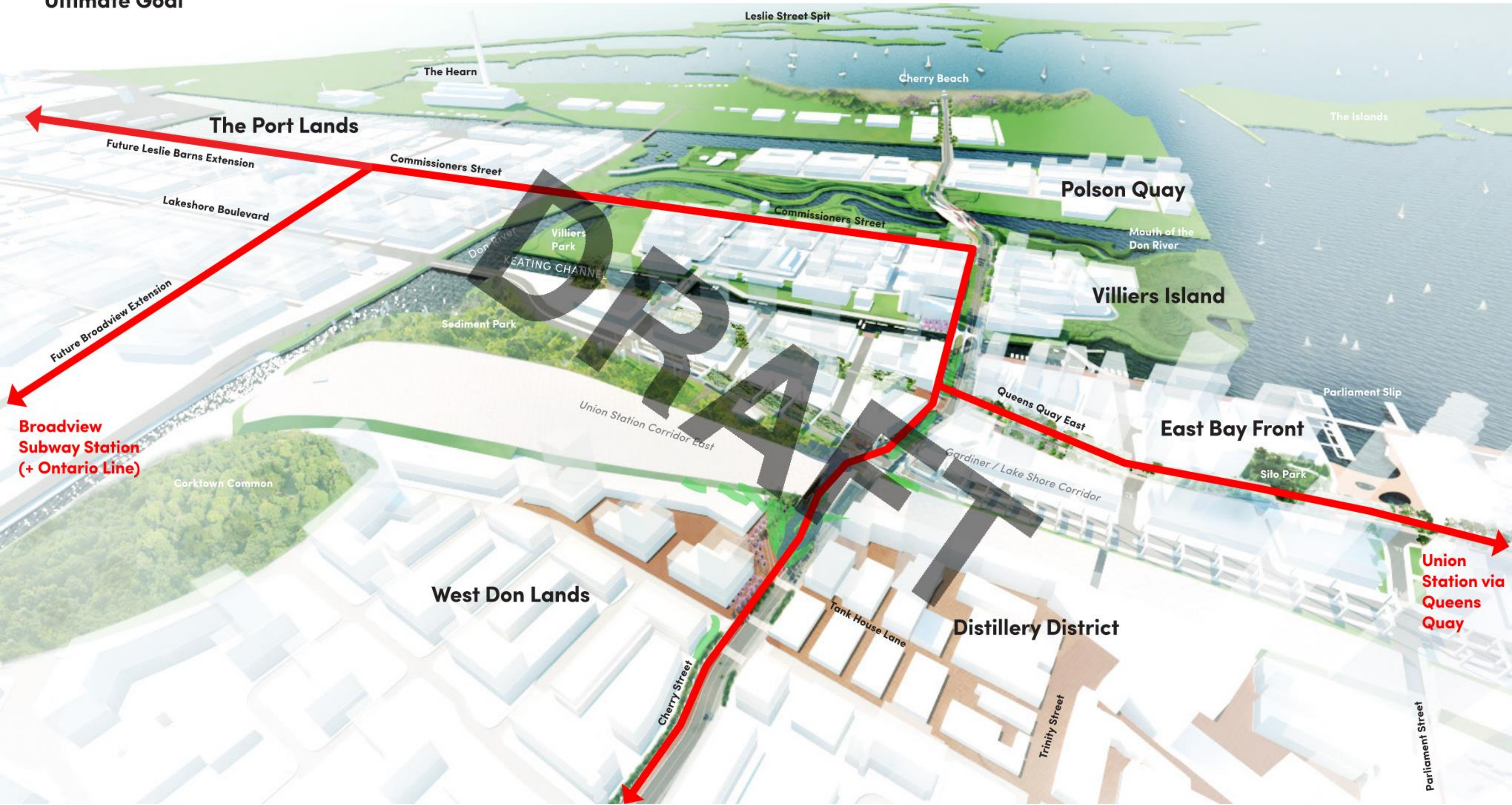
Context: The Toronto Waterfront and the Port Lands



Cherry / King Line

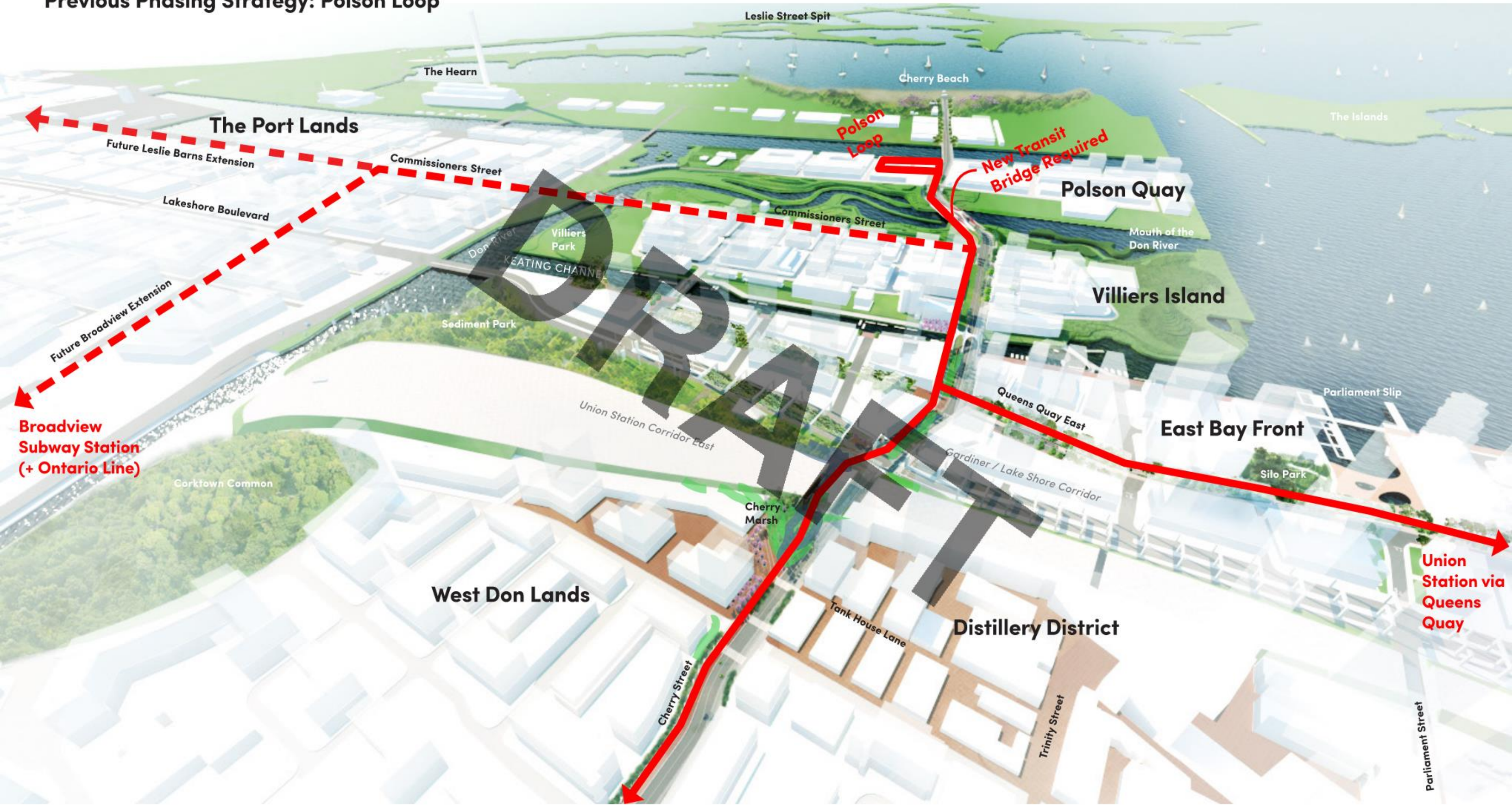
Context: The Waterfront East Transit Project

Ultimate Goal



Cherry / King Line

Context: The Waterfront East Transit Project: Previous Phasing Strategy: Polson Loop



Cherry / King Line

Queens Quay East, Cherry Street, and Commissioners Street /
For Discussion Purposes Only



DRP 2021-10-20: Queens Quay East



DRP 2022-02-23: Cherry Street

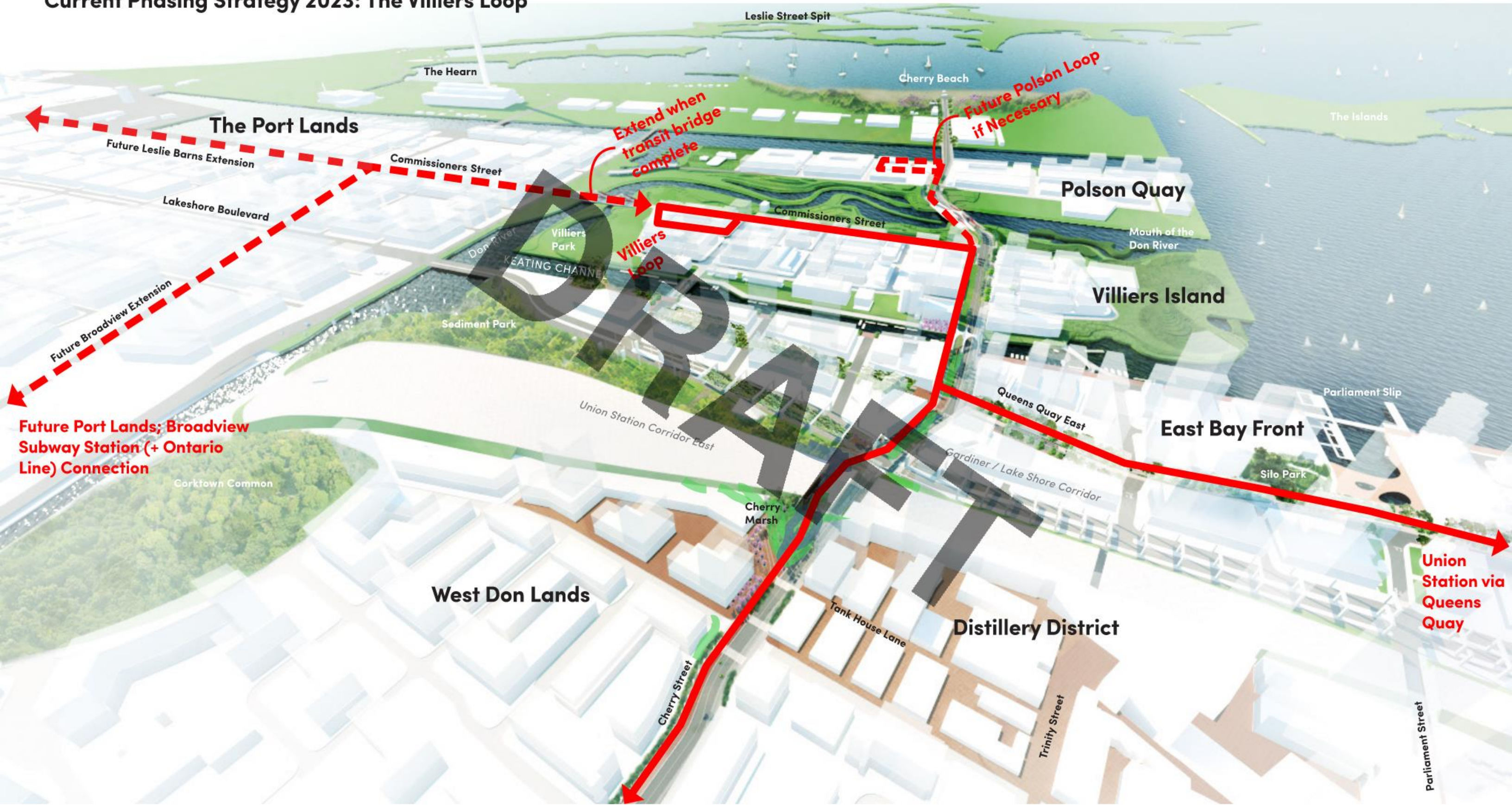


DRP 2021-10-20: Queens Quay East



DRP 2022-02-23: Cherry Marsh

Context: The Waterfront East Transit Project: Current Phasing Strategy 2023: The Villiers Loop



Cherry / King Line

Queens Quay East, Cherry Street, and Commissioners Street /
For Discussion Purposes Only

Villiers Island Open Space System Study

Villiers Island Proposed Street Network / From the Villiers Island Precinct Plan

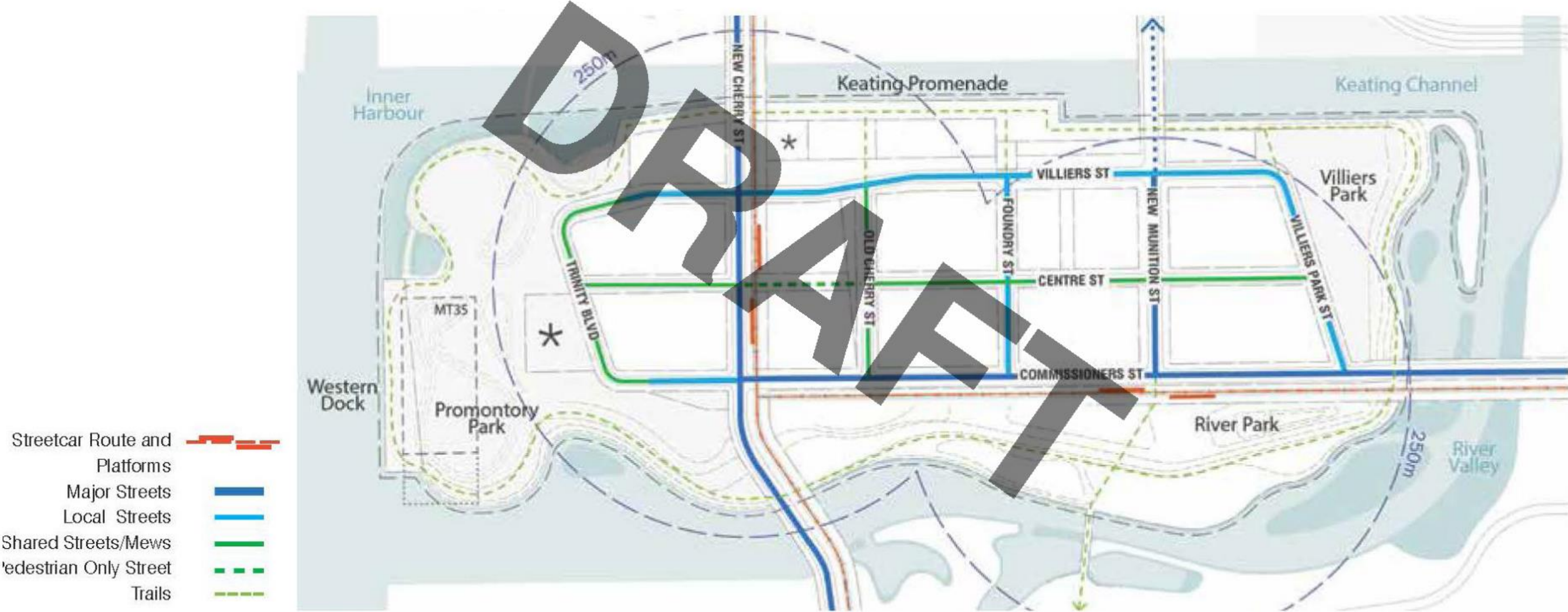
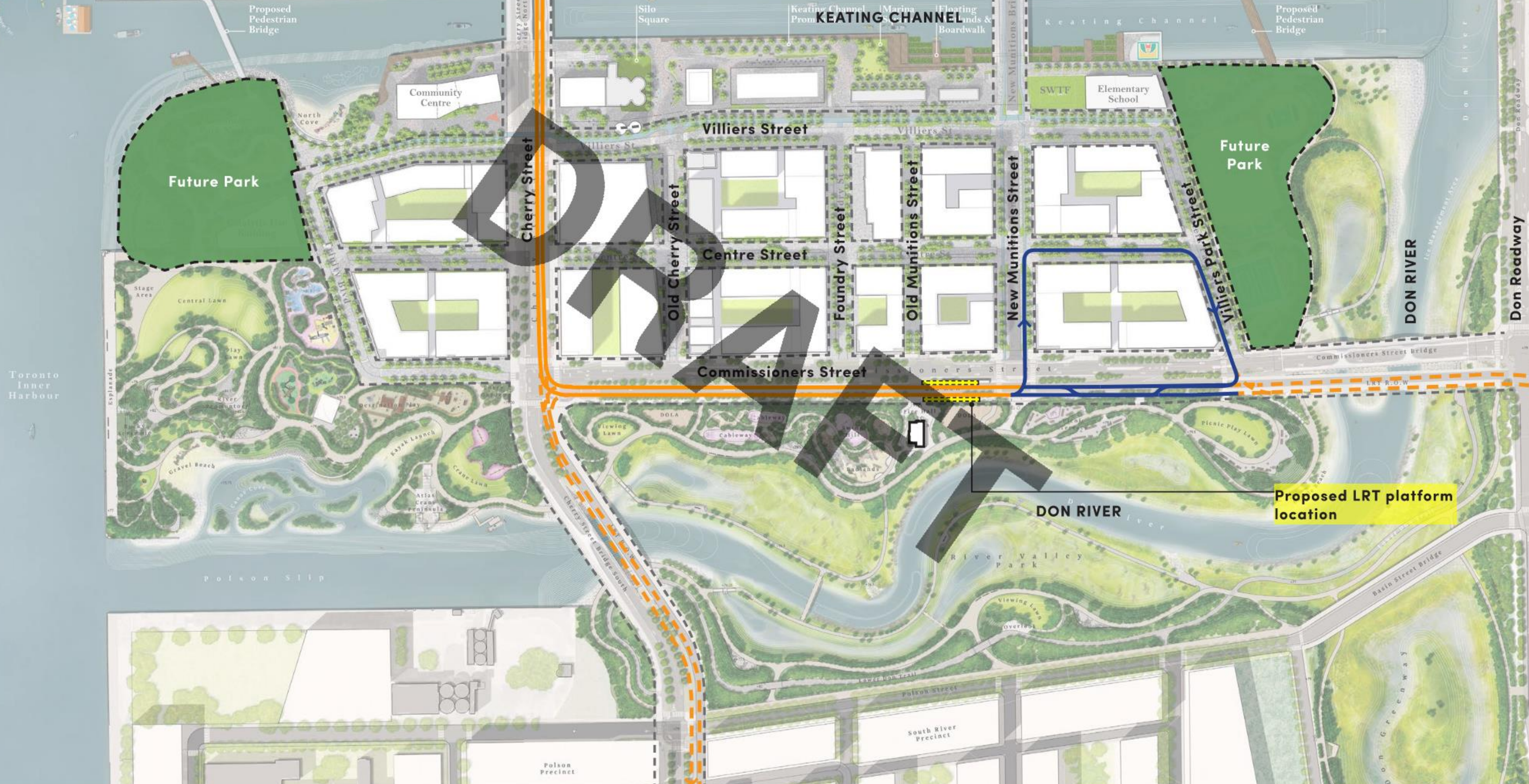


FIGURE 35. Proposed street network

Summary of Options for Villiers Loop



Preferred Option for Villiers Loop Long-term On-Street Loop



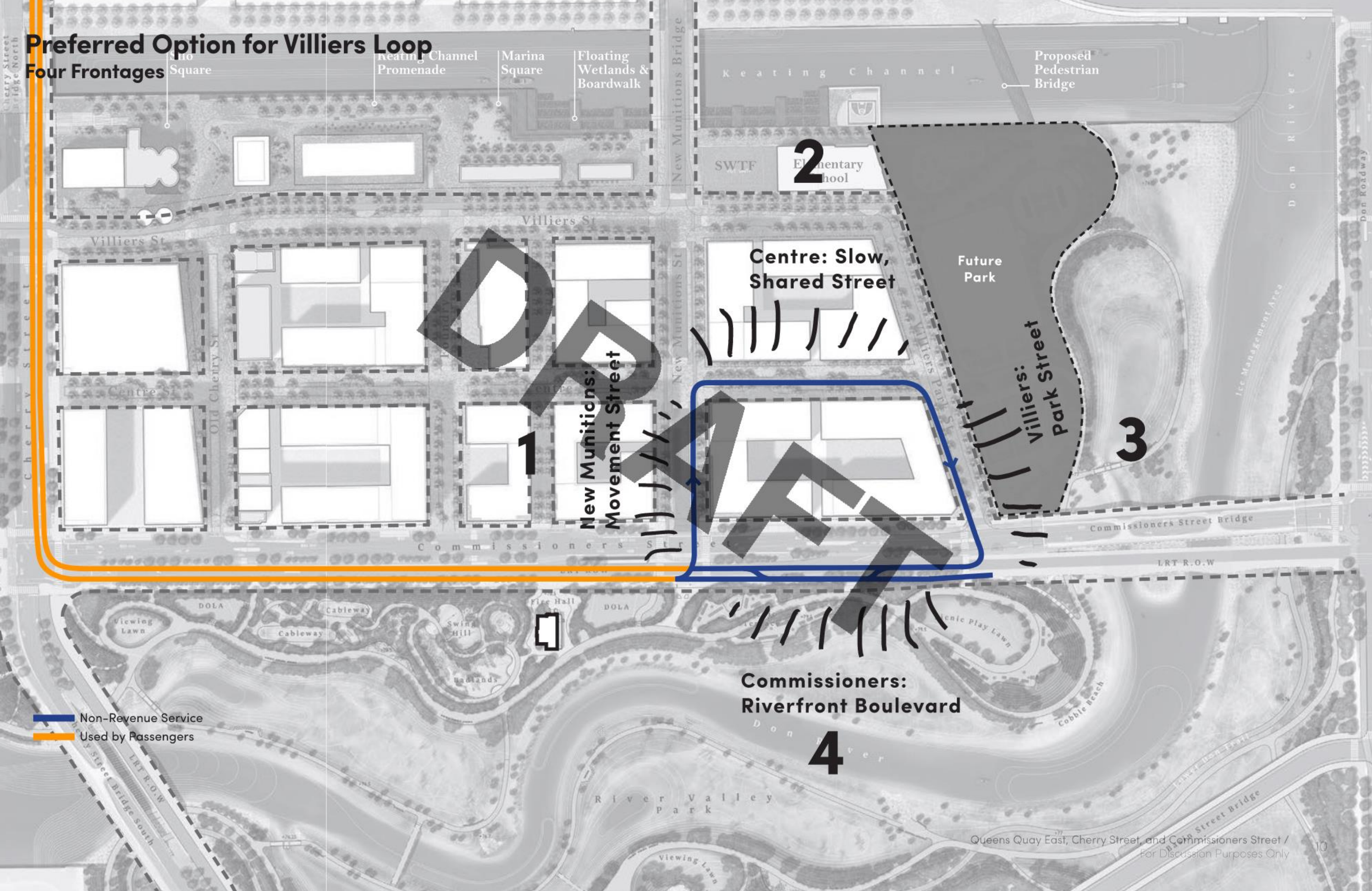
 30m proposed LRT platform location (double = 60m)
 60m tangent length bypass track location

Track Design Notes:

1. Minimum horizontal design curve radius = 15m
2. Minimum tangent length between reverse horizontal curves = 25m

Preferred Option for Villiers Loop

Four Frontages



Keating Channel Promenade

Marina Square

Floating Wetlands & Boardwalk

Proposed Pedestrian Bridge

SWTF

2
Elementary School

Villiers St

Centre: Slow, Shared Street

Future Park

Villiers St

1
New Munitions: Movement Street

Villiers: Villiers Park Street

3

Commissioners Street

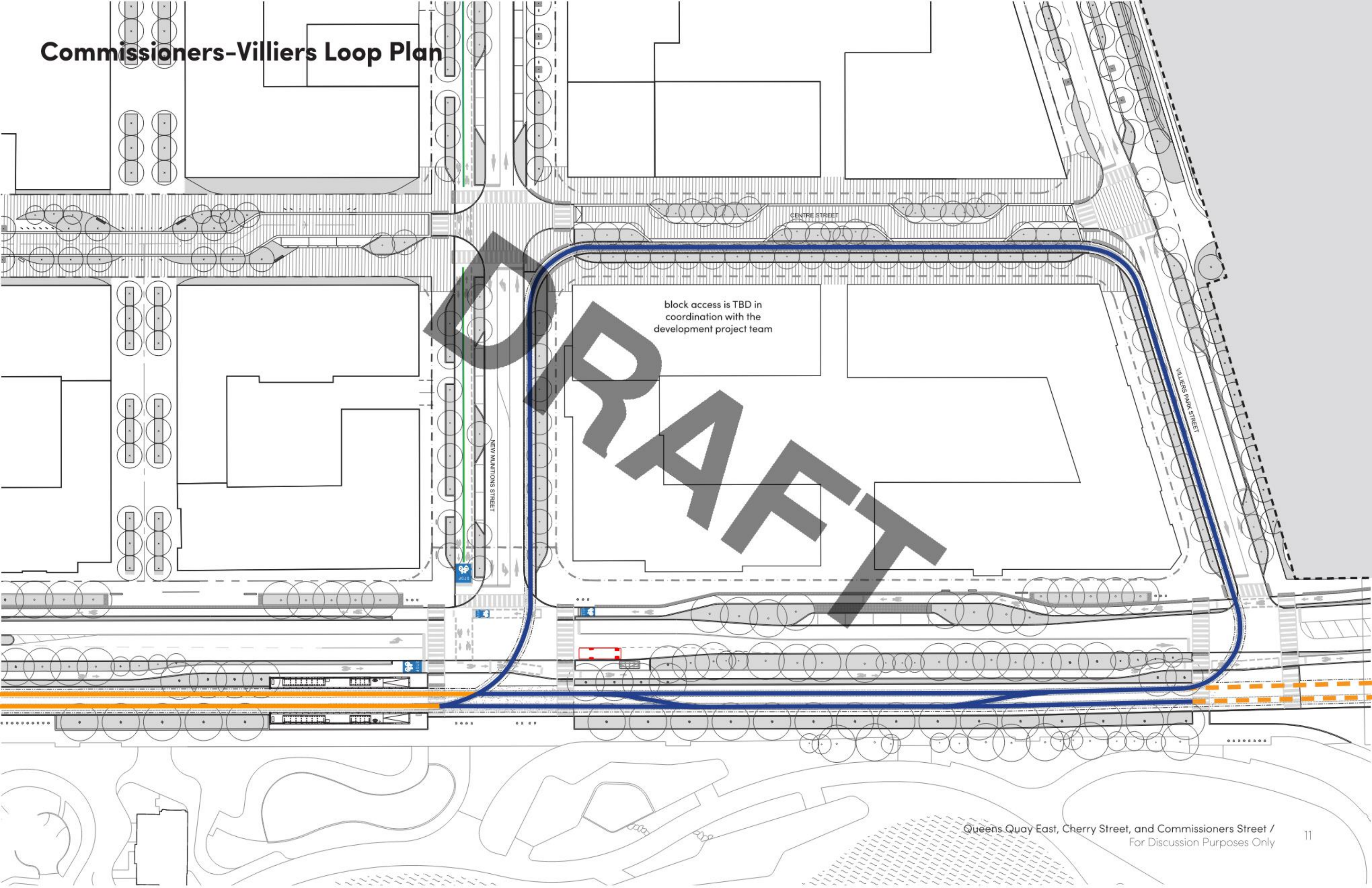
Commissioners: Riverfront Boulevard

4

River Valley Park

— Non-Revenue Service
— Used by Passengers

Commissioners-Villiers Loop Plan



block access is TBD in coordination with the development project team

New Munitions Street

Based on the Villiers Island Precinct Plan

W

30.0m

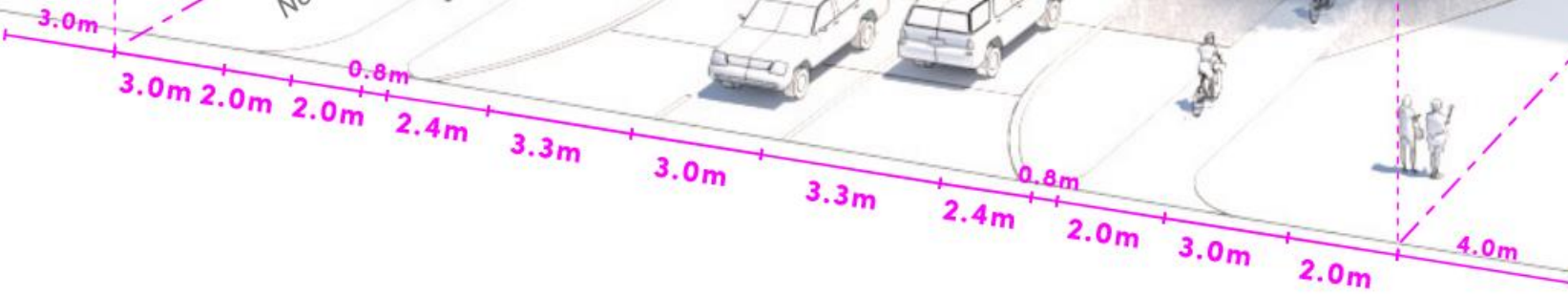
E

DRAFT

Centre Street

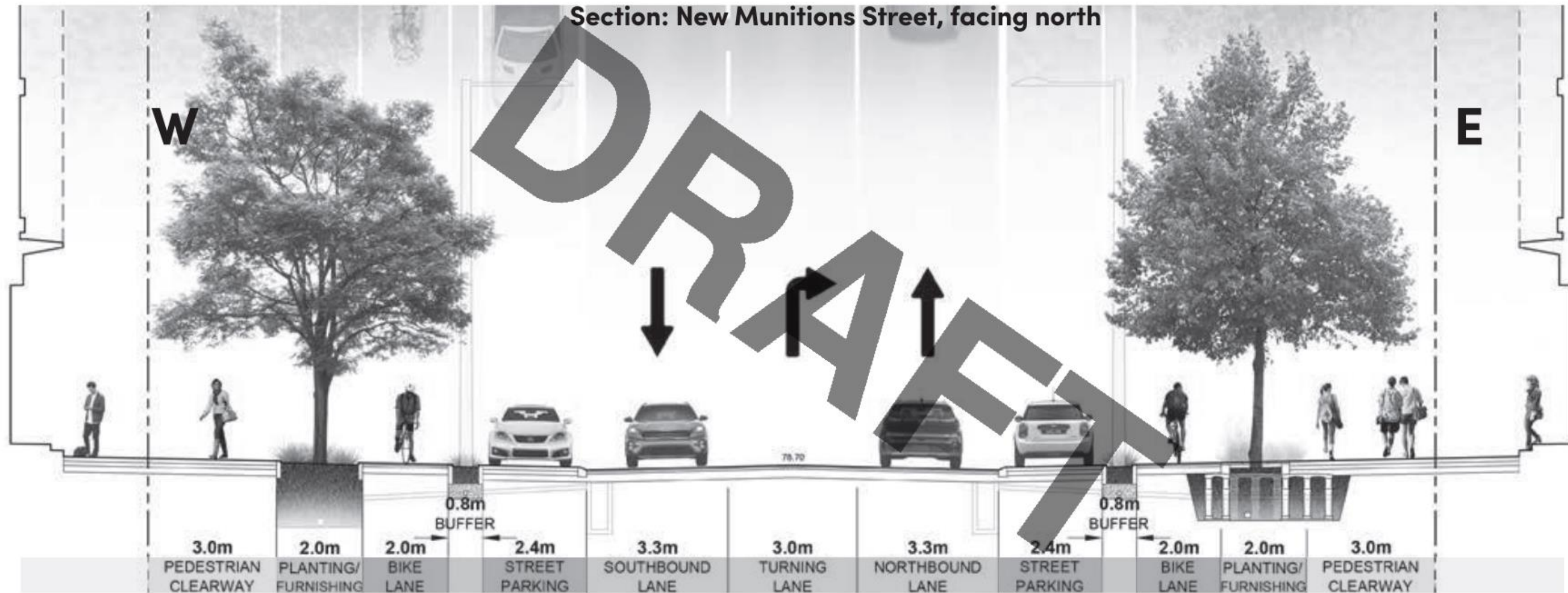
New Munitions Street

Commissioners Street



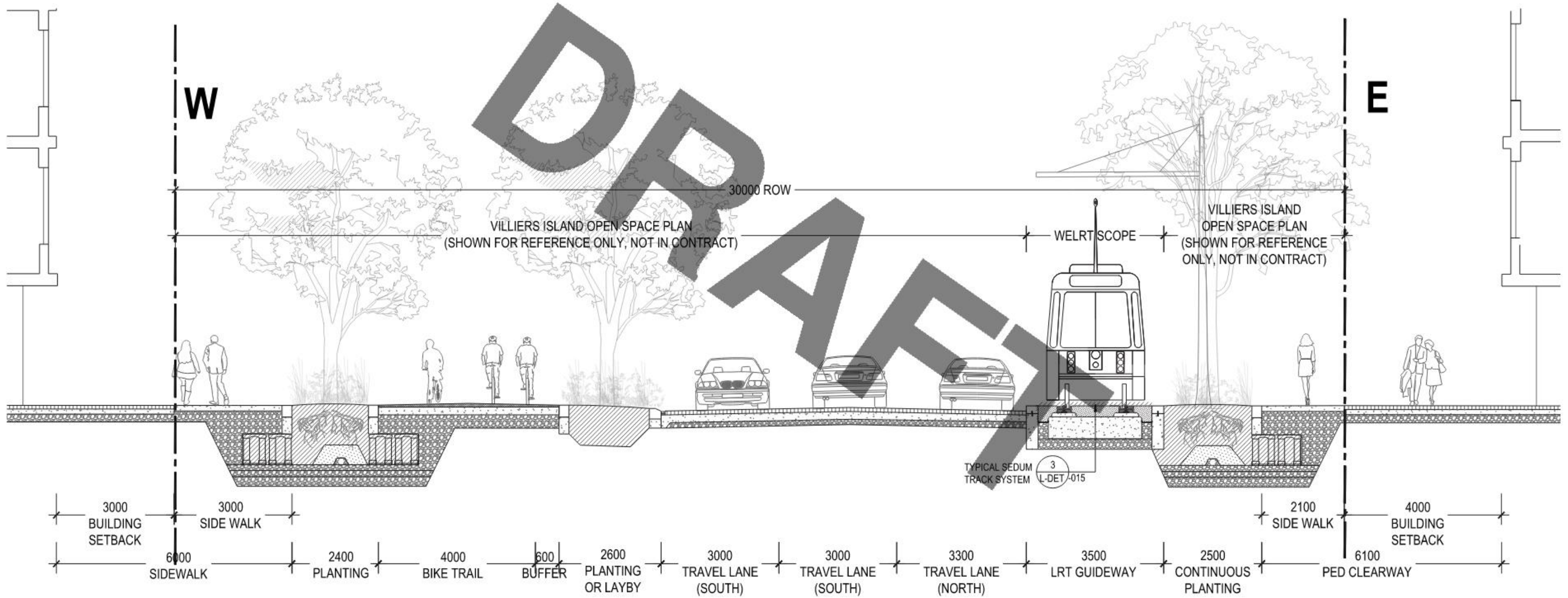
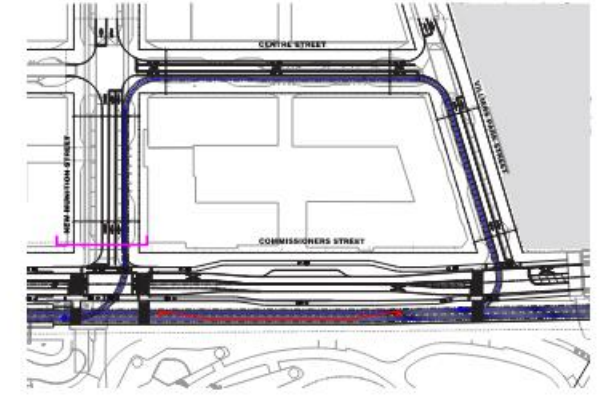
New Munitions Street

Based on the Villiers Island Precinct Plan



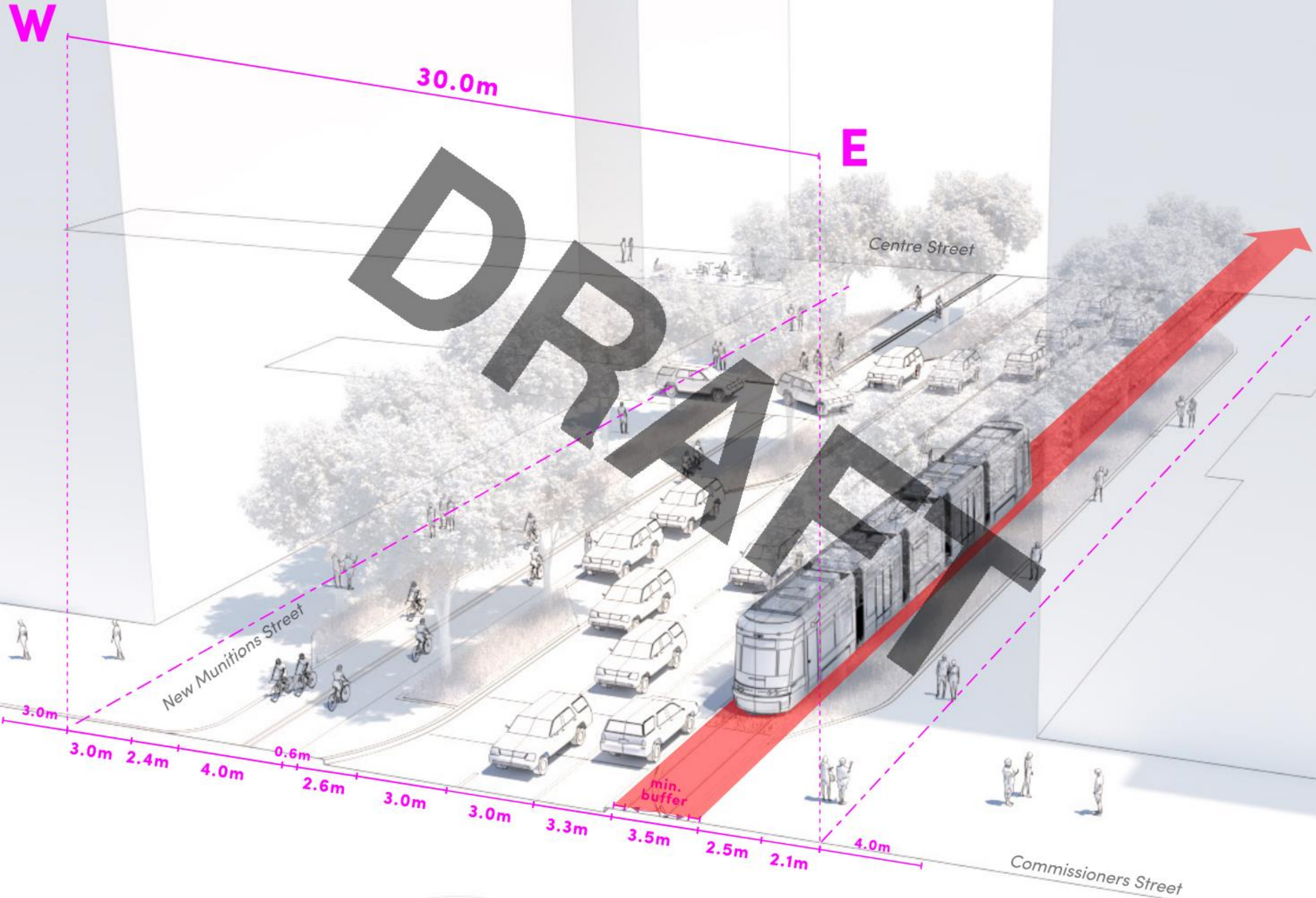
New Munitions Street integrating LRT

Waterfront East Light Rail Transit Extension (this) Project



New Munitions Street integrating LRT

Waterfront East Light Rail Transit Extension (this) Project



New Munitions Street integrating LRT



Planting and
Potential Water Capture

Green Track

Short term
parking

Bi-directional
cycling

Planting and
Potential Water Capture

Patio Setback

Queens Quay East, Cherry Street, and Commissioners Street /
For Discussion Purposes Only

*Green track pending approval by TTC - requires design to accomodate replacement bus service

New Munitions Street integrating LRT



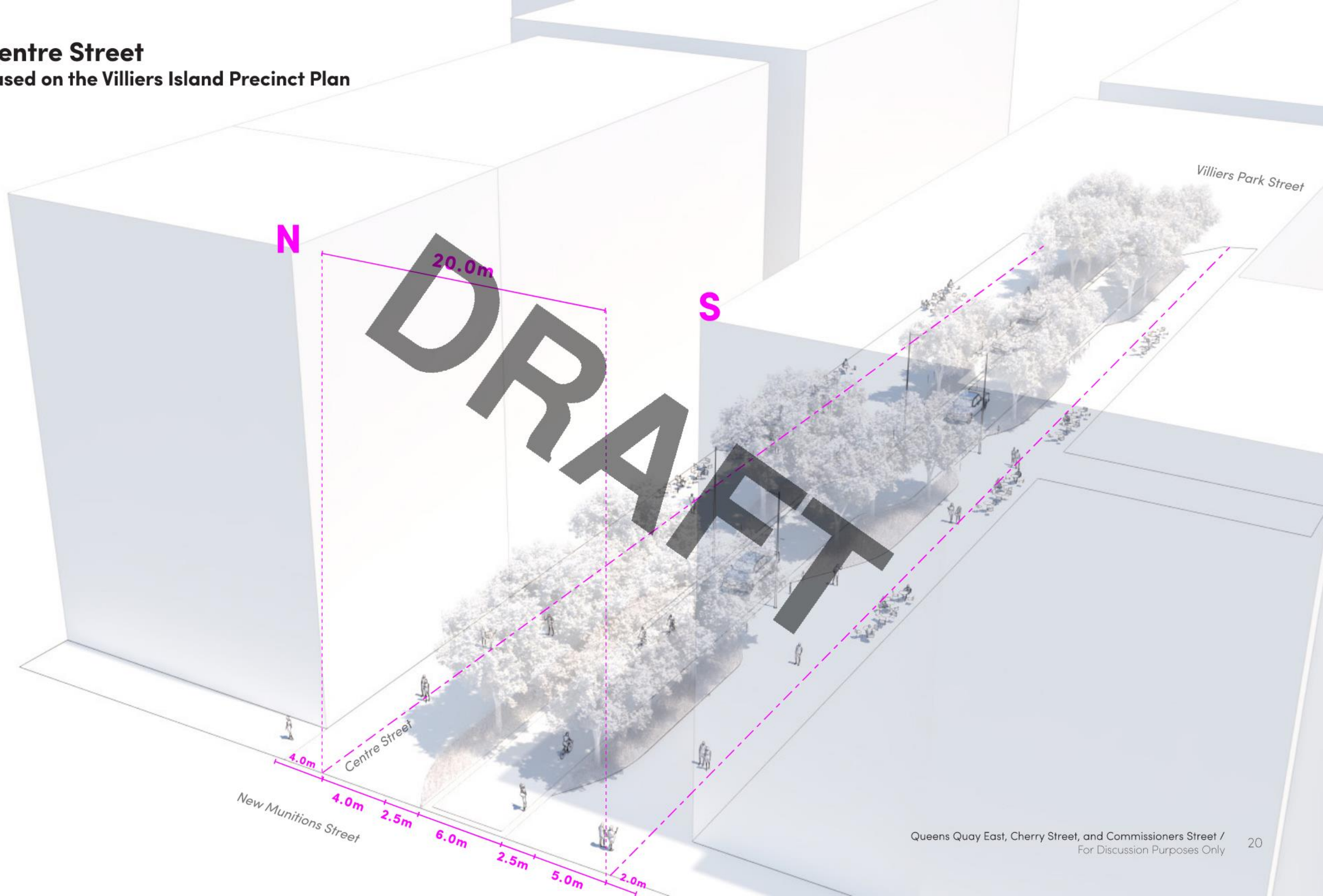
New Munitions Street integrating LRT





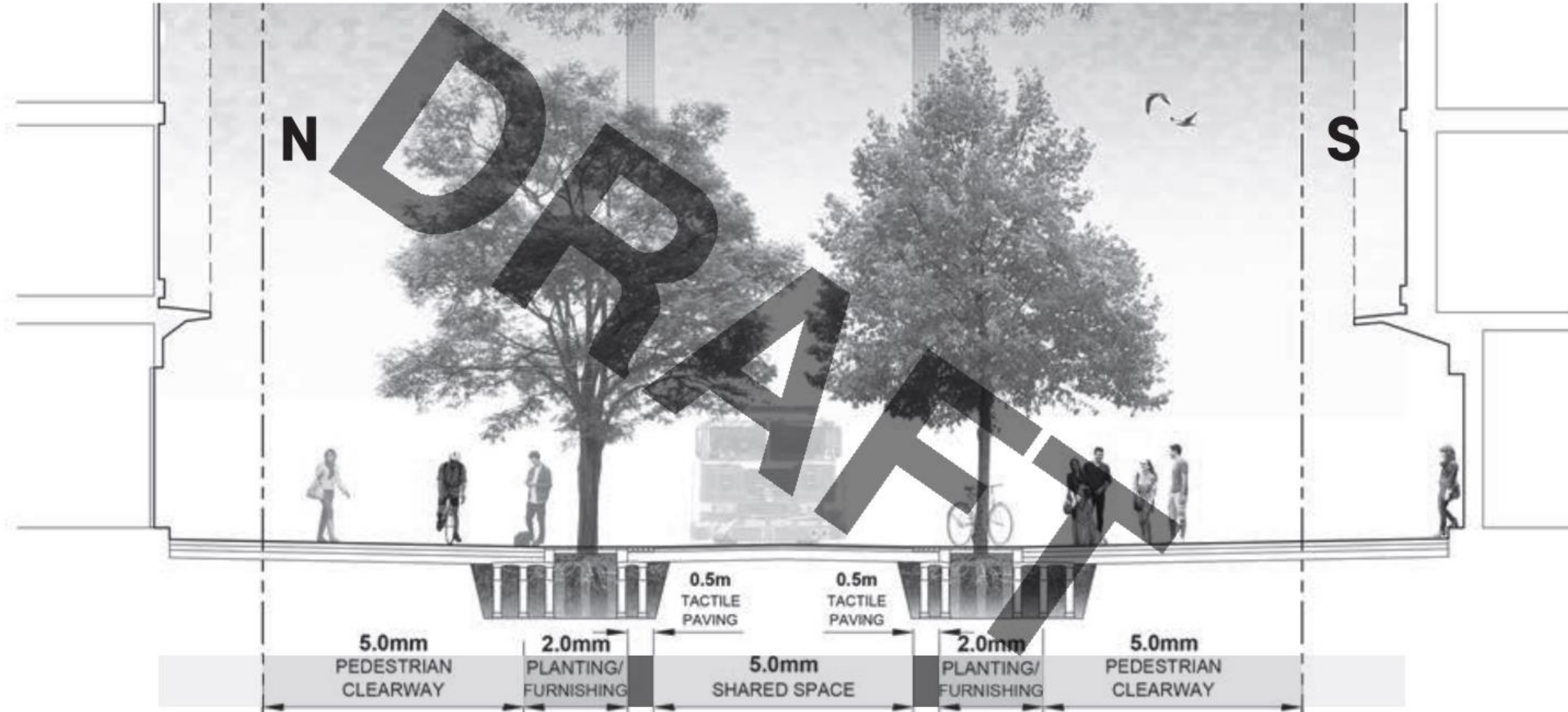
Centre Street

Based on the Villiers Island Precinct Plan



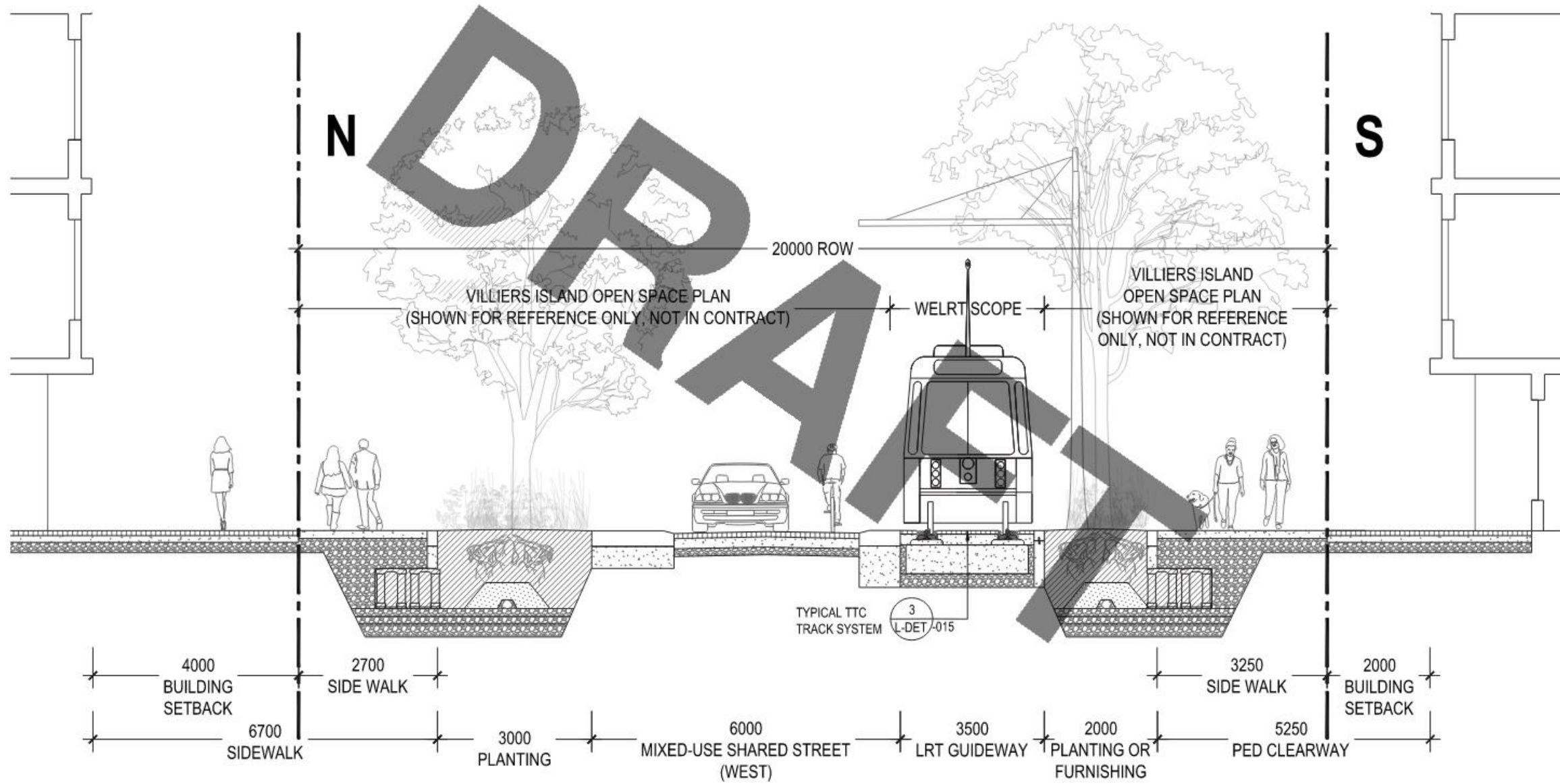
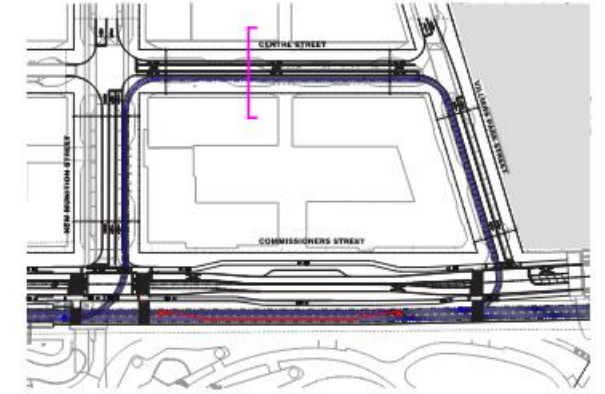
Centre Street

Based on the Villiers Island Precinct Plan



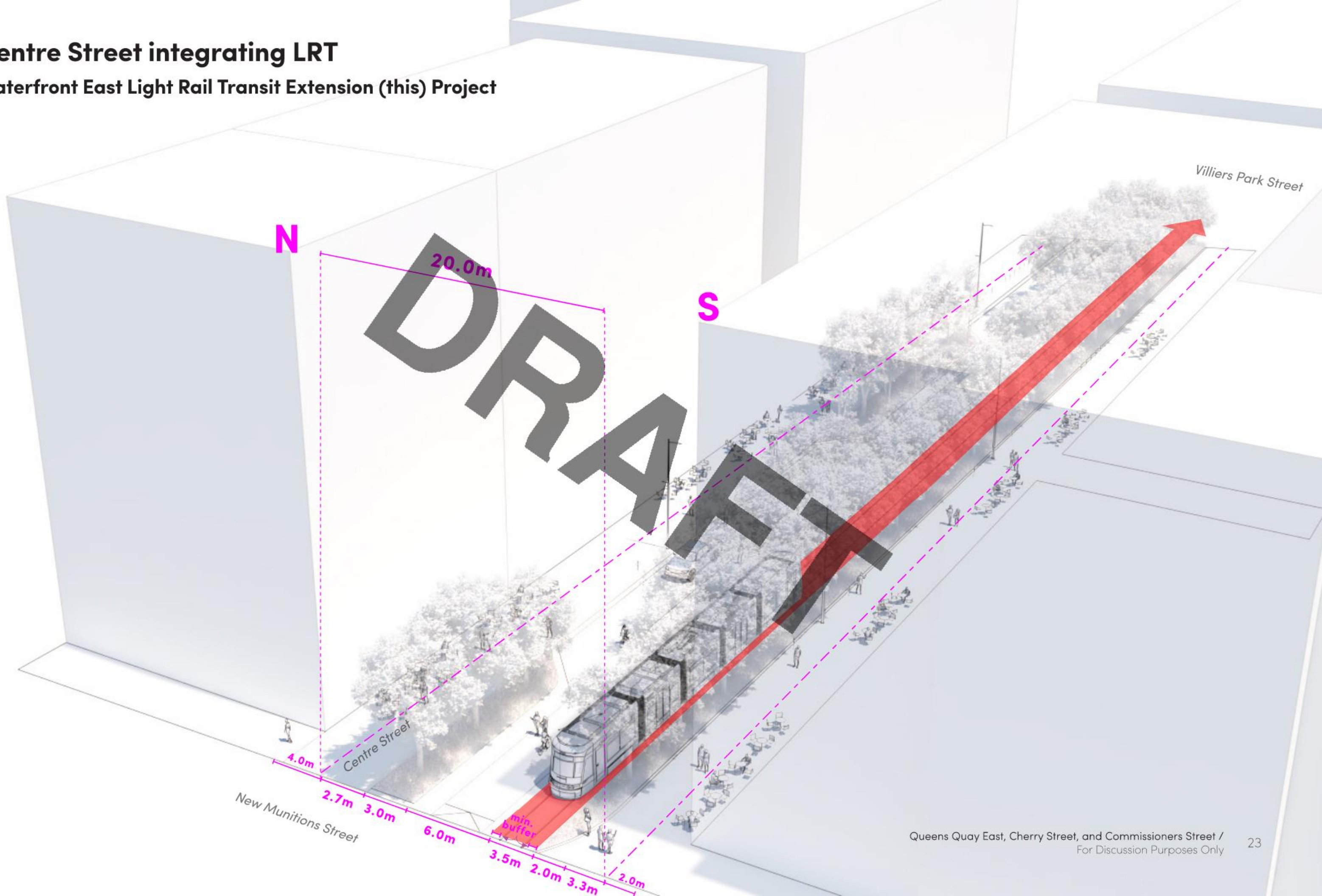
Centre Street integrating LRT

Waterfront East Light Rail Transit Extension (this) Project

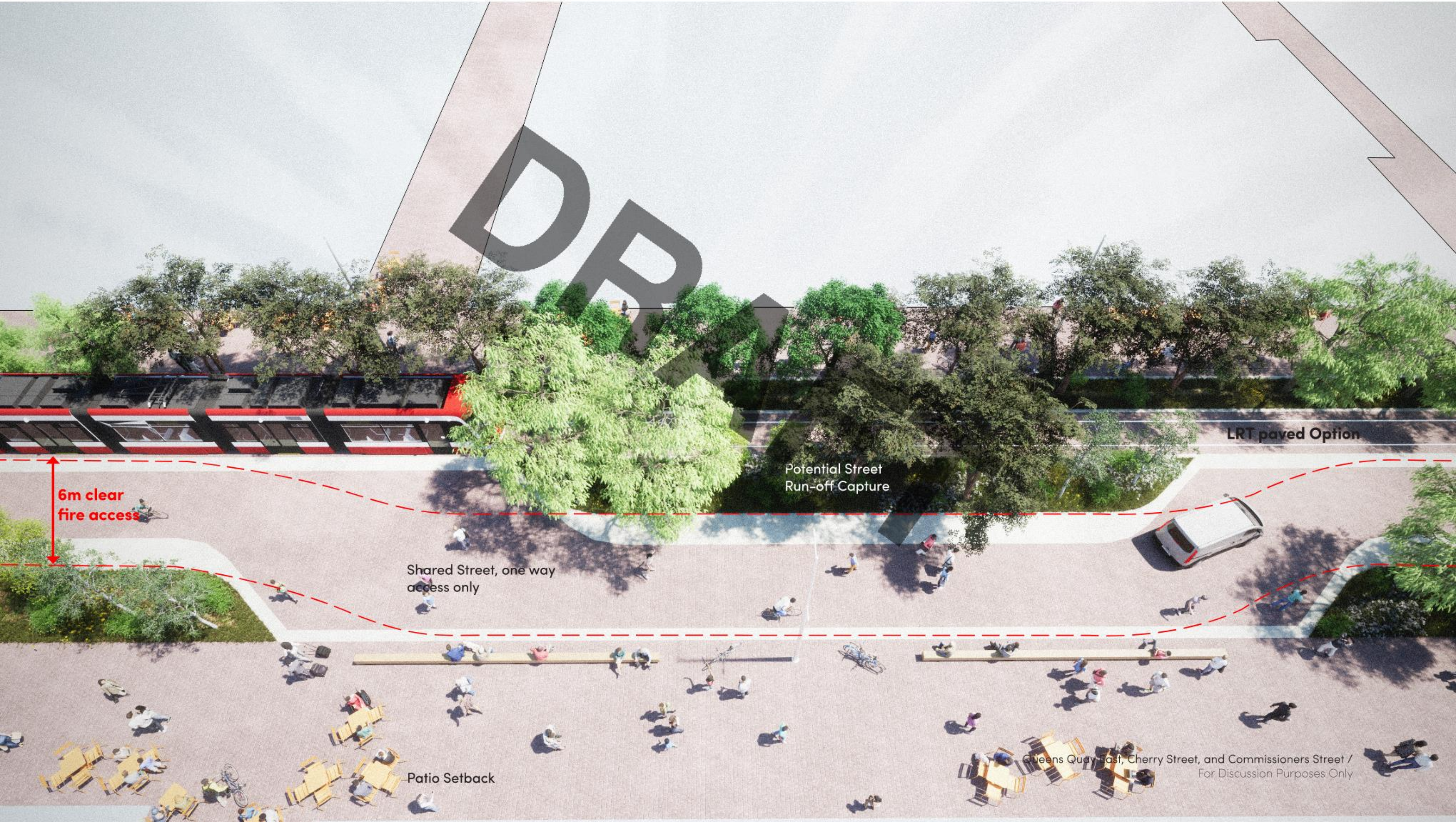


Centre Street integrating LRT

Waterfront East Light Rail Transit Extension (this) Project



Centre Street integrating LRT



6m clear fire access

Shared Street, one way access only

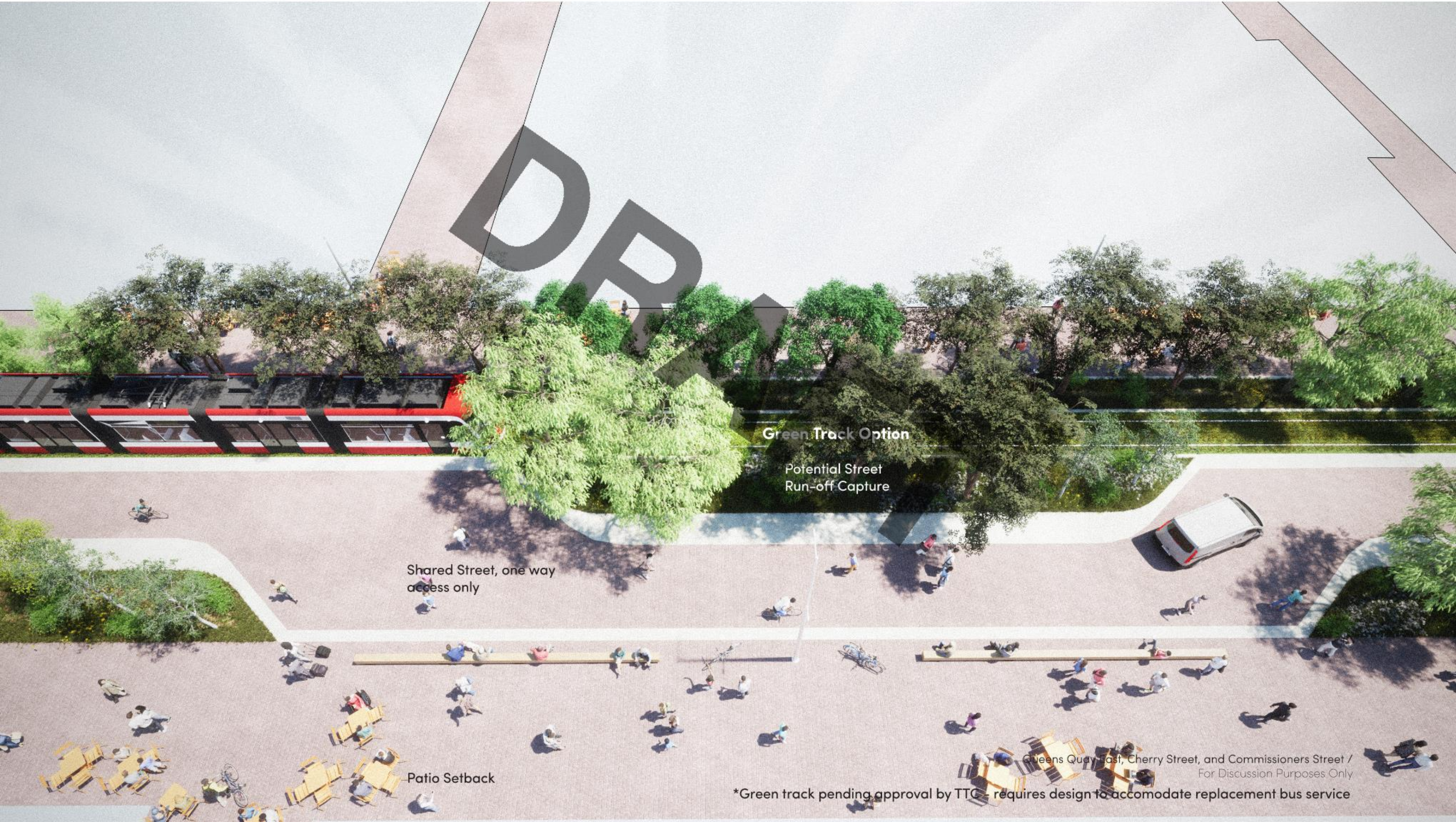
Potential Street Run-off Capture

LRT paved Option

Patio Setback

Queens Quay East, Cherry Street, and Commissioners Street / For Discussion Purposes Only

Centre Street integrating LRT



Green Track Option

Potential Street Run-off Capture

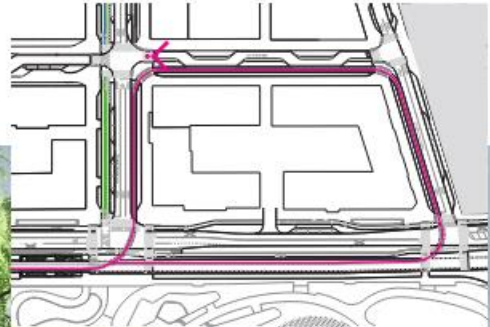
Shared Street, one way access only

Patio Setback

Queens Quay East, Cherry Street, and Commissioners Street / For Discussion Purposes Only

*Green track pending approval by TTC - requires design to accommodate replacement bus service

Centre Street integrating LRT

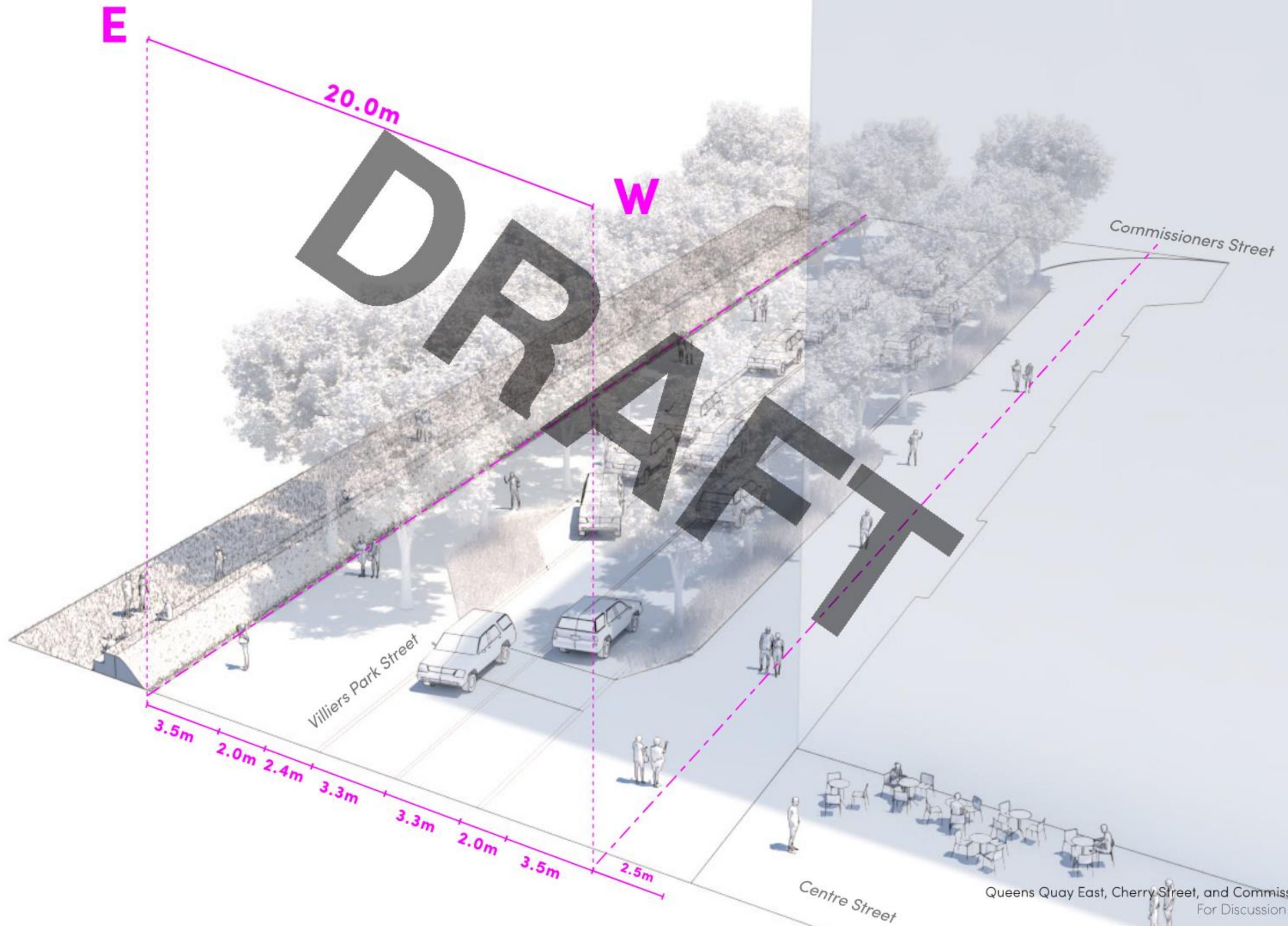


Centre Street integrating LRT



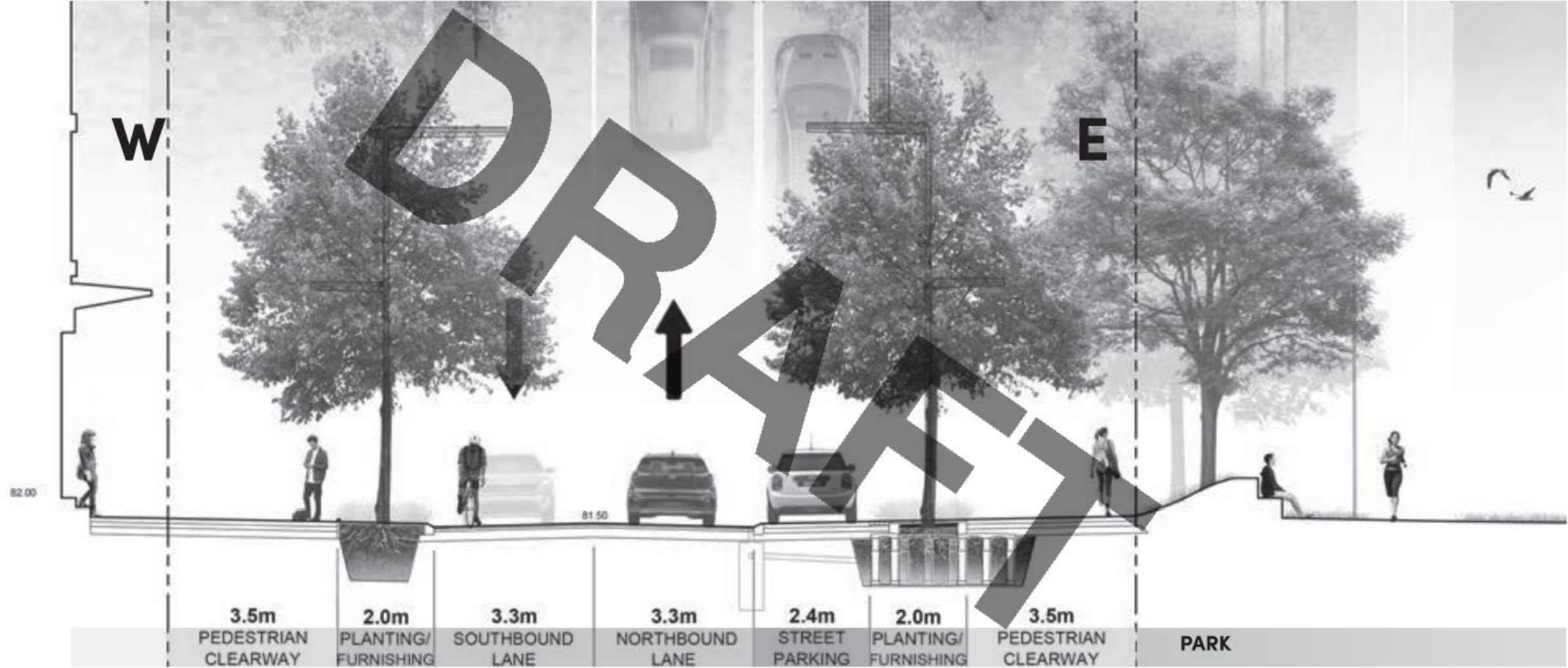
Villiers Park Street

Based on the Villiers Island Precinct Plan



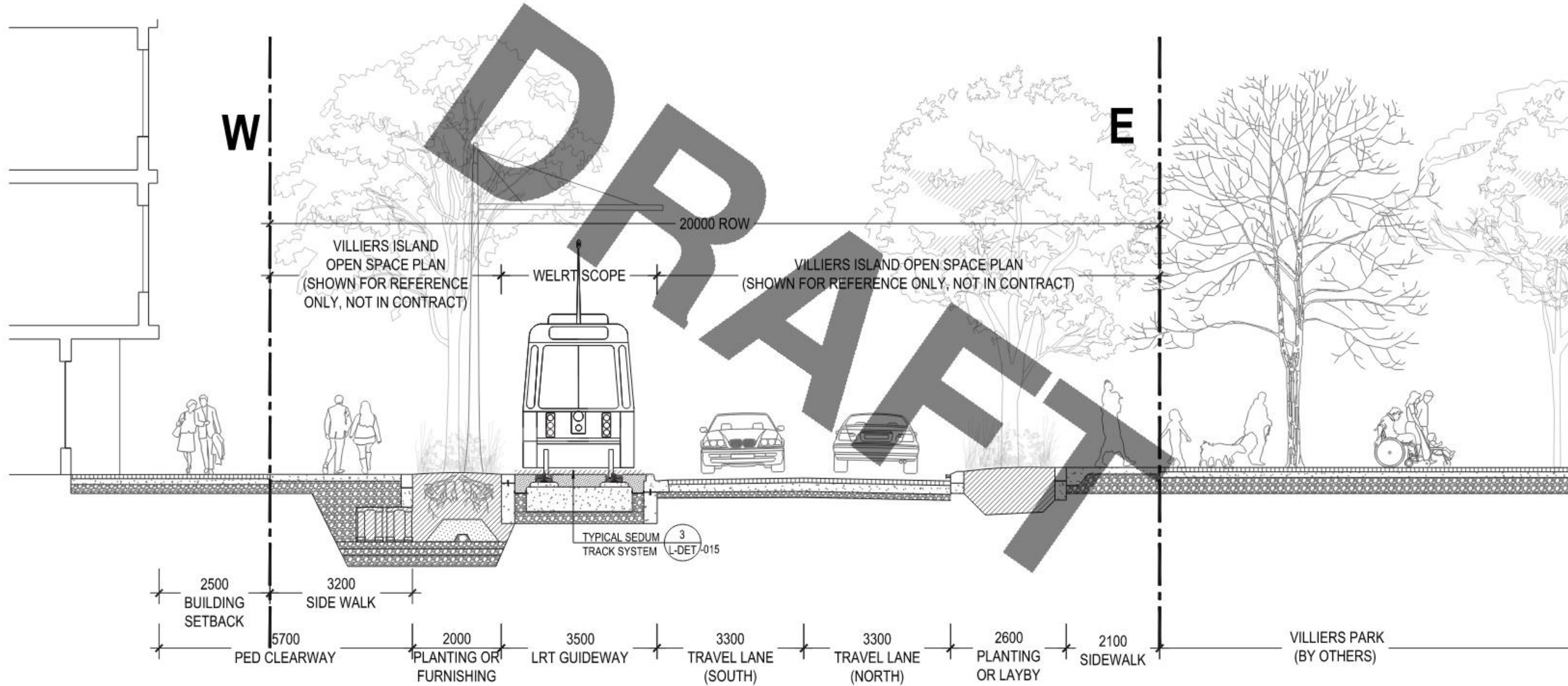
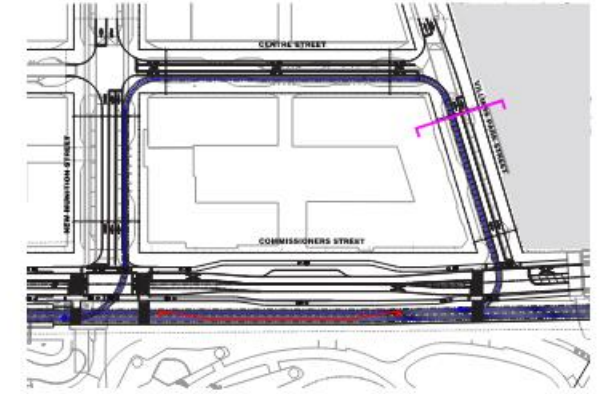
Villiers Park Street

Based on the Villiers Island Precinct Plan



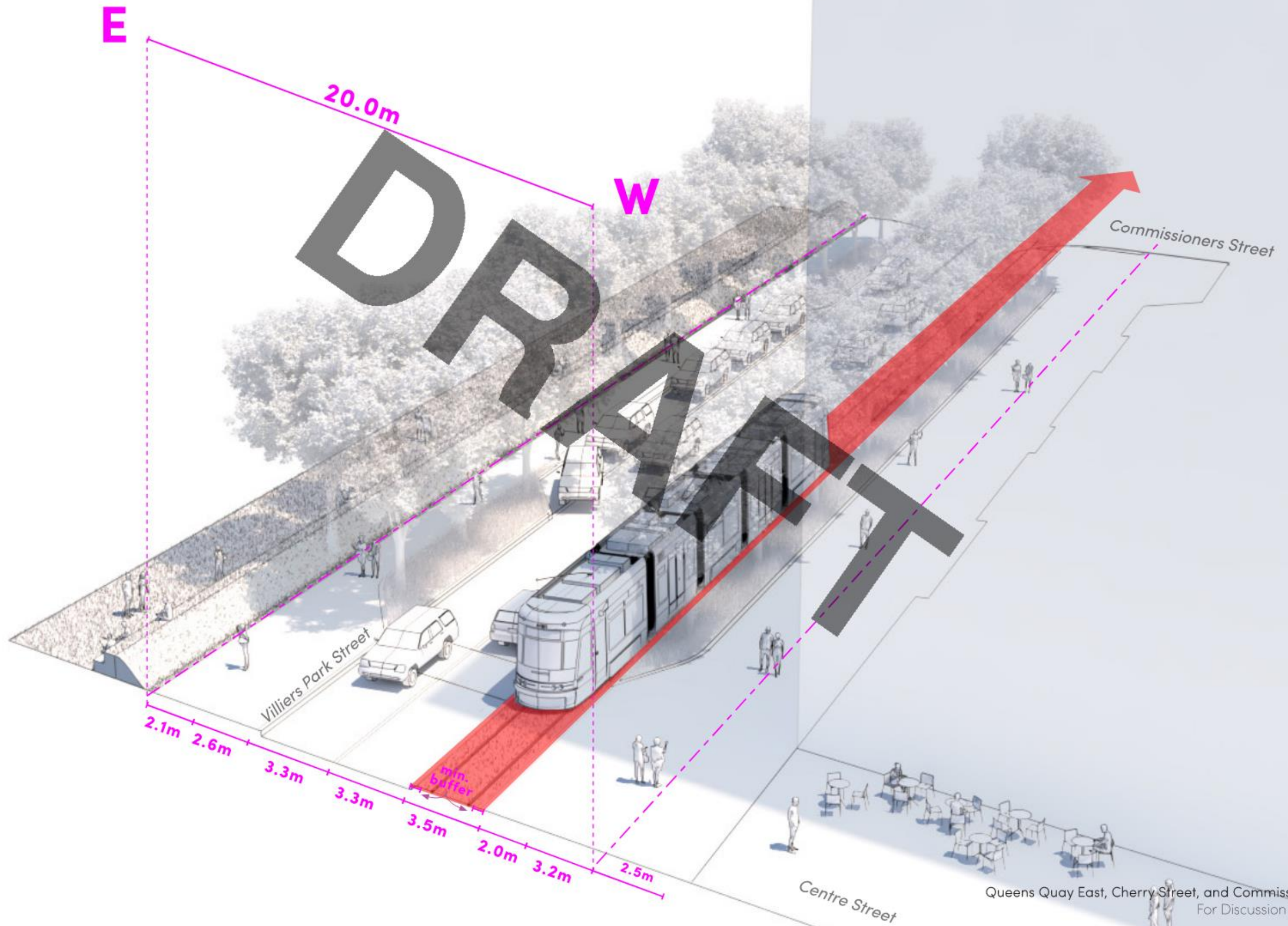
Villiers Park Street integrating LRT

Waterfront East Light Rail Transit Extension (this) Project

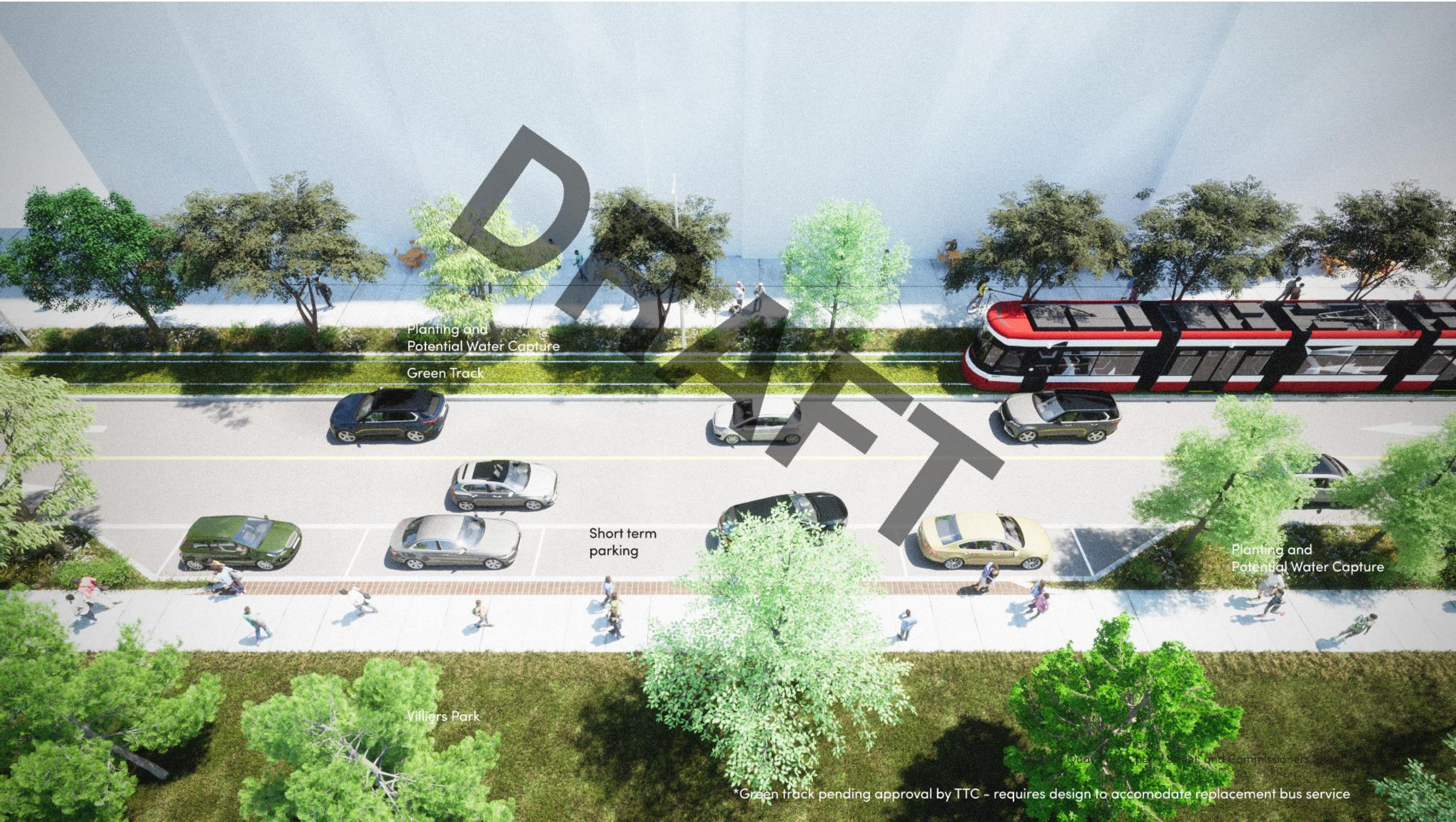


Villiers Park Street integrating LRT

Waterfront East Light Rail Transit Extension (this) Project



Villiers Park Street integrating LRT



Planting and Potential Water Capture
Green Track

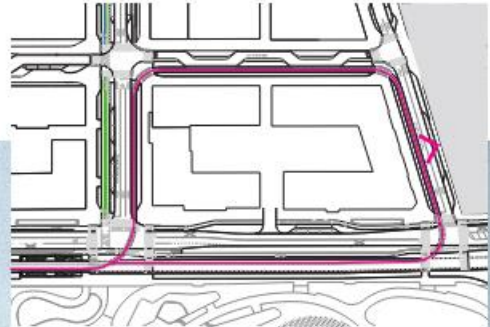
Short term parking

Planting and Potential Water Capture

Villiers Park

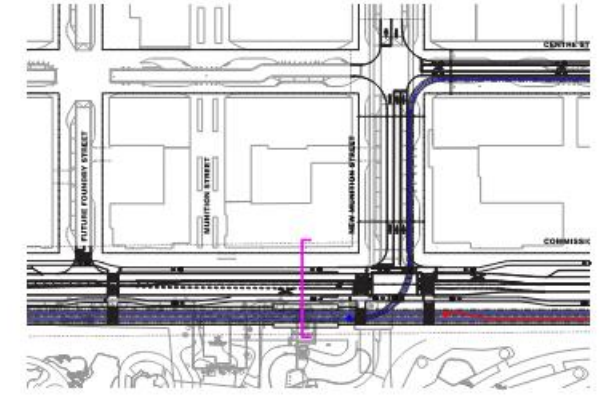
*Green track pending approval by TTC - requires design to accomodate replacement bus service

Villiers Park Street integrating LRT

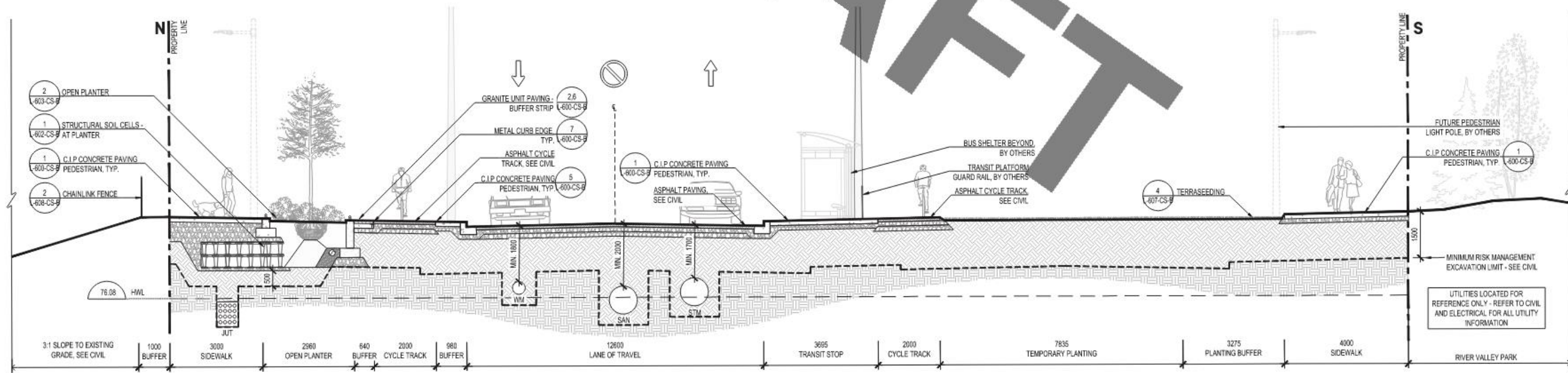


Commissioners Street

Port Lands Flood Protection Project (DTAH)

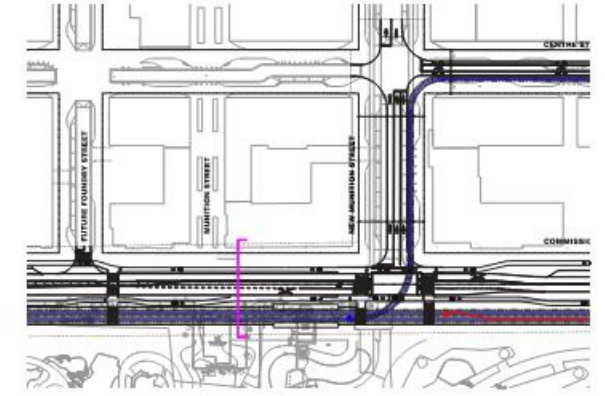


DRAFT



Commissioners Street integrating LRT

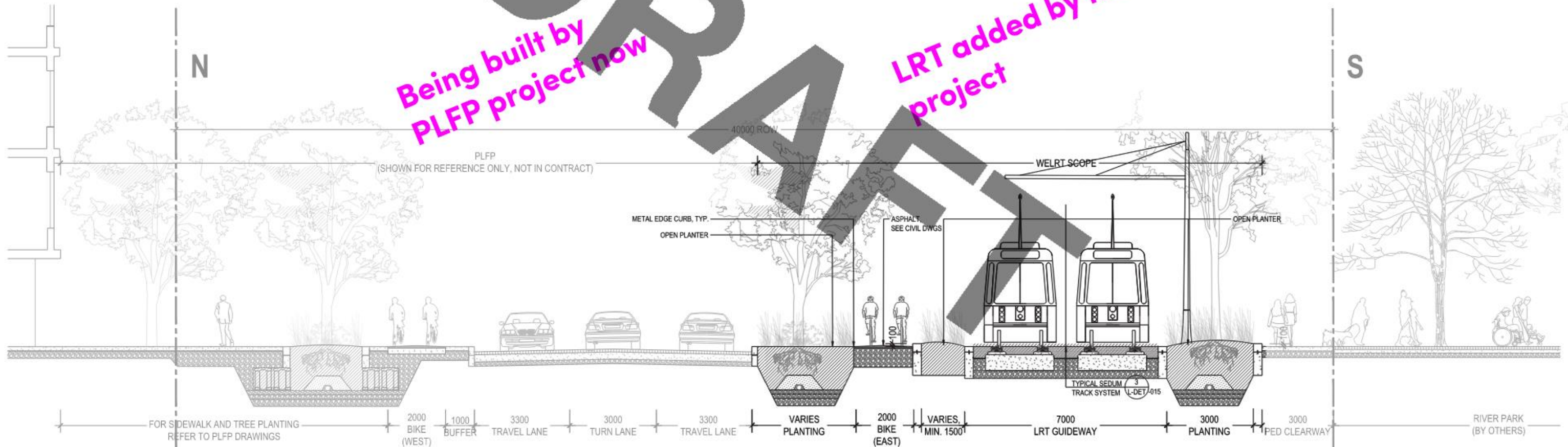
Waterfront East Light Rail Transit Extension (this) Project Scope



DRAFT

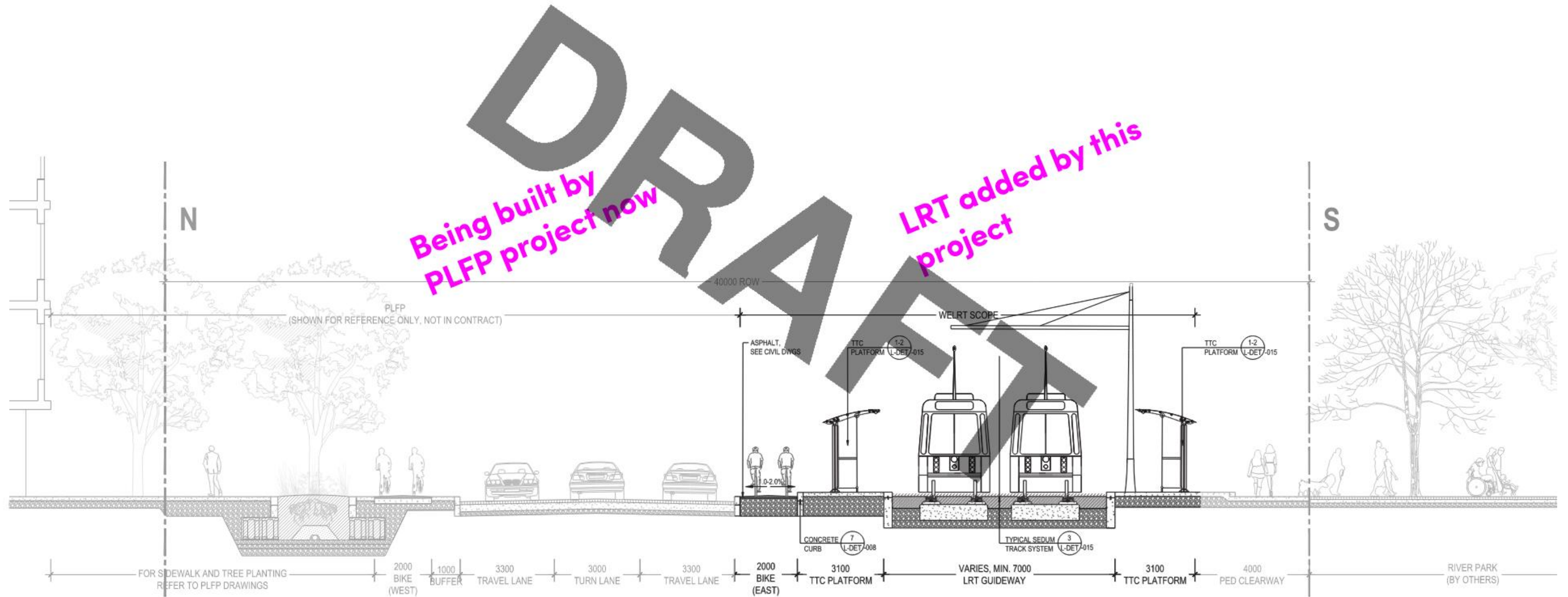
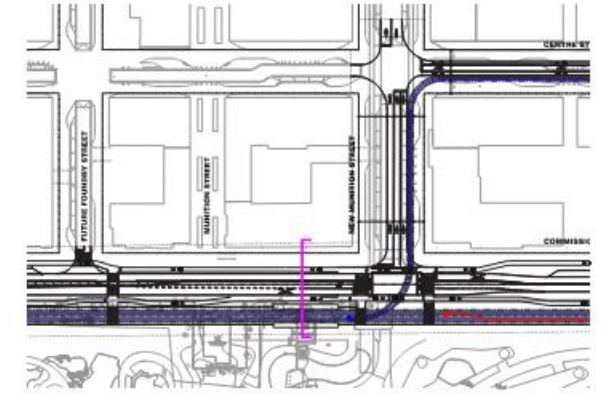
Being built by PLFP project now

LRT added by this project

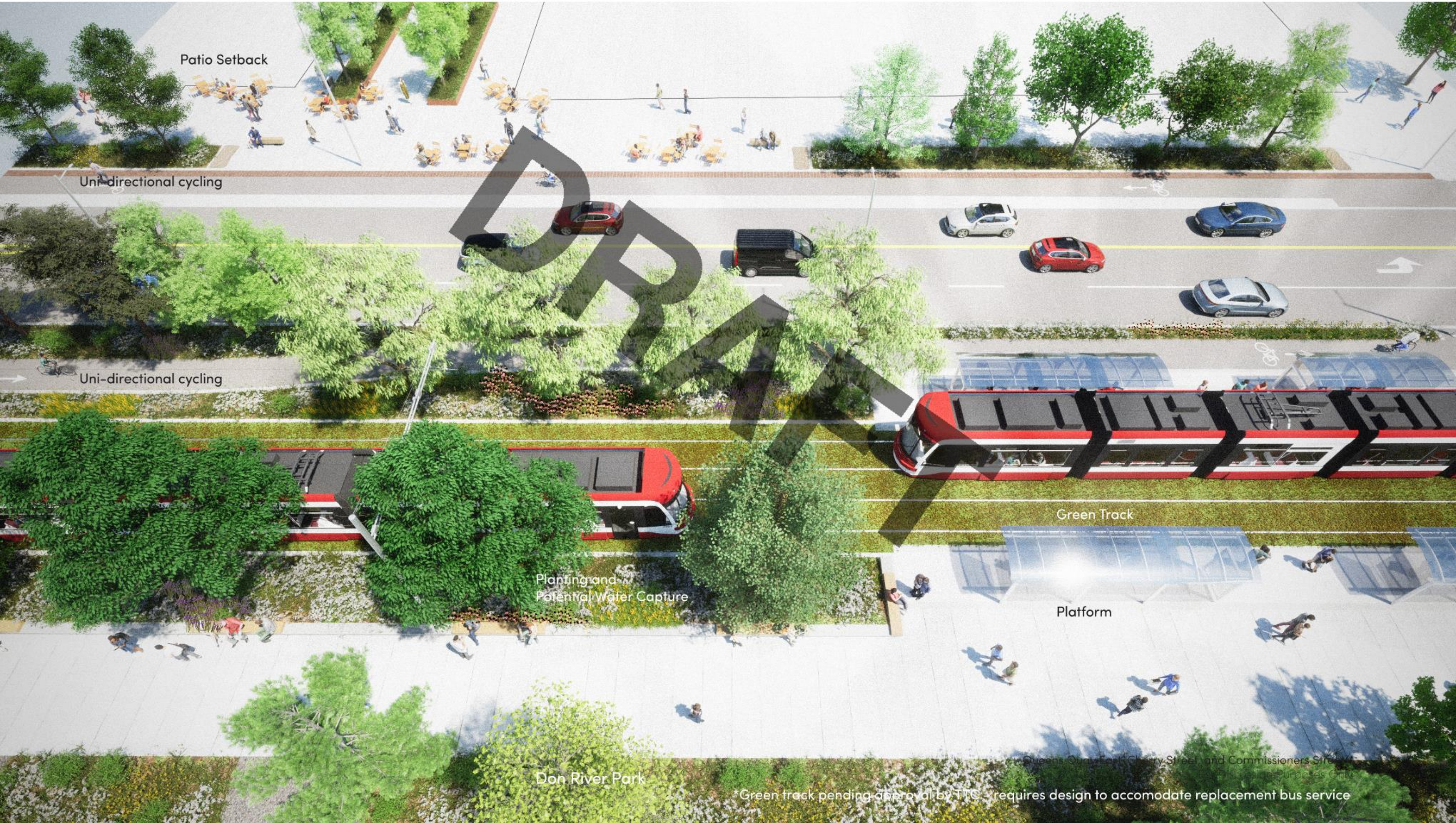


Commissioners Street integrating LRT (at Platforms)

Waterfront East Light Rail Transit Extension (this) Project Scope



Commissioners Street integrating LRT



Patio Setback

Uni-directional cycling

Uni-directional cycling

Planting and
Potential Water Capture

Green Track

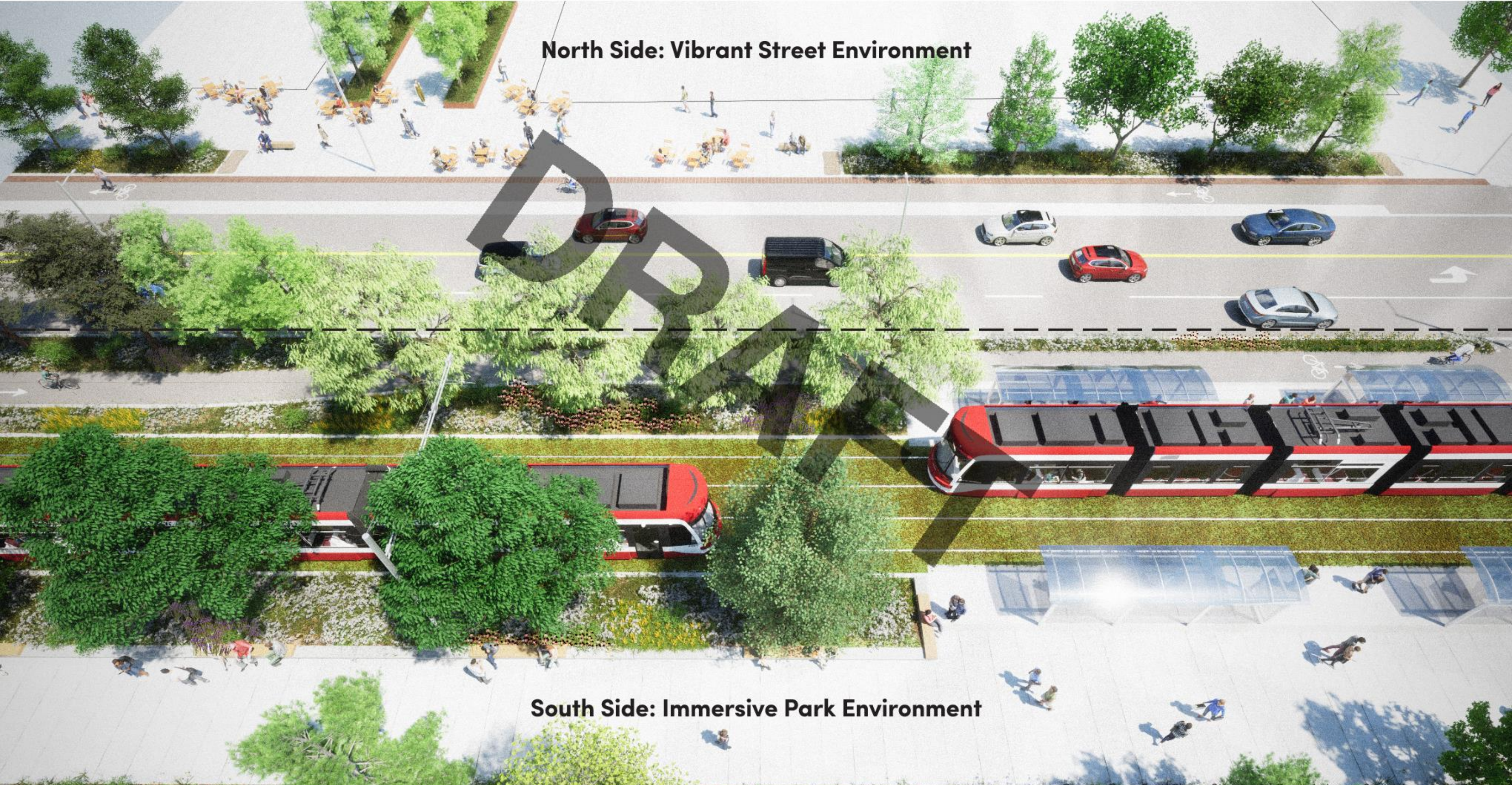
Platform

Don River Park

*Green track pending approval by TTC - requires design to accomodate replacement bus service

Commissioners Street integrating LRT

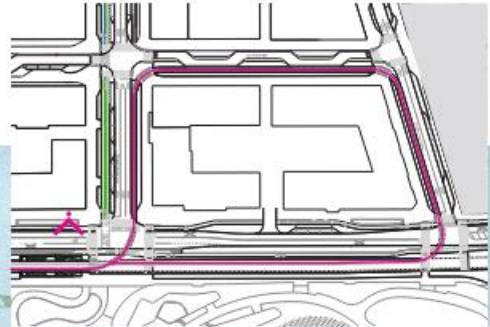
North Side: Vibrant Street Environment



South Side: Immersive Park Environment

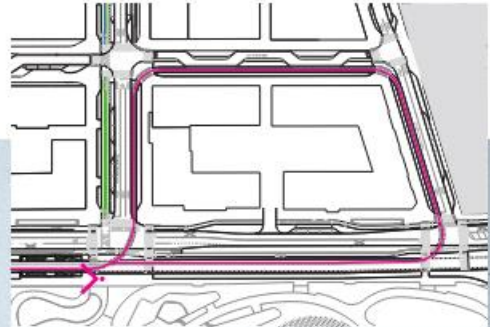
Commissioners Street integrating LRT

North Side: Vibrant Street Environment



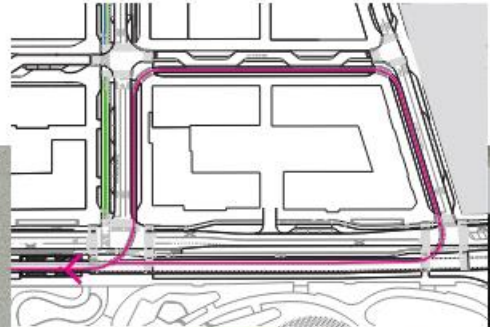
Commissioners Street integrating LRT

South side: Immersive Park Environment



Commissioners Street integrating LRT

South side: Immersive Park Environment



Commissioners Street integrating LRT

