



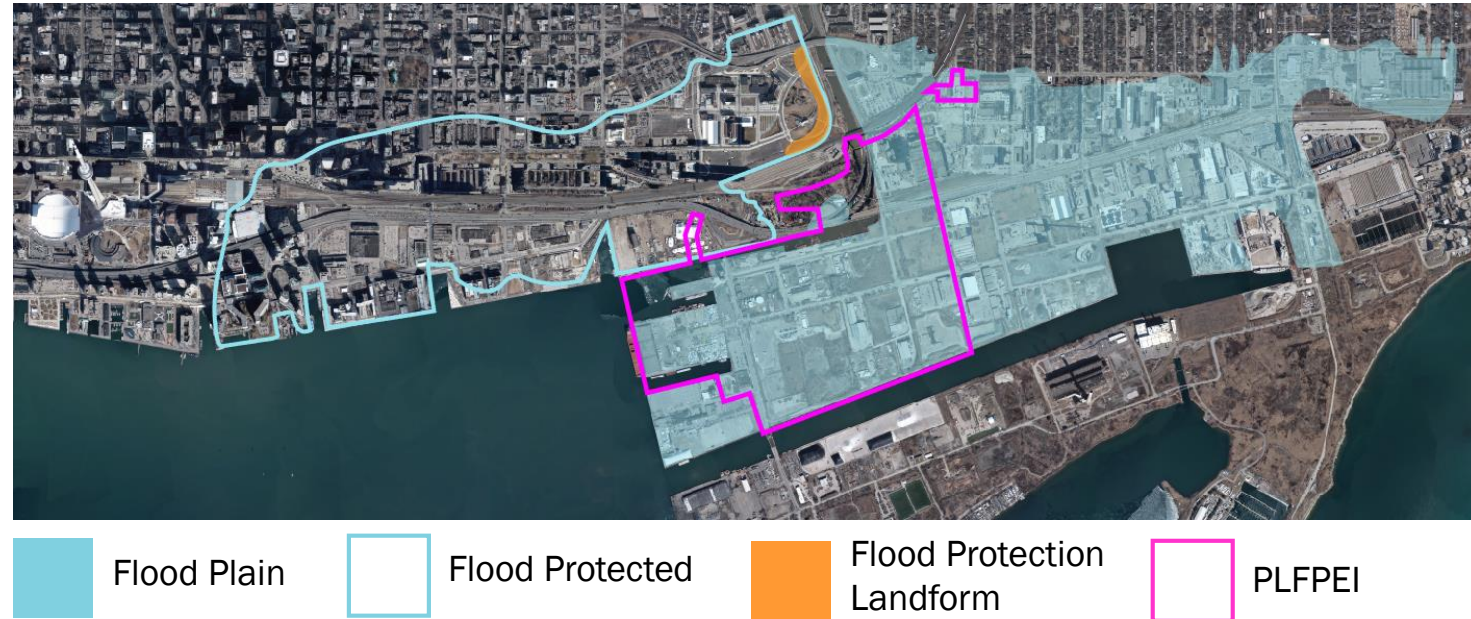
Port Lands Flood Protection and Enabling Infrastructure: River Valley Flood Protection and Parks

Issues Identification

November 15, 2017

Project Description & Background

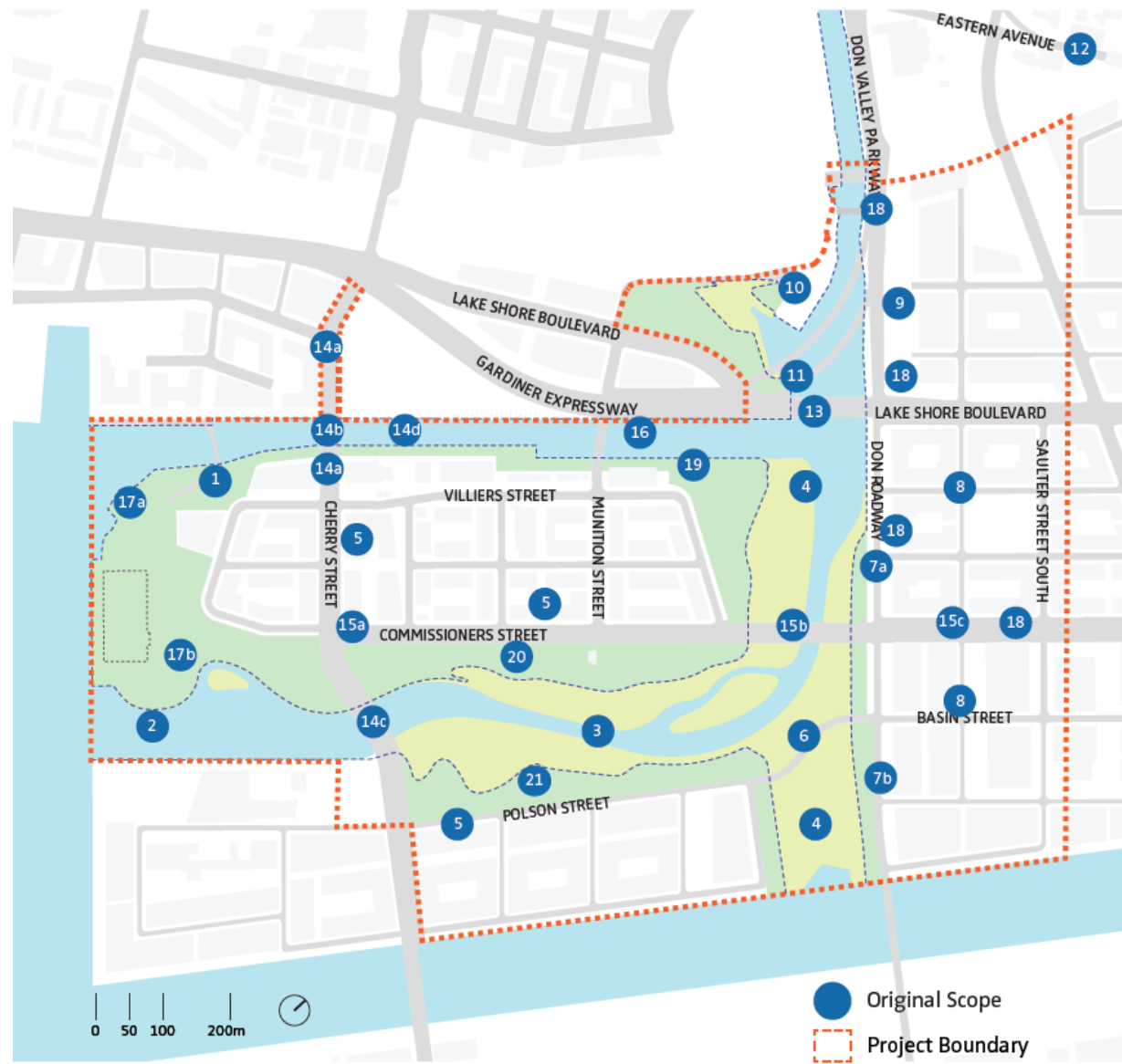
- 290 hectares of southeastern downtown Toronto are at risk of flooding from the Don River watershed
- The Port Lands Flood Protection and Enabling Infrastructure Project is a comprehensive solution to flood protection
- The project has previously presented the EA and Master Planning process to the Panel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



Site Context - Project Scope

Legend

- 1 Essroc Quay Lakefilling
- 2 Polson Slip Naturalization
- 3 River Valley System
- 4 Don Greenway (Spillway & Wetland)
- 5 Site Wide Municipal Infrastructure
- 6 Basin Street Bridge
- 7a Don Roadway North
- 7b Don Roadway South
- 8 Don Roadway Valley Wall Feature
- 9 First Gulf/Unilever Site Flood Protection Land Form
- 10 Sediment and Debris Management Area
- 11 Flow Control Weirs
- 12 Eastern Ave. Flood Protection
- 13 Lake Shore Road & Rail Bridge Modifications
- 14a Cherry Street Re-alignment
- 14b Cherry Street Bridge North
- 14c Cherry Street Bridge South
- 14d Old Cherry Street Bridge Demolition
- 15a Commissioners Street West to New Cherry Street
- 15b Commissioners Street Bridge
- 15c Commissioners Street East to Saulter Street
- 16 Keating Channel Modifications
- 17a Promontory Park North
- 17b Promontory Park South
- 18 Hydro One Integration
- 19 Villiers Island Grading
- 20 River Park North
- 21 River Park South

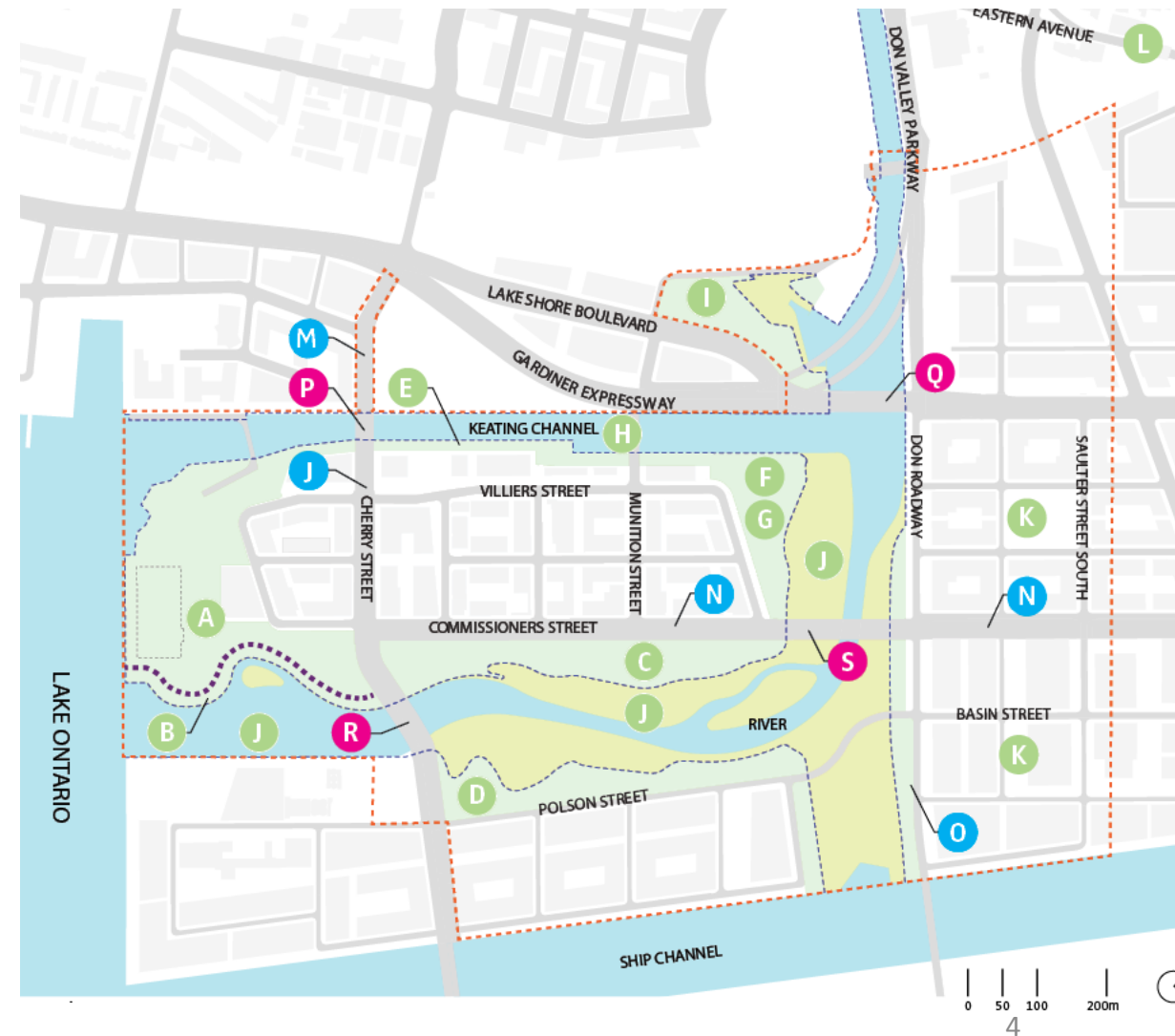


Site Context - Project Scope

Legend

- A Promontory Park Design Alignment
- B Promontory Park South (17b) June 2021-Sept 2023
- C River Park North (20) June 2021-Sept 2023
- D River Park South (21) June 2021-Sept 2023
- E Keating Channel Promenade Flood Protection (19) Nov 2020-Aug 2021
- F Villiers Park Design Alignment
- G Villiers Park Flood Protection (19) Nov 2020-Aug 2021
- H Keating Channel Dockwalls & Aquatic Habitat (16) May 2022-2023
- I Sediment and Debris Management Area (10) Sept 2019-June 2021
- J River (2,3,4,11) Jan 2018-Oct 2021
- K Don Roadway Valley Wall Feature (8) Jan 2020-May 2021
- L Eastern Avenue Flood Protection (12) Mar 2021-May 2022
- M Cherry Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- N Commissioners Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- O Don Roadway and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- P Cherry Street Bridge North (14b) Oct 2017-Nov 2018
- Q Lake Shore Boulevard Bridge (13) Mar 2018-Dec 2019
- R Cherry Street Bridge South (14c) Oct 2017-Sept 2019
- S Commissioners Street Bridge (15b) Oct 2017-Oct 2019

- Parks, Flood Protection & River Valley
- Roads and Municipal Infrastructure
- Bridges

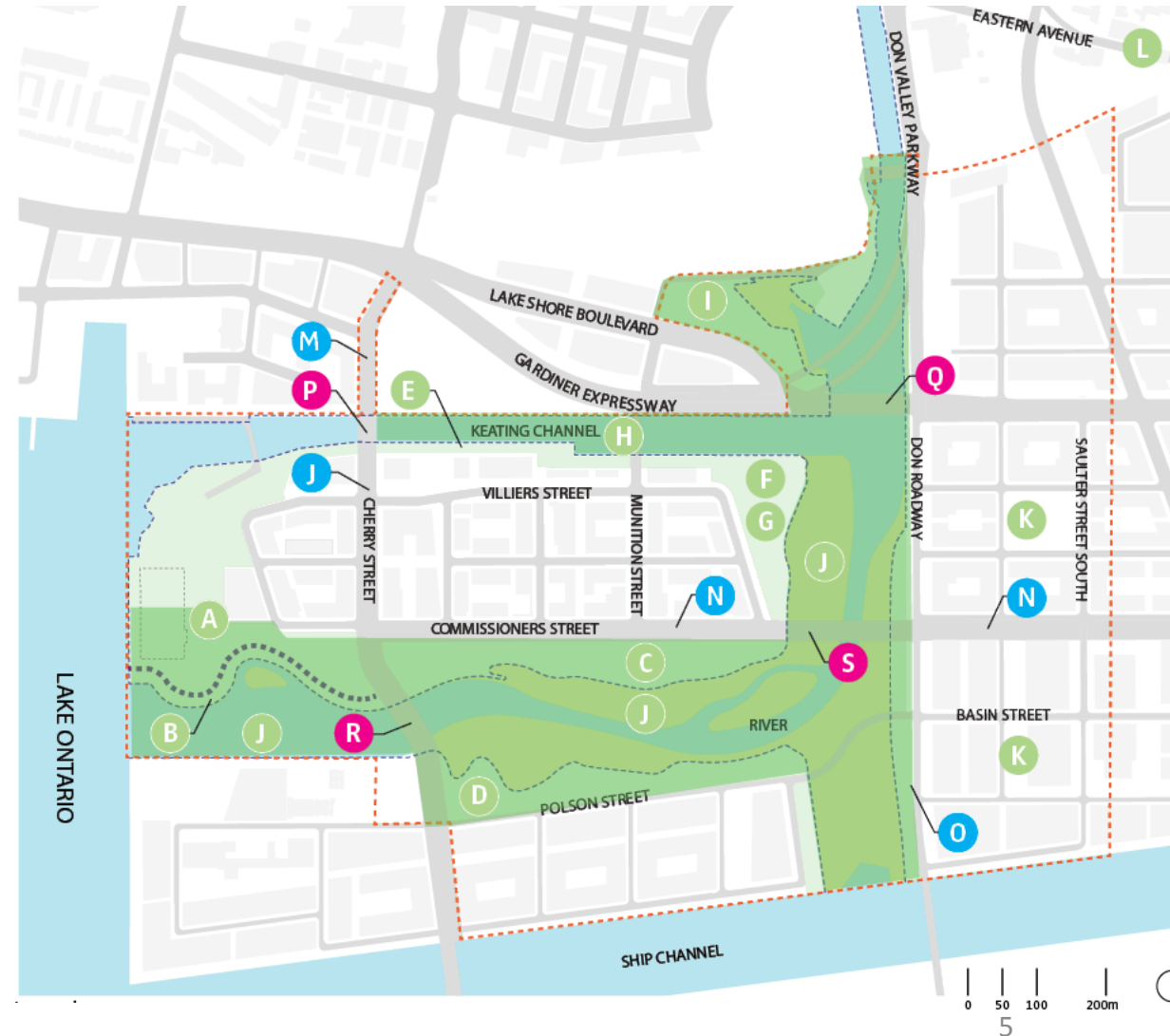


Project Scope – Parks, Flood Protection & River Valley

Legend

- A Promontory Park Design Alignment
- B Promontory Park South (17b) June 2021-Sept 2023
- C River Park North (20) June 2021-Sept 2023
- D River Park South (21) June 2021-Sept 2023
- E Keating Channel Promenade Flood Protection (19) Nov 2020-Aug 2021
- F Villiers Park Design Alignment
- G Villiers Park Flood Protection (19) Nov 2020-Aug 2021
- H Keating Channel Dockwalls & Aquatic Habitat (16) May 2022-2023
- I Sediment and Debris Management Area (10) Sept 2019-June 2021
- J River (2,3,4,11) Jan 2018-Oct 2021
- K Don Roadway Valley Wall Feature (8) Jan 2020-May 2021
- L Eastern Avenue Flood Protection (12) Mar 2021-May 2022
- M Cherry Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- N Commissioners Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- O Don Roadway and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- P Cherry Street Bridge North (14b) Oct 2017-Nov 2018
- Q Lake Shore Boulevard Bridge (13) Mar 2018-Dec 2019
- R Cherry Street Bridge South (14c) Oct 2017-Sept 2019
- S Commissioners Street Bridge (15b) Oct 2017-Oct 2019

- Parks, Flood Protection & River Valley
- Roads and Municipal Infrastructure
- Bridges

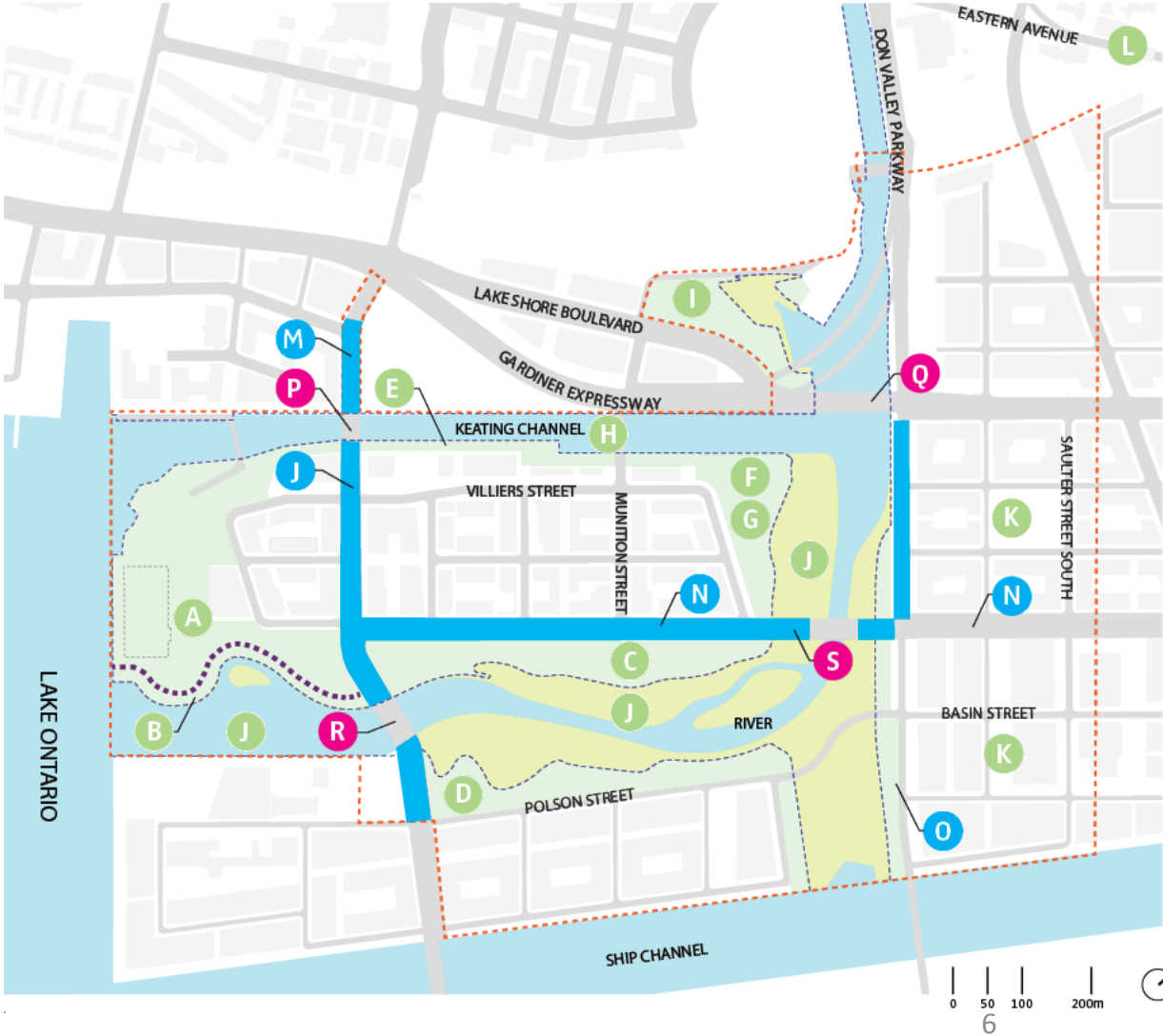


Project Scope – Roads and Municipal Infrastructure

Legend

- A Promontory Park Design Alignment
- B Promontory Park South (17b) June 2021-Sept 2023
- C River Park North (20) June 2021-Sept 2023
- D River Park South (21) June 2021-Sept 2023
- E Keating Channel Promenade Flood Protection (19) Nov 2020-Aug 2021
- F Villiers Park Design Alignment
- G Villiers Park Flood Protection (19) Nov 2020-Aug 2021
- H Keating Channel Dockwalls & Aquatic Habitat (16) May 2022-2023
- I Sediment and Debris Management Area (10) Sept 2019-June 2021
- J River (2,3,4,11) Jan 2018-Oct 2021
- K Don Roadway Valley Wall Feature (8) Jan 2020-May 2021
- L Eastern Avenue Flood Protection (12) Mar 2021-May 2022
- M Cherry Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- N Commissioners Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- O Don Roadway and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- P Cherry Street Bridge North (14b) Oct 2017-Nov 2018
- Q Lake Shore Boulevard Bridge (13) Mar 2018-Dec 2019
- R Cherry Street Bridge South (14c) Oct 2017-Sept 2019
- S Commissioners Street Bridge (15b) Oct 2017-Oct 2019

● Parks, Flood Protection & River Valley
 ● Roads and Municipal Infrastructure
 ● Bridges



Project Scope – Bridges

Legend

- A Promontory Park Design Alignment
- B Promontory Park South (17b) June 2021-Sept 2023
- C River Park North (20) June 2021-Sept 2023
- D River Park South (21) June 2021-Sept 2023
- E Keating Channel Promenade Flood Protection (19) Nov 2020-Aug 2021
- F Villiers Park Design Alignment
- G Villiers Park Flood Protection (19) Nov 2020-Aug 2021
- H Keating Channel Dockwalls & Aquatic Habitat (16) May 2022-2023
- I Sediment and Debris Management Area (10) Sept 2019-June 2021
- J River (2,3,4,11) Jan 2018-Oct 2021
- K Don Roadway Valley Wall Feature (8) Jan 2020-May 2021
- L Eastern Avenue Flood Protection (12) Mar 2021-May 2022
- M Cherry Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- N Commissioners Street and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- O Don Roadway and Municipal Infrastructure (7a, 7b, 13, 14a, 15a, 15c) Oct 2018-Aug 2022
- P Cherry Street Bridge North (14b) Oct 2017-Nov 2018
- Q Lake Shore Boulevard Bridge (13) Mar 2018-Dec 2019
- R Cherry Street Bridge South (14c) Oct 2017-Sept 2019
- S Commissioners Street Bridge (15b) Oct 2017-Oct 2019

- Parks, Flood Protection & River Valley
- Roads and Municipal Infrastructure
- Bridges



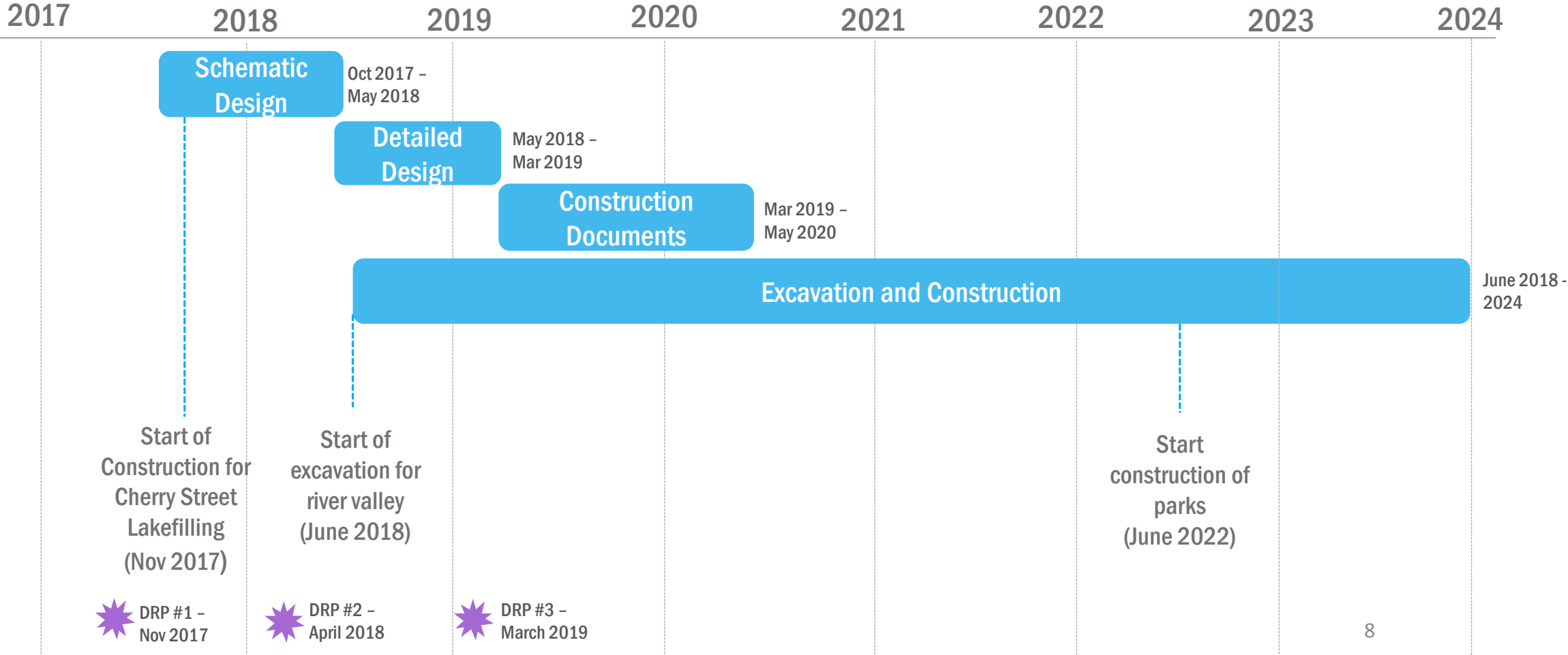
Schedule - Draft

Review Stage: Issues Identification

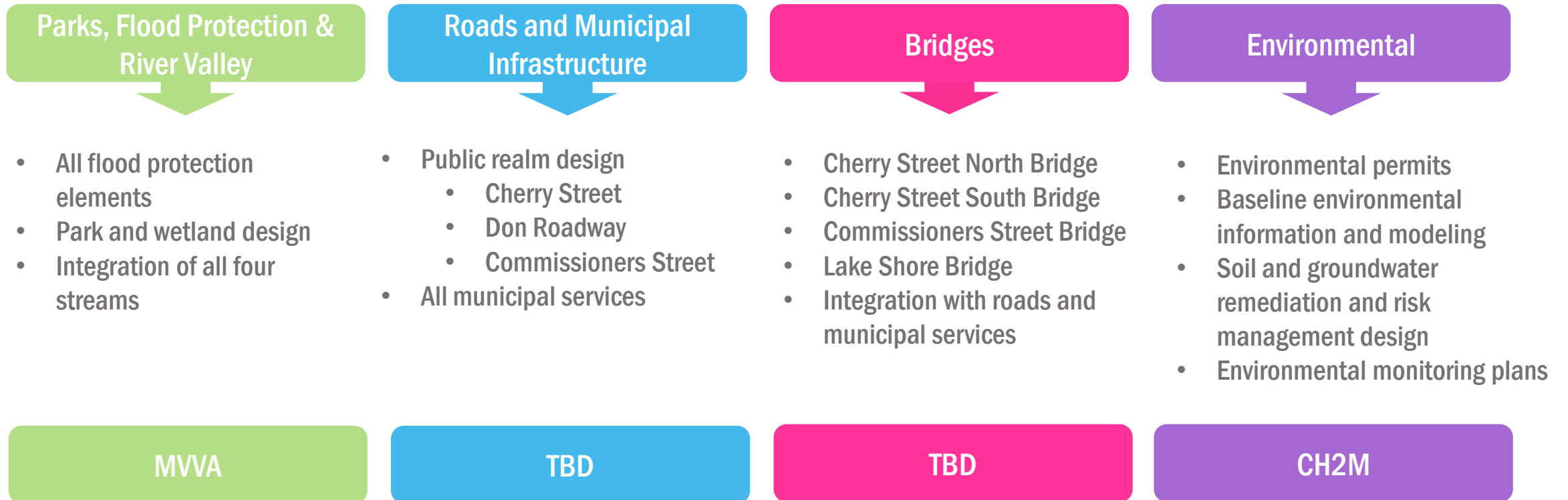
Proponent: Waterfront Toronto

Design Team: MVVA

Presenters: Michael Van Valkenburgh, Herb Sweeney



Team Structure



Illustrative Cross Section of River Valley



Policy Context – Central Waterfront Secondary Plan

C21_RENATURALIZING THE MOUTH OF THE DON RIVER - This project is part of the approved plan for the naturalization of the mouth of the Don River.

(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.

Topics for Panel Consideration

- Ecological Design:
 - Terrestrial habitat design and function
 - Aquatic habitat design and function
- Wetland habitat design and function
- Park programming
- Park design
- Flood protection features
 - Weirs
 - Channel
 - Edge condition (e.g. armour stone)
- Draft schedule

Port Lands Flood Protection & Enabling Infrastructure Design Review Submission

Phase 1

15 November 2017

Michael Van Valkenburgh Associates, Inc.
Landscape Architects



PORT LANDS ESTUARY

Given the opportunity to create a new naturalized mouth to the river that serves the environmental needs of the river and the lake and forms the centerpiece of a comprehensive vision for the Lower Don Lands, the MVVA Team approached the competition with two initial questions: "Where does the mouth of the Don River want to be and what form does it want to take?"

The MVVA Team proposal for the Lower Don Lands originates from these questions and from a very simple observation about the two types of park that one encounters in Toronto: the traditional square derived from the urban grid, and the irregularly formed parks generated from the natural curves of the Don River. Given these two distinct typologies, and the TWRC's objectives in undertaking the naturalization project, it seemed apparent that the new riverfront park and the new mouth of the Don should be taking their cues from river morphology, rather than the existing urban condition as represented by the Keating Channel.

Our proposal consolidates the program of naturalized mouth, floodway, and recreational park into a single and complex central parkland. Naturalizing the mouth of the river in this way has the broadest possible effect on the Lower Don Lands, creating miles of parkfront property and a sustainable "urban estuary" of great richness and complex mixing on multiple levels: spatial, ecological, functional, economic, and social. In shifting pre-established boundaries, we have opened up new possibilities and new relationships between city, river, and lake. The relocation of the mouth of the river reasserts the presence of the river in its city.

Our vision for the Lower Don Lands unites the TWRC's major urban initiatives - the naturalization project, multiple transportation and infrastructure initiatives, and the development of new residential neighbourhoods - into a single framework for a sustainable area.

MVVA TEAM

Team Leader
Michael Van Valkenburgh Associates, Inc.
Landscape Architects
New York, NY + Cambridge, MA

Urban Design
Greenberg Consultants, Inc.
Toronto, ON

Microecologist
Great Eastern Ecology
New York, NY

Consulting Landscape Architect
Philips Fareweg Smalenberg
Vancouver, BC

Climate Engineer
Transcoller
New York, NY

Architect
Behrsch Architects
Venice, CA

Bridge Engineer
RFB Engineering
Paris, FR

River Hydrologist
Limno-Tech, Inc.
Ann Arbor, MI

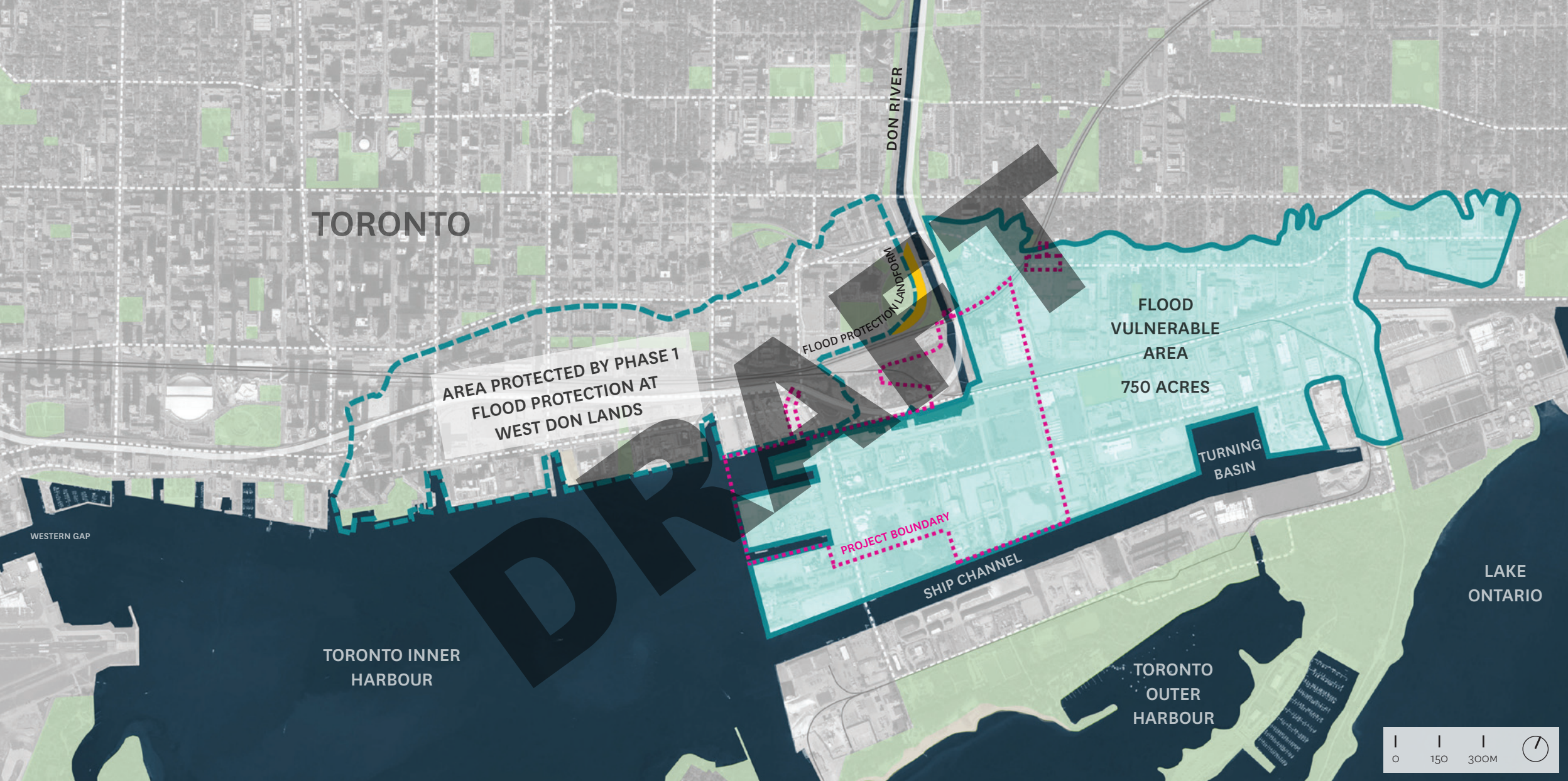
Traffic and Transportation Engineer
Arup
Toronto, ON

Regional Ecologist
Applied Ecological Services
Brookfield, WI

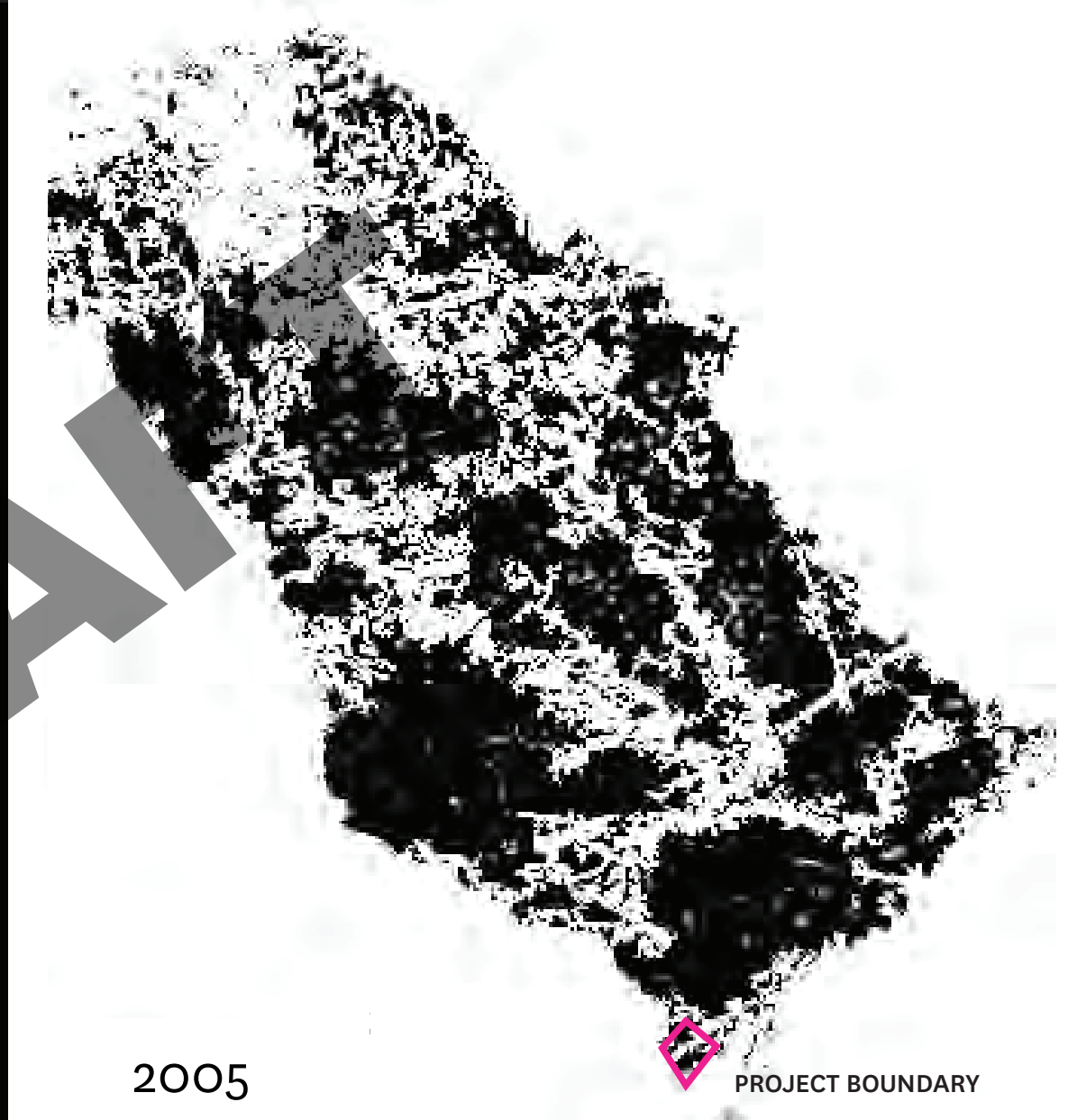
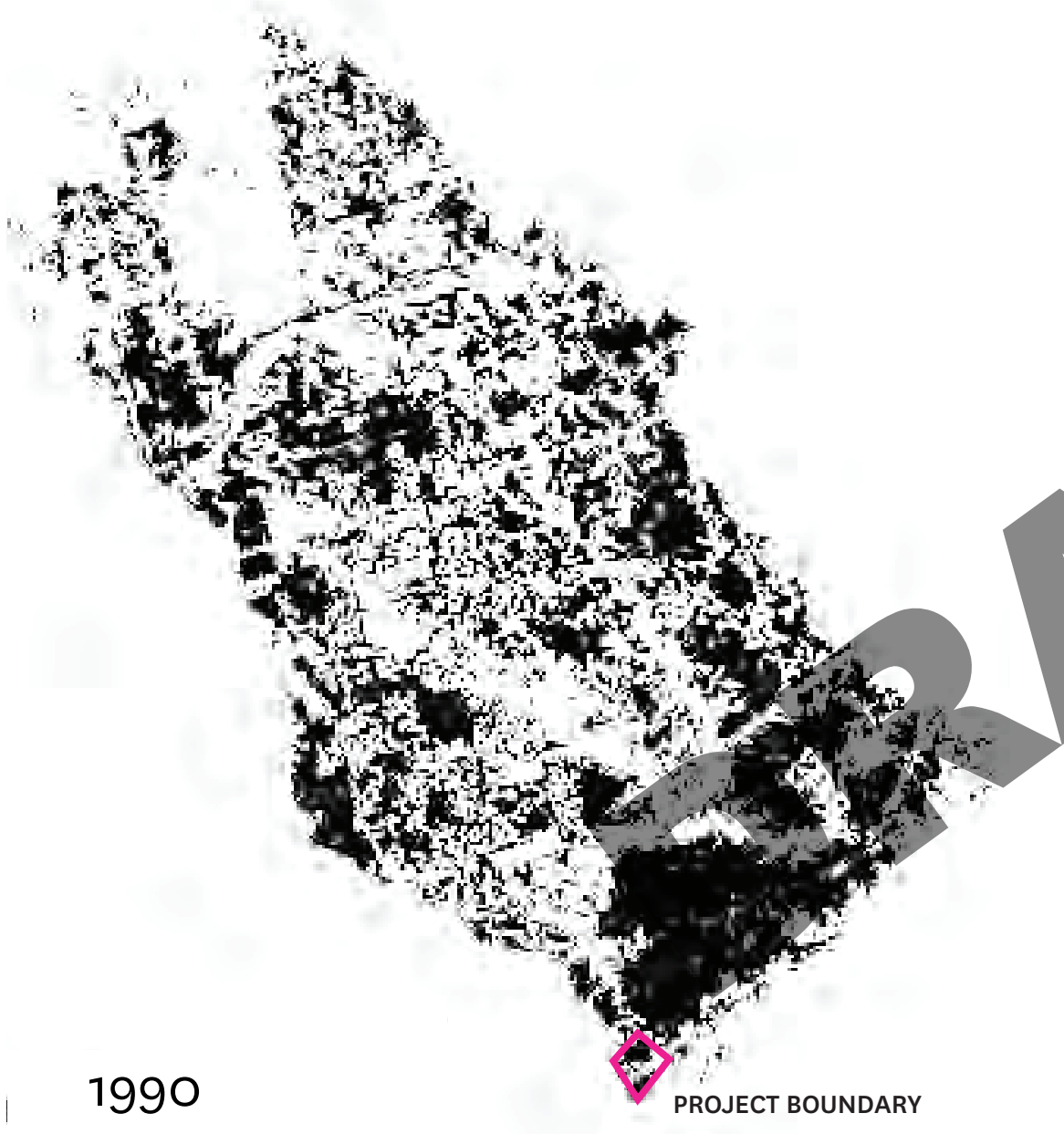
Civil Engineer
TSH
Whitby, ON

Comprehensive Master Plan
1:2000

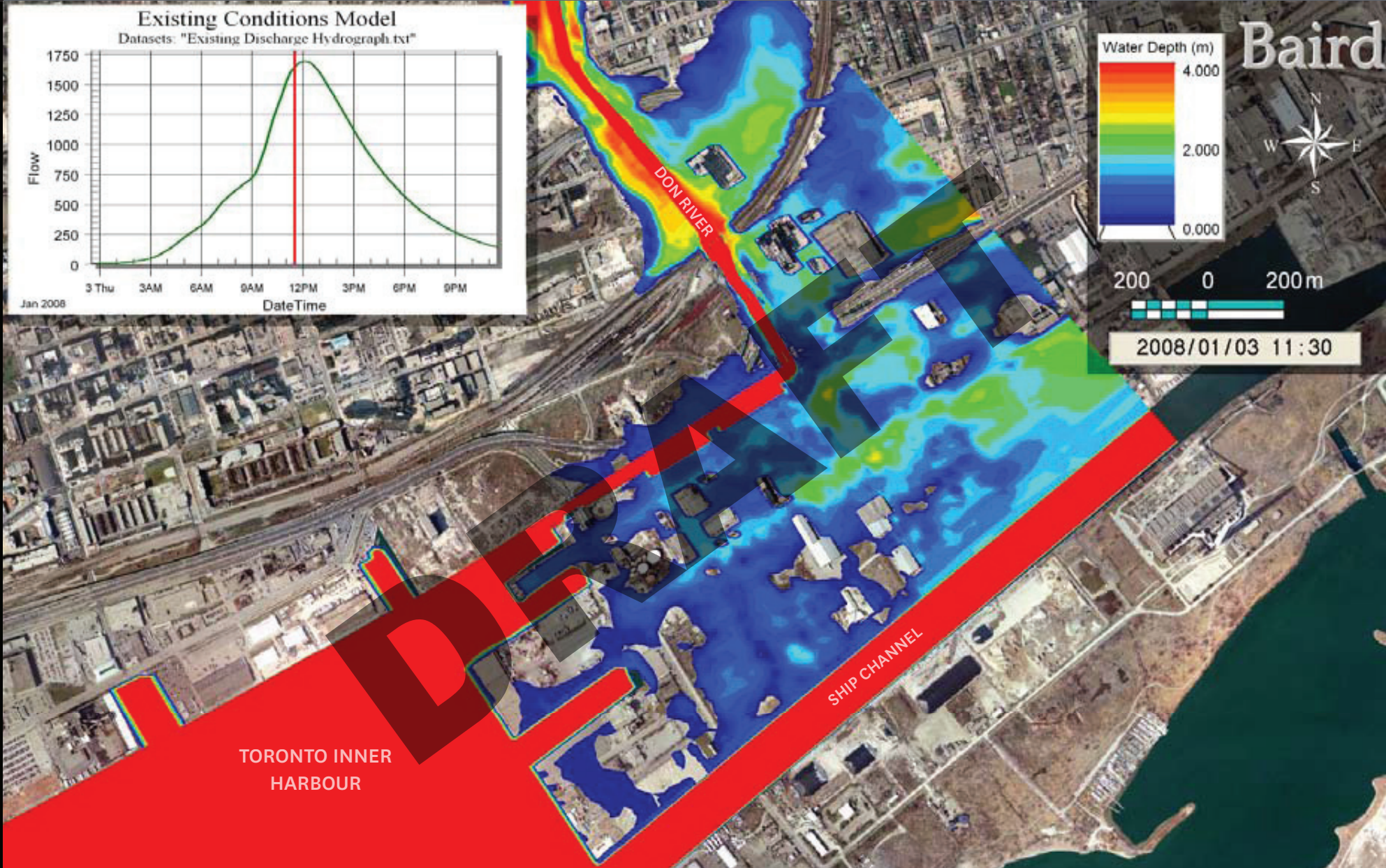
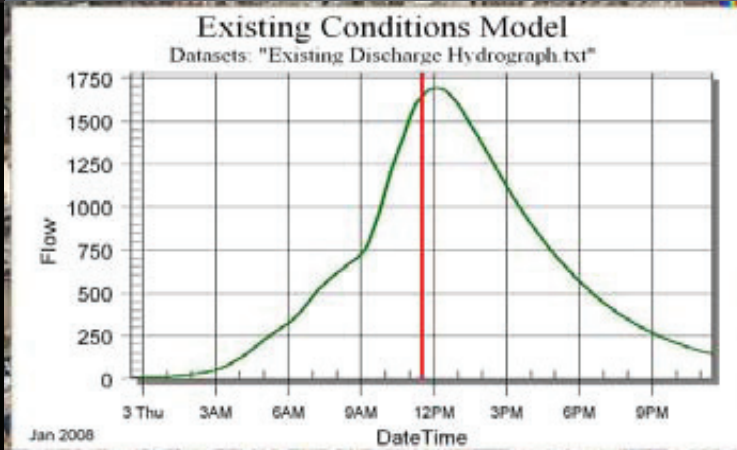




Extent of Flood Vulnerable Area Based on Existing Conditions



Impervious Surface in the Don River Watershed



Flood Model of Existing Conditions During Regulatory Flood Event



DON RIVER

KEATING CHANNEL

SHIP CHANNEL

OUTER HARBOUR

INNER HARBOUR

Lakeshore Boulevard
Gardiner Expressway

Lakeshore Boulevard
Don Roadway

Cherry Street

Respond to the Don River's existing conditions



DON RIVER

KEATING CHANNEL

SHIP CHANNEL

Lakeshore Boulevard
Gardiner Expressway

Lakeshore Boulevard
Don Roadway

Cherry Street

INNER HARBOUR

OUTER HARBOUR

Redirect the Don River



INNER HARBOUR

LAKE ONTARIO
PARK

OUTER HARBOUR

Allow the new river to structure the urban form



INNER HARBOUR

LAKE ONTARIO
PARK

OUTER HARBOUR

DON RIVER

KEATING CHANNEL

SHIP CHANNEL

Lakeshore Boulevard
Gardiner Expressway

Lakeshore Boulevard
Don Roadway

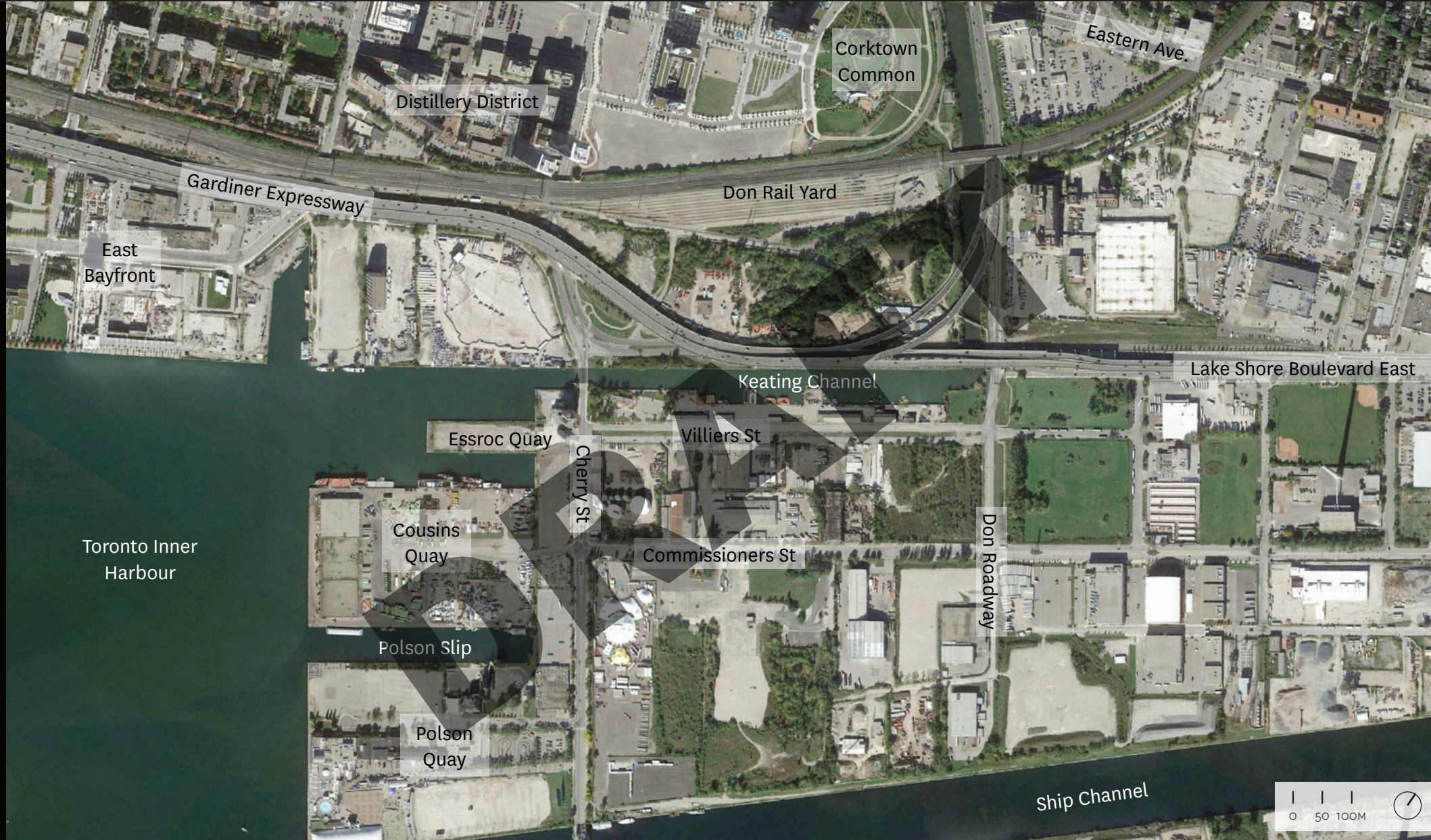
Cherry Street

2. Secondary Channel

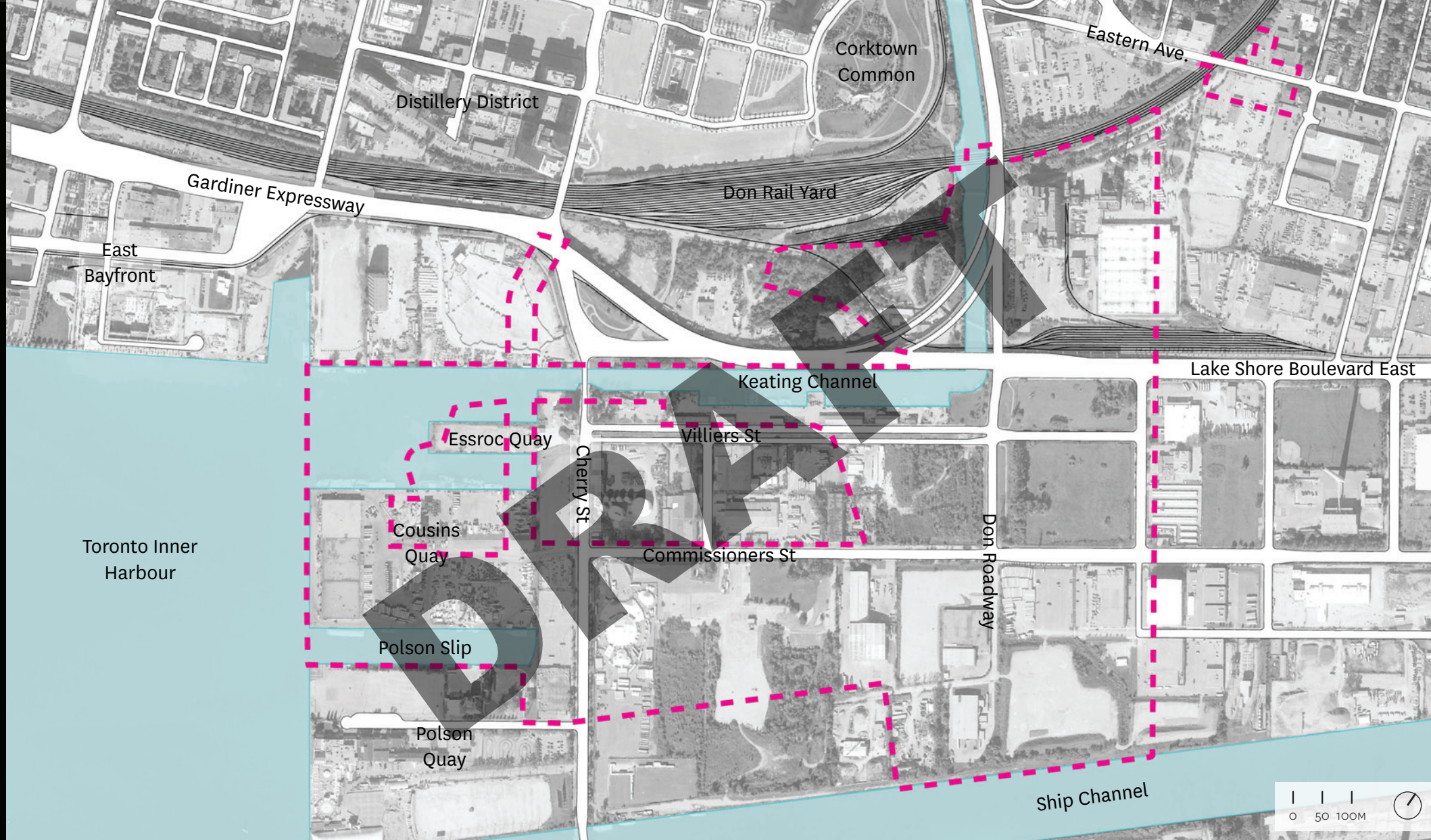
1. Primary Channel

3. Regulatory Flood Channel

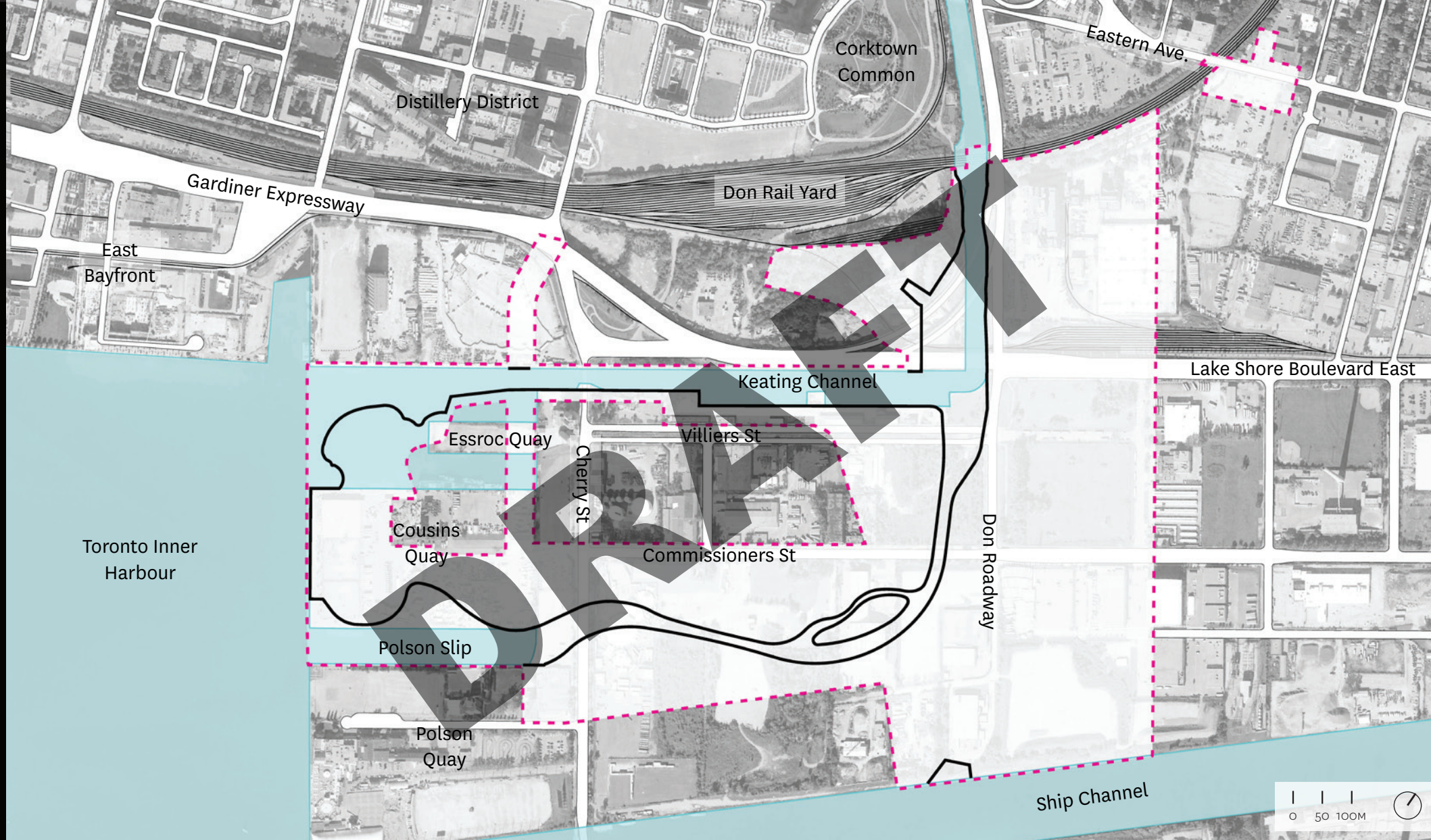
Achieve flood protection through a three-tier system



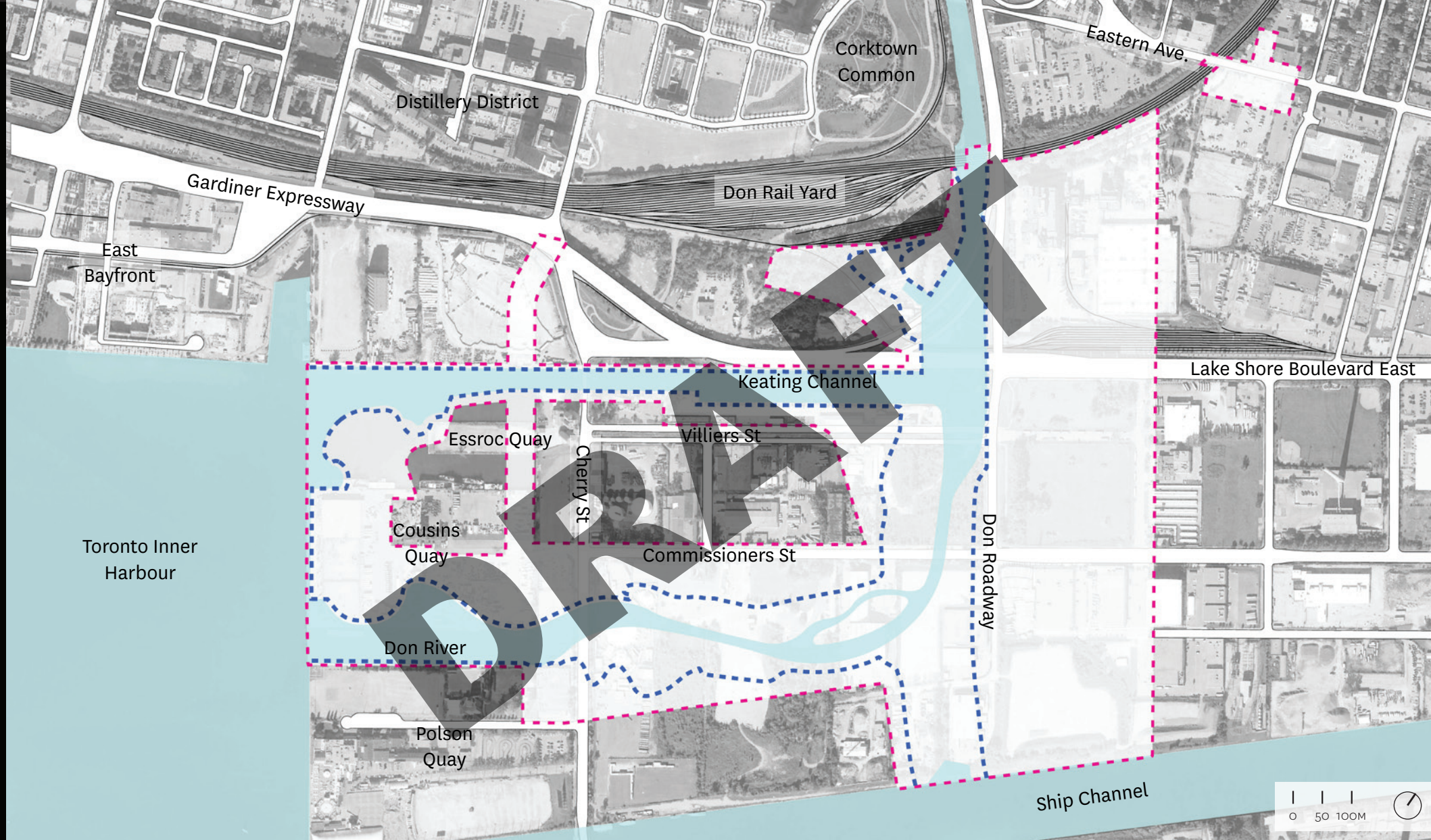
Project Area - Existing Conditions



Project Area - Flood Protection Extents



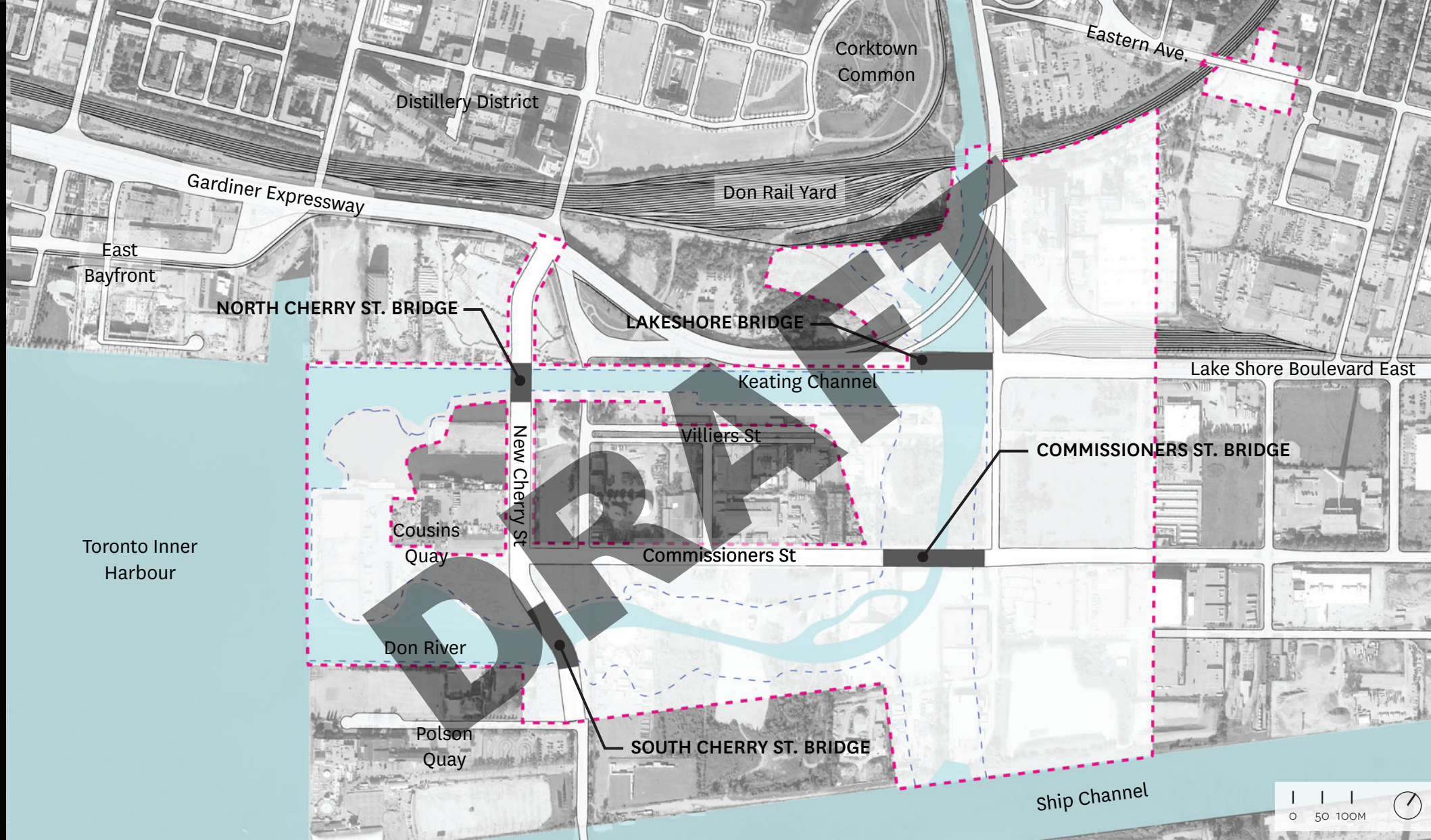
Project Area - Naturalized River Channel



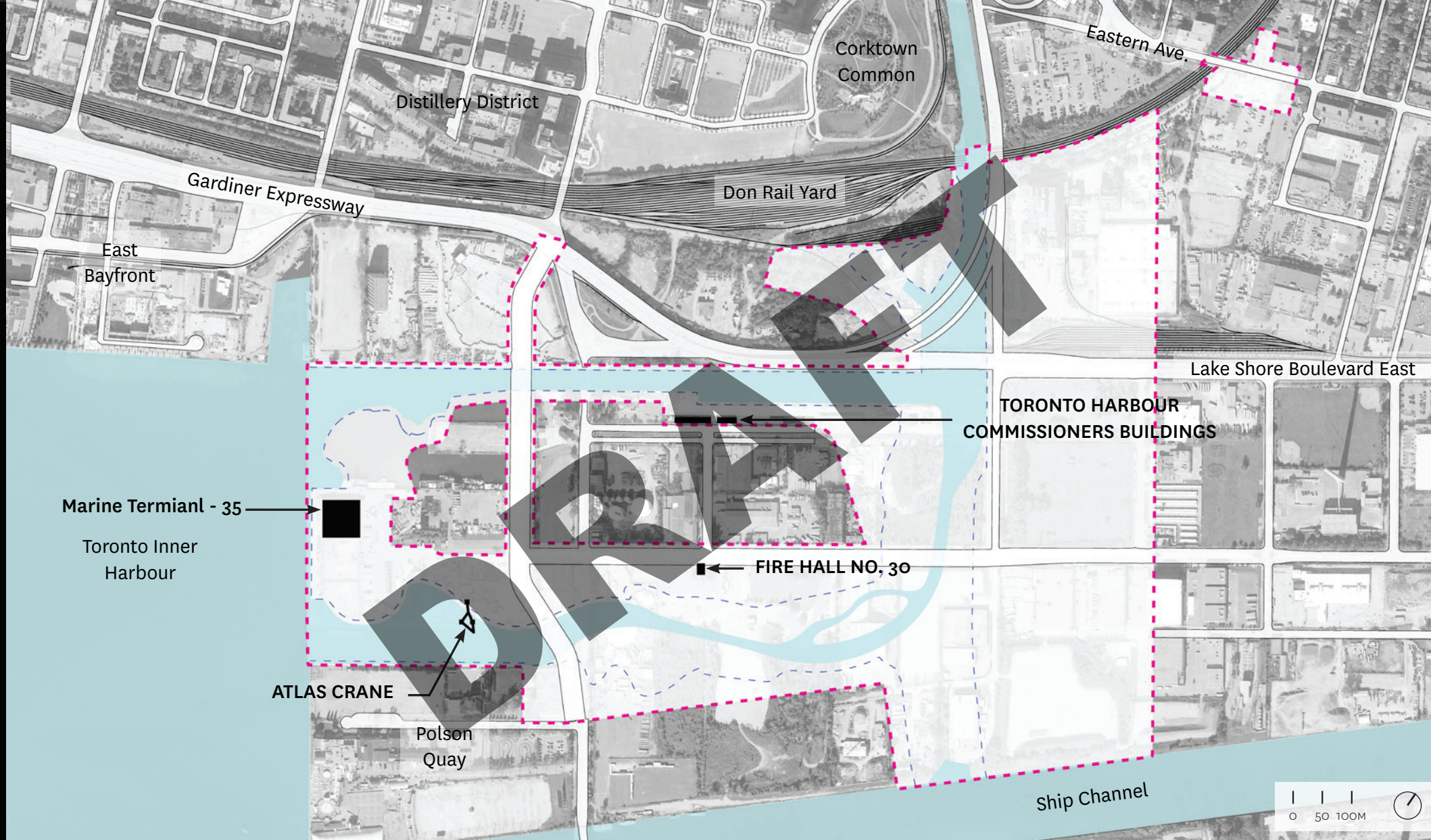
Project Area - Flood Plain Boundary



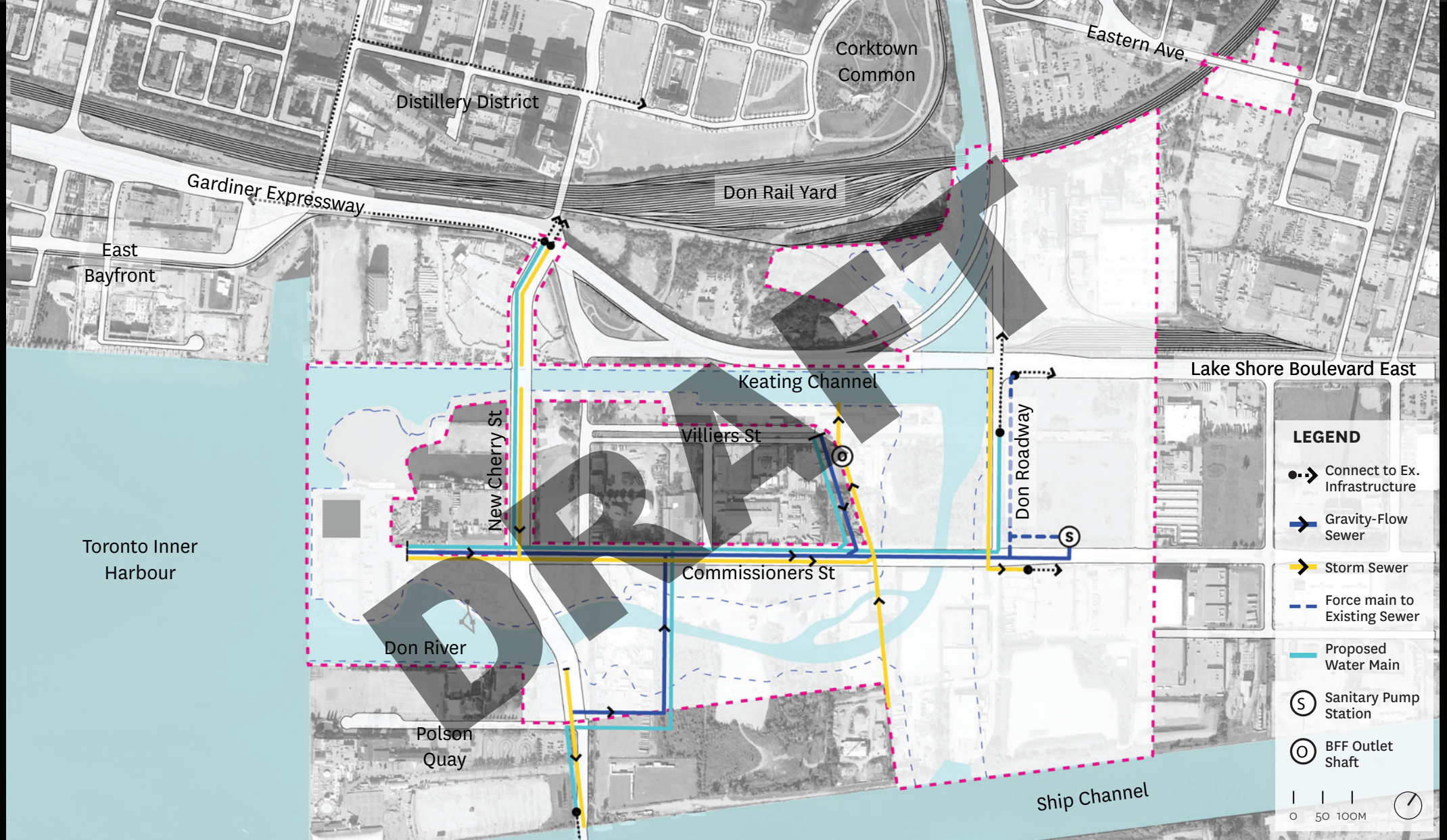
Project Area - Roads



Project Area - Bridges



Project Area - Heritage Buildings and Structures



Project Area - Municipal Infrastructure



Project Area - Full Vision Including Adjacent Neighborhoods



Project Area - Environmental Conditions



Project Area - Contamination Profile



Project Area - Key Views



View Towards the City



View Towards Toronto Inner Harbor

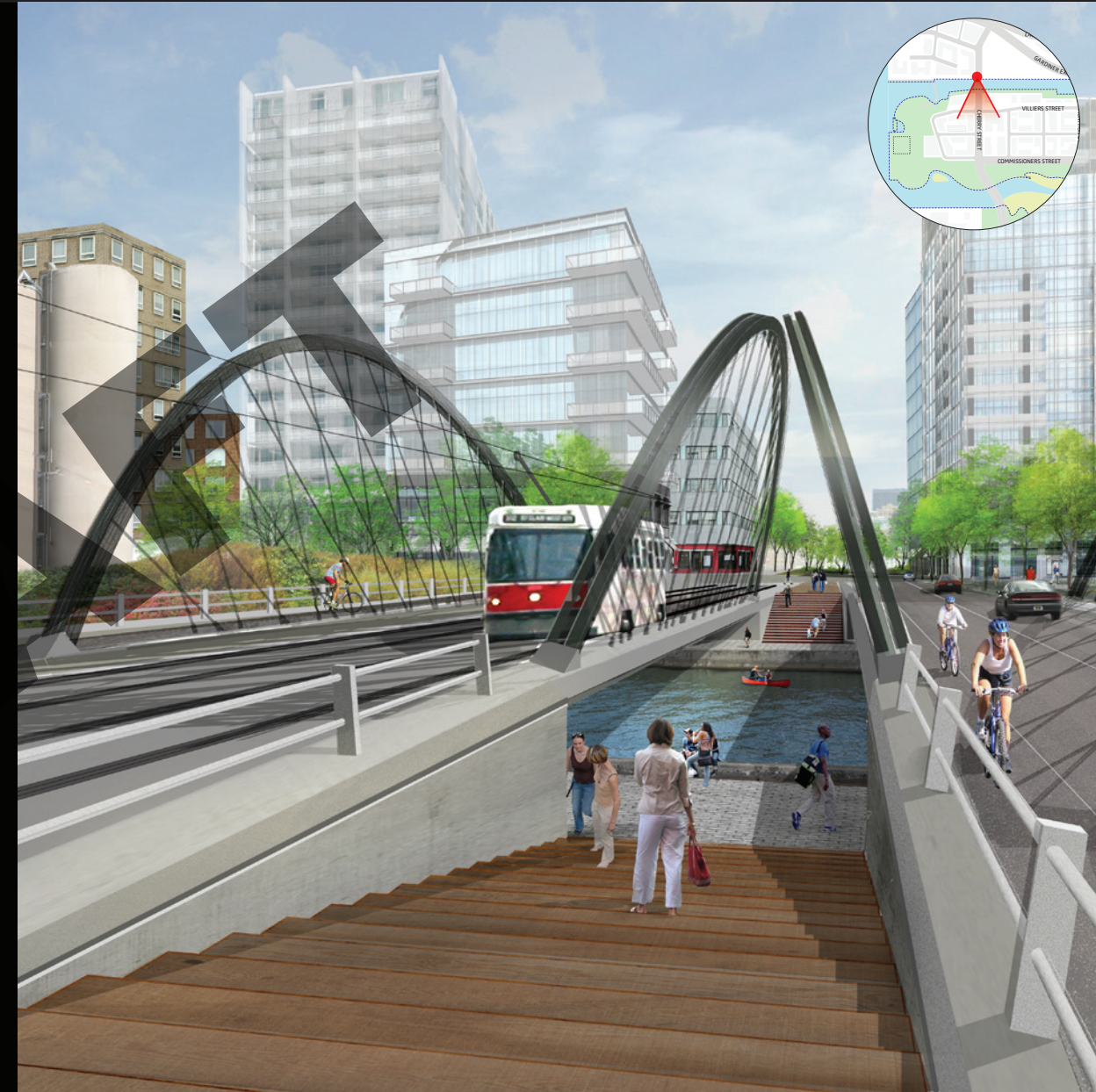


View Towards Harbour Islands

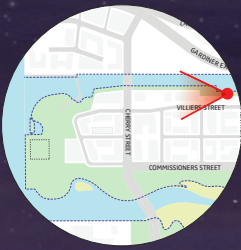


View Along the Keating Channel

Existing Views At Project Boundaries



Looking Southeast at North Cherry Street Bridge and Realigned/New Transportation



Looking West At Vibrant Public Realm Along Keating Channel



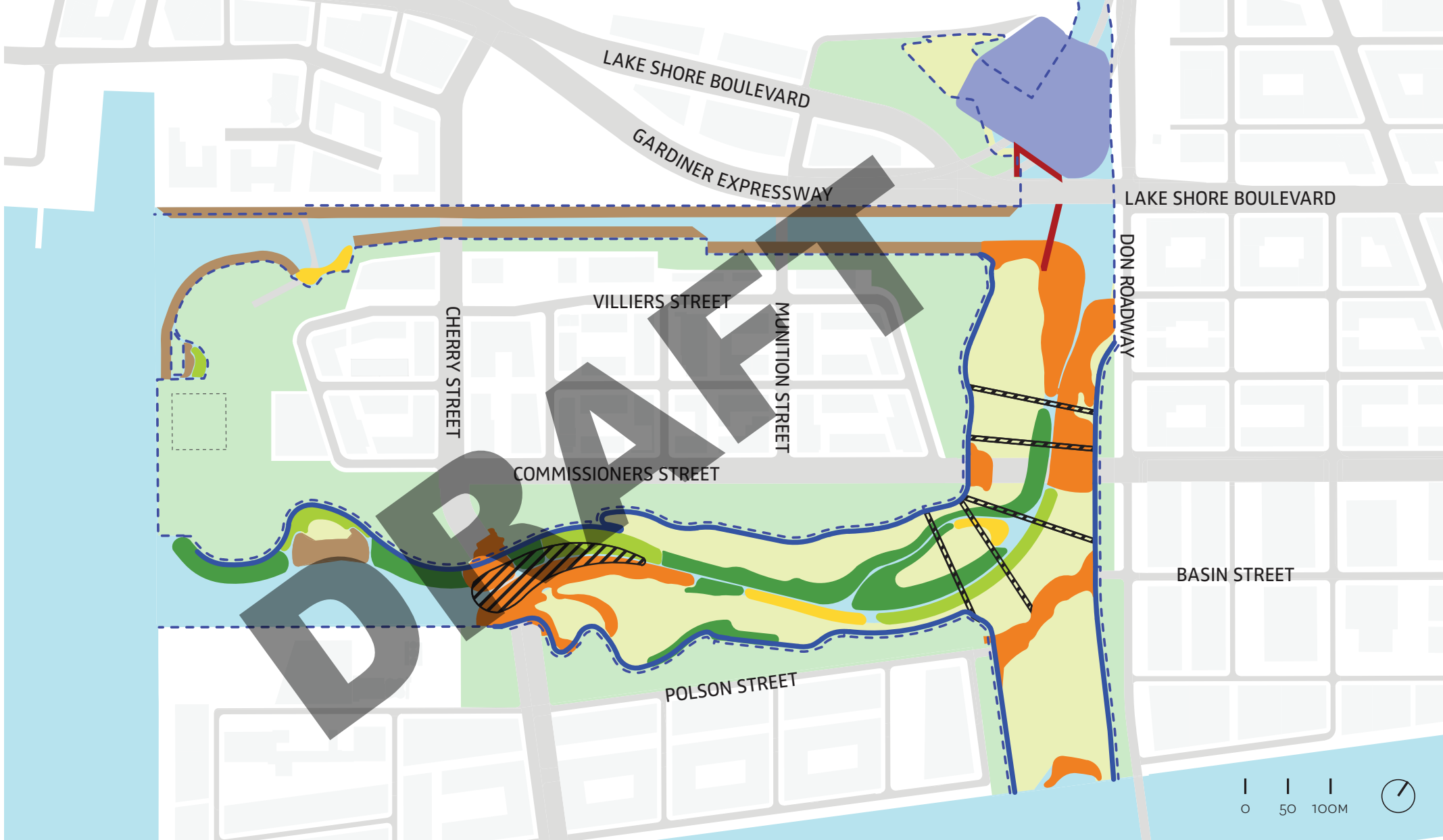
Looking West Across the Naturalized Mouth of the Don River



Looking West Across New Neighborhood Parks Along Commissioners Street

LEGEND

-  Bioengineered Bank
-  Buried Grade Control Structure
-  Exposed Armour
-  Gravel Bank
-  Large Wood Stabilization
-  Rocky Harbour Edge
-  Parkland
-  Floodplain
-  Sediment and Debris Management Area
-  Buried Armour/ Dock Wall
-  Weirs
-  Regulatory Flood Line



Proposed Flood Protection/Edge Conditions Diagram



Rocky Harbor Edge at Brooklyn Bridge Park, Brooklyn, NY



Gravel Bank at Humber Bay Shore, Toronto, ON



Large Wood Stabilization at John Day River, Oregon



Bioengineered Bank at Minnehaha Creek, St. Louis Park, MN



Inflatable Adjustable Weir



LEGEND

- Parkland
- Terrestrial Habitat
- Lake-Connected Wetland Habitat
- Levee System Wetland Habitat
- Aquatic Habitat
- Regulatory Flood Line

Aquatic Habitat
= 13 Hectares
(32 acres)

Wetland Habitat =
13 Hectares (32 acres)

Terrestrial Habitat =
4 Hectares (9.8 acres)



Proposed Ecological Habitat Diagram



Aquatic Habitat at the River Itchen, Hampshire, UK



Wetland at Brooklyn Bridge Park, Brooklyn, NY









Terrestrial Habitat at Don Valley, Toronto, ON















COMMUNITY

-   Children's Playground
-   Dog Off-leash Area
-   Wading Pool
-   Splash Pad

CIVIC + CULTURE

-   Event Space
-   Arts and Sculpture
-   Water Access








SPORTS + RECREATION

-   Baseball
-   Beach
-   Ice Rink
-   Picnic Area
-   Passive Lawn
-   Boardwalk
-   Kite Boarding
-   Marsh
-   Soccer Field









Existing Park Programming Analysis - 1 km Radius

COMMUNITY

-  Maze
-  Dog Off-leash Area
-  Splash Pad
-  Community Center
-  Allotment Gardens
-  Wading Pool
-  Children's Playground

CIVIC + CULTURE

-  Water Access
-  Fountain
-  Museum
-  Ferry
-  Arts and Sculpture
-  Event Space

SPORTS + RECREATION

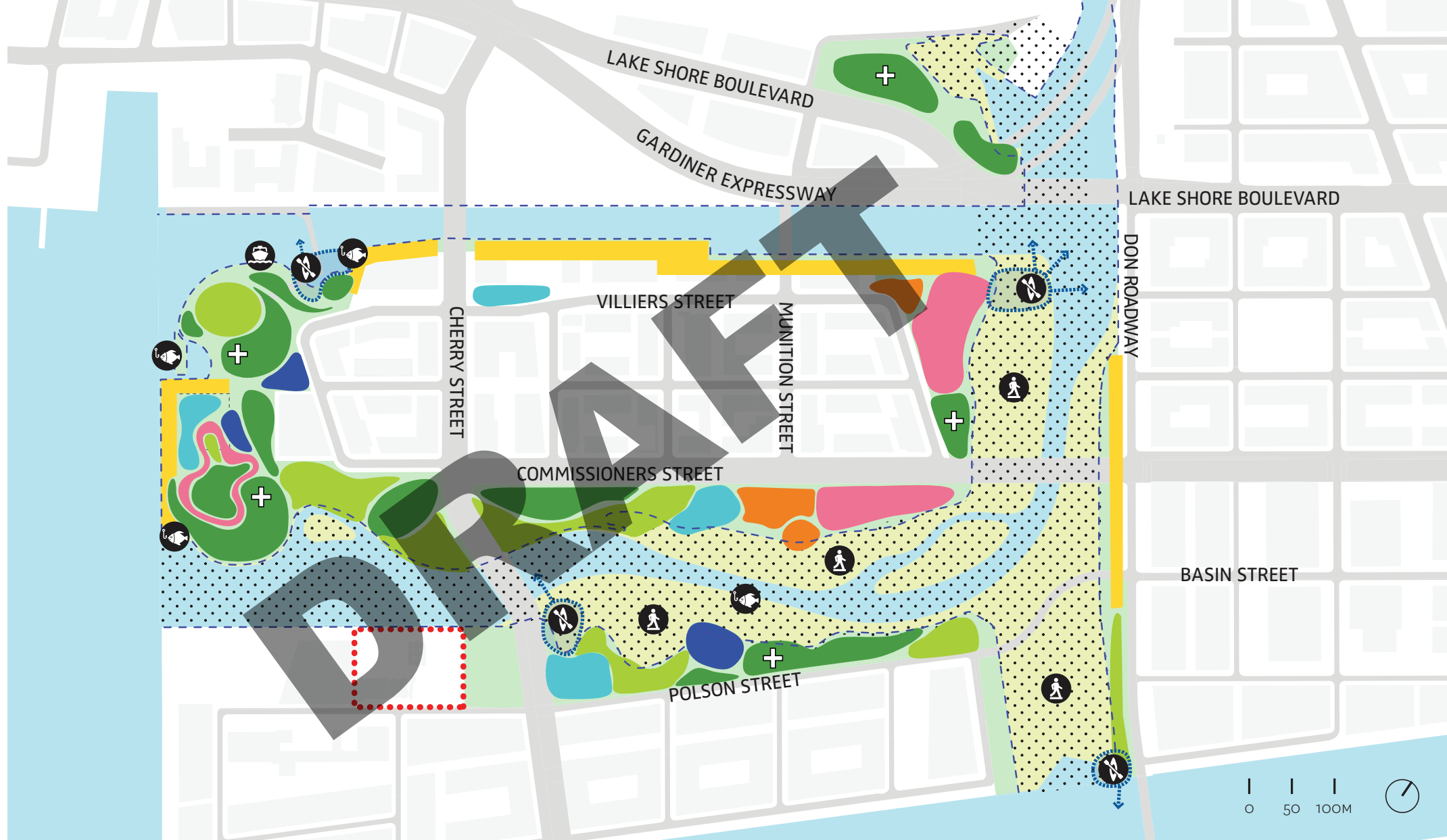
-  Tennis
-  Cricket Pitch
-  Beach
-  Basketball
-  Natural Habitat
-  Ice Rink
-  Hiking
-  Baseball
-  Fishing
-  Field House
-  Passive Lawn



Existing Park Programming Analysis - 2 km Radius

LEGEND

- River Valley + Wetlands
- Wooded Upland
- Passive Use Lawn
- Active Recreation
- Water Access
- Esplanade
- Playground
- Public Gardens
- Event Space
- Prospect / Overlook
- Other Parkland
- Floodplain
- Private Land
- Trail
- Small Boat Launch
- Fishing Area
- Regulatory Flood Line



Parks and Public Realm Programming Diagram



Wooded Upland at Corktown Common, Toronto, ON



Passive Use Lawn at Brooklyn Bridge Park, Brooklyn, NY



Event Lawn at Toronto Music Garden, Toronto, ON



Event Lawn at Brooklyn Bridge Park, Brooklyn, NY



Event Plaza at York Quay, Toronto, ON



Water Play at Sugar Beach, Toronto, ON



Prospect at Brooklyn Bridge Park, Brooklyn, NY



Esplanade at East Bayfront Water's Edge Promenade, Toronto, ON



Water Access at Brooklyn Bridge Park, Brooklyn, NY



Ice Ribbon at Maggie Daley Park, Chicago, IL



Climbing Wall at Maggie Daley Park, Chicago, IL



Tobogganing at Corktown Common, Toronto, ON



Soccer Field at Iowa Athletic Facilities Complex, Iowa City, IA



Pavilion at Brooklyn Bridge Park, Brooklyn, NY



Industrial Garden at Brooklyn Bridge Park, Brooklyn, NY



Picnic Peninsula at Brooklyn Bridge Park, Brooklyn, NY



Playground at Corktown Common, Toronto, ON



Swing Valley at Brooklyn Bridge Park, Brooklyn, NY



Nature Play at Maggie Daley Park, Chicago, IL



Playground at Maggie Daley Park, Chicago, IL

