



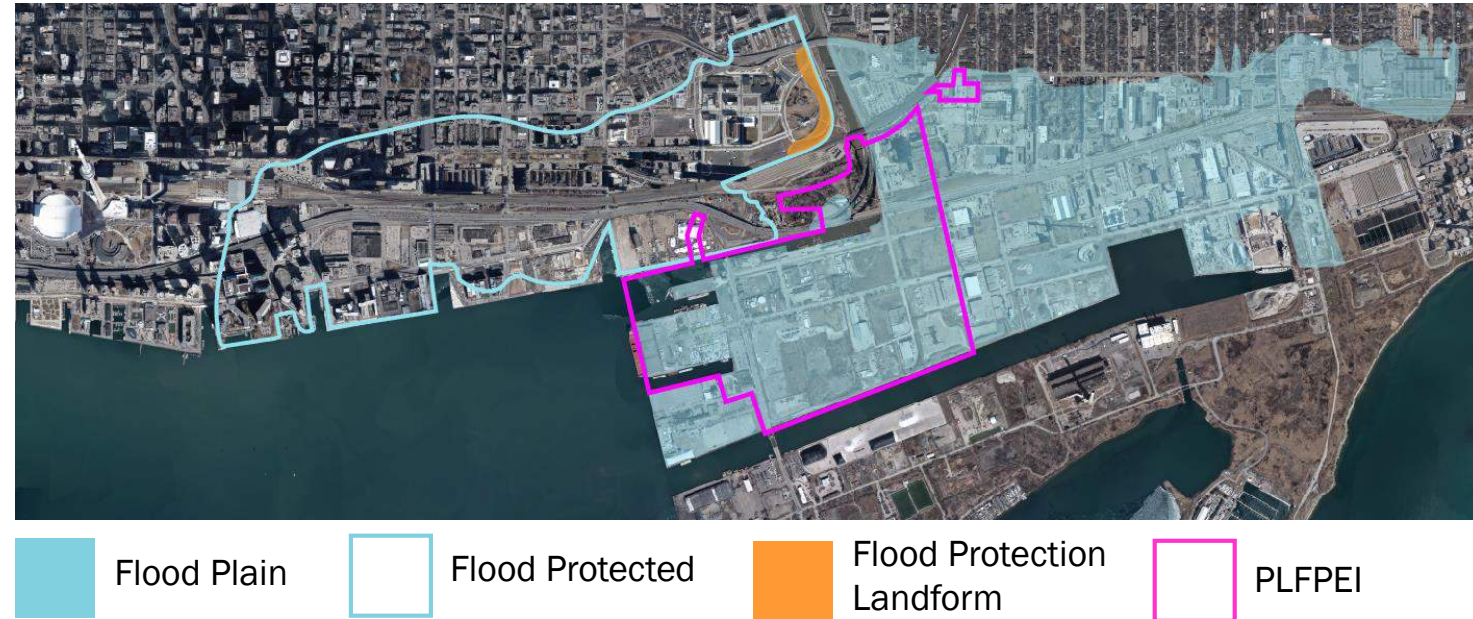
Port Lands Flood Protection and Enabling Infrastructure: Bridges, Roads and Municipal Infrastructure

Issues Identification

February 21, 2018

Project Description & Background

- 290 hectares of southeastern downtown Toronto are at risk of flooding from the Don River watershed
- The Port Lands Flood Protection and Enabling Infrastructure Project is a comprehensive solution to flood protection
- The project has previously presented the EA and Master Planning process to the Panel
- This is the project's first time presenting the bridges, roads and municipal infrastructure



Port Lands Flood Protection: Bridges, Roads and Municipal Infrastructure

Review Stage: Issues Identification

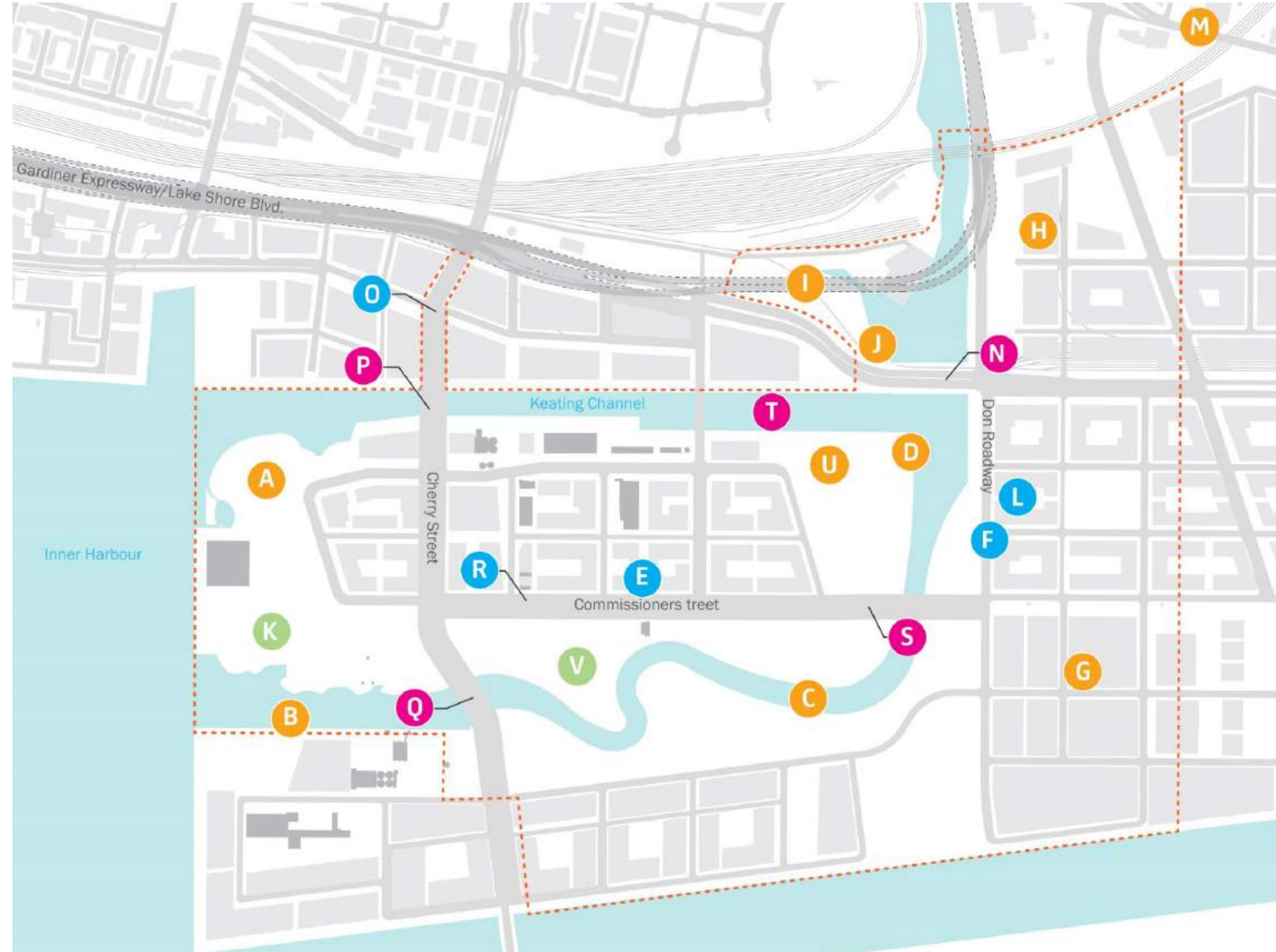
Proponent: Waterfront Toronto

Design Team: WSP with DTAH (Roads), Entuitive with Grimshaw and WSP (Bridges)

Site Context - Project Scope

- A** Cherry Street Stormwater and Lakefilling
- B** Polson Slip Naturalization
- C** Flood Protection: River Valley
- D** Don Greenway (Spillway & Wetland)
- E** Site Wide Municipal Infrastructure
- F** Don Roadway
- G** Don Roadway Valley Wall Feature
- H** East Harbour Flood Protection Land Form
- I** Sediment and Debris Management Area
- J** Flow Control Weirs
- K** Promontory Park
- L** Hydro One Integration
- M** Eastern Avenue Flood Protection
- N** Lake Shore Road and Rail Bridge Modifications
- O** Cherry Street Re-alignment (incl. BRT)
- P** Cherry Street Bridge North (incl. BRT)
- Q** Cherry Street Bridge South (vehicular only)
- R** Commissioners Street
- S** Commissioners Street Bridge (vehicular only)
- T** Keating Channel Modifications
- U** Villiers Island Grading
- V** River Park

-  Port Lands Flood Protection and Enabling Infrastructure Boundary
-  Parks
-  Roads and Municipal Infrastructure
-  Bridges & Structures
-  Earthworks/Flood Protection



Project Scope – Roads and Municipal Infrastructure

Port Lands Flood Protection: Bridges, Roads and Municipal Infrastructure

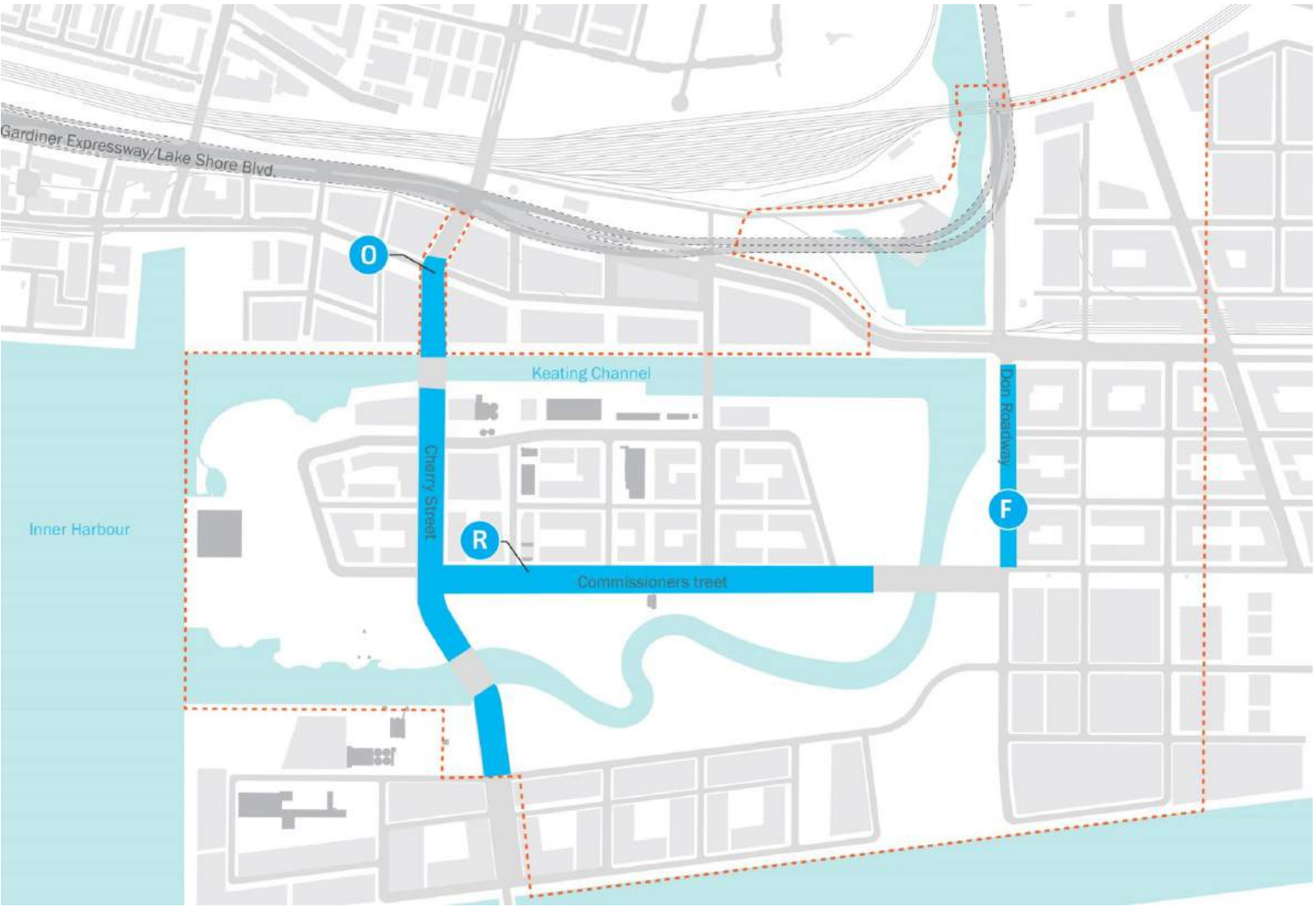
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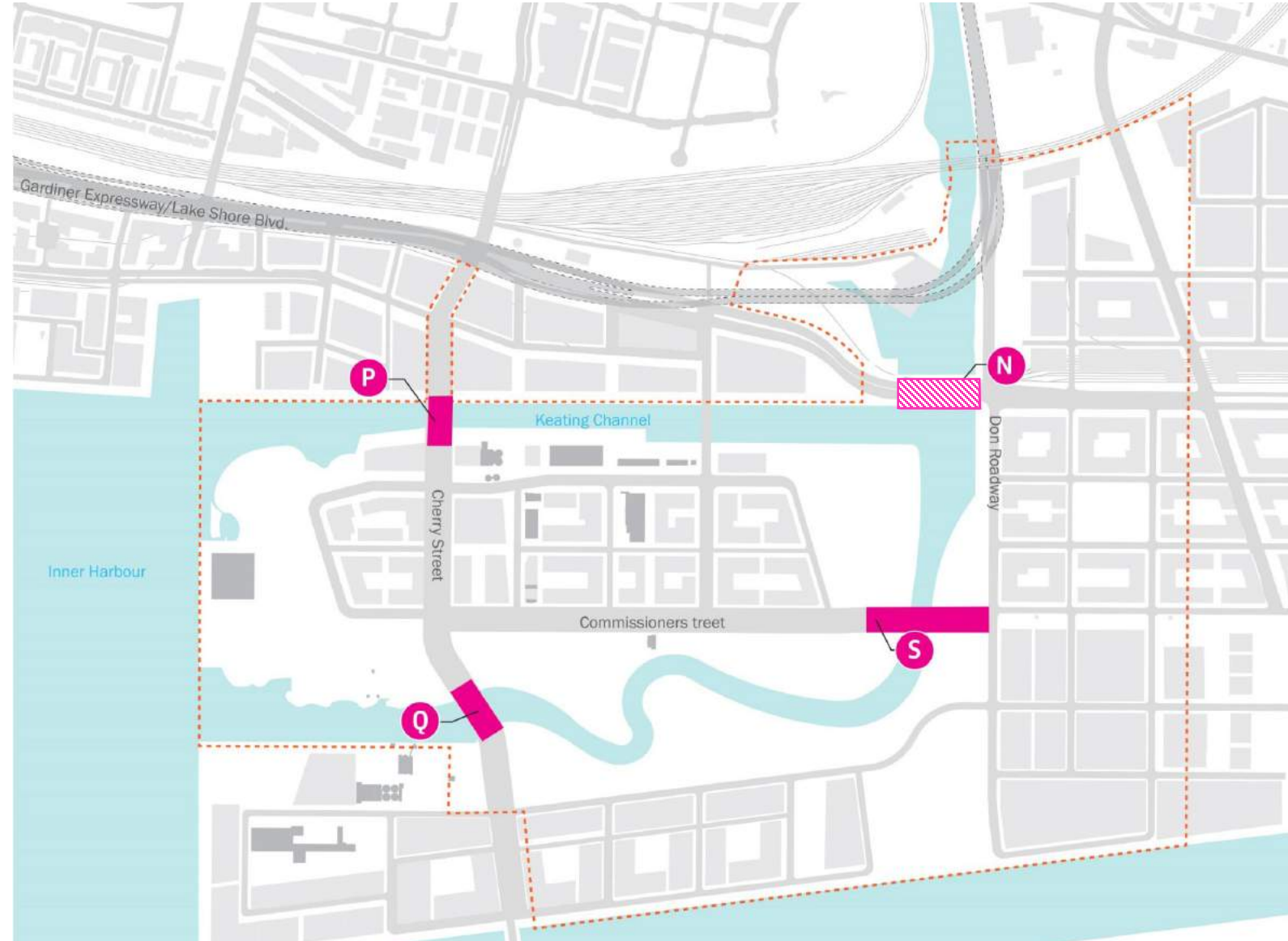
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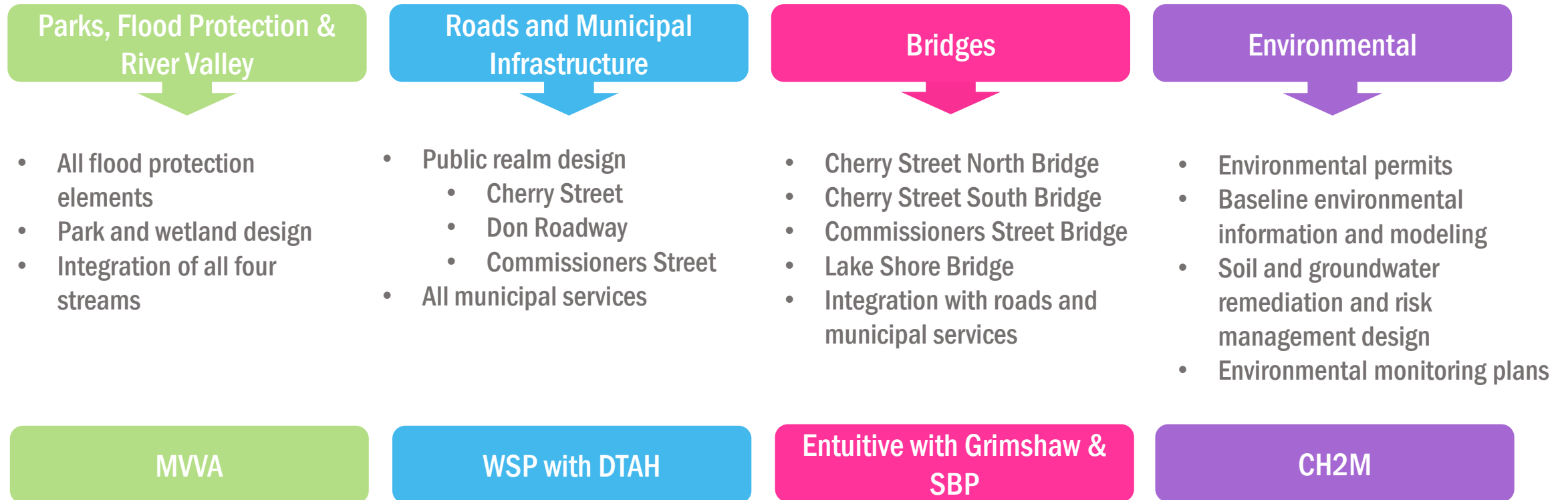
Project Scope – Bridges

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Team Structure



Policy Context – Central Waterfront Secondary Plan

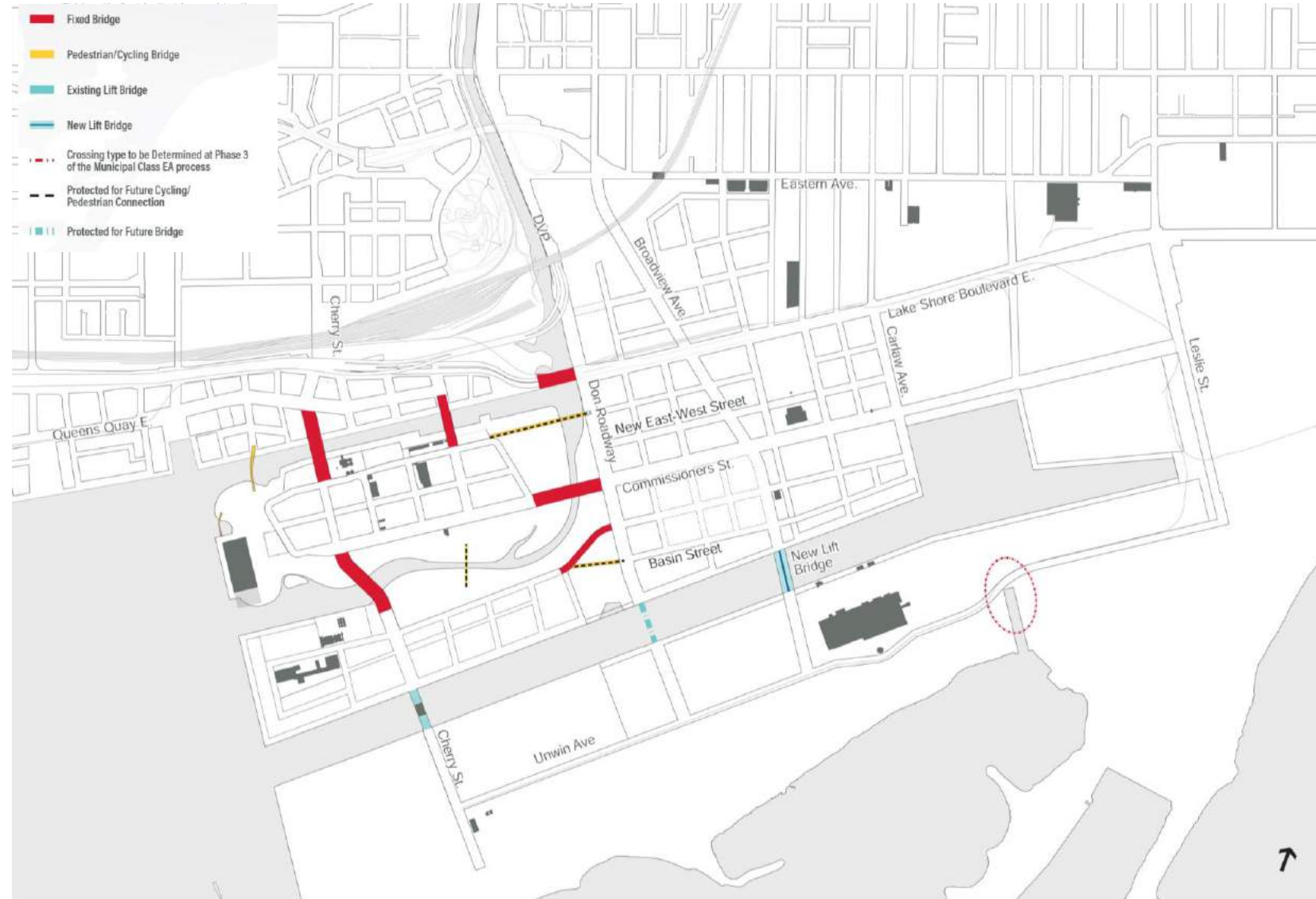
C21_The mouth of the Don River will be rerouted through lands south of the rail corridor. This will improve the ecological function of the river, provide flood protection for the Port Lands and East Bayfront and attract new wildlife to the area. The renaturalized mouth of the river will also become a key open space and recreational link to the Don Valley, West Don Lands, Port Lands and waterfront park system. This enhanced river setting will provide a gateway to the new urban communities in the Port Lands. Pedestrian and cyclist's bridges over the river mouth will be designed as signature entrances of beauty and inspiration

(P28) Lakefilling will be considered only for stabilizing shorelines, improving open spaces, creating trail connections, preventing siltation and improving natural habitats and is subject to Provincial and Federal Environmental Assessment processes. Consideration will be given to the impact of such lakefilling on recreational uses.

D22_OPENING UP THE PORT LANDS TO URBAN DEVELOPMENT - The vast Port Lands, an area more than 14 times the size of London's Canary Wharf, will be cleaned up and opened to a range of urban development opportunities. The Port Lands will become Toronto's springboard to the future, a place for wealth creation, originality and creativity in all aspects of living, working and having fun. The Port Lands will be transformed into a number of new urban districts set amid the hustle and bustle of Toronto's port activities. An enticing environment conducive to the creation of an international Centre for Creativity and Innovation for knowledge-based industries, film and new media activities will be nurtured. It will be a part of the city where "green" industries can be incubated and thrive. The new Port districts will be supported by a rich infrastructure of recreational, cultural and tourist amenities.

Port Lands Framework Plan - Bridges

- Bridges will be important elements of the overall transportation system, providing connection across the Port Lands' many utilitarian and naturalized waterways.
- The bridges will reflect appropriate levels of utility and design excellence to complement the unique characteristics and qualities of the accompanying river and park system.
- Space will be provided to accommodate dedicated higher order transit lanes on Cherry Street and Commissioners Street and within the new bridge across the river at Cherry Street.



Port Lands Framework Plan - Roads

Complete Street Principles

Transit Prioritization through the use of dedicated transit rights-of-ways will improve the reliability of transit routes and convenience for passengers.

Bicycle Lanes + Cycle Tracks provided on all major streets will create a well-connected, robust and safe cycling network enabling active transportation as a primary means of moving in and through the area.

Accommodation of Goods Movement to ensure the continued economic vitality of live-industry. Critical goods movement corridors will be designed with suitable conditions for truck access balanced with other complete street objectives.

Permeable Surfaces for roadways and sidewalks will reduce flooding, preserve capacity in storm drains and sewers where provided and add visual interest in the overall street design.

Pedestrian + Cycling Amenities are important elements to be considered in the design of streets and encourage people to be on our streets. Benches, bike rings, pedestrian-scaled lighting, weather protection, garbage and recycling receptacles and public art, among others, will be provided.

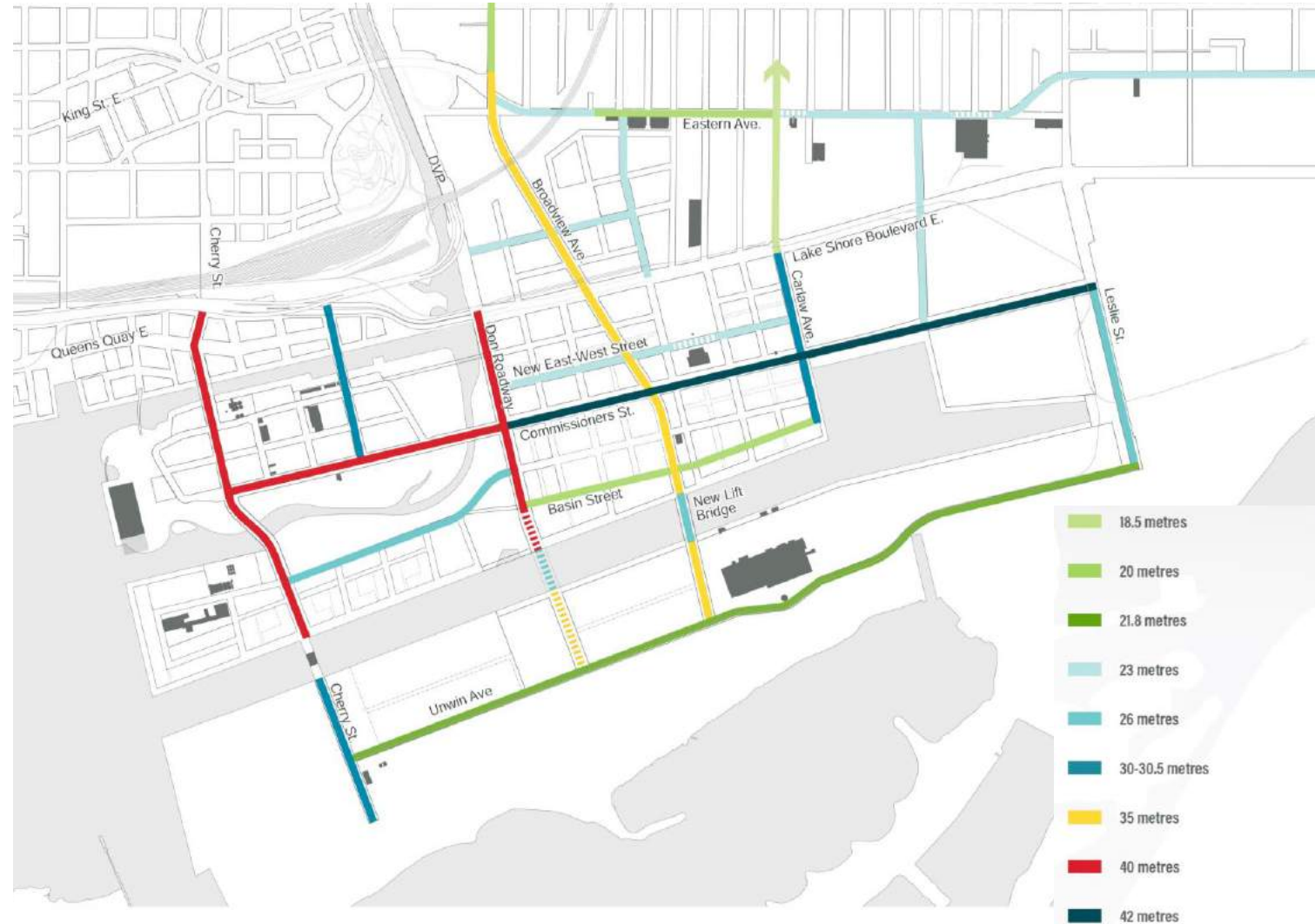
Minimum Lane Widths will assist in making streets safer and more pedestrian friendly. Narrower pavement widths contribute to safer vehicle speeds.

Wide Sidewalks with unobstructed, accessible pedestrian clearways will encourage walking and contribute to the overall vibrancy of in the Port Lands and South of Eastern public realm.

Water as a Community Resource and other greenscape elements will divert stormwater and allow for infiltration while also improving air quality, providing habitat and adding visual interest to an area. Streets celebrate and embrace stormwater as a valuable resource and provide access for LIFE!

Street Trees with adequate room to grow and high-quality soil conditions provide shade, beauty and wildlife habitat. They also reduce air pollution and energy consumption.

Innovative Features such as the port / industrial / infrastructural qualities of the study area will contribute to the character of the area. Other features like electric vehicle charging stations, bicycle and car sharing stations and renewable energy features will contribute to a sustainable future for the area.



Topics for Panel Consideration

Roads

- Appropriateness of approach to Commissioners Street as the spine of the Port Lands and shift in Don roadway cross section
- Appropriateness of the proposed character
- Feedback on innovation ideas

Bridges

- Assessment of views from city vs views within the river valley
- Feedback on proposed “family” of bridges
- Appropriateness of consistency vs a mix of both industrial and natural bridge “family”

Port Lands Flood Protection & Enabling Infrastructure Roads and Municipal Infrastructure

Phase 1

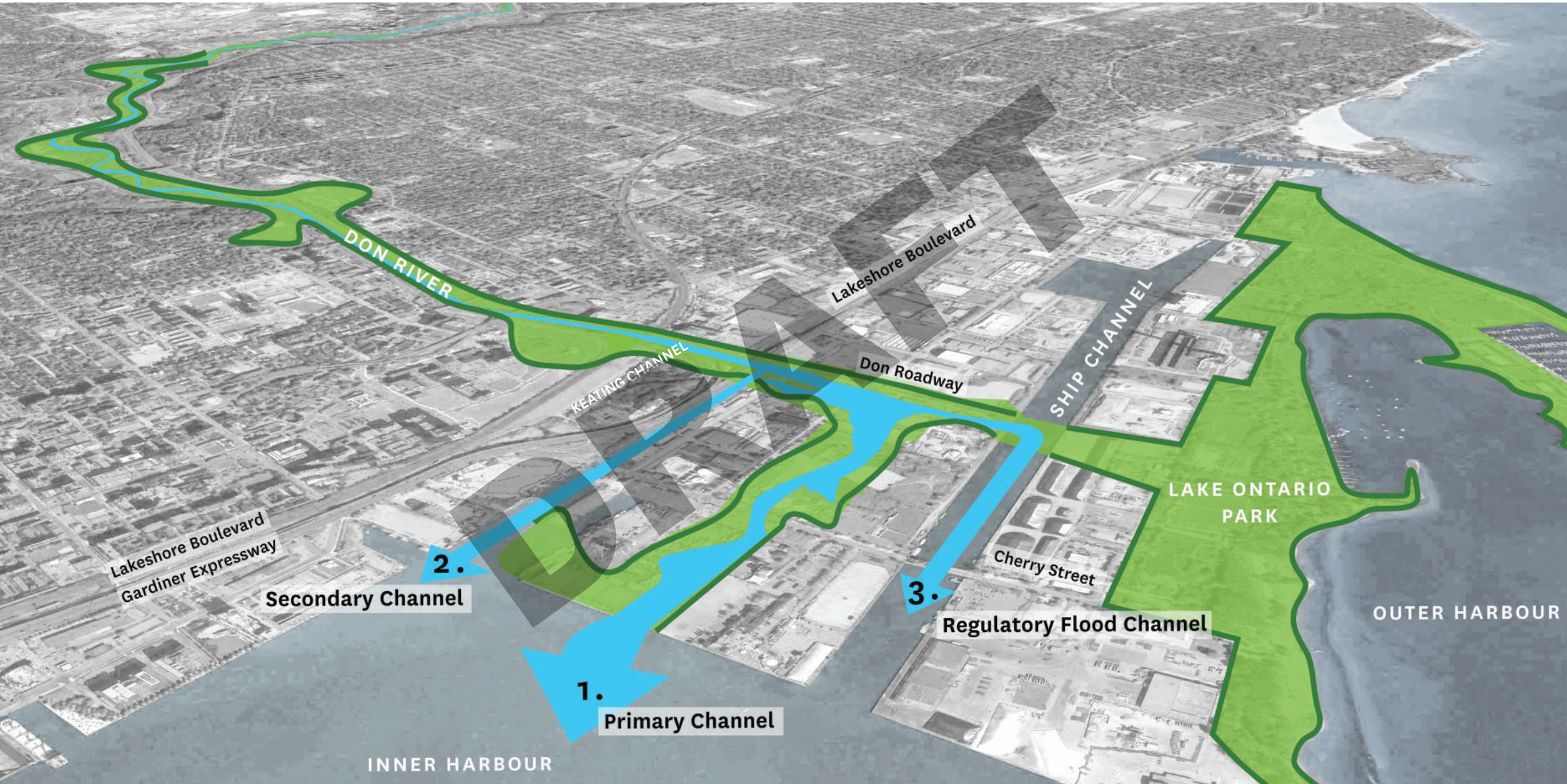
21 February 2018

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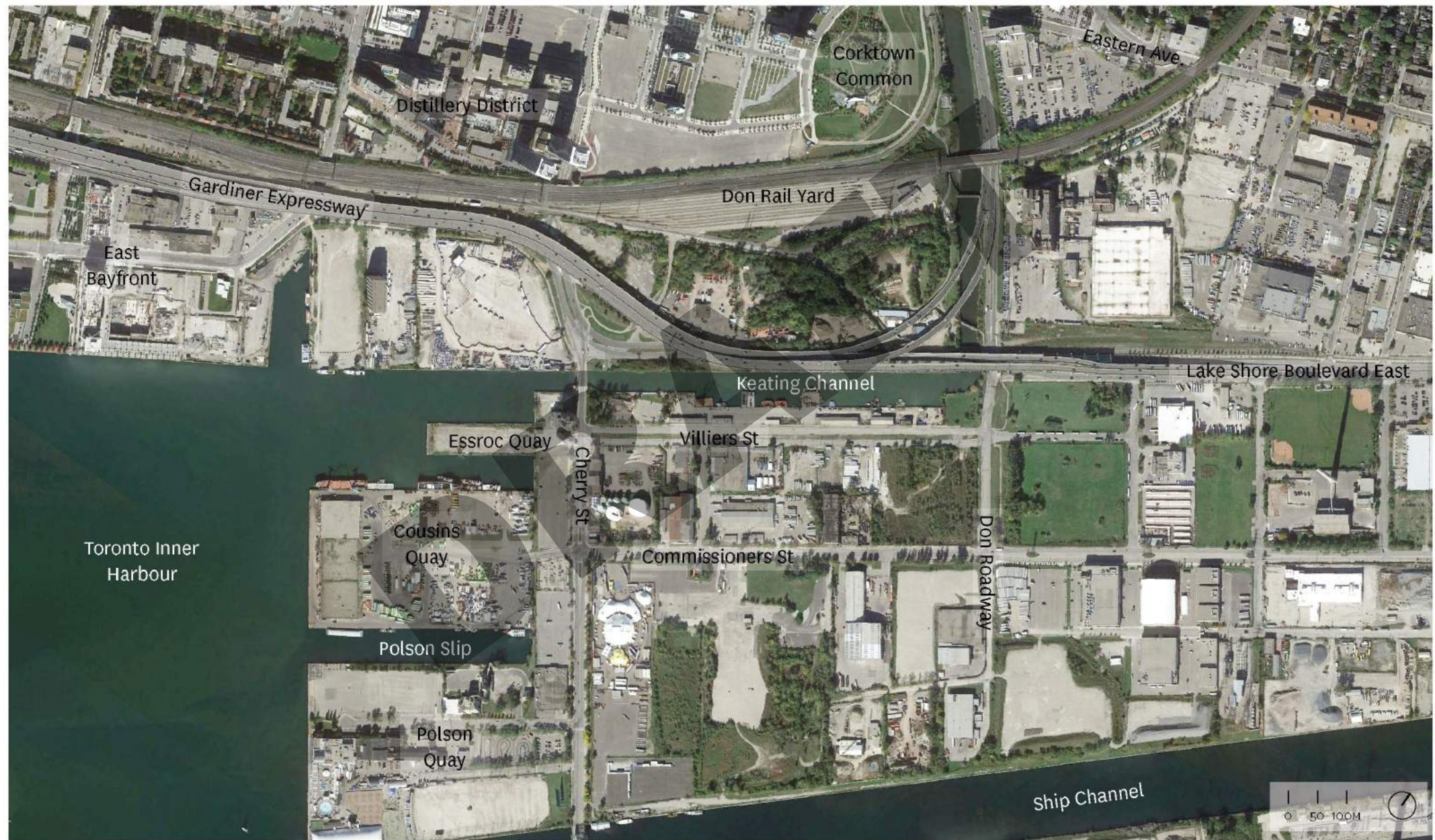
Full Project Vision Including Adjacent Neighbourhoods



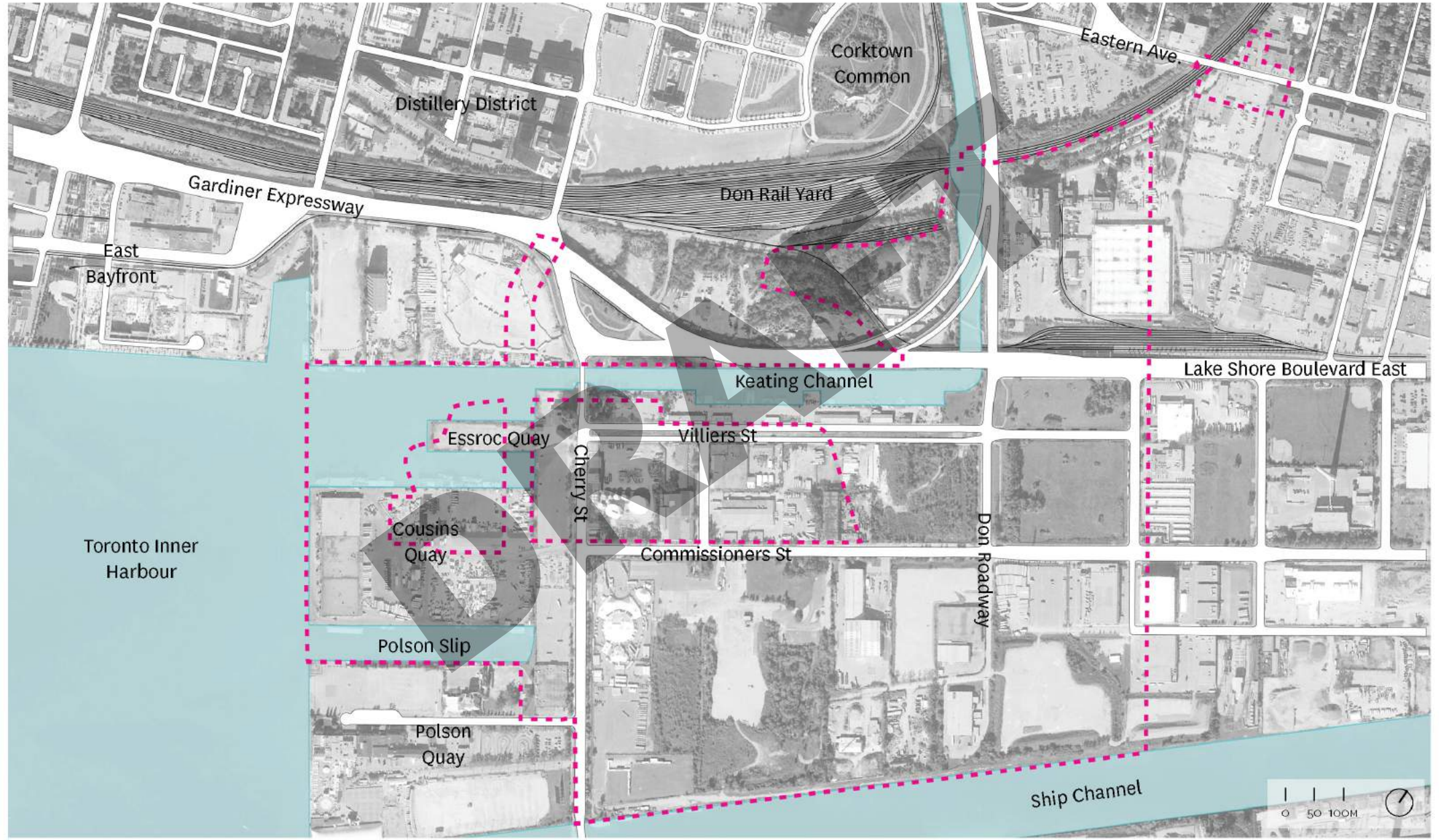
Achieve Flood Protection through a Three-Tier System



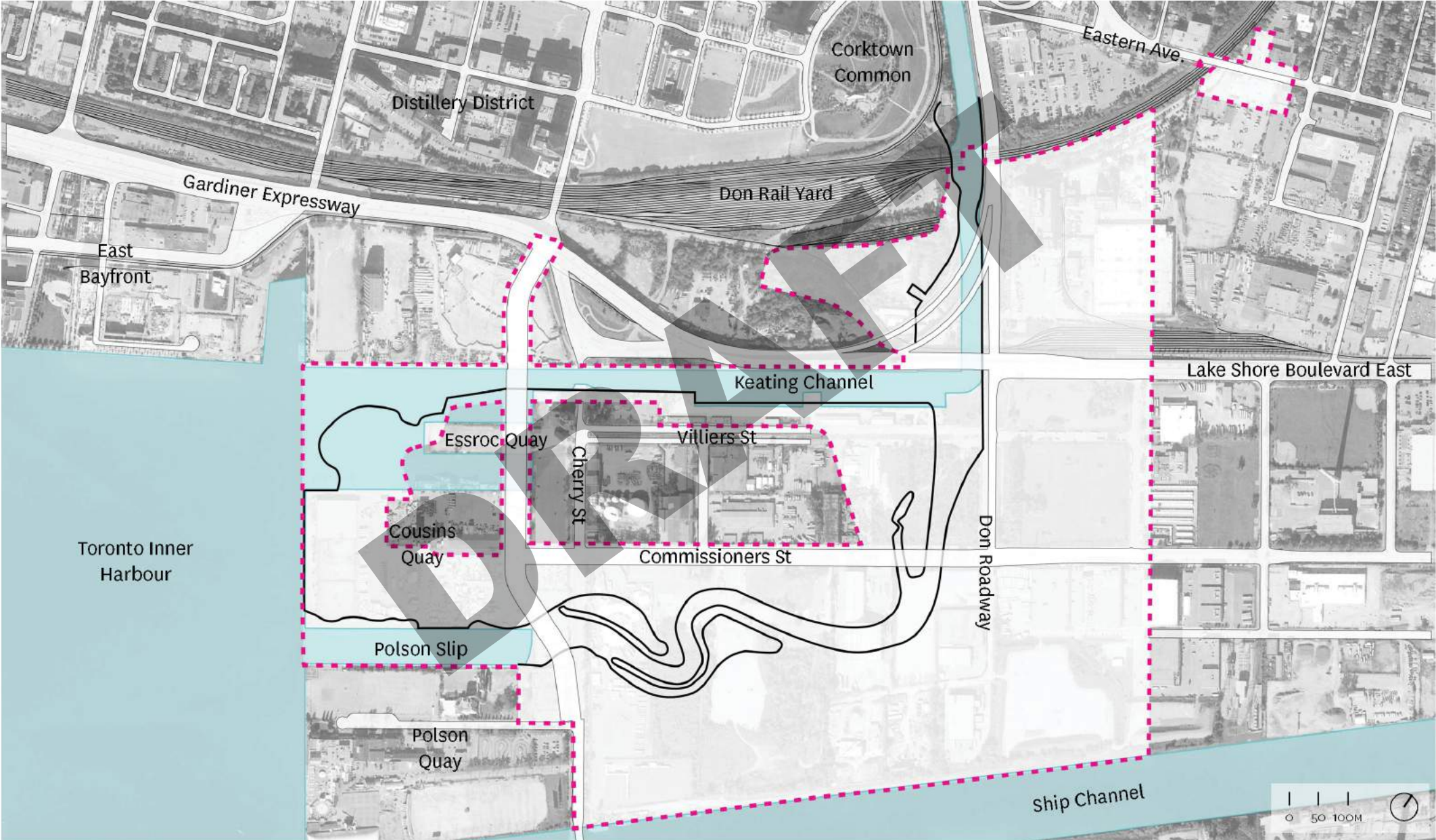
Project Area - Existing Conditions



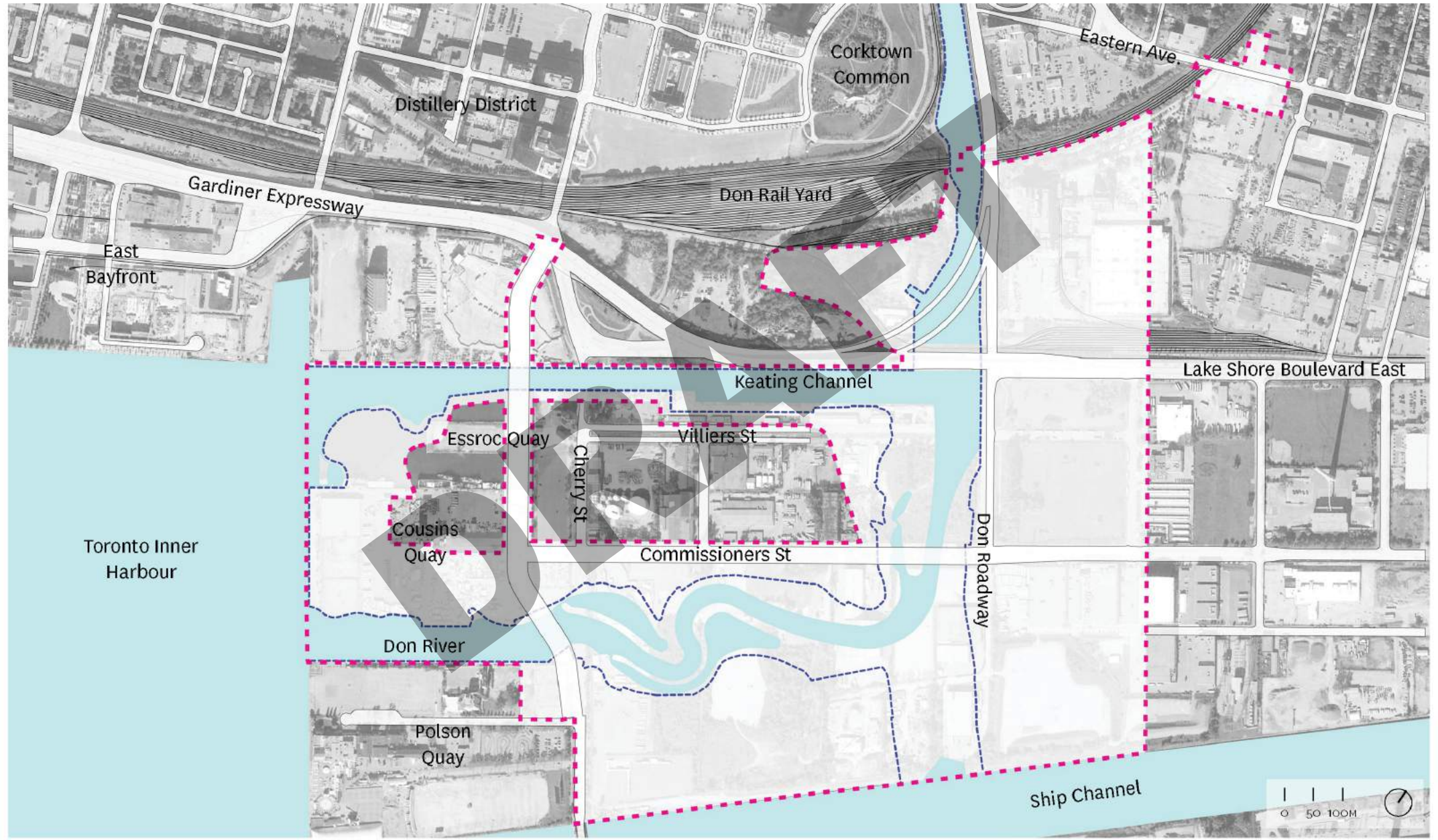
Project Area - Flood Protection Extents



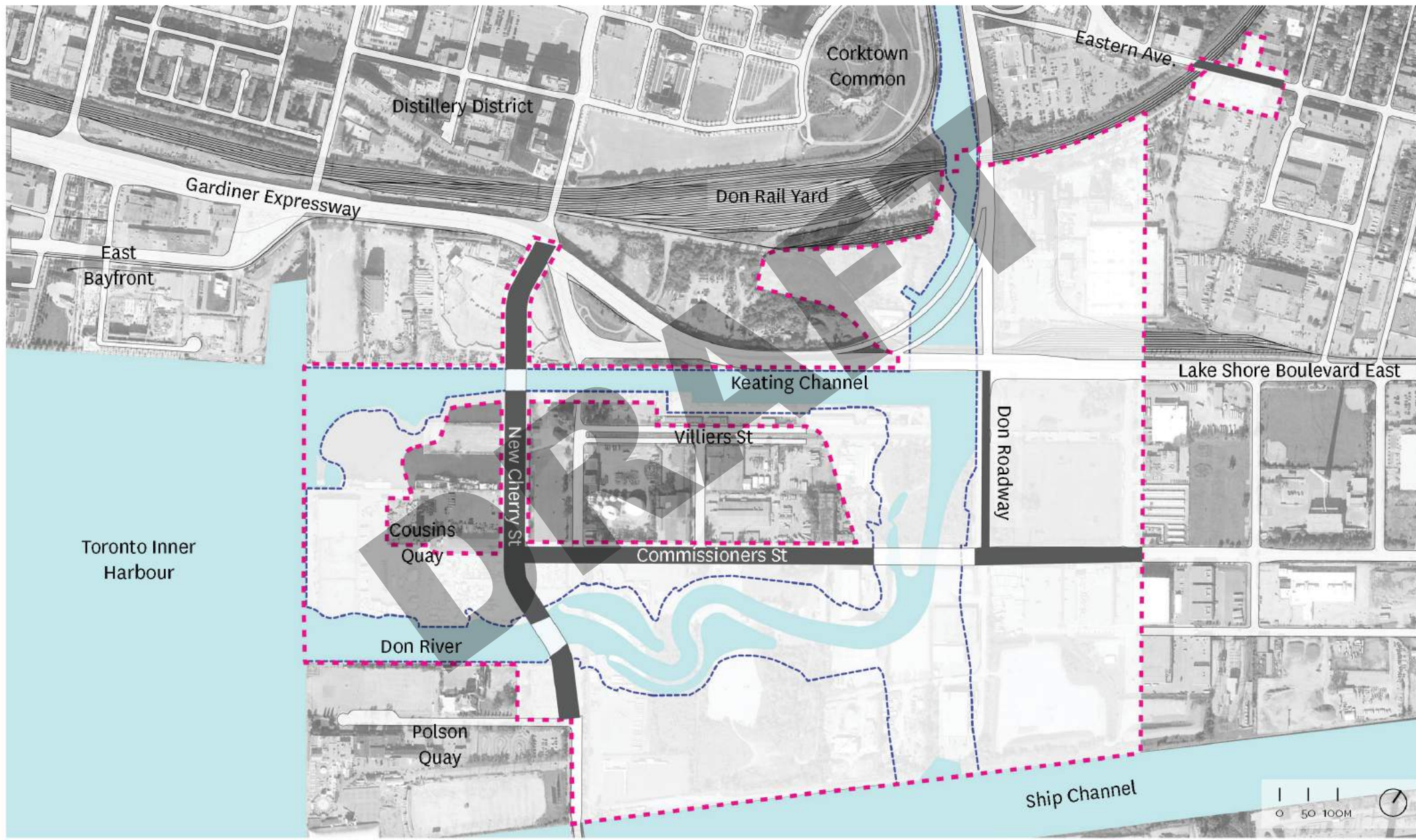
Project Area - Naturalized River Channel



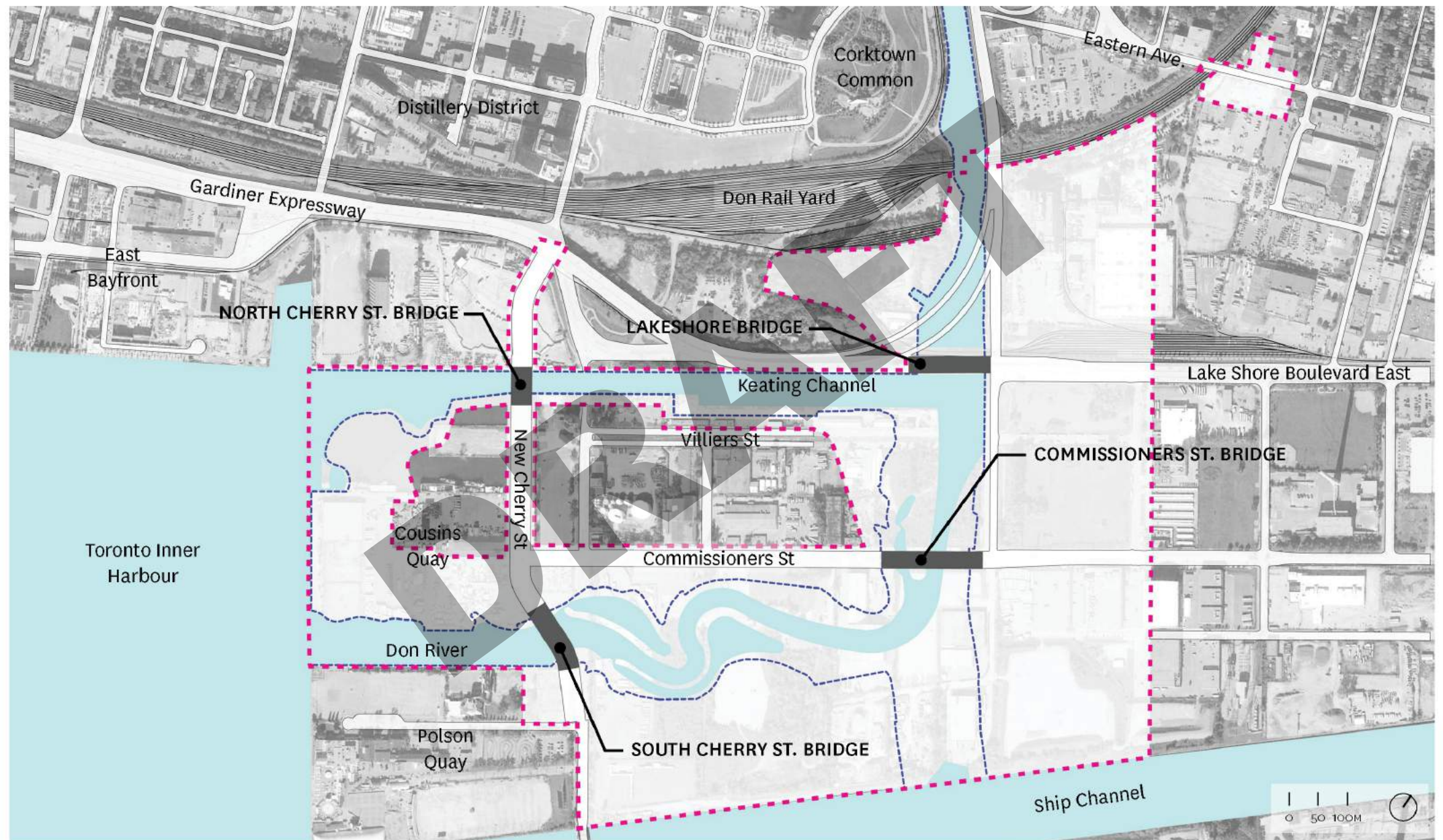
Project Area - Flood Plain Boundary



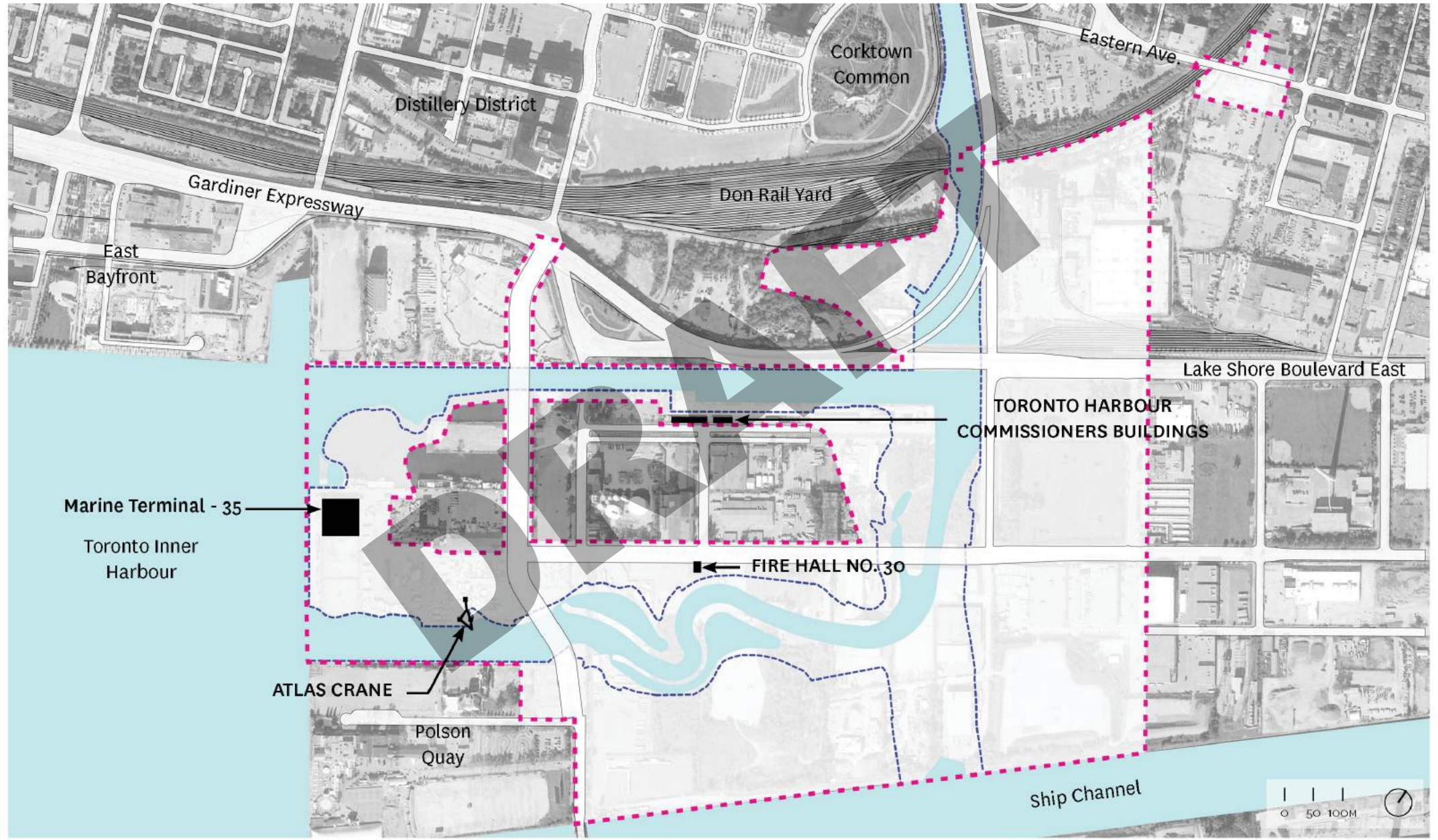
Project Area - Roads



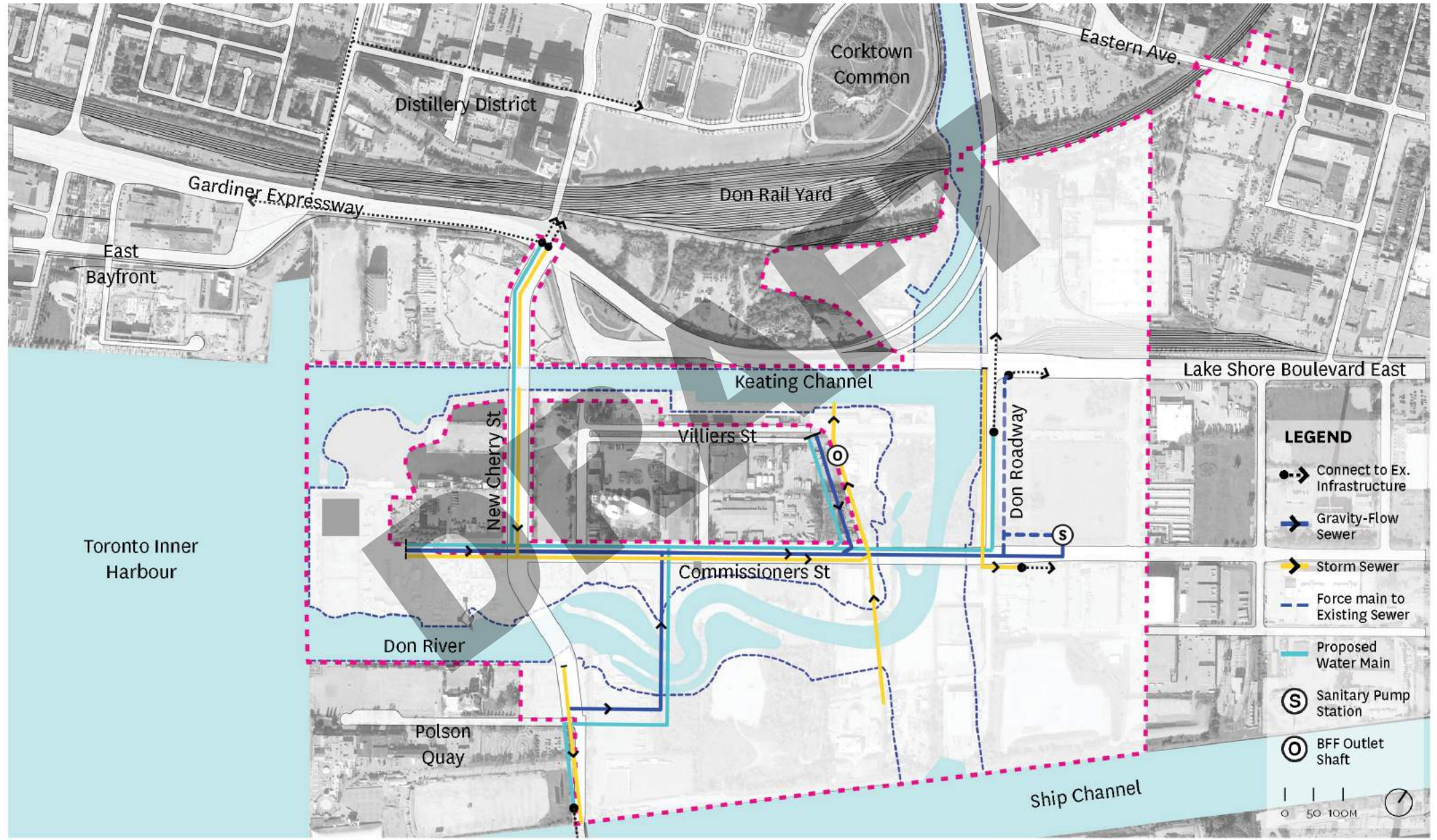
Project Area - Bridges



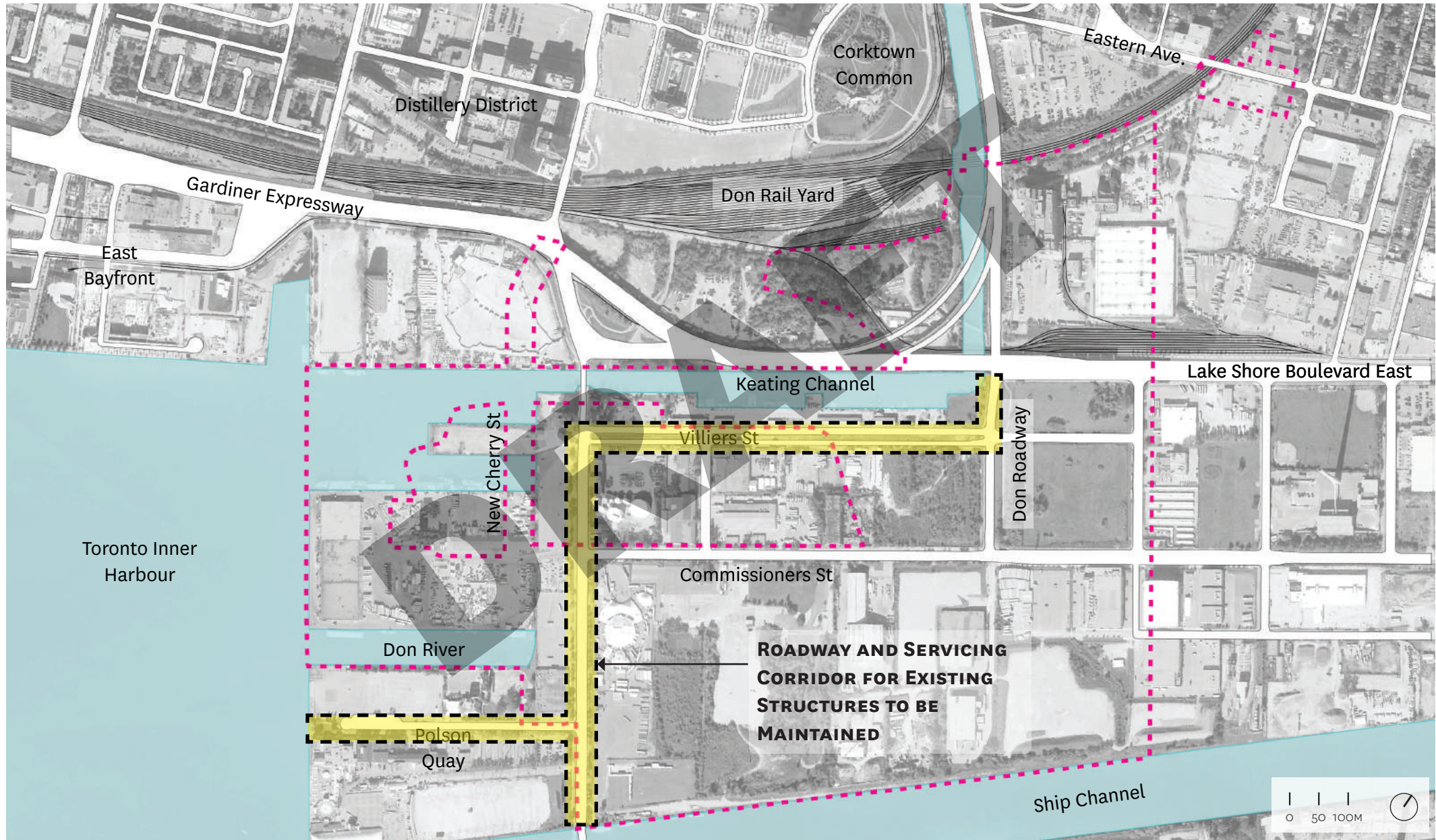
Project Area - Heritage Buildings and Structures



Project Area - Municipal Infrastructure



Project Area - Existing Servicing



Distillery District

Corktown Common

Eastern Ave.

Gardiner Expressway

Don Rail Yard

East Bayfront

Keating Channel

Lake Shore Boulevard East

Toronto Inner Harbour

New Chery St

Villiers St

Don Roadway

Don River

Commissioners St

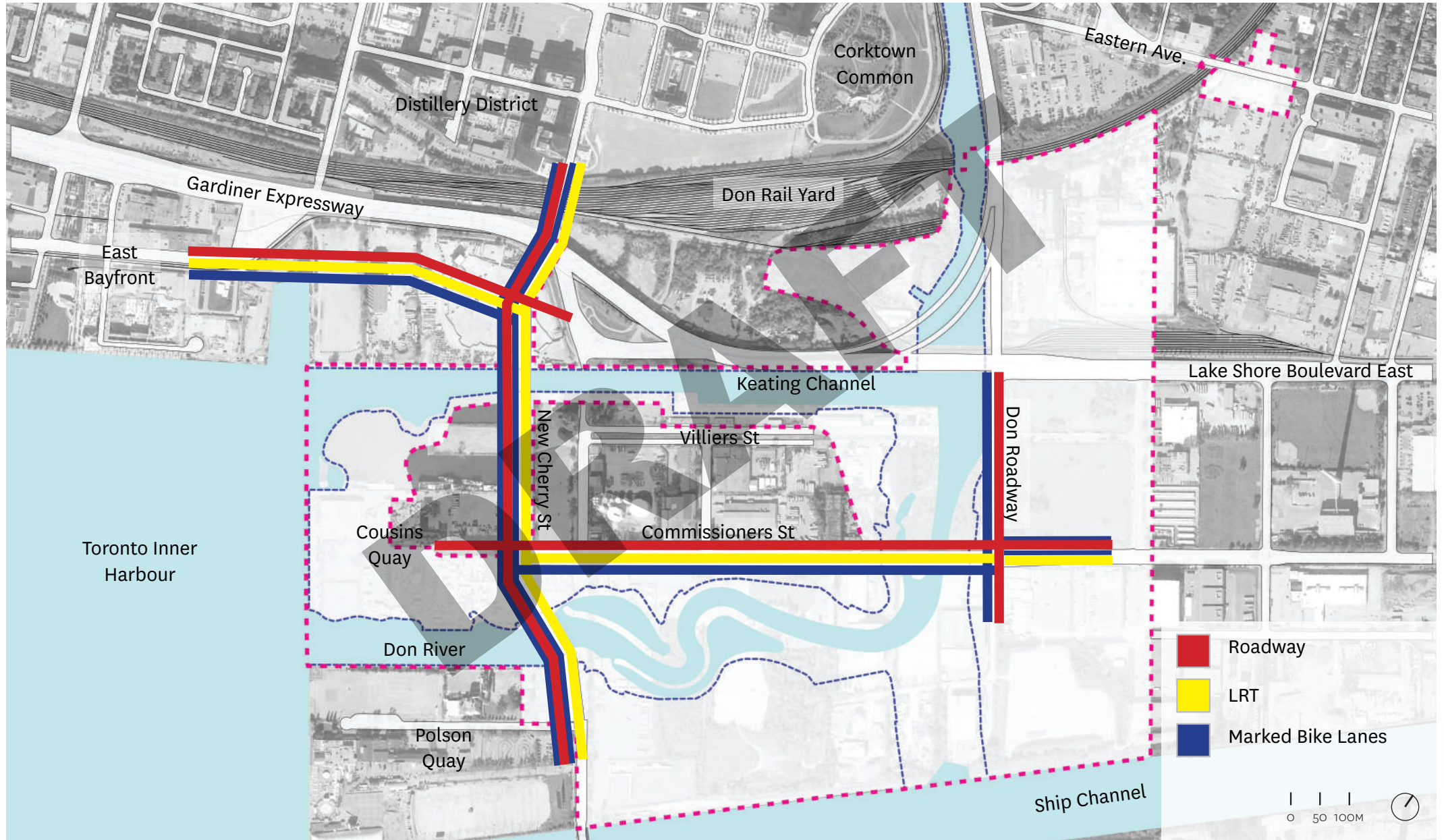
ROADWAY AND SERVICING CORRIDOR FOR EXISTING STRUCTURES TO BE MAINTAINED

Polson Quay

Ship Channel



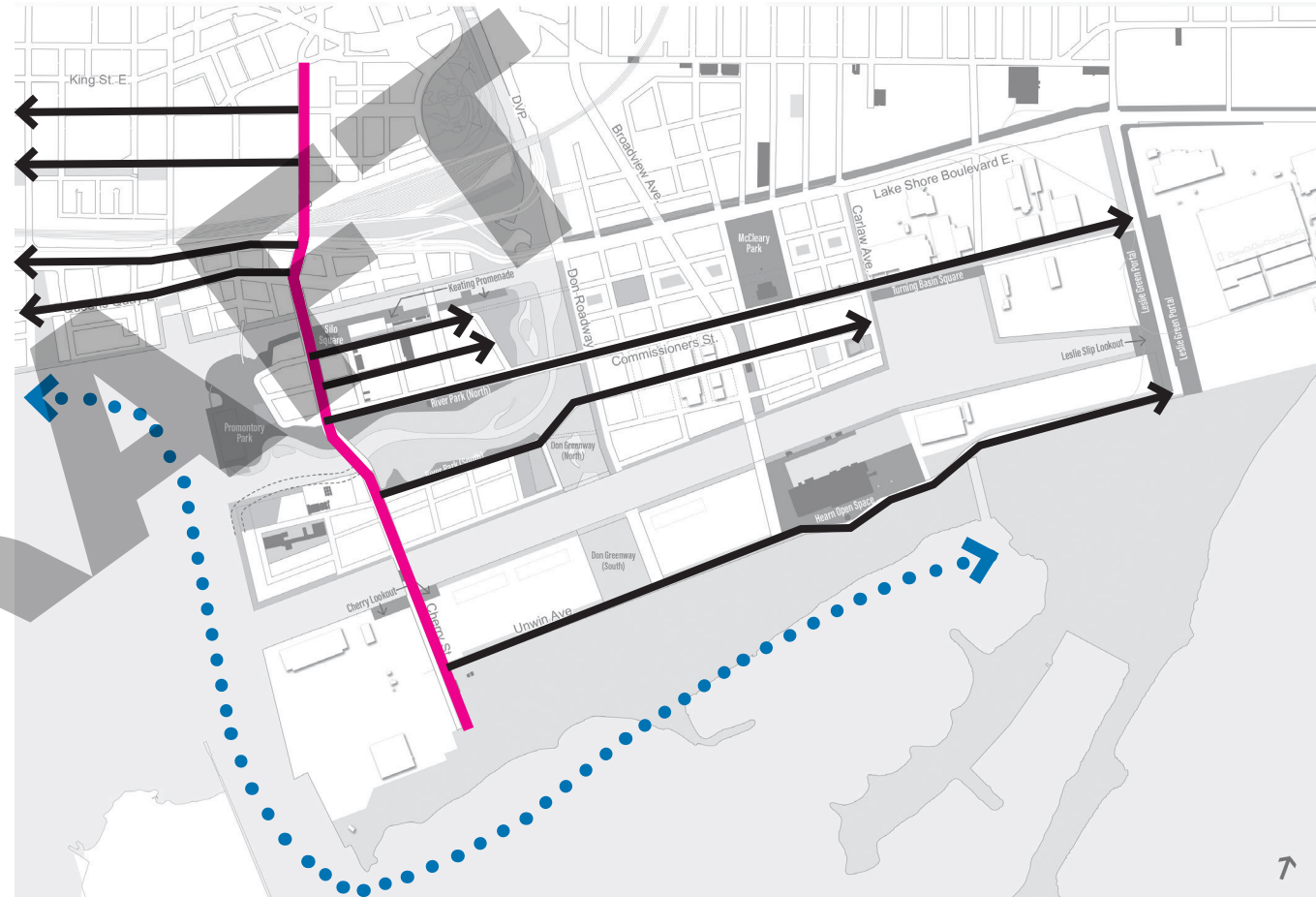
Baseline Roadway EA Infrastructure Assumptions



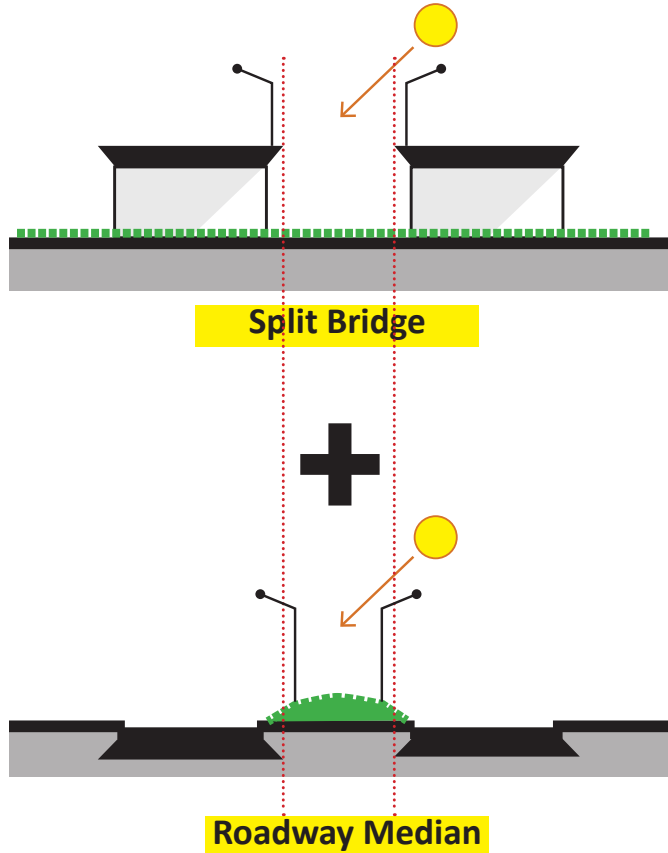
Roadway Morphology

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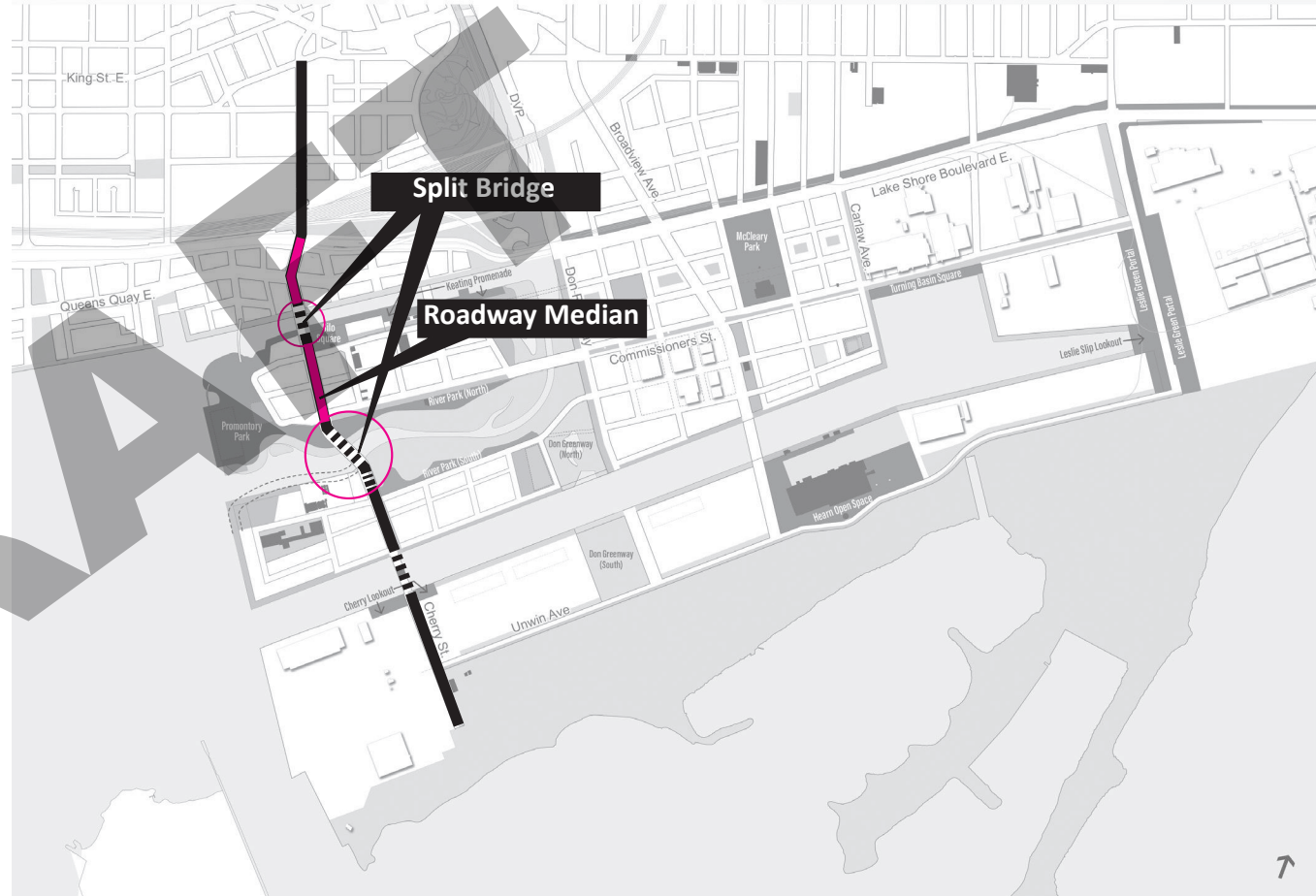
Cherry Street Expresses the Shift in Waterfront Geometry



Cherry Street - Unify Streetscape through Bridges and Roadway Layout



Bridge Concept From LDL EA



Commissioners Street - Enhance Linear Nature through Planting

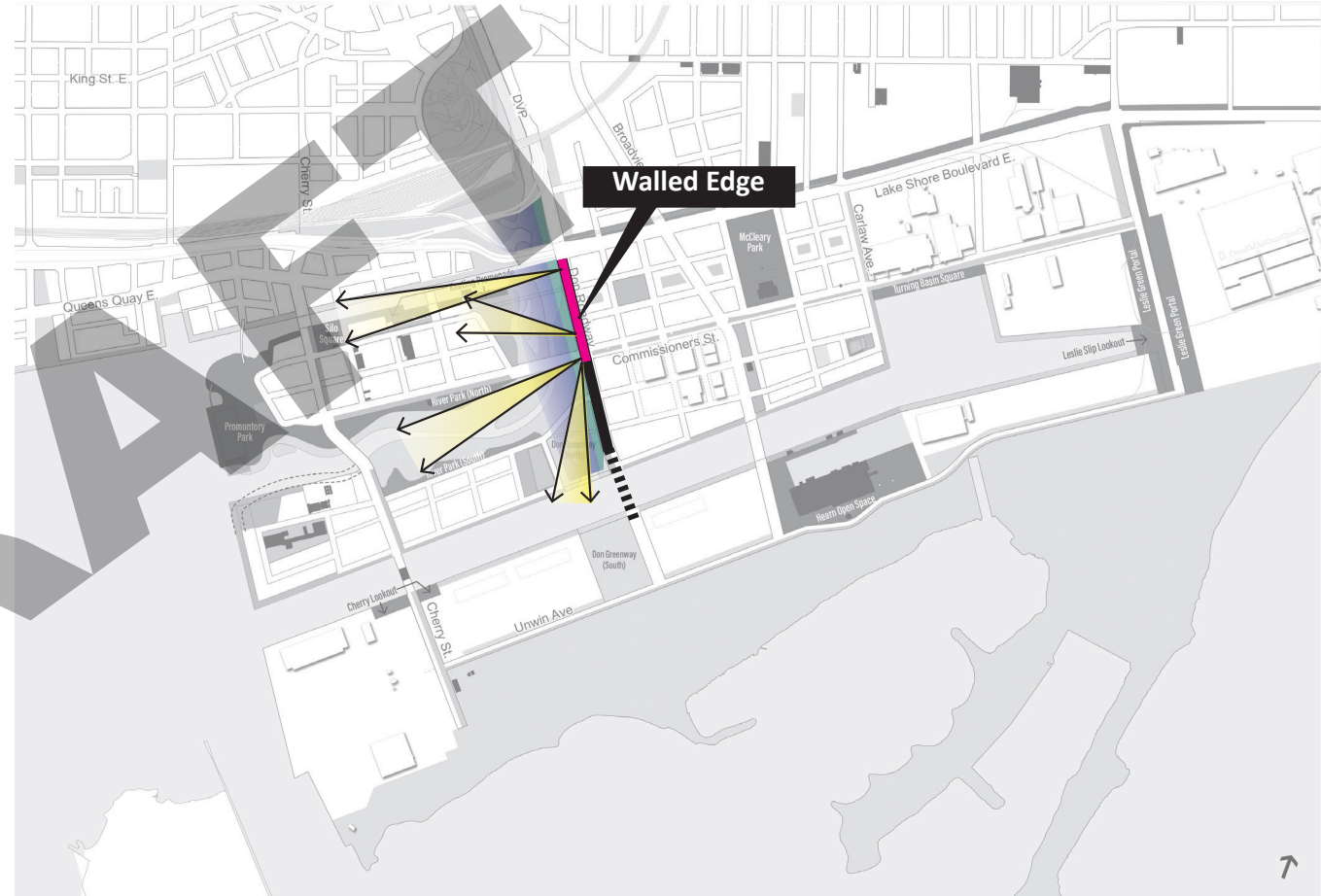


Don Roadway - River Park Promenade

Sculptural form at crest of wall



Occupiable edges at riverine vistas



Roadways and Park Circulation form New Link to Central Waterfront



Cherry Street

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Cherry Street Proposed Alignment and Constraints

EXISTING CHERRY STREET ROW
CONFIGURATION IN WEST DON LANDS

METROLINX UNDERPASS

CONNECTION TO EXISTING AND
PROPOSED LAKE SHORE BOULEVARD

CONNECTION TO QUEENS QUAY AND
3C DEVELOPMENT

CLEARANCE AT KEATING CHANNEL

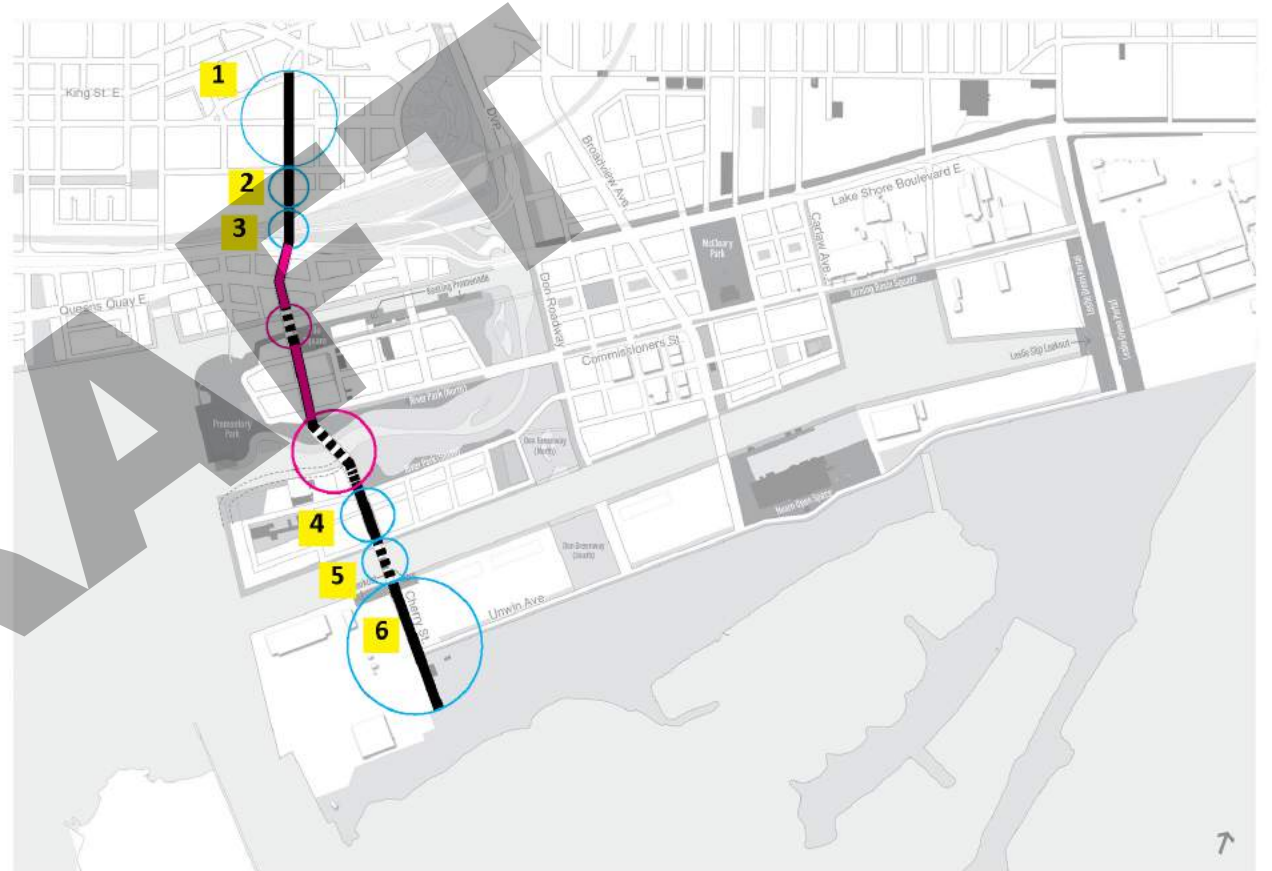
MAINTAIN ACCESS AND SERVICE TO
EXISTING STRUCTURES

CONNECTION TO EXISTING SHIP
CHANNEL BRIDGE

ALIGNMENT WITH BIKEWAY TO
CHERRY BEACH



Cherry Street Existing Conditions - Fragmented By Infrastructure



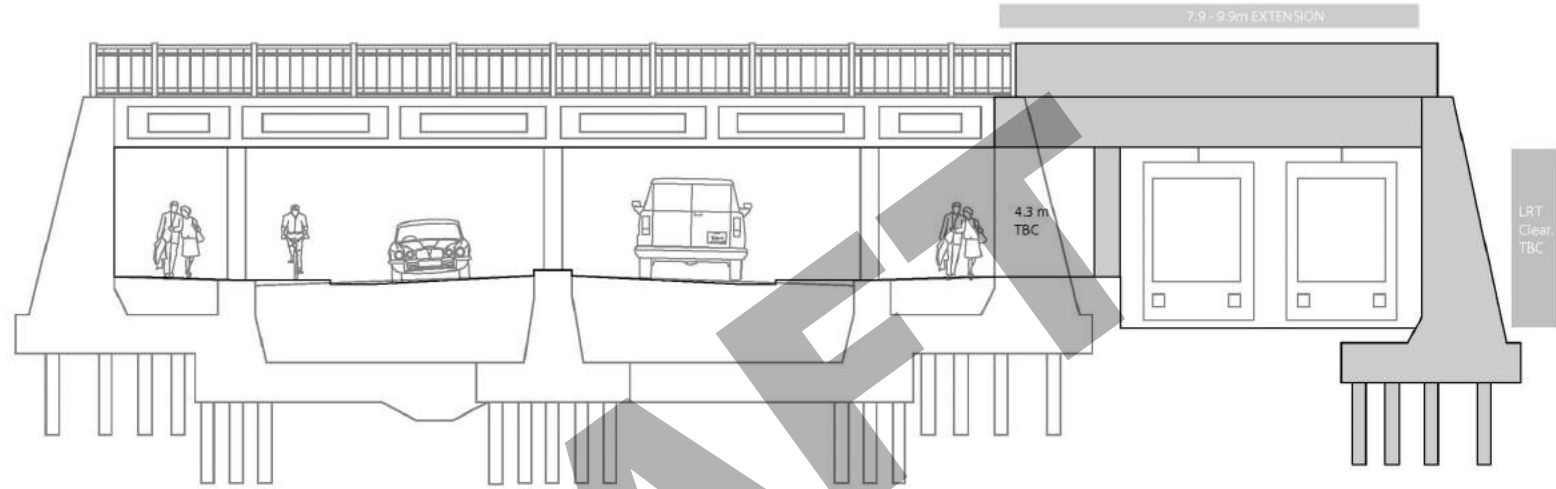
New Cherry Street - Villiers Island Precinct Plan



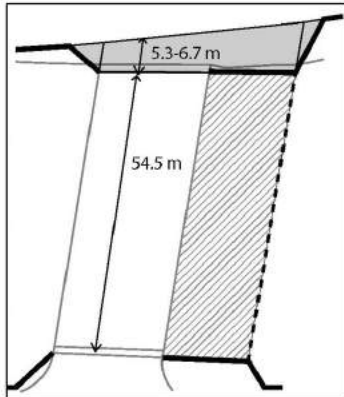
New Cherry Street - TSMP EA



Constraint - Metrolinx Underpass Section



*Grading of Cherry St. is being studied by MVVA and will be provided as soon as it is available.



Existing Cross Section Dimensions

PEDESTRIAN	BUFFER	DRIVE LANE	DRIVE LANE	BUFFER	DRIVE LANE	DRIVE LANE	BUFFER	PEDESTRIAN
2.6 m	0.6	3.3m	3.3m	0.9m	3.3m	3.3m	0.6	2.7m
20.6 m								

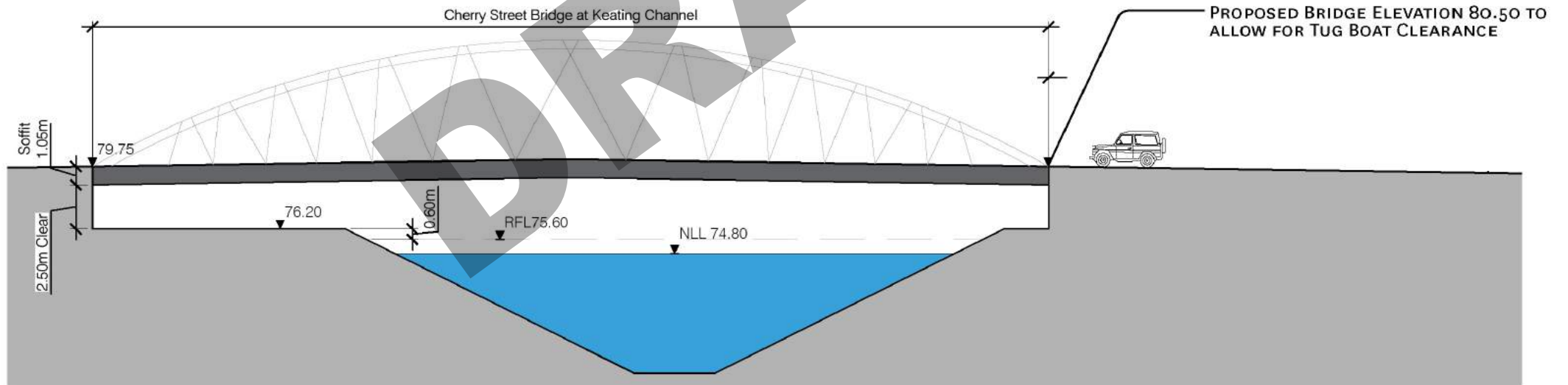
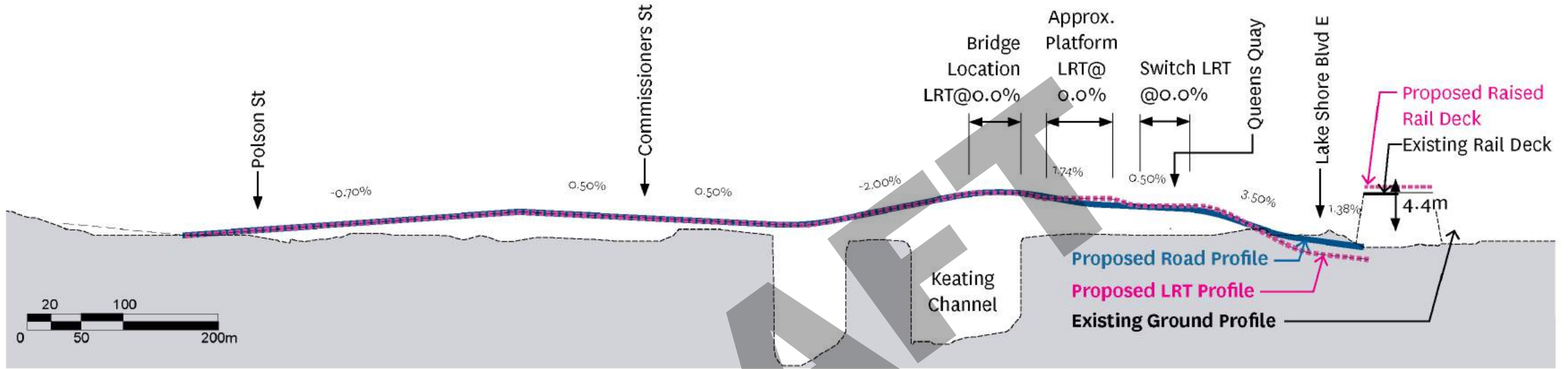
Potential Cross Section Dimensions

PEDESTRIAN	BUFFER	CYCLE TRACK	BUFFER	DRIVE LANE	BUFFER	DRIVE LANE	BUFFER	CYCLE TRACK	BUFFER	PEDESTRIAN	BUFFER	LRT R.O.W.
2.6 m	0.6	1.8 m	0.8	3.3m	2.1 m	3.3m	0.8	1.8m	0.6	3.0-5.0m	0.6	7.0m
28.3-30.3 m												

* Based on:
Villiers Island Precinct
Plan Cherry St. Section

* All dimensions are approximate

Constraint - Cherry Street Profile Study



Condition at Keating Channel Bridge

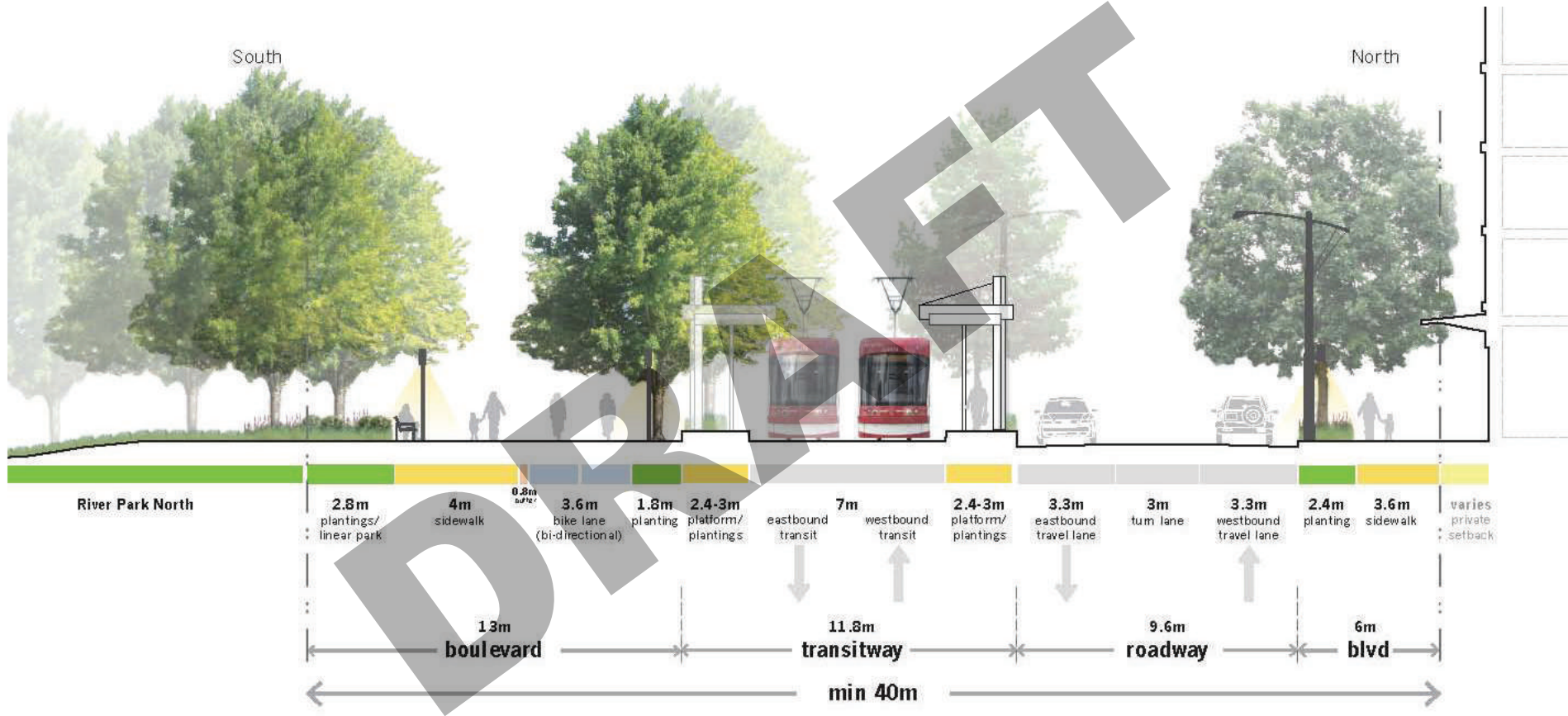
Commissioners Street

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Commissioners Street - Existing Conditions



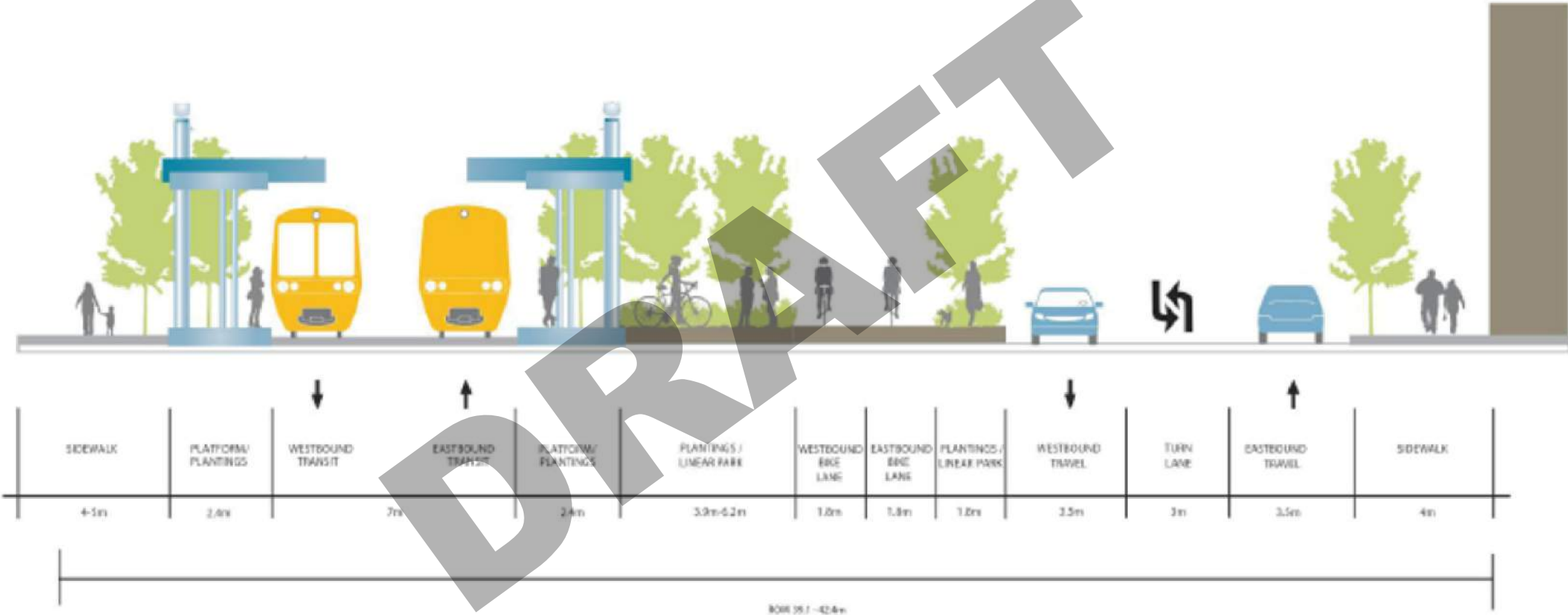
Commissioners Street - Villiers Island Precinct Plan



Commissioners Street - TSMP EA



Commissioners Street - Lower Don Lands EA MP



Commissioners Street - Constraints



CONNECTION
TO PARK EDGE

FIRE HALL
LOCATION

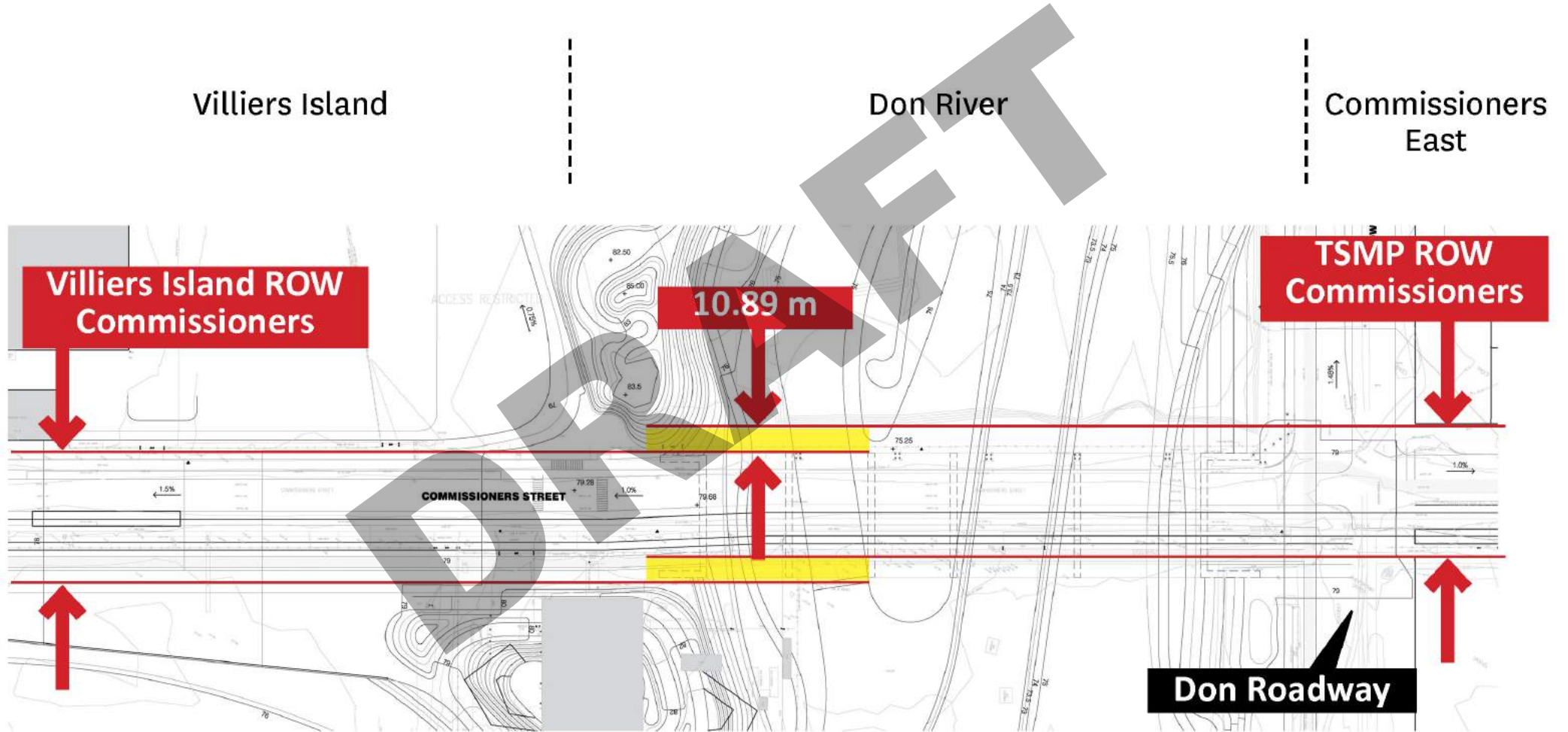
DEEP SERVICES
FOR MUNICIPAL
INFRASTRUCTURE
BELOW RIVER

ALIGNMENT
BETWEEN VILLIERS
ISLAND AND FILM
STUDIO PRECINCT

HONI TOWERS
WITHIN ROW

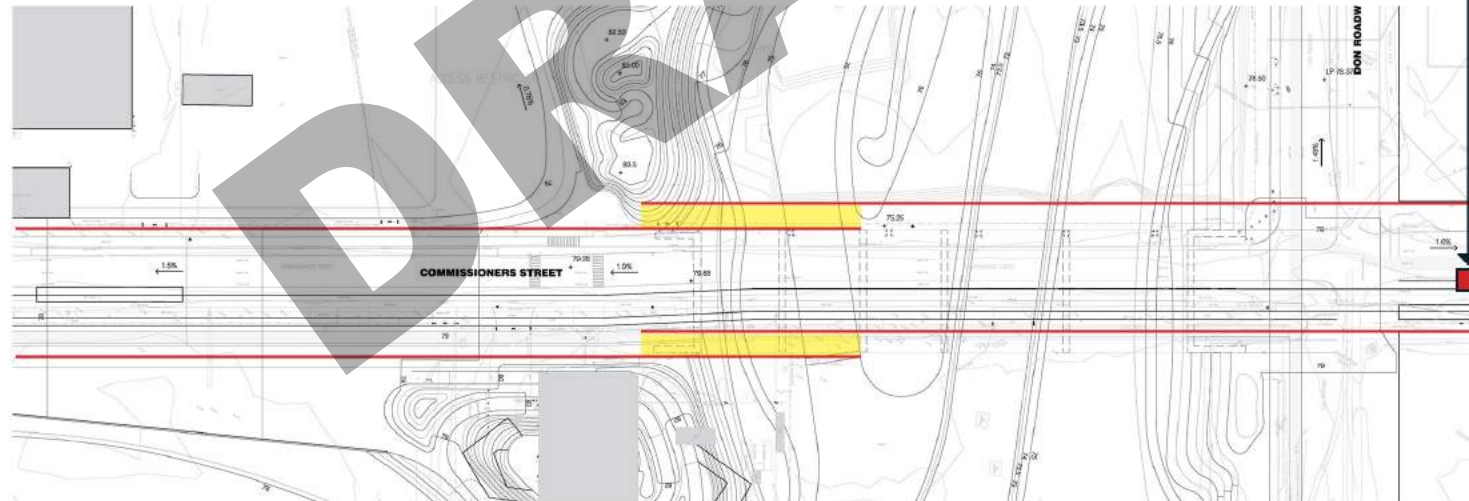
EXISTING
COMMERCIAL
BUILDINGS

Commissioners Street Constraint - ROW Alignments

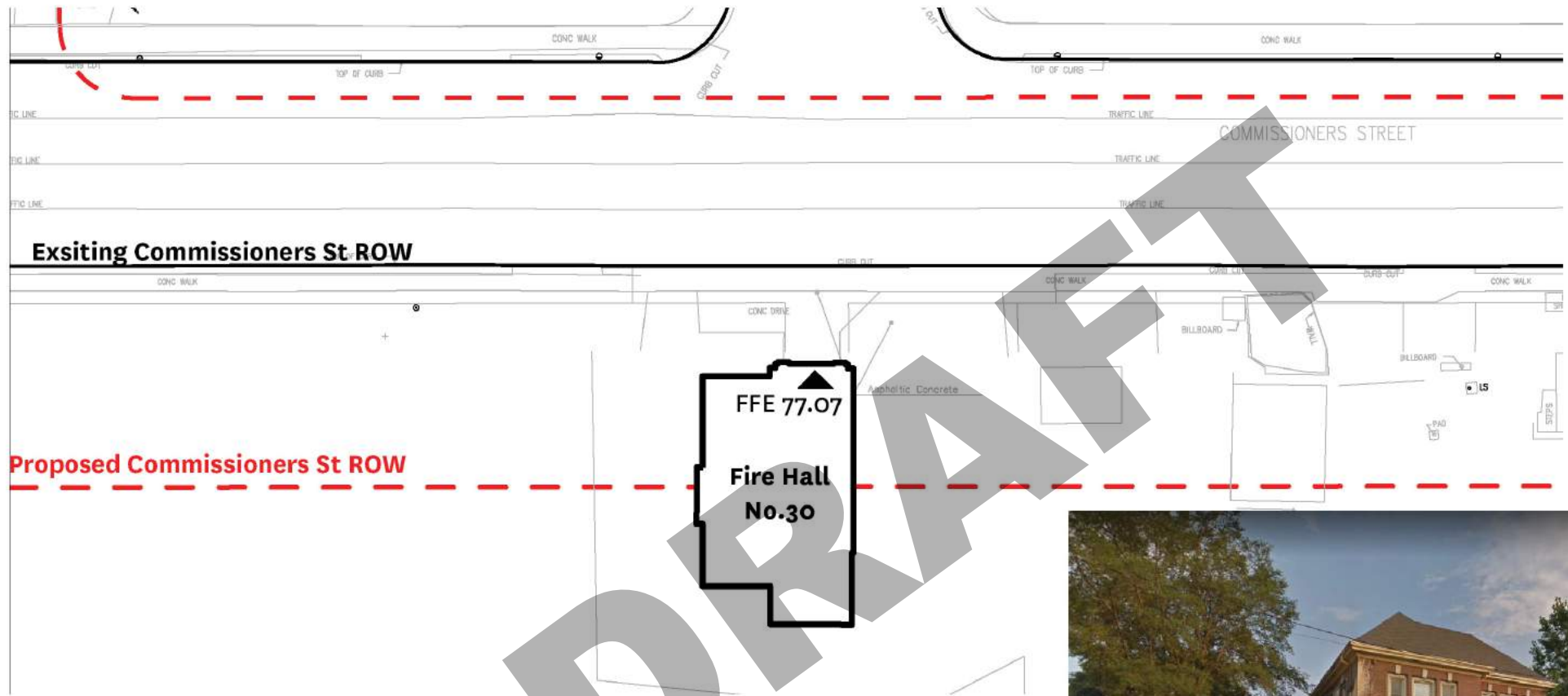


Commissioners Street Constraint - HONI Towers

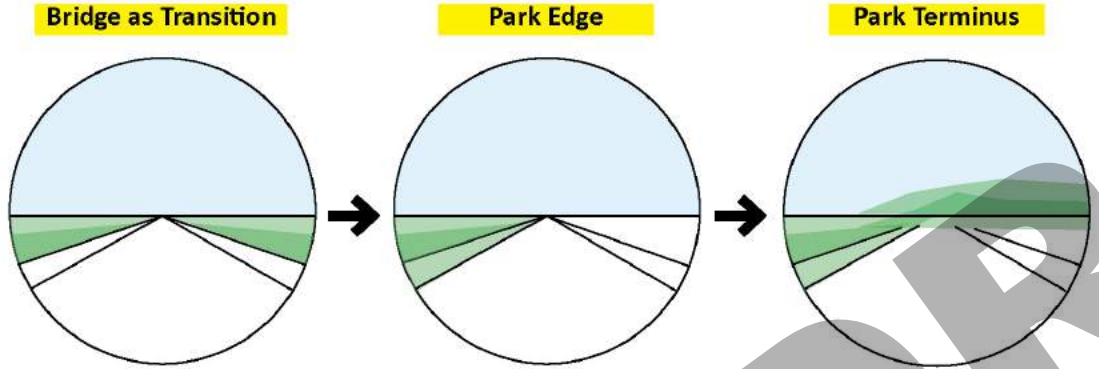
EXISTING HONI TOWERS FALL WITHIN ROW
TO THE EAST OF DON ROADWAY



Commissioners Street Constraint - Fire Hall No. 30



Commissioners Street – Streetscape Relationship to Park



Bridge as Transition
Park Edge
Park Terminus

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Don Roadway

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Don Roadway - Existing Conditions



Don Roadway - TSMP EA



Don Roadway - Lower Don Lands EA MP

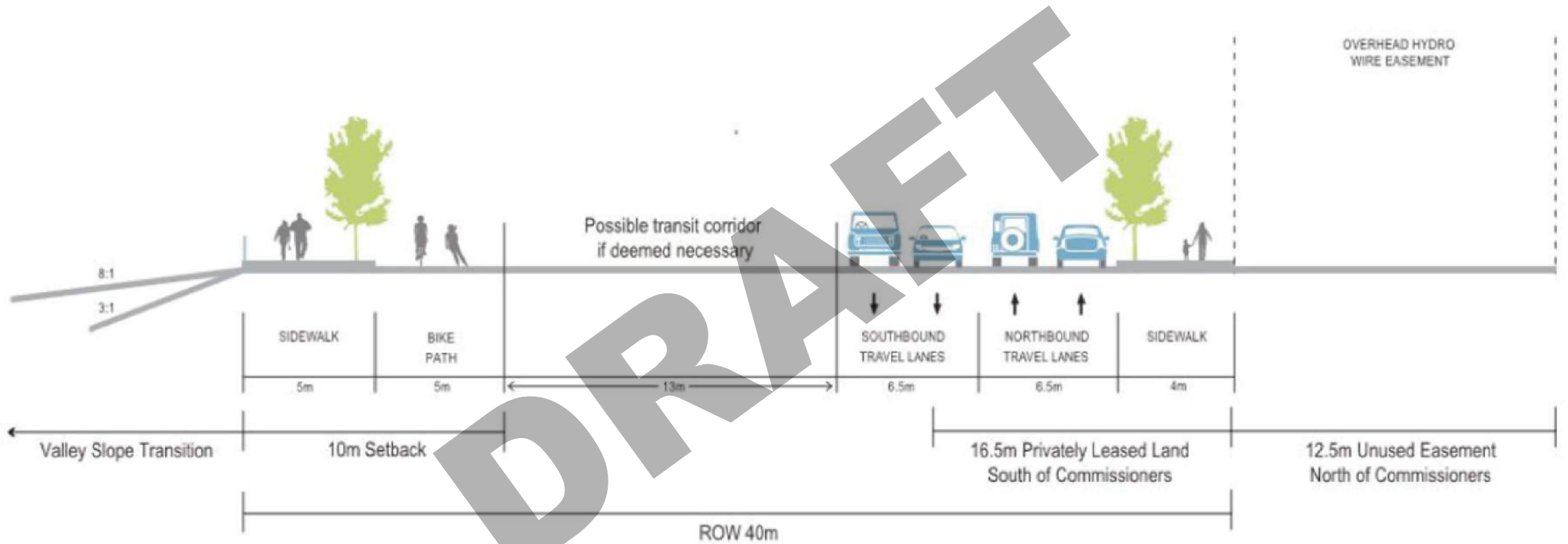
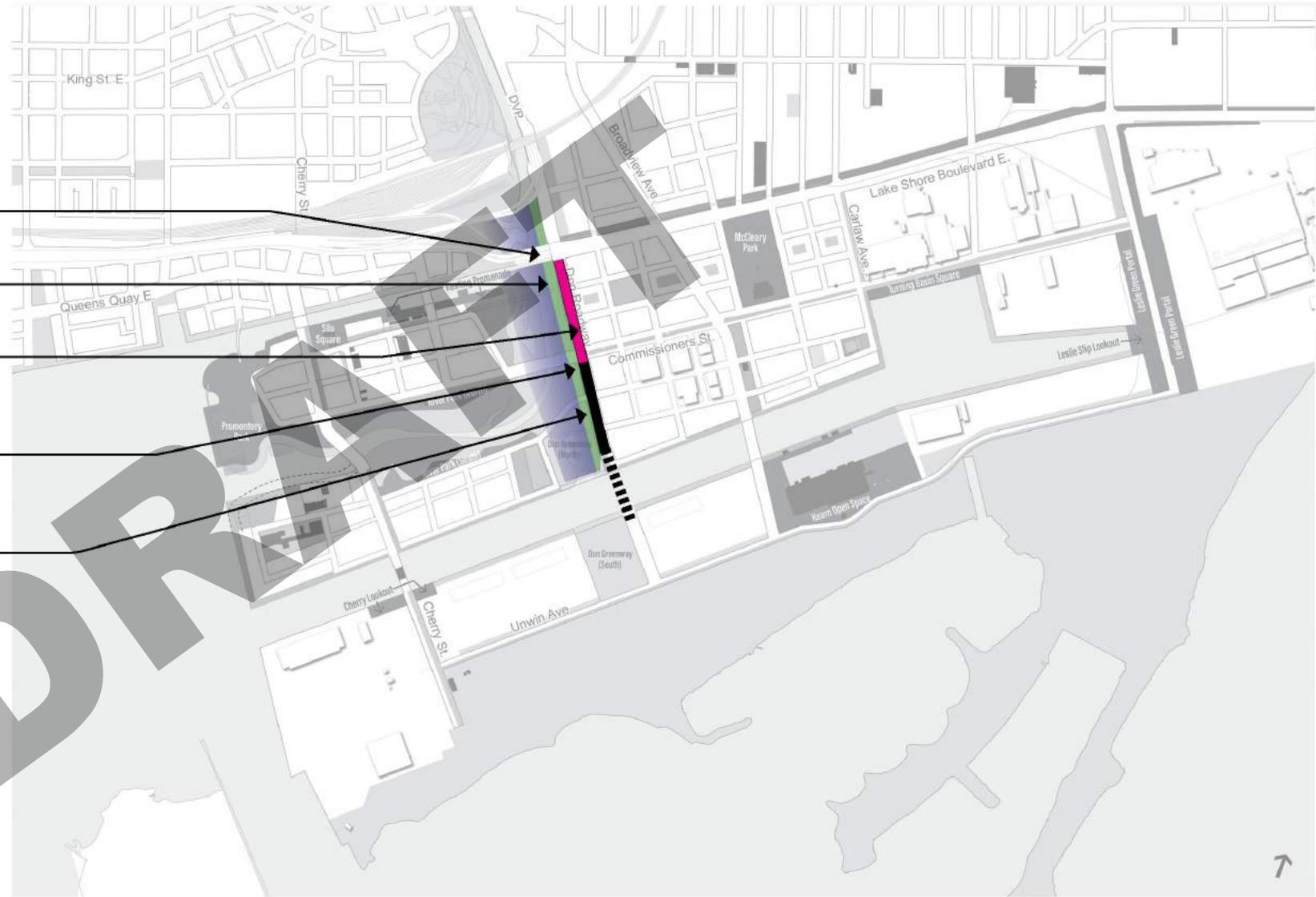


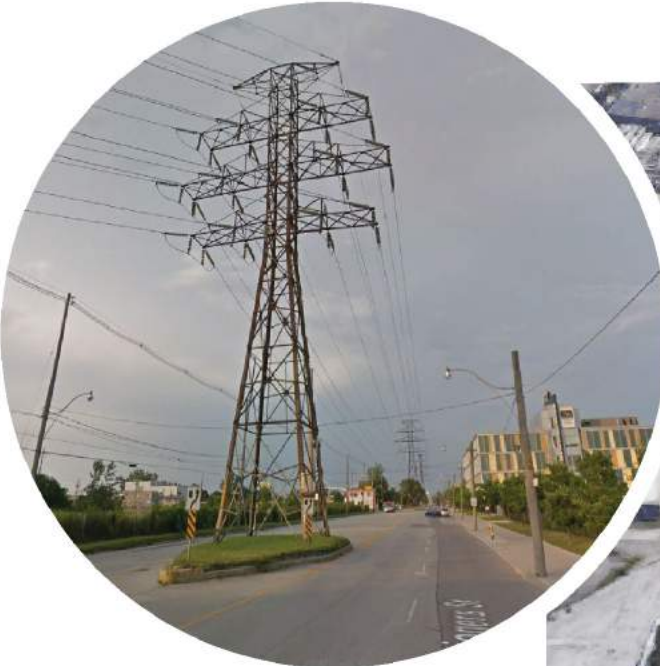
FIGURE 6-12: Cross section for Don Roadway between Lake Shore Boulevard East and the ship channel

Don Roadway - Constraints

- INTERSECTION WITH LAKE SHORE BOULEVARD
- PROPOSED DOCK WALL AT RIVER VALLEY
- HONI TOWERS WITHIN THE ROW
- ACCESS TO NEW PARK LANDSCAPE
- IMPLEMENTATION OF VALLEY WALL FEATURE



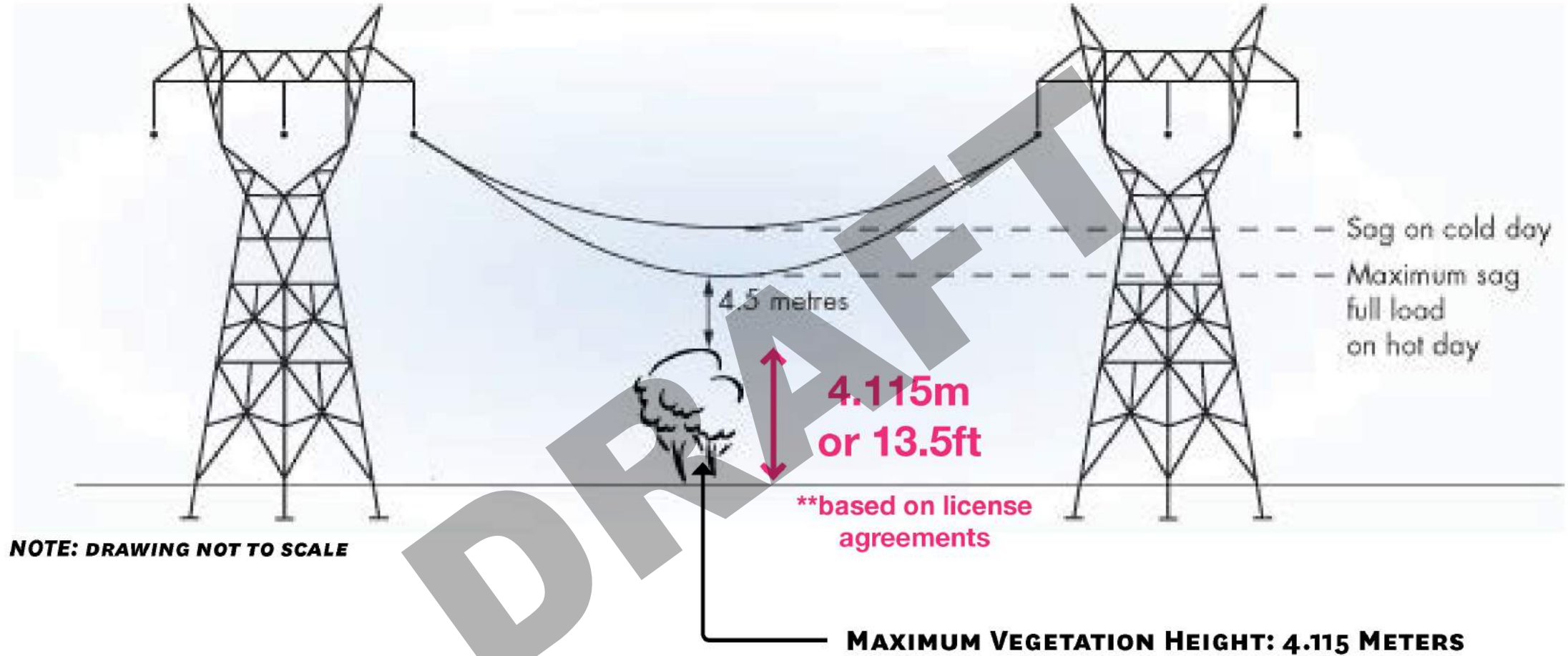
Don Roadway and Commissioners Street at HONI Lines



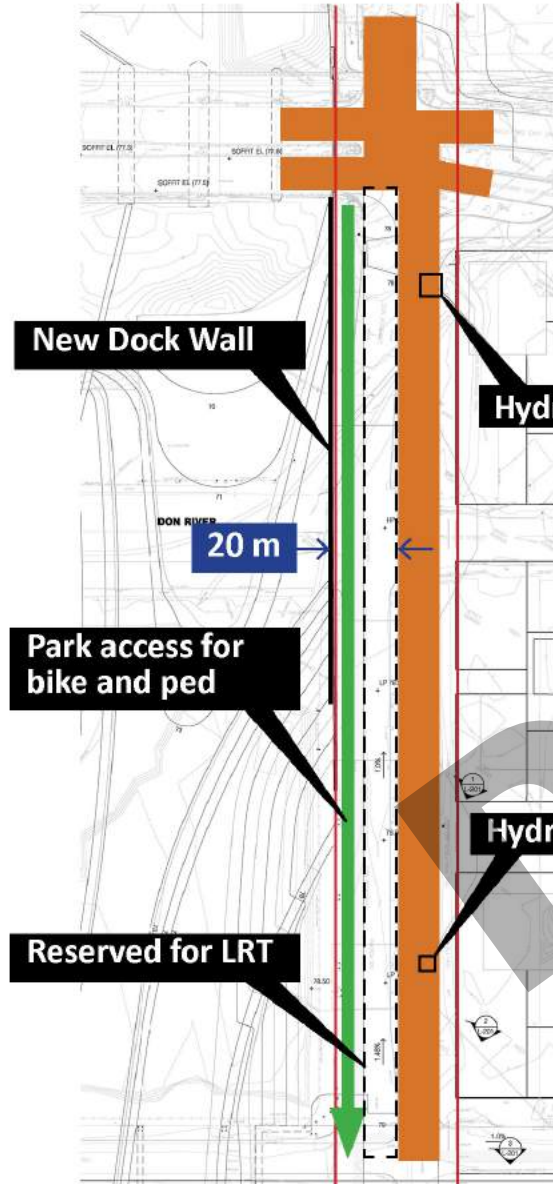
Power Plant

Downtown

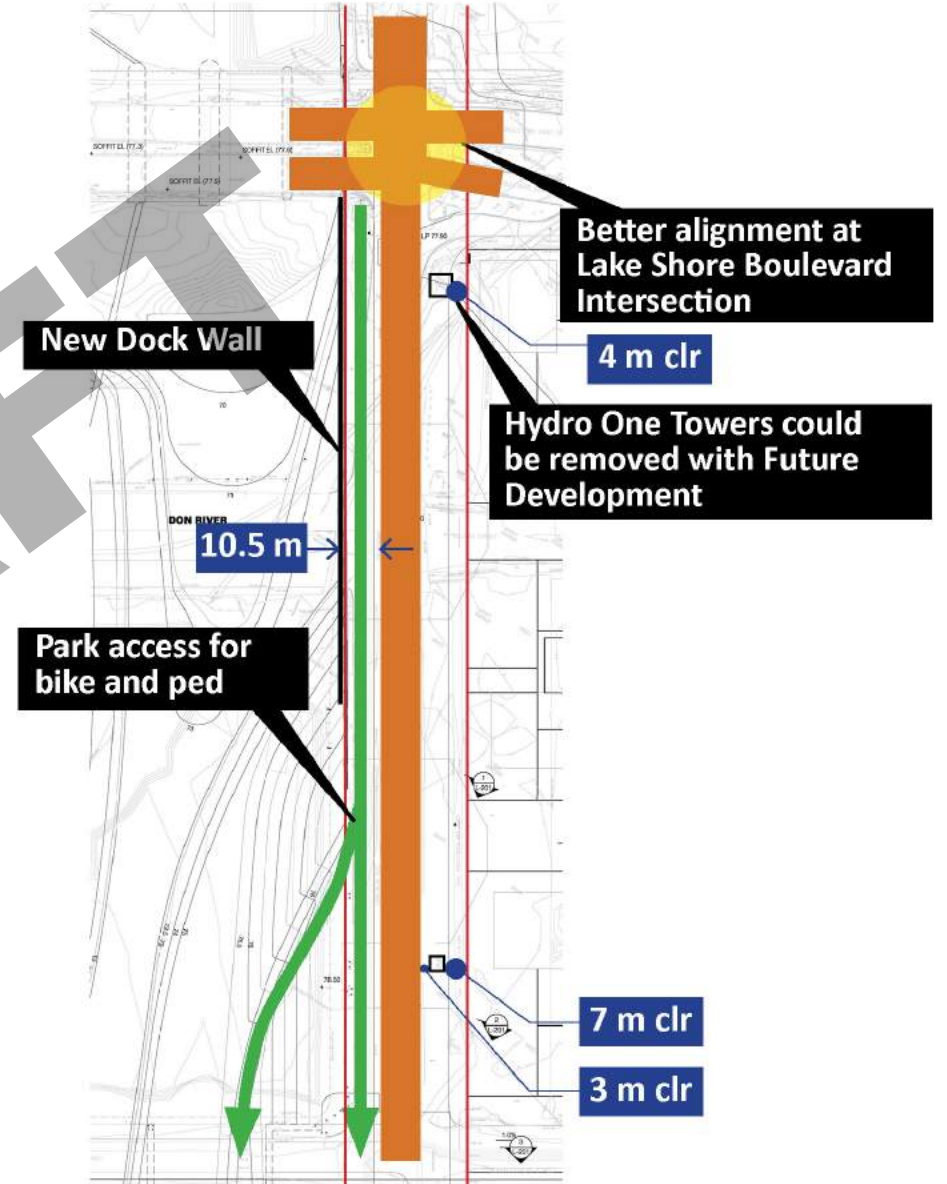
HONI Lines Landscape Constraints



Don Roadway Alignment



LDL EA ROADWAY ALIGNMENT

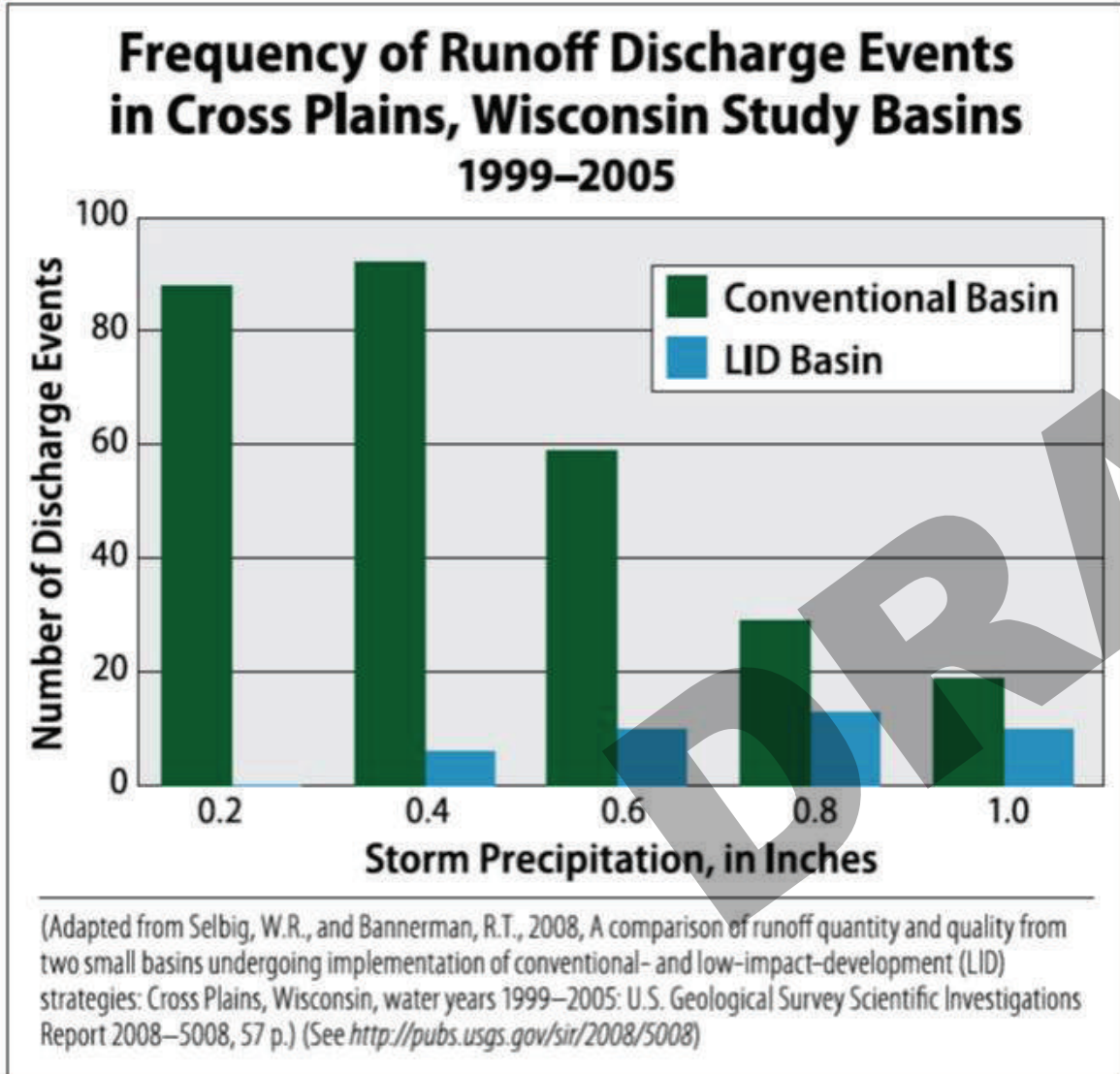


ALTERNATE ROADWAY ALIGNMENT

Innovation in Urban Environments

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Stormwater Management



Precipitation events having depths of 5mm or less represent 50% of the average annual rainfall in Toronto

Distributed controls (e.g. LID's) focusing on diverting the 5mm event greatly reduce discharges to the receiving system, which yields a corresponding reduction in the downstream storm infrastructure requirements – such as storm sewer sizes and water quality treatment facilities

Passive Irrigation & Bioswales - Local Examples



West Donlands

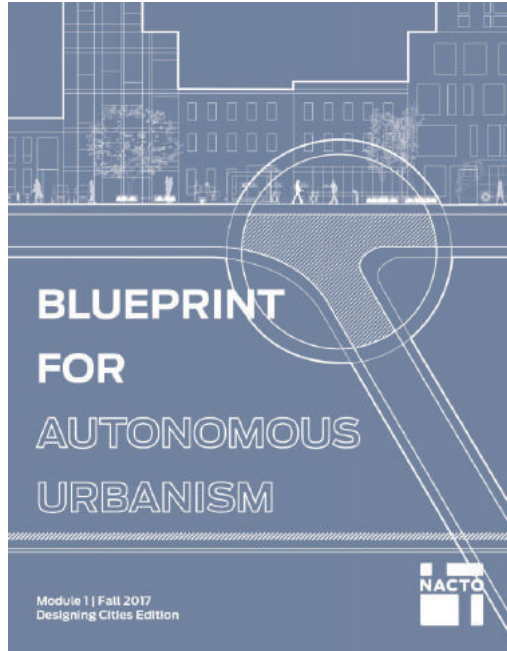


Evergreen Brickworks



Coxwell & Fairford Parkette

AV Integration



NCHRP
RESEARCH REPORT 845

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

**Advancing Automated
and Connected Vehicles:
Policy and Planning Strategies
for State and Local
Transportation Agencies**

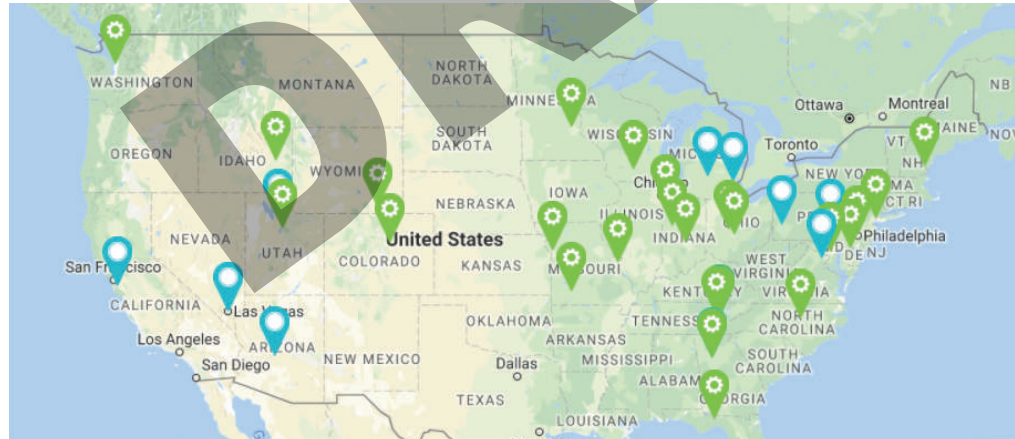
The National Academy of
SCIENCES • ENGINEERING • MEDICINE
TRANSPORTATION RESEARCH BOARD



The Future of Automated Vehicles in Canada

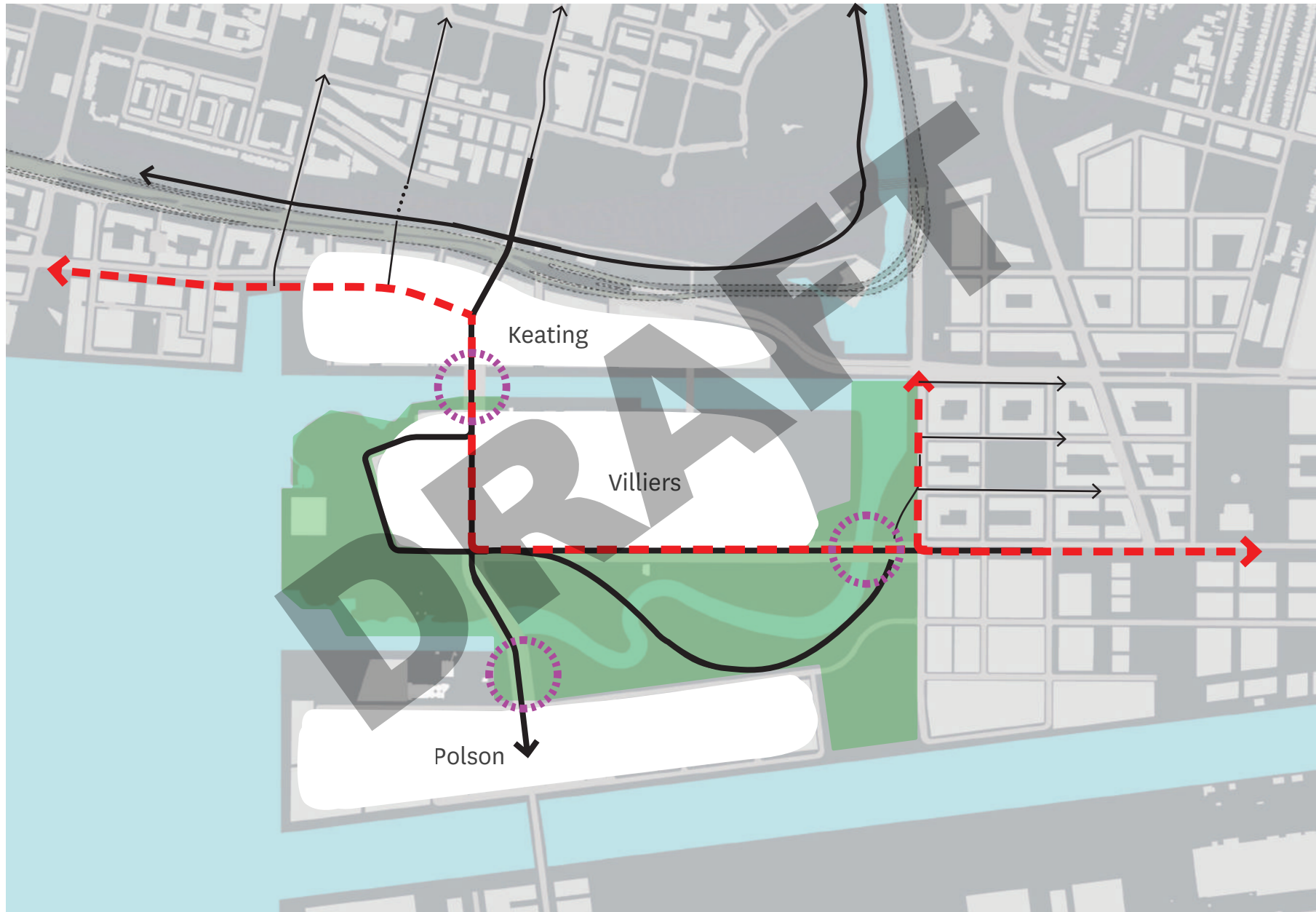
Report of the PPSC Working Group on
Connected and Automated Vehicles

January 29, 2018



**Establish Gateways to the
New Precinct and Stitch the
Port Lands to the City**

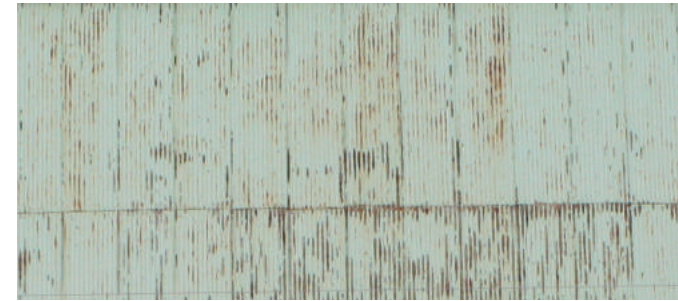
Establish Gateways and Stitch the Port Lands to the City



**Establish a Unique
Character for a New District**

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Connecting the Industrial Heritage of the Past...



Existing Cherry St Bridge at Shipping Channel

Materiality of the site

and the Natural Systems of the Future River Landscape



Hunter's Point South Waterfront Park, Queens, NY

Portland, Oregon

**Streets as a Seemless
Extension of the Parks and
River Public Realm**

Exploring Expressions of the Post-Industrial Landscape



Exploring Expressions of the Post-Industrial Landscape



LUX – Stahlhof Belval-Ouest, Luxembourg

Cleveland Flats

Brooklyn Bridge Park

