City of Toronto | Toronto Transit Commission | Waterfront Toronto

Waterfront East LRT

Transit Project Assessment Process (TPAP)
Environmental Project Report [DRAFT]

February 2024

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Land acknowledgement

The City of Toronto acknowledges that we are on the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples and is now home to many diverse First Nations, Inuit and Métis peoples. The City also acknowledges that Toronto is covered by Treaty 13 signed with the Mississaugas of the Credit, and the Williams Treaties signed with multiple Mississaugas and Chippewa bands.

Acronyms and abbreviations

AA	Archaeological Assessment
AAQC	Ambient Air Quality Criteria
AHT	Aquatic Habitat Toronto
AODA	Accessibility for Ontarians with Disabilities Act
APM	Automated people mover
BIA	Business Improvement Area
BHR	Built heritage resource
CHER	Cultural Heritage Evaluation Report
CHL	Cultural heritage landscape
CHR	Cultural heritage resources
CHVI	Cultural heritage value or interest
CN Rail	Canadian National Railway
CP Rail	Canadian Pacific Railway
CSO	Combined sewer overflow
dB	Decibels
dBA	A-weighted decibels
DFO	Department of Fisheries and Oceans Canada
EA	Environmental assessment
EAB	Environmental Approvals Branch
EASR	Environmental Activity and Sector Registry
EBF Transit Class EA	East Bayfront Transit Class Environmental Assessment (2010)
EC	Environment and Climate Change Canada
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
EPR	Environmental project report
FHBRO	Federal Heritage Buildings Review Office
GHG	Greenhouse gas
GI	Green infrastructure
GTA	Greater Toronto Area
HCD	Heritage Conservation District
HEAT	Habitat Ecosystem Assessment Tool
HIA	Heritage Impact Assessment
HSU	Heavy single unit
IAAC	Impact Assessment Agency of Canada
IGLD 85	International Great Lakes Datum 1985
kph	Kilometres per hour
L_{eq}	Equivalent continuous sound level
LCBO	Liquor Control Board of Ontario
LDL EAMP Addendum	Lower Don Lands Environmental Assessment Master Plan Addendum and Environmental Study Report
LDL IMP	Lower Don Lands Infrastructure Master Plan and Keating Channel Precinct Environmental Study Report
LEED	Leadership in Energy and Environmental Design
LID	Low impact development
LRT	Light rail transit
LUAC	Landowner and User Advisory Committee
m	Metre

m²	Square metres
m³	Cubic metres
mASL	Metres above sea level
mBGS	Metres below ground surface
MCM	Ministry of Citizenship and Multiculturalism
MCU	Ministry of Colleges and Universities
MECP	Ministry of the Environment, Conservation and Parks
MEDJCT	Ministry of Economic Development, Job Creation and Trade
MGT	Martin Goodman Trail
mm	Millimetre
MMAH	Ministry of Municipal Affairs and Housing
MNRF	Ministry of Natural Resources and Forestry
MSG	Ministry of the Solicitor General
MSU	Medium single unit
MTCS	Ministry of Tourism, Culture, and Sport
MTO	Ministry of Transportation
NACTO	National Association of City Transportation Officials
NAPL	Non-aqueous phase liquid
NTU	Nephelometric turbidity units
NVCM	Noise and vibration control measures
ORNAMENT	Ontario Road Noise Analysis Method for Environment and Transportation
O. Reg.	Ontario Regulation
PAHs	Polycyclic aromatic hydrocarbons
PCAs	Potentially contaminating activities
PCBs	Polychlorinated biphenyls
PDE	Preliminary design and engineering
PHCs	Petroleum hydrocarbons
PLFP	Port Lands Flood Protection and Enabling Infrastructure Project
PTTW	Permit to Take Water
RESCU	Road Emergency Services Communication Unit
RCP	Representative Concentration Pathway
RfR	Request for review
RMS	Root Mean Square
SAC	Stakeholder Advisory Committee
SCS	Site Condition Standards
SOE	Support of excavation
SPA	Special policy area
Table 3 SCS	Table 3 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition
Table 9 SCS	Table 9: Generic Site Conditions Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition
TAC	Technical Advisory Committee
TC	Transport Canada
TCDSB	Toronto Catholic District School Board
TDSB	Toronto District School Board
TGS	Toronto Green Standards
TPAP	Transit project assessment process
TPH	Toronto Public Health
TPSS	Traction power substation
TPZ	Tree protection zone
TRCA	Toronto and Region Conservation Authority
TTC	Toronto Transit Commission
TTMP	Traffic and Transit Management Plan
USRC	Union Station Rail Corridor
VOCs	Volatile organic compounds
VPR	Voluntary project review
WELRT	Waterfront East Light Rail Transit

Glossary

Term	Definition
Automated people mover	A small-scale automated guideway transit system, serving small areas like airports, theme parks or downtown districts
Bathymetric survey	A water-based survey that maps the depths and shapes of underwater terrain to illustrate the land that lies below
Berm	An artificial ridge or embankment
Brownfield	Brownfield properties are vacant or underutilized places where past industrial or commercial activities may have left contamination (chemical pollution) behind
Caisson	A large watertight chamber, open at the bottom, from which the water is kept out by air pressure
Colonnade	A row of columns supporting a roof, an entablature, or arcade.
Combined sewer overflow	Acts as a relief valve preventing sewer overloads, which could lead to the flooding of properties, public spaces or even the sewage treatment plants
Delineated	Marked with drawn or painted lines
Demising wall	A partition wall that separates one space from another
Environmental assessment	A process that ensures that governments and public bodies consider potential environmental effects before an infrastructure project begins
Escarpment	A steep slope or long cliff that forms as a result of faulting or erosion and separates two relatively level areas having different elevations.
Extensometer	An instrument for measuring the deformation of a material under stress
Extirpated	A species that no longer exists in the wild in Canada, but occurring elsewhere
Glacio-fluvial	Erosion or deposition caused by flowing meltwater, from melting glaciers, ice sheets and ice caps
Glacio-lacustrine	Sediments deposited into water bodies that have come from glaciers
Ground improvement	The procedure typically defined as using mechanical means to improve poor ground conditions
Higher-order transit	Transit that operates in whole or in part in a dedicated right-of-way, including heavy rail, light rail and buses
Inclinometer	A device for measuring the angle of inclination of something, especially from the horizontal
Invertebrates	Animals lacking a backbone, such as arthropods, mollusks, etc.
Lay-by	A place at the side of a road where a vehicle can stop for a short time without interrupting other traffic
Loop	Serves as termini and turnback points for streetcar routes, used by single-ended streetcars to reverse direction
Overburden	The rock or soil overlying a mineral deposit
Overhead catenary system	A system consisting of tensioned wires that are somewhat flexible, that moves up and down as the train passes by, while supplying electricity to n electric transit vehicles
Piezometer	An instrument for measuring the pressure of a liquid or gas, or something related to pressure

Term	Definition
Pile target	Installation at the top of each pile in a site once the piles are installed and the first excavation cut has occurred
Portal	A streetcar portal is a transit infrastructure that allows streetcars to move from street-level to an underground tunnel
Rigid inclusion	High modulus/controlled stiffness grout columns typically installed through weak, highly compressible soils to reduce settlement and increase bearing capacity
Slip	A channel of water between piers or wharves
Strain gauge	A device used to measure strain on an object
WaveDecks	A series of wooden structures constructed on the waterfront of Toronto, as part of the revitalization of the central waterfront
WB-20	A tractor-semitrailer that is 22.7 metres in length

Acknowledgements

This Environmental Project Report was compiled by Arup from material provided by various consultants retained directly by the Proponents or their primary consultants, including:

Area A

Project delivery leads: **Toronto Transit Commission and City of Toronto**

Consultant team:

- **WSP Environment & Infrastructure (formerly Wood)** - project management, tracks, utilities, environmental, geo-environmental, stormwater, structures
- **HH Angus** - mechanical, electrical
- **Strasman Architects Inc.** - architecture
- **PMA** - landscape, urban planning
- **Groma** - topographic survey
- **Callon Dietz** - subsurface utility engineering
- **Vortex** - fire and life safety
- **Solace Consulting** - property impacts
- **AW Hooker** - cost estimation
- **TraffMobility** - pedestrian modelling

Area B

Project delivery leads: **Waterfront Toronto and City of Toronto**

Consultant team:

- **West8 + DTAH** - project management, landscape architecture, urban design
- **Arup** - TPAP, transportation planning and engineering, signals and transit signal priority
- **WSP** - roadways, utilities, civil structures, fish habitat
- **Hatch** - systems
- **Shoreplan** - marine engineering
- **LURA** - public consultation
- **Archaeological Services Inc** - archaeology, cultural heritage
- **Phyto Studio** - planting and green infrastructure
- **DPM** - electrical engineering, dry utility

This team is the latest in a long list of firms who have worked on this critical Project. This Environmental Project Report (EPR) builds upon and, where appropriate, utilizes text from the good work of previous consultants presented in the 2010 East Bayfront Transit Class Environmental Assessment. Previous consultants include:

2010 East Bayfront Transit Class Environmental Assessment

Proponents: **Toronto Transit Commission, Waterfront Toronto, City of Toronto**

Consultant Team:

- **MRC** (now WSP)
- **BA Group**
- **duToit Allsopp Hillier**
- **Ecoplans**

Executive summary

Waterfront Toronto, the Toronto Transit Commission (TTC), and the City of Toronto (collectively known as the Proponents) are seeking environmental approval for the portion of the Waterfront East Light Rail Transit (WELRT) between Union LRT Station and the western edge of Street A (the Project). The Project was previously approved as part of the 2010 East Bayfront Transit Class Environmental Assessment (EBF Transit Class EA). In March 2020, the EBF Transit Class EA lapsed, necessitating a review of the Project. Following discussion with the Ministry of the Environment, Conservation, and Parks (MECP), the Proponents elected to update the lapsed approvals by following the transit project assessment process (TPAP).

The purpose of this Environmental Project Report (EPR) is to document the TPAP by providing:

- A review of past planning activities related to the Project;
- A description of the transit project, including a description of the preferred design method;
- A summary of existing conditions;
- An analysis of the Project's benefits, impacts, and associated mitigation and monitoring measures;
- A record of engagement and feedback; and
- A list of future commitments.

Exhibit 0.1 Rendering of Yonge Slip © West 8 + DTAH

West portal
© WSP and SAI

Queens Quay-Ferry Docks LRT Station
© WSP and SAI

East portal
© WSP and SAI

Yonge Slip
© West 8 + DTAH

Exhibit 0.2 Updated Project components

Project description

The WELRT network includes the implementation of the eastern portion of the Council-approved Waterfront Transit Network, including light rail transit (LRT), bicycle, and pedestrian infrastructure between Union LRT Station and Leslie Barns with connections to East Harbour, the current Distillery Loop, and the future Villiers and Polson loops. Design work is currently underway for the segments of the network from Union LRT Station to Villiers Loop. As part of this TPAP, the Proponents are seeking environmental approval for the section of the network between Union LRT Station and Street A (a future street east of Parliament Street). **For the purpose of this TPAP, 'Project' as used throughout this document refers to the scope of the WELRT network located between Union Station and Street A.**

The current Project design is substantially the same as the designs presented in the previously-approved environmental assessment. While there have been some minor updates to the design as a result of design development, four key changes have been made since the approval of the previous environmental assessments (Exhibit 0.2):

1. The **reconfiguration of the west portal** to enable east-west streetcar operations;
2. The **expansion of Queens Quay-Ferry Docks LRT Station** to accommodate increased streetcar demand;
3. The **relocation of the east portal** from Freeland Street to between Bay Street and Yonge Street; and
4. **Partial infill at the Yonge Slip** to create new access points for the Westin Harbour Castle Hotel and Jack Layton Ferry Terminal to mitigate circulation conflicts resulting from the location of the east portal.

Additionally, there have been several updates to the planning context since the approval of the previous environmental assessments. These include:

- An **increase in the expected development density** in and around the Project footprint;
- The **announcement of the Ontario Line**, which will run north of and parallel to the Project alignment; and
- The **development of the Lower Yonge Precinct Plan**, which has implications for the Lower Yonge transportation network north of Queens Quay East.

Summary of planning process

Several studies have been prepared for the Project in support of the TPAP. The findings of these studies as they relate to the existing conditions in the study area and to the impacts of the Project are summarized below. A summary of consultation is also provided.

Existing conditions

The Project study area (defined in Section 1.7 of the EPR) is located on infilled land created in the late nineteenth and early twentieth centuries. Most of the Project study area consists of urban brownfield sites that have been recently redeveloped or are undergoing development to accommodate population growth. The Project study area presently lacks higher order transit connections along Queens Quay East (Exhibit 0.3). Please refer to Chapter 3 of the EPR for additional discussion of the existing conditions in the Project study area.

Existing attributes of the Project study area include:

- **Physical environment:** Highly urbanized environment adjacent to Lake Ontario with significant fill areas and shallow groundwater; impacts to subsurface soil and groundwater quality from historical land uses;
- **Aquatic environment:** The Yonge Slip, which is home to several aquatic species;
- **Terrestrial environment:** Sparse vegetation, beyond some urban street trees and grassed areas;
- **Archaeological resources**: Limited areas of archaeological potential;
- **Cultural heritage resources (CHRs)**: 14 CHRs in the Area A study area and six CHRs in the Area B study area;
- **Air quality:** Air quality representative of urban environment with limited air quality parameters approaching or exceeding air quality standards;
- **Noise and vibration:** Ambient noise levels representative of an urban environment;
- **Population and employment:** Increasing population and employment;
- **Land use:** Many new developments, including large-scale projects such as Quayside and Bayside;
- **Utilities and municipal infrastructure:** A range of existing utilities, including a major combined sewer overflow (CSO), a subsurface high voltage transmission line, and the planned Inner Harbour West Tunnel in the TPAP area;
- **Transit network:** A range of existing transit service (including connections to VIA rail service, GO transit service, and subway service at Union LRT Station; ferry service at the Jack Layton Ferry Terminal; and local buses throughout the Project study area) and planned infrastructure (including the Ontario Line). There are currently no higher order transit options serving the eastern waterfront;
- **Active network:** Relatively complete sidewalk network, bike facilities (including the Martin Goodman Trail), and several Toronto Bike Share locations; and
- **Road network:** Four-lane Queens Quay East, with planned changes to the surrounding network including the extension of Harbour Street, the removal of the Gardiner Expressway on-ramp off Bay Street, and the realignment of the Gardiner Expressway.

Exhibit 0.3 Queens Quay East existing conditions

Impacts, mitigation measures, and monitoring activities

Based on the existing conditions and a review of potential impacts and mitigations, the Project is expected to have a net positive impact on the Project study area. Potential impacts are mitigable, and appropriate measures have been identified to minimize negative effects during construction and operations phases. The Project's impacts, both negative and positive, are discussed below. Please refer to Chapters 4 and 7 of the EPR for additional discussion of the Project's impacts, as well as mitigation measures and monitoring activities.

Transportation

The Project will provide reliable higher-order transit to East Bayfront.

To date, transit along Queens Quay East is provided by buses operating in mixed traffic. The construction of the transitway will enable both buses and streetcars to operate in a dedicated right-of-way, improving reliability of transit to the eastern waterfront. These developments are expected to extend farther east and considerably improve transit operations in the Port Lands.

The Project will expand the capacity of critical streetcar infrastructure at Union LRT Station.

The Union Station – Queens Quay Link is a key link within the overall Waterfront Transit Network, serving both existing Waterfront West streetcars and the planned Waterfront East LRT. Expansion of the Union LRT Station will increase platform capacity, improve the customer experience, and provide operational flexibility, benefiting users across the entire waterfront transit network.

The Project will transform Queens Quay East and adjacent areas into an attractive boulevard with sustainable transport options for residents and visitors to the waterfront.

Queens Quay East will become a complete street featuring a transitway, a wide pedestrian promenade, and the Martin Goodman Trail. Queens Quay East will become a place that attracts active travel and sustainable mobility for all users of the Waterfront.

The Project will result in a reduction of vehicle lanes on Queens Quay East from four lanes to two lanes.

The lane reduction on Queens Quay East will be mitigated by the addition of new multimodal transportation facilities, which will increase the overall capacity of Queens Quay East. Additionally, the extension of Harbour Street (being delivered as part of the Lower Yonge Master Plan) will provide alternative routing options that may be used instead of Queens Quay East. New turning lanes and appropriate signal timing will further mitigate impacts to vehicles.

Access

The Project will provide higher-order transit service to jobs across the eastern Waterfront.

The Project will enable higher-order transit connectivity to both residents and jobs beyond the eastern limits of the Project footprint while also providing people residing in those areas with an option for connectivity into the financial district. The connection into Union LRT Station provides a critical link for commuters accessing current and future jobs across downtown Toronto.

Development and property

The Project will have some minor impacts on properties along the corridor.

Property requirements will affect some parcels adjacent to the Project footprint. Conversations with stakeholders are ongoing. Where possible, required properties will be secured through Planning Act approvals.

The Project's new east portal will require a reconfiguration of the access to the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal.

The proposed location of the new portal will block the existing vehicular access points to the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal. The Yonge Slip infill will provide new access points for both.

The Project will impact the subsurface and utilities in the area.

Cut and fill activities during construction will disturb soil and groundwater and may mobilize existing contaminants. Standard mitigation measures including proper material handling and disposal, dewatering, and excavation protection will be implemented and monitored.

The area in and around the Project footprint includes numerous utilities and services some of which will be disturbed during construction and require relocation. Coordination with utility owners will continue throughout detailed design to ensure appropriate actions with respect to protecting and maintaining services.

Environmental

The Project will require infill at Yonge Slip.

The required infill of the Yonge Slip will affect the physical environment and aquatic habitat. A fish habitat offsetting plan is anticipated to be required to address lost or degraded habitat. Overall, the project is expected to improve the quality of aquatic habitat in the Yonge Slip.

The Project will improve the natural environment by incorporating stormwater management infrastructure and new vegetation.

Stormwater infrastructure is proposed to improve and protect ecological and hydrological functions and processes. Additionally, the proposed design will result in a significant increase of trees in the study area.

The Project will have a positive or minimal impact on air quality and noise and vibration levels in the area.

Higher-order electrified transit is expected to have a positive effect on local air quality. Impacts from noise and vibration or dust and vehicle emissions are limited to construction related activities and will be mitigated through standard construction best practices. In certain operating scenarios, minimal noise increases may be observed.

The Project supports opportunities for sustainable development and mobility and positive impacts to climate.

Opportunities to further enhance the benefits of the Project include further reducing embodied and whole-life carbon emissions and supporting healthy urban ecosystems and the implementation of nature-based solutions.

Archaeology and cultural heritage

The Project may have a minor affect on some adjacent heritage properties.

Impacts to built heritage resources and cultural heritage landscapes are generally limited to minor property takings and indirect impacts from construction activities. This will be mitigated using a range of measures including avoidance, approvals, and vibration monitoring.

The area generally has low archaeological potential.

Potential archaeological resources are limited given the highly disturbed nature of the area and widespread fill activities. Archaeological monitoring is recommended for two portions of the Project footprint in order to identify and document remains of the circa 1899 Harbour Square Wharf shore east crib walls and associated piling, and intact remains of the 1870 Don Breakwater.

Consultation and engagement

Project engagement as part of the TPAP has already begun and will continue through detailed design and construction. To date, the Project engagement efforts have included:

- Public engagement meetings;
- Regular Technical Advisory Committee (TAC) meetings;
- Landowner and User Advisory Committee (LUAC) meetings;
- Stakeholder Advisory Committee (SAC) meetings;
- Meetings with key stakeholders, including Redpath Sugar Plant, the Westin Harbour Castle Hotel, the Residences of the World Trade Centre, and the Waterfront Business Improvement Area;
- Meetings with various regulatory agencies and utilities; and
- Consultation with Indigenous communities.

Additionally, a Project website has been maintained by the City of Toronto for several years (Exhibit 0.4).

A complete consultation record is provided in Chapter 6 of the EPR.

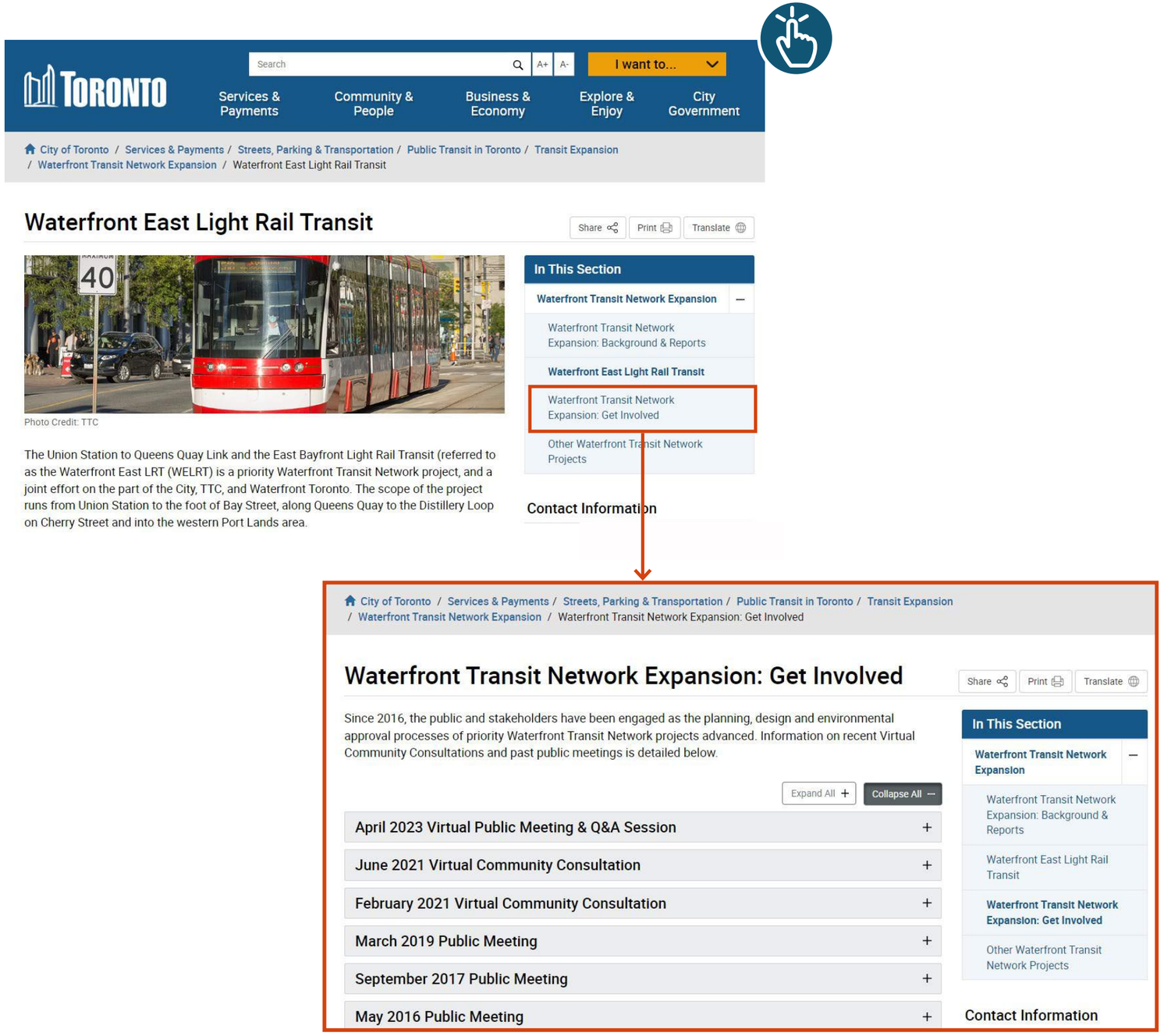

Exhibit 0.4 City of Toronto's Project website

Next steps

Before construction and operation of the Project, Waterfront Toronto, the City of Toronto, and TTC commit to completing several actions related to the natural environment, cultural environment, emissions, business operation and property impacts, utilities and municipal infrastructure, transportation, climate change and sustainability, consultation, implementation, and operations and management. These are detailed in Chapter 7 of the EPR.

The Project will be implemented in accordance with applicable municipal, provincial, and federal laws. Waterfront Toronto, the City of Toronto, and TTC will obtain necessary permits and approvals for the construction and operation of the Project.

In advance of commencing construction activities, and during construction, mitigation measures will be implemented. Monitoring activities will continue throughout construction and upon completion of construction, where required. An Environmental Management Plan (EMP) will be developed to outline environmental protection measures for features located in and around the Project footprint in order to mitigate negative impacts and define the monitoring measures required to ensure effectiveness. Additionally, coordination amongst Project interfaces will be critical to reduce the negative impacts of construction on surrounding residents and businesses.

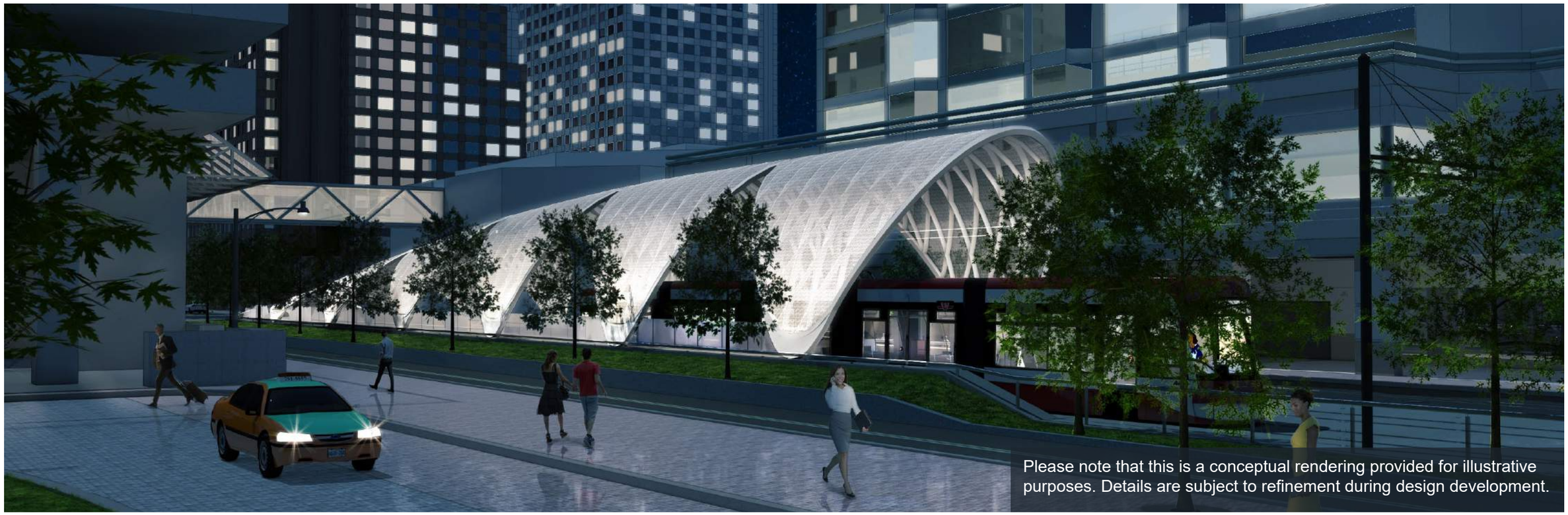

Exhibit 0.5 Rendering of east portal © WSP and SAI

1.0 Introduction

Image: Queens Quay West

1.0 Introduction

The Waterfront East Light Rail Transit (WELRT) network proposes transit, bike, and pedestrian infrastructure between Union LRT Station and Leslie Barns with connections to East Harbour, the current Distillery Loop, and the future Villiers and Polson loops. The WELRT will provide connectivity to existing and future developments by offering sustainable transportation modes, increasing right-of-way capacity, creating high-quality open spaces adjacent to Lake Ontario, and integrating the local area with the rest of the city. Environmental approval for the section of the WELRT network between Union LRT Station and Street A is being sought through this transit project assessment process (TPAP).

1.1 Purpose

The Waterfront East Light Rail Transit (WELRT) network has long been established and officially approved as an essential component of Toronto's eastern waterfront. The WELRT will facilitate a transformation of existing and future development areas into a destination that welcomes all, connecting residents, workers and visitors to countless landmark places throughout Toronto's waterfront. The WELRT network will provide improved transit options to the Central Waterfront, Lower Yonge, East Bayfront, Quayside, Keating Precinct, Lower Don Lands, and the Port Lands communities. When fully built, the network is forecasted to provide over 50,000 daily trips, supporting an estimated 100,000 residents and 50,000 jobs.

As ambitious plans to build dense housing and commercial spaces in the eastern waterfront advance, the transportation network must be built to support this new development. If the WELRT is not constructed to provide critical transportation infrastructure to the area, this will place ever increasing pressure on transit operating in mixed traffic. To bring these incredible places within reach of Toronto's residents, workers and visitors in an efficient and equitable manner, it is critical that they be connected with convenient, high-capacity transit service and served by a contiguous and inviting public realm. Per direction from City Council, further density increases are contemplated for the Port Lands and other developments on City-owned land. These changes are expected to further strengthen the case for higher-order transit.

Waterfront Toronto, the Toronto Transit Commission (TTC), and the City of Toronto (collectively known as the Proponents) are seeking environmental approval for the portion of the WELRT network between Union LRT Station and the western edge of Street A (the Project). The Project was previously approved as part of the 2010 East Bayfront Transit Class Environmental Assessment (EBF Transit Class EA). In March 2020, the EBF Transit Class EA lapsed, necessitating a review of the Project. Following discussion with the Ministry of the Environment, Conservation and Parks (MECP), the Proponents elected to update the lapsed approvals by following the transit project assessment process (TPAP).

The purpose of this Environmental Project Report (EPR) is to document the TPAP by providing a review of past planning activities related to the Project; a description of the transit project, including a description of the preferred design method; a summary of existing conditions; an analysis of the Project's benefits, impacts, and associated mitigation and monitoring measures; a record of engagement and feedback; and a list of future commitments.

While the Project's original objective—to provide sustainable transportation options and high-quality open spaces in Lower Yonge and East Bayfront—remains unchanged, some modifications have been made since the completion of the EBF Transit Class EA to respond to changes in the Project environment. The key updates include:

- The **reconfiguration of the west portal** to enable east-west streetcar operations;
- The **expansion of Queens Quay-Ferry Docks LRT Station** to accommodate increased streetcar demand;
- The **relocation of the east portal** from Freeland Street to between Bay Street and Yonge Street; and
- **Partial infill at the Yonge Slip** to create new access points for the Westin Harbour Castle Hotel and Jack Layton Ferry Terminal to mitigate circulation conflicts resulting from the location of the east portal.

1.2 Background

1.2.1 Waterfront East Light Rail Transit overview

The WELRT network includes the implementation of the eastern portion of the Council-approved Waterfront Transit Network, including light rail transit (LRT), bicycle, and pedestrian infrastructure between Union LRT Station and Leslie Barns with connections to East Harbour, the current Distillery Loop, and the future Villiers and Polson loops. Design work is currently underway for the segments of the network from Union LRT Station to Villiers Loop. As part of this TPAP, the Proponents are seeking environmental approval for the section of the network between Union LRT Station and Street A (a future street east of Parliament Street). **For the purpose of this TPAP, 'Project' as used throughout this document refers to the scope of the WELRT network located between Union Station and Street A.**

1.2.1.1 Project phases

The WELRT network will be delivered in several phases. The first phase includes the infrastructure between Union LRT Station and the Villiers Loop. The connections to the Polson Loop, East Harbour and Leslie Barns will be delivered as part of future phases.

1.2.1.2 Project segments and areas

The first phase of the WELRT network has been divided into three segments for the purposes of progressing design work:

- **Segment 1:** Bay Street from Union LRT Station to Queens Quay West, including the east and west streetcar portals
- **Segment 2:** Queens Quay West (from Bay Street to Yonge Street) and Queens Quay East (from Yonge Street to Cherry Street)
- **Segment 3:** Cherry Street (from current Distillery Loop to Commissioners Street) and Commissioners Street (from Cherry Street to Villiers Loop)

These segments have been used in public and stakeholder consultations to introduce and describe the WELRT network. However, they do not align exactly with the Project footprint considered through this TPAP, which includes areas undergoing permanent changes through the Project. The western half of Segment 2 falls within the Project footprint while the eastern half of Segment 2 falls outside of the Project footprint (the eastern portion of Segment 2 has existing environmental approvals, as shown in Exhibit 1.1). As such, two areas have been defined to facilitate discussion of the work completed within the Project footprint:

- **Area A:** Bay Street from Union LRT Station to Queens Quay West, including the east and west streetcar portals. Area A matches Segment 1 exactly.
- **Area B:** Queens Quay West (from Bay Street to Yonge Street) and Queens Quay East (from Yonge Street to the western edge of Street A). Area B is smaller than Segment 2, which extends east to Cherry Street.

Exhibit 1.2 illustrates the Project footprint, segments, and areas.

1.2.1.3 Transit service

The Phase 1 streetcar infrastructure will enable a future 519 streetcar service running between Union LRT Station and Villiers Loop. It will also enable the extension of the existing streetcar route 504A from the Distillery Loop to Villiers Loop. Once this extension is made, the Distillery Loop will not be maintained, but made a through service.

Segment	Segment 1	Segment 2		Segment 3
Area	**Area A**	**Area B**		
Distance	0.9 kilometres (km) — 0.2 km overlap with Area B	1.5 km — 0.2 km overlap with Area A	0.3 km	1.5 km
Grade	Sub-surface	Surface		Surface
Location	Bay Street from Union LRT Station to Queens Quay West, including the east and west streetcar portals	Queens Quay West (from Bay Street to Yonge Street) and Queens Quay East (from Yonge Street to Cherry Street)		Cherry Street (from current Distillery Loop to Commissioners Street) and Commissioners Street (from Cherry Street to Villiers Loop)
Project delivery leads	TTC and City of Toronto	Waterfront Toronto and City of Toronto		Waterfront Toronto and City of Toronto
Description	• Expansion of the Union LRT Station • Expansion of Queens Quay-Ferry Docks LRT Station • Construction of the east portal • Reconfiguration of the existing west portal to allow for an east-west streetcar connection	• Queens Quay West and Queens Quay East transportation infrastructure and public realm from the portals to future Street A	• Queens Quay East extension, including transportation infrastructure and public realm from future Street A to Cherry Street	• Streetcar infrastructure along Cherry Street north of Queens Quay East, including the works under the Union Station Rail Corridor (USRC) • Streetcar infrastructure along Cherry Street (from Distillery Loop to Commissioners Street) and Commissioners Street (from Cherry Street to Villiers Loop)
Environmental approvals	2010 East Bayfront Transit Class Environmental Assessment (lapsed) Waterfront East LRT Transit Project Assessment Process		2010 Lower Don Lands Infrastructure Master Plan and Keating Channel Precinct Environmental Study Report and 2014 Lower Don Lands Environmental Assessment Master Plan Addendum and Environmental Study Report	

Exhibit 1.1 WELRT segments and areas

Note: Grey cells describe scope that is outside of the Project footprint.

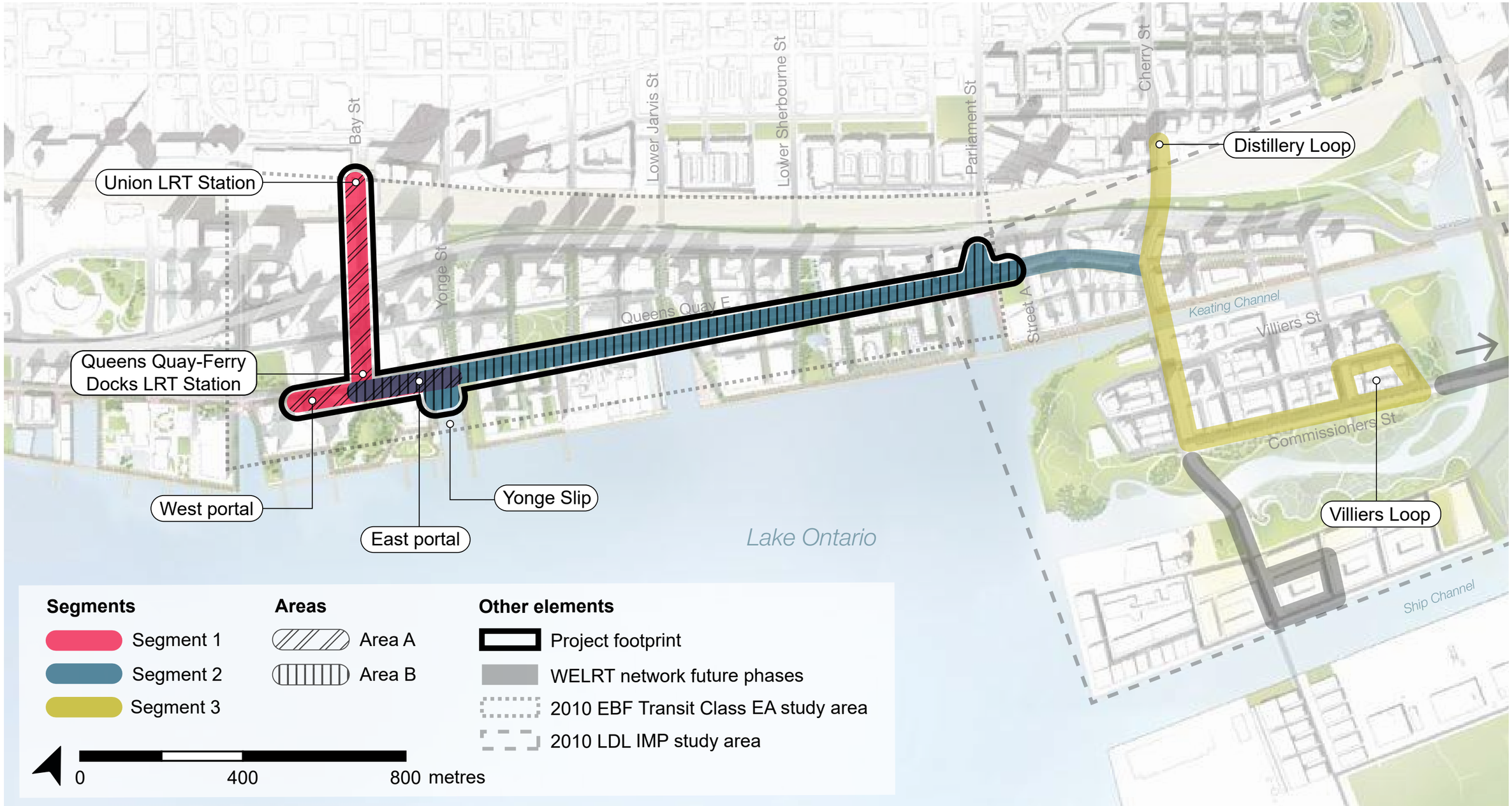

Exhibit 1.2 WELRT segments, areas, and Project footprint

1.2.2 Central Waterfront Master Plan & Queens Quay West

The WELRT network is one component of the overarching vision for Toronto's central waterfront. In 2006, Waterfront Toronto launched a Central Waterfront Master Plan process to transform the area into a vibrant and attractive destination. The ultimate plan proposed a series of public spaces along the waterfront and a cohesive and distinct waterfront identity. The plan included three major components, including:

- A continuous water's edge promenade;
- The transformation of Queens Quay into an iconic boulevard; and
- In-water elements such as finger piers and aquatic habitat.

The implementation of the vision of Toronto's central waterfront began in the west. Before implementation, the plans to revitalize Queens Quay West underwent an extensive environmental assessment (EA) process. In April 2010, the EA was approved by MECP.[1]

Detailed design and construction works were carried out between 2010 and 2015, with the revitalized Queens Quay West officially opening on June 19, 2015. The new waterfront boulevard features two lanes of east-west traffic on the north side of the street, dedicated LRT guideways in the middle of the street, and a wide pedestrian promenade adjacent to the redeveloped Martin Goodman Trail on the south side (Exhibit 1.3).

This Project extends the design vision for Queens Quay West east to Street A. While Toronto's waterfront was intended to be developed using a transit-first approach, delays in the Project have enabled the completion of several developments prior to transit implementation. With Queens Quay East as the spine of future waterfront development, the Project is critical to realign the area with the transit-first development approach and to provide residents, employees, and visitors with direct, sustainable connections to the wider city. Moreover, the extension of the Queens Quay East streetcar, pedestrian promenade, and the Martin Goodman Trail will promote a sense of cohesion and identity along the entirety of Queens Quay, creating a high-quality space worthy of the street's prominence.

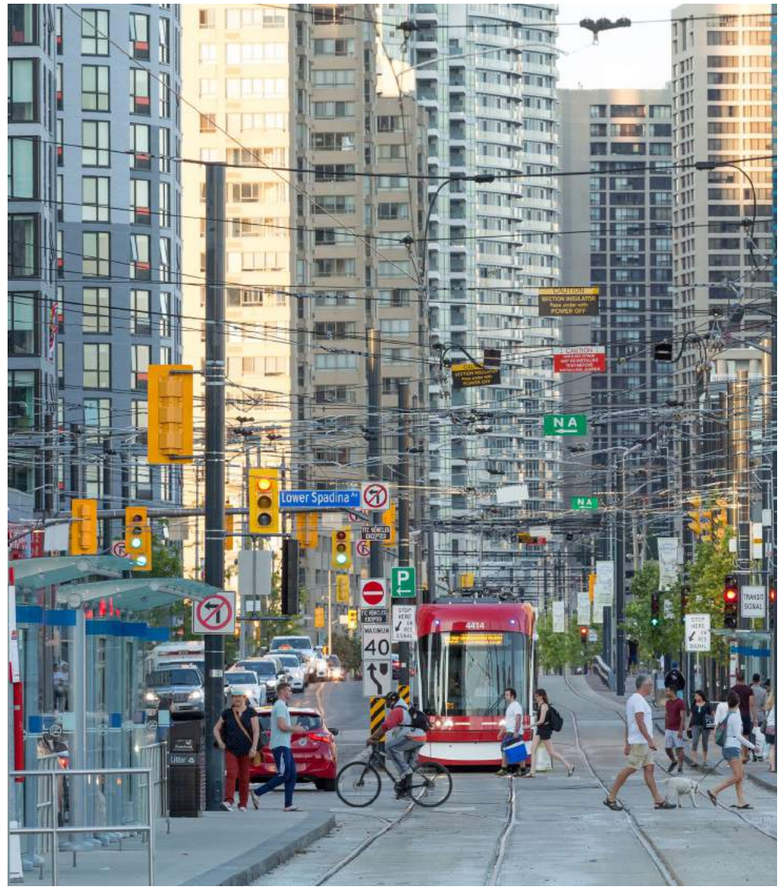

Exhibit 1.3 Queens Quay West © Harold Clark Photography

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Central Waterfront and Queens Quay West	●	●	●	●	●	●	●	●	●	●								
Central Waterfront Master Plan	○																	
Queens Quay Revitalization Municipal Class EA initiated		○																
Queens Quay Revitalization Municipal Class EA approved by Ontario Ministry of the Environment, Conservation and Parks					○													
Official opening of revitalized Queens Quay West										○								

Exhibit 1.4 Central Waterfront and Queens Quay West timeline

1.2.3 Previously approved studies

1.2.3.1 2010 East Bayfront Transit Class Environmental Assessment

The EBF Transit Class EA recommended a streetcar alignment between Union LRT Station and Parliament Street along Bay Street and Queens Quay East. The assessment noted the potential for a future connection to Cherry Street, the exact alignment of which was to be confirmed by the 2010 Lower Don Lands Infrastructure Master Plan and Keating Channel Precinct Environmental Study Report (LDL IMP). The recommended configuration included a portal east of Yonge Street, segregated streetcar guideways, and an enhanced Martin Goodman Trail.[2]

1.2.3.2 2010 Lower Don Lands Infrastructure Master Plan and Keating Channel Precinct Environmental Study Report

The 2010 LDL IMP outlined servicing requirements to support developments in the Lower Don Lands. The LDL IMP proposed the extension of Queens Quay East eastward past Cherry Street and the implementation of streetcar service from Parliament Street to the Distillery Loop in the north and the Polson Loop in the south.[3] Construction of this work has commenced through work on the realigned Cherry Street and Commissioners Street rights-of-way.

1.2.3.3 2010 Keating Channel Precinct Plan and 2017 Ontario Municipal Board decision

The Keating Channel Precinct Plan outlined specific planning parameters for the Keating Channel Precinct and provided the rationale for the rules that make up the Zoning By-law for the Precinct.[4] The General Zoning By-law with respect to the Keating Channel Precinct West was amended by By-law No. 1174-2010 in August 2010 to allow a mix of commercial and residential uses and parks and community related uses. By-law No. 1174-2010 was later amended by the Ontario Municipal Board in 2017 to adjust density allowances, tower locations, and building heights.[5]

1.2.3.4 2011 Preliminary Design for the East Bayfront Portal and Tunnel

The Preliminary Design for the East Bayfront Portal and Tunnel provided a cost analysis of a portal east of Yonge Street, as outlined in the 2010 EBF Transit Class EA. The study concluded that the environmental and cost impacts of relocating the combined sewer overflow (CSO) line beneath Yonge Street were high and recommended the evaluation of portal alternatives west of Yonge Street.[6]

1.2.3.5 2014 Lower Don Lands Environmental Assessment Master Plan Addendum and Environmental Study Report

The 2014 Lower Don Lands Environmental Assessment Master Plan Addendum and Environmental Study Report (LDL EAMP Addendum) updated the LDL IMP to align more closely with the Don Mouth Naturalization and Port Lands Flood Protection (PLFP) project and the Port Lands Acceleration Initiative. The updates included relocation of roads and transit on Villiers Island that will impact any extension of the WELRT east of Cherry Street.[7] Construction of this work has commenced through work on the realigned Cherry Street and Commissioners Street rights-of-way.

1.2.3.6 2018 Waterfront Transit Reset

The Waterfront Transit Reset incorporated several parallel planning efforts to establish a transit network plan for Toronto's waterfront area. The study considered projected growth in population and employment through 2041 and new transportation projects. As part of the Waterfront Transit Reset, City Council directed staff to find an appropriate and implementable solution for the Union LRT Station - Queens Quay Transit Link. Following a comparative evaluation of a streetcar and an automated people mover (APM), the streetcar was identified as the preferred option.[8]

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Previously approved studies					●	●	●	●	●	●	●	●	●					
EBF Transit Class EA					○													
LDL IMP					○													
Keating Channel Precinct Plan and By-law No. 1174-2010					○													
Preliminary Design for the East Bayfront Portal and Tunnel						○												
LDL EAMP Addendum									○									
Ontario Municipal Board amends By-law No. 1174-2010												○						
Waterfront Transit Reset													○					

Exhibit 1.5 Previously approved studies timeline

1.2.4 Key decision history

The WELRT network has evolved from the 2010 EBF Transit Class EA and the 2010 LDL IMP and its subsequent addendum, the 2014 LDL EAMP Addendum. The EBF Transit Class EA approved an LRT line from Union LRT Station and along Queens Quay East to an interim loop at Parliament Street. The EBF Transit Class EA included a streetcar portal on Queens Quay east of Yonge Street to transition the line from below grade under Bay Street to at grade along Queens Quay East. An extension to Cherry Street was approved as part of the LDL IMP. Despite approval, implementation of the LRT did not start.

In November 2015, City Council considered the report Waterfront Transit Reset, and directed City staff in consultation with the TTC and Waterfront Toronto to undertake a comprehensive review of waterfront transit initiatives and options.[9]

In July 2016, City Council considered the report Waterfront Transit Network Vision and directed City staff to initiate a second phase of the Waterfront Transit Reset for further development and costing of alignment concepts, detailed analysis of transit operations and ridership, identification of priority segments, as well as a business case and implementation strategy for delivering a coordinated waterfront transit solution.[10]

In January 2018, City Council considered the report Waterfront Transit Network Plan, and endorsed the overall Waterfront Transit Network Plan, including identification of priority segments. Council directed staff to complete a focused feasibility study of light rail and automated funicular technology options for connecting transit below grade between Union LRT Station and Queens Quay.[11]

In April 2019, City Council approved the streetcar option as the preferred technology for the Union Station to Queens Quay Link, and directed staff to undertake the preliminary design and engineering (PDE) phase of the extension of streetcar service to the East Bayfront.[12]

In February 2020, as part of the TTC's 2020-2029 Capital Budget, City Council approved the advancement of the PDE for Area A of the Project,[13] including:

- Expansion of Union LRT Station and Queens Quay-Ferry Docks LRT Station to accommodate additional streetcar staging area, platform space, and improved pedestrian connectivity below grade;
- Below-grade improvements for the west portal to accommodate an east-west streetcar connection; and
- A new east portal.

In December 2020, City Council directed staff to report back on the recommended schedule and funding requirements for the Union Station to Queens Quay Link and the WELRT, including phasing options and an updated business case as part of an update on Waterfront Transit Network priorities prior to the 2022 Budget process.[14]

In June 2022, City Council provided direction to undertake a constructability review of the Union Station to Queens Quay Link and the WELRT to assess constructability and coordination risks with nearby major infrastructure projects. City Council also provided direction to determine potential undertakings to expedite the budgetary and design processes for the WELRT and to engage with officials of the Provincial and Federal Governments to identify and secure funding to advance the WELRT as expeditiously as possible. Finally, City Council directed staff to report back to City Council in concert with reports on the Next Phase of Waterfront Revitalization anticipated in second quarter of 2023 with the recommended alignment and scope of the project based on ongoing work and the constructability review; an updated cost estimate; and a funding, financing and implementation strategy, including a phasing plan.[15]

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Key decision history										●	●	●	●	●	●	●	●	
Council direction to undertake review of waterfront transit initiatives										○								
Council direction to initiate Phase 2 of Waterfront Transit Reset											○							
Council endorses Waterfront Transit Network Plan													○					
Council direction to study technology options for Union Station to Queens Quay Link													○					
Council approves streetcar as preferred technology														○				
Council approves advancement of PDE for Area A															○			
Council direction to report back on schedule and funding prior to 2022 Budget process															○			
Council direction to undertake constructability review; identify options to expedite budgetary and design processes; and report back with findings and funding, financing, and implementation plan																	○	

Exhibit 1.6 Key decision history timeline

1.2.5 Pre-planning activities

Several studies have been completed in recent years to advance the planning and design of the Project. The results of these studies are integrated into Chapter 2 (Project description) and Chapter 4 (Impacts, mitigation measures, and monitoring activities).

1.2.5.1 2020 Portal Selection Study

The Portal Selection Study analyzed the feasibility of and presented a high-level cost estimate for a streetcar portal located west of Yonge Street. While the 2010 EBF Transit Class EA evaluated five portal options for the streetcar guideway and identified the preferred portal location as east of Yonge Street, updated design and cost estimates determined that the costs to construct this portal were greater than originally estimated due to major civil infrastructure beneath Yonge Street. The study concluded that a portal west of Yonge Street was preferred and presented an updated design.

1.2.5.2 2020 Design Refresh

The 2020 Design Refresh included the concept design of roadway and streetcar track elements on Queens Quay East from Bay Street to Street A. The concept design was generally consistent with the approved 2010 EBF Transit Class EA but included some modifications in response to changes in context since 2010.

1.2.5.3 2020 Transit Phasing Study

The Transit Phasing Study evaluated options for the phased funding and implementation of the Waterfront Transit Network. The study identified the transit infrastructure that should be prioritized for Phase 1 for two segments: Area A - Union LRT Station and Queens Quay-Ferry Docks LRT Station and Area B - Waterfront East Surface Network. Much of the analysis from the Transit Phasing Study is included in the WELRT's Preliminary Design Business Case.

1.2.5.4 Area A Value Engineering

The Area A Value Engineering effort sought to identify ways to de-scope the design for Area A in order to reduce the overall costs of Phase 1 of the WELRT. The value engineering identified a preferred version of the Phase 1 design for Area A that includes a de-scoped Queens Quay-Ferry Docks LRT Station. While the original design called for an expanded Queens Quay-Ferry Docks LRT Station with four streetcar platforms, a traction power substation (TPSS), and several new accesses, the value engineered design only retains one access enhancement at the southwest corner of the station.

While the value engineered design was used for the purposes of cost estimation for the delivery of Phase 1 of the WELRT, the full scope of Queens Quay-Ferry Docks LRT Station is expected to be implemented in the long term. As such, this TPAP is seeking approvals for the original, full-scope design. Interim conditions expected to be constructed are discussed in Chapter 2.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Pre-planning activities															▬	▬	▬	▬
Portal Selection Study															○			
Design Refresh															○			
Transit Phasing Study															○			
Area A Value Engineering																		○

Exhibit 1.7 Pre-planning activities timeline

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Central Waterfront and Queens Quay West																		
Central Waterfront Master Plan																		
Queens Quay Revitalization Municipal Class EA initiated																		
Queens Quay Revitalization Municipal Class EA approved by MECP																		
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LDL EAMP Addendum																		
Ontario Municipal Board amends By-law No. 1174-2010																		
Waterfront Transit Reset																		
Key decision history																		
Council direction to undertake review of waterfront transit initiatives																		
Council direction to initiate Phase 2 of Waterfront Transit Reset																		
Council endorses Waterfront Transit Network Plan																		
Council direction to study technology options for Union LRT Station - Queens Quay Link																		
Council approves streetcar as preferred technology																		
Council approves advancement of PDE for Area A																		
Council direction to report back on schedule and funding prior to 2022 Budget process																		
Council direction to undertake constructability review; identify options to expedite budgetary and design processes; and report back with findings and funding, financing, and implementation plan																		
Pre-planning activities																		
Portal Selection Study																		
Design Refresh																		
Transit Phasing Study																		
Area A Value Engineering																		

Exhibit 1.8 Waterfront planning timeline

1.3 Detailed planning context

The Project exists within a rich planning context. Plans and policies with implications for the Project have been published by a variety of jurisdictions and for a range of geographic scales (Exhibit 1.9), including:

- The Province of Ontario;
- The Greater Toronto and Hamilton Area;
- The Metrolinx Service Area;
- The TTC Service Area;
- The City of Toronto;
- Toronto's Waterfront Area; and
- Precincts within Toronto's Waterfront Area.

Exhibit 1.10 provides an overview of the plans, policies, and projects which impact the Project, categorized into five groups:

- **Supportive policies**: Policies and plans which enable the implementation of the Project through support of transit, active transportation, and densification;
- **Neighbourhood and precinct plans**: Plans and by-laws which define specific development guidelines and servicing requirements for neighbourhoods and precincts;
- **Previously approved studies**: Previous Project studies that have received Council approval;
- **Pre-planning activities**: Recent studies confirming the Project's rationale and updating its design; and
- **Related projects**: Previous or concurrent projects that will impact the Project.

Additional details about the relevant plans, policies, and projects are provided in Appendix A.

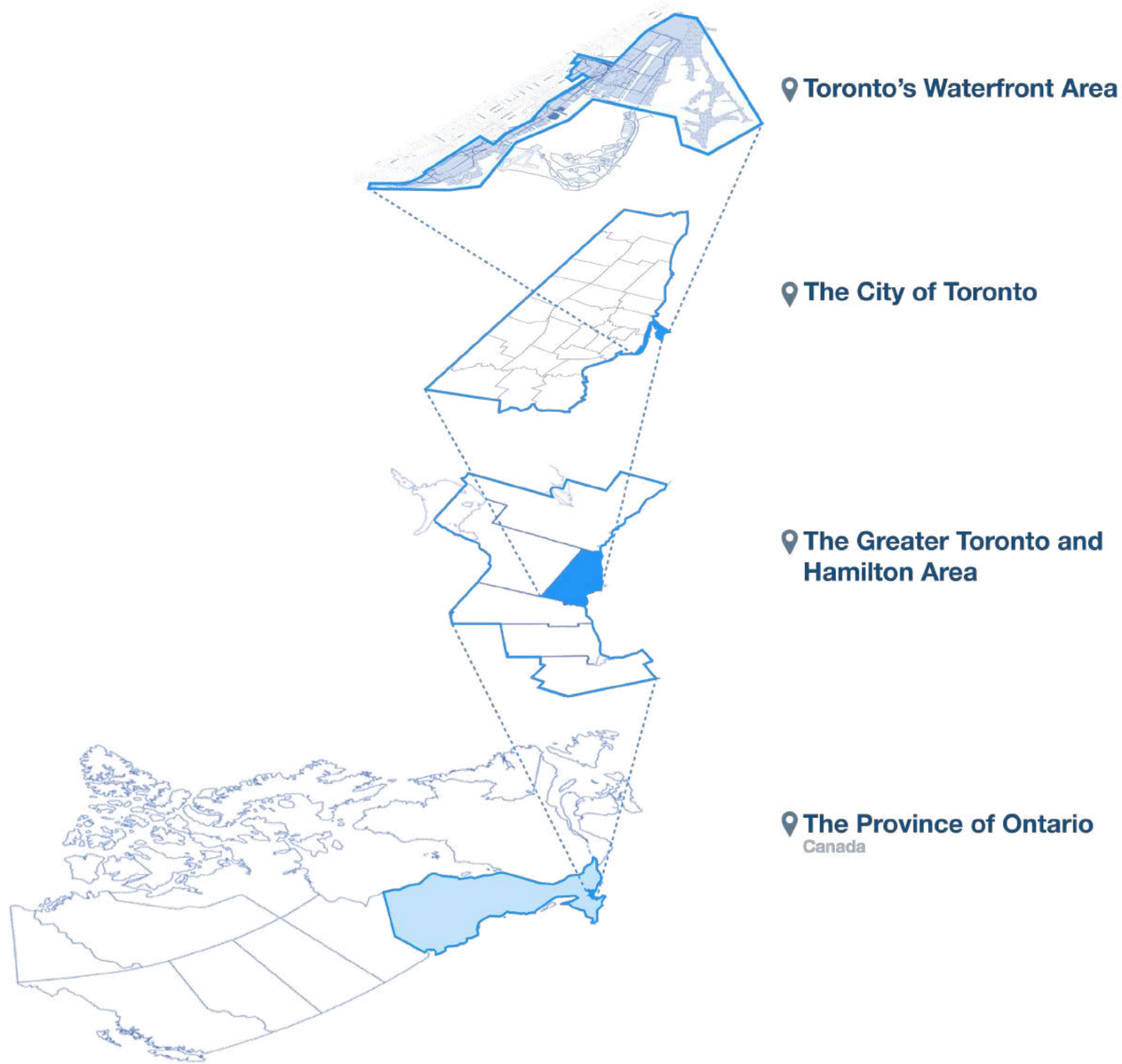


Exhibit 1.9 Planning context

Plan	Category	Year
Central Waterfront Secondary Plan	Neighbourhood and precinct plans	2003
East Bayfront Precinct Plan	Neighbourhood and precinct plans	2005
Villiers Island Precinct Plan	Neighbourhood and precinct plans	2017
Port Lands Planning Framework	Neighbourhood and precinct plans	2017
Lower Yonge Precinct Plan	Neighbourhood and precinct plans	2016
East Bayfront Municipal Class Environmental Assessment Master Plan	Neighbourhood and precinct plans	2006
Lower Yonge Transportation Master Plan Environmental Assessment	Neighbourhood and precinct plans	2014
Lower Yonge Municipal Class Environmental Assessment	Neighbourhood and precinct plans	2018
Keating Channel Precinct Plan	Neighbourhood and precinct plans	2010
By-law No. 1174-2010	Neighbourhood and precinct plans	2010
By-law No. 1174-2010 amendment	Neighbourhood and precinct plans	2017
Portal Selection Study	Pre-planning activities	2020
Design Refresh	Pre-planning activities	2020
Union LRT Station and Queens Quay Station Platform Requirements	Pre-planning activities	2021
Union LRT Station-Queens Quay Transit Link Study	Pre-planning activities	2019
Transit Phasing Study	Pre-planning activities	2020
Area A 30% Design	Pre-planning activities	2021
Area A Value-Engineered Reference Concept Design (15%)	Pre-planning activities	2023
Area B 30% Design	Pre-planning activities	2022
Preliminary Design for the East Bayfront Portal and Tunnel	Previously approved studies	2011
Waterfront Transit Reset	Previously approved studies	2018
EBF Transit Class EA	Previously approved studies	2010
LDL IMP	Previously approved studies	2010
LDL EAMP Addendum	Previously approved studies	2014
Queens Quay Revitalization Municipal Class Environmental Assessment	Related projects	2010
Union LRT Station Rail Corridor East Enhancements and Union LRT Station Enhancements	Related projects	Ongoing
Gardiner Expressway East Environmental Assessment	Related projects	2017
Inner Harbour West Tunnel	Related projects	Ongoing
Ontario Line	Related projects	Ongoing
Lower Yonge Preliminary Engineering Design (30%)	Related projects	2020
Provincial Policy Statement	Supportive Policy	2020
Towards a Greater Golden Horseshoe Transportation Plan	Supportive Policy	2021
A Place to Grow: Growth Plan for the Greater Golden Horseshoe	Supportive Policy	2020
2041 Regional Transportation Plan	Supportive Policy	2018
Toronto Official Plan	Supportive Policy	2019
Next Stop, Even Better	Supportive Policy	2019
Ridership Growth Strategy	Supportive Policy	2003
Transit-Oriented Communities Act	Supportive Policy	2020

Exhibit 1.10 Relevant plans, projects, policies, and designs

1.4 Transit project assessment process

Approvals for the project are being sought through a TPAP, a proponent-driven assessment of transit projects that includes an analysis of the Project's positive and negative impacts, strategies for mitigating negative impacts, consultation, and documentation. The TPAP satisfies the *Environmental Assessment Act, Ontario Regulation 231/08, Transit Projects and Metrolinx Undertakings* (O. Reg. 231/08). This page presents a synopsis of the information provided on the Province of Ontario's Guide to Environmental Assessment Requirements for Transit Projects.[16]

The TPAP defines steps which must be completed by the proponents of a transit project within specified time frames (Exhibit 1.11). Extensive pre-planning activities are completed to engage stakeholders, identify and assess impacts, and determine methods to avoid or mitigate negative impacts. The TPAP's regulated timeline begins once the proponent distributes the Notice of Commencement. The distribution of this document marks the start of a 120-day period in which the proponent must prepare an EPR and consult with a broad range of stakeholders. The proponent may elect to take a "time out" during this 120-day period should they identify a potential negative impact on a matter of provincial importance or on a constitutionally protected Aboriginal or treaty right that will compromise the 120-day timeline.

Within the 120-day period, the proponent must publish a Notice of Completion of EPR, starting a 30-day period during which the public, regulatory agencies, Indigenous communities, and other interested persons may review the EPR. Reviewers must submit any objections to the transit project to the Environmental Approvals Branch (EAB) for the Minister of the Environment (the Minister) to consider. Proponents are given an opportunity to comment on the concerns raised in an objection before any action is taken by the Minister.

Upon the completion of the 30-day review period, the Minister has 35 days to consider whether the transit project will have a negative impact on a matter of provincial importance or a constitutionally protected Aboriginal or treaty right. The Minister may then issue one of three notices:

- A notice to proceed with the transit project as planned in the EPR;
- A notice that requires the proponent to take further steps, which may include further study or consultation; or
- A notice allowing the proponent to proceed with the transit project subject to conditions.

If the proponent must conduct additional work, they must submit a revised EPR to the Minister upon completion of additional studies or consultation. The Minister then has 30 days to decide whether the revised EPR sufficiently addresses the negative impacts. If it does not, the Minister can terminate the TPAP and require the proponent to comply with Part II of the *Environmental Assessment Act* or to comply with an approved class EA before proceeding with the project.

If the Minister decides that the original or revised EPR addresses the negative impacts, the Minister issues a notice allowing the transit project to proceed. To finalize the TPAP, the proponent must submit a Statement of Completion.

If the Minister does not issue one of the three aforementioned notices within the 35-day period, the project may proceed as described in the EPR.

1.4.1 Matters of provincial importance

The Minister may only require further steps if there is a potential for a negative impact on a matter of provincial importance that relates to the natural environment or has cultural heritage value or interest (CHVI), or on a constitutionally protected Aboriginal or treaty right.

Dealing with potential negative impacts on matters of provincial importance or on constitutionally protected Aboriginal or treaty rights during the TPAP may occur at any point, but are particularly relevant in the following situations:

- When a proponent is considering whether to take a "time out" during the 120-day consultation and documentation time frame.
- When an interested person, including regulatory agencies, Indigenous communities, property owners and other members of the public, is considering submitting an objection to a proposed transit project to the Minister.
- If the Minister exercises his/her discretion to act on a proposed transit project.

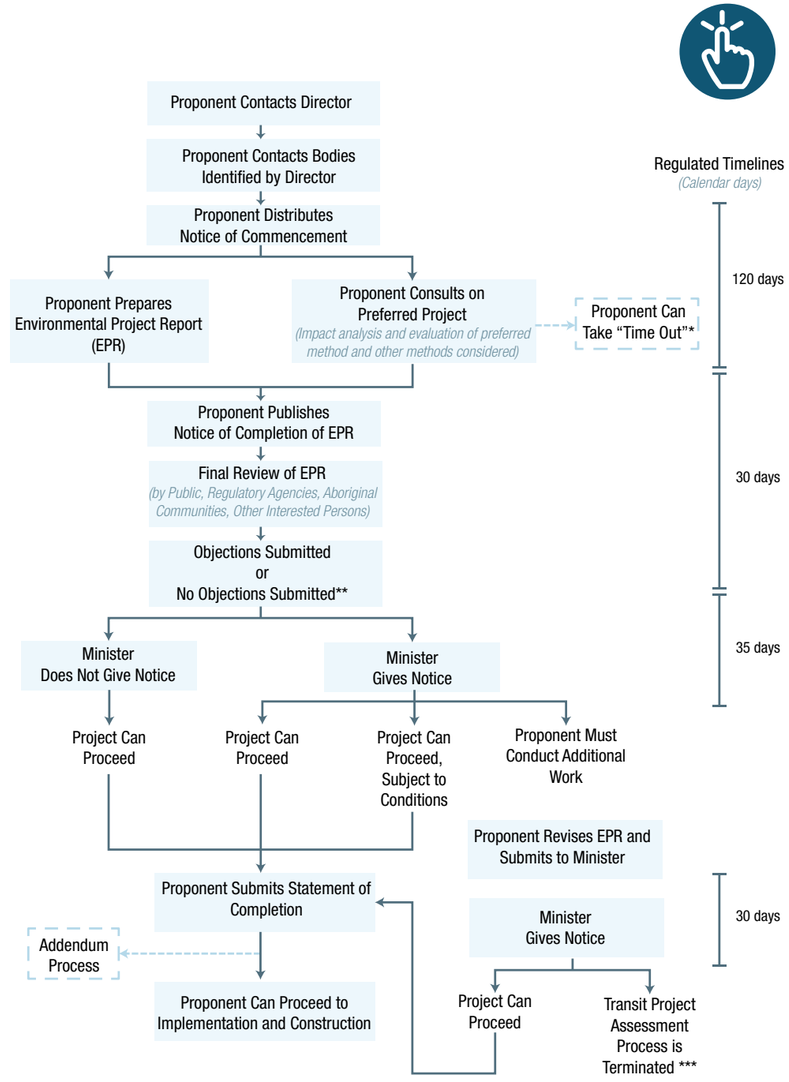


Exhibit 1.11 TPAP timeline

1.5 Environmental Project Report

The EPR is required to document the TPAP and must be completed within 120 days of distribution of the Notice of Commencement. Among other requirements, EPRs must include a description of the project, a review of existing conditions, potential impacts of the project, strategies for mitigating potential negative impacts, and a consultation record.

The Project design presented in this EPR has been agreed upon by all Proponents. This EPR satisfies the requirements of O. Reg. 231/08. Readers may consult Exhibit 1.12 to identify which chapter(s) of this document address each of the TPAP requirements.

This report is structured as follows:

- **Chapter 1** contextualizes the Project, providing background on the Project's key decision history, approved studies, pre-planning activities, and other related plans and policies;
- **Chapter 2** presents the Project description, with information about the design approach, alignment, transit stops, portals, slips, and active transportation facilities;
- **Chapter 3** describes existing conditions in and around the Project footprint, including a review of the natural environment, cultural environment, emissions, socio-economic environment and land use, utilities and municipal infrastructure, and transportation infrastructure;
- **Chapter 4** examines the positive and negative impacts of the Project and outlines mitigation measures that will be taken to reduce negative impacts and monitoring activities;
- **Chapter 5** discusses the Project's potential impact on climate change as well as climate change's potential impact on the Project;
- **Chapter 6** provides an overview of the consultation and engagement process; and
- **Chapter 7** lists future commitments, identifies permits and approvals that may be required, and provides a summary of impacts, mitigation measures, and monitoring activities.

TPAP requirement	EPR chapter
A statement of the purpose of the transit project and a summary of any background information relating to the transit project.	Chapter 1
A final description of the transit project including a description of the preferred design method.	Chapter 2
A description of any other design methods that were considered once the project commenced the TPAP. Note: Does not include any alternatives considered during pre-planning as TPAP starts with a transit project and is focused on an impact assessment of that project.	To be confirmed during 120-day period
A map showing the site of the transit project.	Chapters 1 and 2
A description of the local environmental conditions at the site of the transit project.	Chapter 3
A description of all studies carried out, including a summary of all data collected or reviewed and a summary of all results and conclusions.	Chapters 3 and 4
The assessments, evaluation and criteria for any impacts of the preferred design method and any other design method (described above) that were considered once the project's TPAP commenced (does not include pre-planning work).	To be confirmed during 120-day period
A description of any proposed measures for mitigating any negative impacts the transit project might have on the environment.	Chapter 4
If mitigation measures are proposed, a description of the proposal for monitoring or verifying the effectiveness of the mitigation measures.	Chapter 4
A description of any municipal, provincial, federal, or other approvals or permits that may be required.	Chapter 7
A consultation record, including: • A description of the consultations and follow up efforts carried out with interested persons, including Indigenous communities; • A list of the interested persons, including Indigenous communities who participated in the consultations; • Summaries of the comments submitted by interested persons, including Indigenous communities; • A summary of any discussions with Indigenous communities including discussions of any potential impacts of the transit project on constitutionally protected Aboriginal or treaty rights, and copies of all written comments submitted by Indigenous communities; • A description of what the proponent did to respond to concerns expressed by interested persons, including Indigenous communities.	Chapter 6
If a "time out" was taken during the TPAP, a summary of each issue including: • A description of the issue; • A description of what the proponent did to respond to the issue and the results of those efforts; • The dates that notices for the "time out" were given to the Director and the Regional Director.	To be confirmed during 120-day period

Exhibit 1.12 TPAP requirements

1.6 Objection process

The EPR submission and Notice of Completion triggers the 30-day public and agency review period. During this time, interested persons with concerns regarding the Project may submit objections to the Minister. After that time objections will not be considered.

The following information should be provided when submitting an objection to the Minister:

- Name, mailing address, organization or affiliation (where applicable);
- Daytime telephone number, email address (where possible);
- Contact details of the proponent including name, address, and telephone number;
- Brief description of the proponent's proposed undertaking;
- Basis for why further study is required, including identification of any negative impacts that relate to a matter of provincial importance or a constitutionally protected Aboriginal or treaty right that was not identified in the proponent's EPR; and
- Summary of how the person(s) objecting have participated in the Project's consultation process.

If an objection is submitted to the Minister during the 30-day review period, proponents will be given an opportunity to comment on the concerns raised in an objection(s) before the Ministry acts.

1.6.1 EPR amending procedure

1.6.1.1 Need for EPR addendum

The TPAP includes provisions (in Section 15 of O. Reg. 231/08 for proponents to make changes to a transit project after the Statement of Completion for the transit project is submitted. The Statement of Completion is a notice prepared by the proponents and submitted to the Director of the MECP EAB following successful completion of the TPAP.

Modifications to the design and implementation of the project proposed in the EPR may occur due to unforeseen circumstances, including:

- Changes in environmental conditions in the corridor that may affect anticipated project impacts and means of mitigating adverse effects;
- Technological advancements/modifications; and
- Funding availability.

The Project design is currently at the 30% stage and as such, is preliminary. The TPAP recognizes that the Project layout and execution approach will continue to evolve to a higher level of detail during the detailed design and construction phases. However, if, after submitting a statement of completion of the TPAP, the Proponents wish to make a change to the transit project that is inconsistent with the EPR, the Proponents must prepare an addendum to the EPR.

The EPR Addendum must include the following information:

1. A description of the change;
2. The reasons for the change;
3. The proponent's assessment and evaluation of any impacts that the change might have on the environment;
4. A description of any measures proposed by the proponent for mitigating any negative impacts that the change might have on the environment; and
5. A statement of whether the proponent is of the opinion that the change is a significant change to the transit project, and the reasons for the opinion.

If the proponents are of the opinion that a change described in an addendum is a significant change to the transit project, the proponents shall prepare a notice of EPR addendum in accordance with Section 15(4) of O. Reg. 231/08. This will require additional consultation and documentation requirements for significant addenda, as outlined in Section 15 of O. Reg. 231/08.

Changes to the project may also be required if there is a significant lapse of time (i.e., ten years) between the Statement of Completion and the start of construction, which will require a formal review of the project in accordance with Section 16 of O. Reg. 231/08. Where changes to the project are identified through the review, the proponents may follow the EPR Addendum process described herein.

The proponents also have the option of proceeding with the transit project changes in accordance with Part II of the Environmental Assessment Act (i.e., under the provisions/requirements for an individual EA).

The requirement for an addendum does not apply to a change that is required to comply with another Act, a regulation made under another Act, or an order, permit, approval, or other instrument issued under another Act.

An addendum would not be required if the Project is implemented in a staged process (including interim transit operating periods) so long as the Project is consistent with the EPR.

1.6.1.2 EPR addendum timelines

The timelines for making objections, and for the Minister to act with respect to the proposed revisions in the EPR Addendum, are essentially the same in the addendum process as in the process following the original Notice of Completion (30-day public review period and the 35-day period for the Minister to act). Where the Minister provides notice to the Proponents requiring further consideration of the changes described in the EPR Addendum, the additional timeline for any such revisions would be as prescribed in the notice. The timelines for subsequent activities (further notification; and consideration by the Minister leading to a final decision on the revised EPR Addendum) would be in accordance with the provisions of Sections 15(18) to 15(21).

1.6.1.3 Consultation

During the pre-addendum consultation process with MECP, the ministry will provide advice on the consultation scope and mechanisms to be used. This will include repeating the mandatory contact with the Director of the MECP EAB for an opinion on which bodies to contact to assist in identifying Indigenous communities that may be interested in the change to the project; and then contacting those bodies (per Section 15(6) of O. Reg. 231/08). It is expected that the consultation mechanisms employed during the EPR Addendum process will be similar to those used during the initial TPAP phase.

1.7 Study area

The Project study area is comprised of the Project footprint (see Section 1.2.1.2) and discipline-specific study areas outlined in Exhibit 1.13. The study area of each environmental discipline varies to account for differences in the range of potential impacts per domain. Laydown areas—which are not part of the Project footprint but which will be impacted during construction—are included in the study areas as appropriate. Laydown areas have therefore been considered in the identification and development of mitigation measures.

Environmental Study	Area A Study Area	Area B Study Area
Natural Environment - Physical Environment	Project footprint + laydown areas	Project footprint + laydown areas
Natural Environment - Aquatic Environment	Not applicable (there are no aquatic environments)	Yonge Slip (as documented in Appendix D.1)
Natural Environment - Terrestrial Environment	Not applicable (no impacts anticipated)	Project footprint (as documented in Appendix E.1)
Archaeology	Project footprint + laydown areas (as per Ministry of Citizenship and Multiculturalism (MCM) guidance and as documented in Appendix F.1)	Project footprint + laydown areas (as per MCM guidance and as documented in Appendix F.2)
Cultural Heritage	Project footprint + 50 metres (m) (including laydown areas) (as per MCM guidance and as documented in Appendix G.1)	Project footprint + 50 m (including laydown areas) (as per MCM guidance and as documented in Appendix G.6)
Air Quality	Regional assessment (as per guidance in Metrolinx's guidelines* and as documented in Appendix H.1)	
Noise and Vibration	Identified receptors near Project footprint (based on Industry-accepted best practices and as documented in Appendix I.1)	Identified receptors near Project footprint (based on Industry-accepted best practices and as documented in Appendix I.2)
Transportation	Street and transit network impacted by LRT operations in Segment 1, Segment 2, and Segment 3	

* Recommended Approach for Assessing and Mitigating Air Quality Impacts and Greenhouse Gas Emissions of Metrolinx Public Transit Projects

Exhibit 1.13 Discipline-specific study areas

2.0 Project description

© West 8 + DTAH

Image: Rendering of the view from Martin Goodman Trail

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

2.0 Project description

2.1 Design intent

The current design for the Project will bring critical transportation connections to existing and planned developments along Toronto's waterfront while increasing public space and improving the health of the local environment. The Project will extend the design of Queens Quay West to Queens Quay East, promoting a sense of cohesion and identity along the entire street and creating a high-quality space worthy of the corridor's prominence (Exhibit 2.1 and Exhibit 2.2). Some aspects of the design have been advanced since the implementation of Queens Quay West to integrate lessons learned and further enhance the waterfront experience.

In addition to providing critical transit infrastructure, the Project enables substantial improvements to existing bicycle and pedestrian infrastructure along the corridor. The Martin Goodman Trail (MGT) will be widened to support its role as a major connector within the bicycle network in the downtown area. Wide pedestrian promenades with a continuous tree canopy and street furnishings will provide a safe and comfortable public realm that can support the vibrant street life envisioned in the coming years. At key intersections, finish treatments signal and enhance the experience of arriving at the waterfront. At Yonge Slip, where partial infilling is required to support the transit extension, a public space will be created to provide new and enhanced water-based amenities and other opportunities for public enjoyment in an otherwise constrained right-of-way.

Exhibit 2.1 Queens Quay East existing conditions

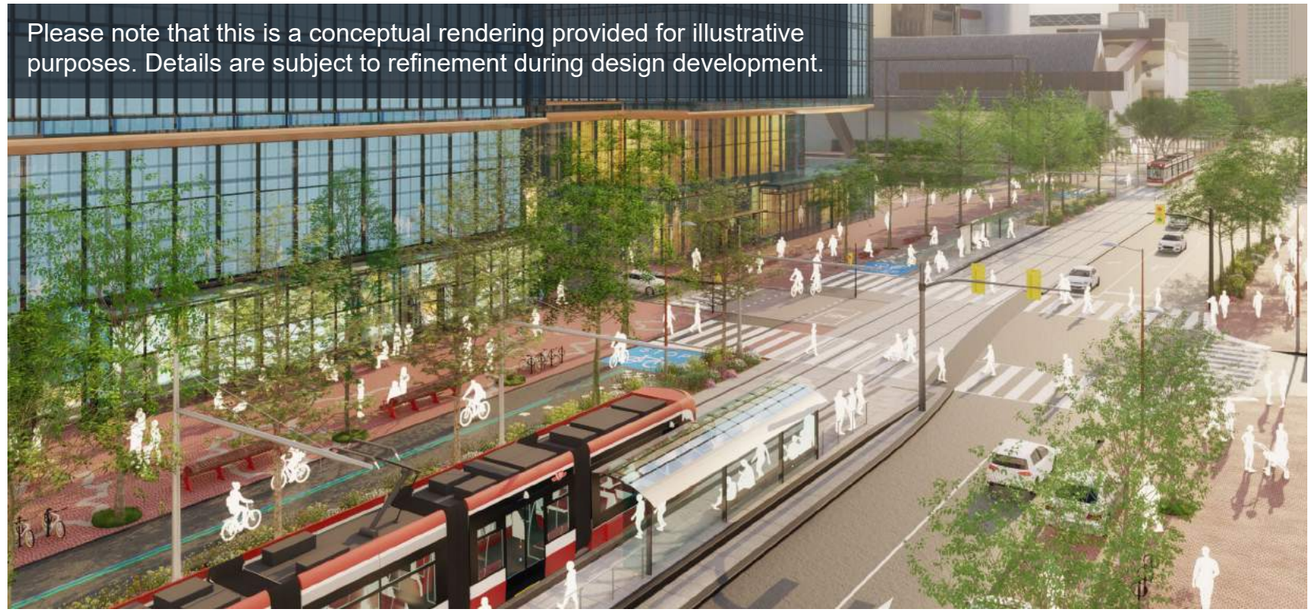


Exhibit 2.2 Rendering of Queens Quay East future conditions © West 8 + DTAH

2.2 Design changes

While the Project's objectives and design remain largely unchanged from those of the 2010 EBF Transit Class EA, some design modifications have been made to respond to changes in and around the Project footprint. Exhibit 2.3 highlights some of the key design changes. Exhibit 2.3 does not capture changes that have been introduced as a result of design development. It should be noted that the current design is subject to further refinement during detailed design.

Exhibit 2.4 describes the key changes in the Project's immediate physical environment and Exhibit 2.5 shows changes in key design criteria.

Element	Previously-approved design	Current design
Queens Quay-Ferry Docks LRT Station	Not expanded	Expanded
West portal	Not reconstructed	Reconstructed to enable east-west through movements
East portal location	Between Yonge Street and Freeland Street	Between Bay Street and Yonge Street
Yonge Slip Fill	None	Approximately 50 m long
Yonge/Queens Quay intersection	'T' intersection	Four-leg intersection, providing access to Yonge Slip
Lower Jarvis Street	Two-stage pedestrian crossing	Single-stage pedestrian crossing
Crossings	No delineated crossings for the MGT	Delineated crossings for the MGT
Signals at Bayside	One: at Street 'D' (future)	Two: at Bonnycastle Street and Small Street

Exhibit 2.3 Design changes

Element	Previously anticipated physical environment	Currently anticipated physical environment
New Street (east of Cooper Street)	No	Yes (Lower Yonge Master Plan)
Harbour Street extension	No	Yes (Lower Yonge Master Plan)
Harbour Street two-way traffic	No	Yes (Lower Yonge Master Plan)
Bay Street on-ramp	Present	Removed (Lower Yonge Master Plan)
Cooper Street	Extends to Lake Shore Boulevard East	Extends to Church Street (Lower Yonge Master Plan)

Exhibit 2.4 Changes in immediate physical environment

Element	Previous design criteria	Current design criteria
LRT guideway	7 m guideway	7 m guideway plus 0.7 m buffer
Platform length	60 m	30 m
Through lane width	3.5 m	3.3 m
Platform/median width	3.0 m	2.4 m width clearance
Parking/lay-by	3.0 m	2.3 m typical, 2.9 m bus
MGT	4.0 m	4.8 m (4.2 m + 2*0.3 m drainage)

Exhibit 2.5 Changes in key design criteria

2.3 Current Project design

The following sections present the Project design, including details on the alignment, transit routes and stops, portals, slips, TPSS, intersections, and active-transportation facilities (Exhibit 2.6).

The Project design is currently at the 30% stage and as such, is preliminary and subject to refinement. As noted in Chapter 1, the TPAP recognizes that the actual Project may evolve during the detailed design and construction phases. To allow flexibility in design, it is expected that there will be variations from the configurations described in this chapter. Such variations do not require additional approval or amendment to the EPR unless they result in environmental impacts which cannot be mitigated using approaches outlined in the report or a protocol for the change has not been considered in the report.

A complete drawing set of the current design is provided in Appendix B.

Please note that this is a conceptual map provided for illustrative purposes. Details are subject to refinement during design development.

Exhibit 2.6 Project map

2.3.1 Alignment and cross-sections

2.3.1.1 Bay Street alignment and cross-section

The Project alignment begins underground at Union LRT Station and runs south in the existing tunnel under Bay Street and through Queens Quay-Ferry Docks LRT Station until Queens Quay West. The existing tunnel will be reconstructed north of Lake Shore Boulevard at a new depth to facilitate transition of existing track to the new track alignment and elevation at Union LRT Station. Bay Street will be reconstructed to reflect the street's existing conditions.

2.3.1.2 Queens Quay East alignment and cross-section

After Queens Quay-Ferry Docks LRT Station, the alignment turns onto Queens Quay West and the alignment transitions from a below-grade alignment to an at-grade alignment through a portal located between Bay Street and Yonge Street. The alignment continues east along Queens Quay East past Street A (the eastern boundary of this TPAP). To facilitate this alignment, Queens Quay East will be extended past its present-day eastern edge at Small Street to New Munitions Street.

Queens Quay East is proposed to be a minor arterial road. The 38 m right-of-way will include a LRT guideway in the middle of the street, flanked to the north by a bidirectional roadway and to the south by the MGT. Both sides of the street will feature sidewalks for pedestrians. The number of lanes on the roadway will be reduced from four in the existing condition to two in the future condition.

2.3.1.3 Parliament Street alignment and cross-section

The realignment of Queens Quay East will necessitate the realignment of Parliament Street between Queens Quay East and Lake Shore Boulevard East. The proposed alignment for Parliament Street is curved.

During pre-planning activities, three different alignments were considered for Parliament Street. The designs needed to consider four factors:

- The location of the columns supporting the Gardiner Expressway;
- The spacing between intersections on Queens Quay East;
- The potential for creating a plaza around Parliament Street; and
- The experiential approach of arriving at the waterfront from the north.

The proposed alignment will not require the relocation of the Gardiner Expressway columns, which will be located to the east of the alignment. It will also allow for acceptable spacing between the intersection of Queens Quay East / Small Street and Queens Quay East / Parliament Street. Additionally, the curve in the alignment will preserve the view corridor to the water, while providing a gradual reveal of the lake for visitors arriving from the north. This also creates a strong connection to the Parliament Slip and Silo Park southeast of the intersection, in concurrence with the Keating Channel Precinct Plan.

However, to accommodate the curved alignment, Parliament Plaza will be divided into two parts located on either side of Parliament Street. The decision to provide a larger plaza on the east side takes advantage of fewer below-grade utility conflicts, as well as greater sun exposure.

The current Project design updates the Parliament Street cross-section between Queens Quay East and Lake Shore Boulevard. The new design includes three traffic lanes and uni-directional bike lanes on either side of the street. The current Project design preserves space for a future bi-directional bike facility on the west side of Parliament Street. This updated cross-section still accommodates anticipated traffic volumes and enables the creation of a larger public realm.

2.3.2 Transit routes and stops

The implementation of the streetcar infrastructure proposed in the Project will support Route 519, a new LRT line. Several bus routes will provide supplemental transit service in and around the Project footprint.

2.3.2.1 Route 519 Waterfront East Streetcar

The streetcar infrastructure implemented between Union LRT Station and Street A will serve Route 519 (Exhibit 2.7). The proposed 519 streetcar service includes eight stops, five of which are within the Project footprint:

- Union LRT Station
- Queens Quay-Ferry Docks LRT Station
- Queens Quay East and Freeland Street
- Queens Quay East and Richardson Street
- Queens Quay East and Small Street
- Cherry Street and Queens Quay East*
- Cherry Street and Commissioners Street*
- Villiers Loop*

* Stops outside of Project footprint

Brief descriptions of the 519 streetcar stops are provided below. Please note that stop locations are subject to refinement during detailed design.

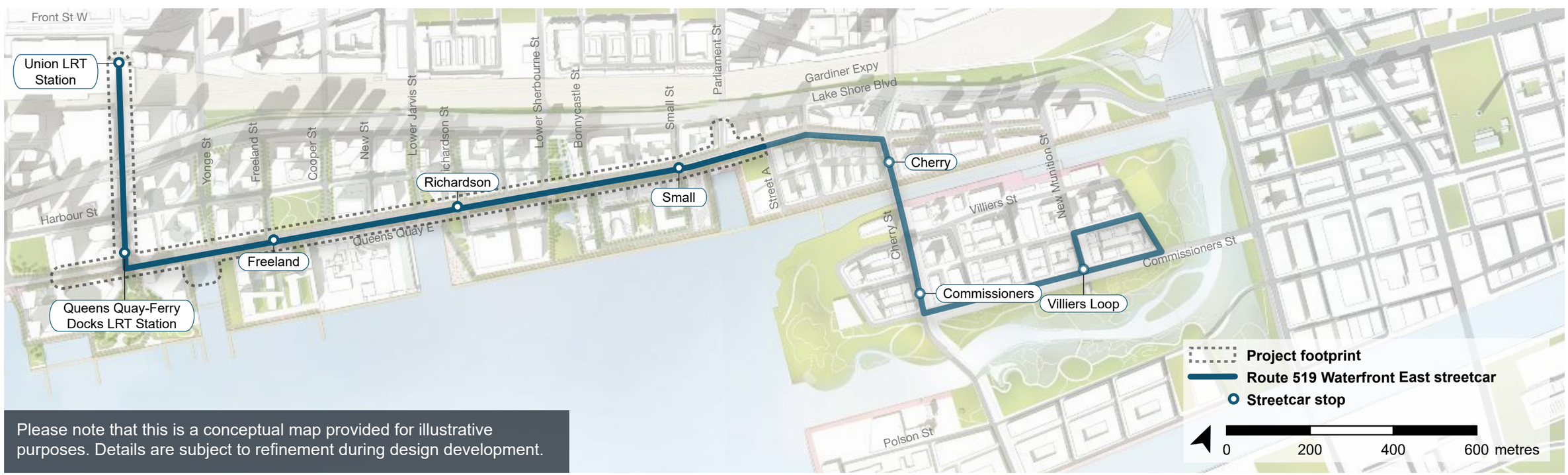


Exhibit 2.7 Proposed 519 streetcar service

2.3.2.1.1 Union LRT Station

Situated in downtown Toronto, Union LRT Station is part of a complex of transit and regional commuting infrastructure in one of Toronto's busiest commuter hubs: Union Station. Union LRT Station is centred on Bay Street at the northeastern corner of the Union Station Complex and is located at the tunnel level. One storey above grade is the USRC, which bisects the complex east-west.

The existing Union LRT Station has a combined boarding and alighting platform at the north end of the LRT Loop and is accessible solely from the Union Subway Station to the north. An existing egress stair is located within the area contained within the streetcar loop. The life safety systems for the existing station are an extension of the Union Station Subway facility. A single rail line serves the LRT Loop with a demising wall separating the northbound tunnel from the southbound.

To accommodate more streetcars and passengers once the Project is operational, Union LRT Station will be expanded eastward, westward, and southward to include four platforms (two northbound and two southbound). The future LRT Loop will be located in approximately the same location as the existing LRT Loop, but its elevation will be lowered to address civil and structural requirements. The layout of the platforms, which will be moved farther south, is dictated by the specific turning radii and lengths required for the vehicle movements and the general horizontal and vertical location of the platform is indexed to the track layout. Platform widths are being designed to support passenger capacities and movements during peak conditions.

The future Union LRT Station will maintain the connection to the subway station and add three new accesses including (Exhibit 2.8):

- A southwest entrance providing a new stair and elevator connection to Union LRT Station;
- A northwest entrance providing a new stair and elevator connection to the Union Station Retail Level; and
- An east entrance providing a new stair and elevator connection to the Bay Street East Teamway.

Additionally, the design of the new Union LRT Station preserves the potential for a future connection to Bremner Boulevard.

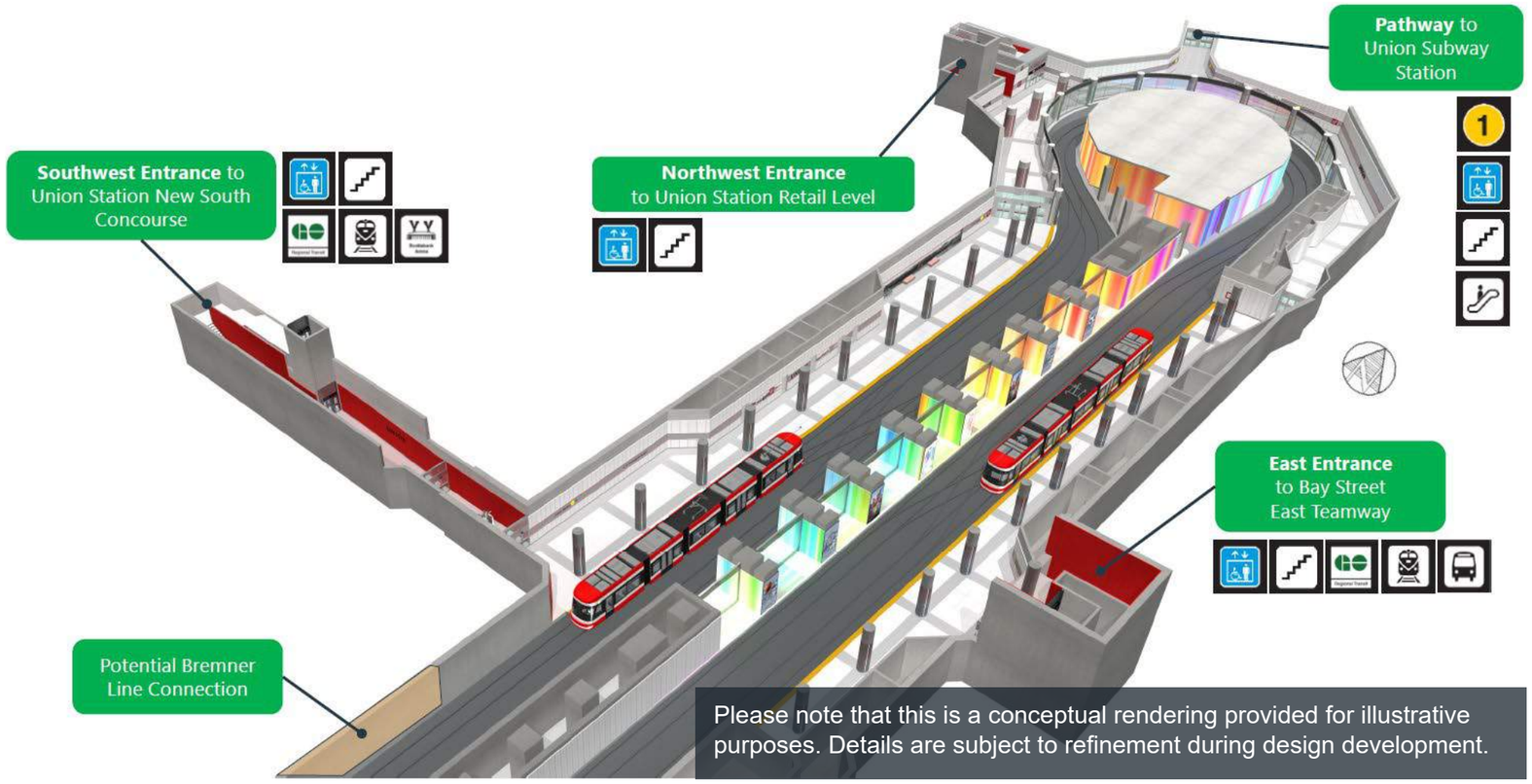


Exhibit 2.8 Union LRT Station © WSP and SAI

2.3.2.1.2 Queens Quay-Ferry Docks LRT Station

Queens Quay-Ferry Docks LRT Station is the first stop south of Union LRT Station. The station is centred on Bay Street south of Harbour Street and north of Queens Quay West. Queens Quay-Ferry Docks LRT Station is currently accessible via stairs at the southwest corner of Bay Street and Queens Quay West and an adjacent elevator connecting the street level with the southbound platform. A second set of stairs is located on Bay Street's eastern sidewalk north of Queens Quay West connecting the street level with the northbound platform.

At the tunnel level, there is one northbound (east) platform and one southbound (west) platform. There are open columns between the tracks which facilitate clear lines of sight between the platforms. There is an existing pedestrian crossing across the northbound and southbound tracks that facilitates barrier-free access to the northbound platform from the elevator on the southbound platform. To the south of Queens Quay-Ferry Docks LRT Station is a northbound and southbound tunnel which curves westward leading to the existing west portal.

The proposed expansion of Queens Quay-Ferry Docks LRT Station includes four platforms capable of accommodating two stacked vehicles on both the northbound and southbound lines (Exhibit 2.9). This expansion will also incorporate mechanical and electrical services necessary for station operation. A new underground substation may be located at this station or Union LRT Station to serve the expanded vehicle service.

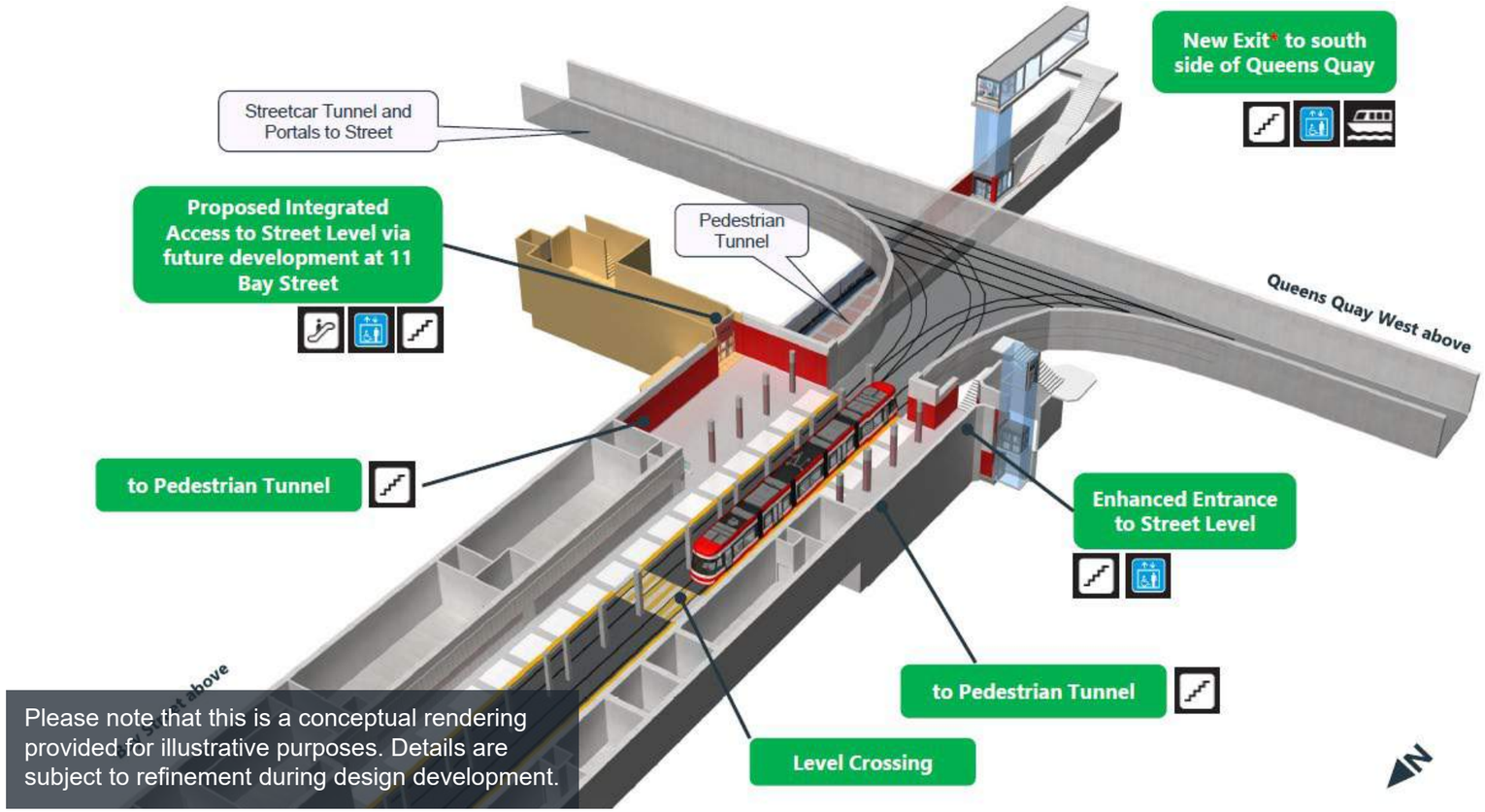


Exhibit 2.9 Queens Quay-Ferry Docks LRT Station © WSP and SAI

The expansion will increase Queens Quay-Ferry Docks LRT Station's footprint northward and add a new sub-basement level with a pedestrian tunnel connection to Harbour Square Park on the south side of Queens Quay West. This entrance will provide barrier-free access to the station, and support multiple connection options to the adjacent 10, 20, and 11 Bay Street properties should subsequent connections be incorporated into the final design.

Proposed station access points include:

- An enhanced access to street level from the southwest corner of the south platform;
- An access to the pedestrian tunnel from the south side of the east platform;
- An access to the pedestrian tunnel from the south side of the west platform; and
- An integrated access to street level via future development at 11 Bay Street from the southeast corner of the east platform.

The level pedestrian crossing at the track level will be maintained but relocated to the middle of the expanded station (between the platforms) to ensure good sightlines for the streetcar operators.

2.3.2.1.3 At-grade streetcar platforms

The Project includes three at-grade streetcar stops at the following locations (Exhibit 2.10):

- Queens Quay East and Freeland Street
- Queens Quay East and Richardson Street
- Queens Quay East and Small Street

The Transportation Report in Appendix J analyzed a future condition which included four at-grade stops within the Project footprint. The number of stops in the Project footprint has since been reduced to the three listed above due to comments received from Project stakeholders. It is expected that the reduction in the number of stops will increase transit speed and reliability within the Project footprint.

The at-grade streetcar stops will each feature two platforms, one for each direction of travel. The platform configurations will be refined during detailed design, but may include far-side platforms, near-side platforms, or split parallel platforms. Stop amenities will generally consist of Accessibility for Ontarians with Disabilities Act (AODA) features, including ramps, railings, and tactile warning strips.

Please note that stop locations are subject to refinement during detailed design.

2.3.2.1.4 Interim operations

The LRT guideway is being designed to facilitate bus operations. Replacement bus services may utilize the guideway in the final condition, and the Project may be constructed in a phased manner that allows for use of the future LRT guideway space for regular bus operations, in an interim condition prior to completion of the final LRT infrastructure or underground LRT facilities.

During detailed design, the design teams will further assess the requirements for and ability to accommodate a temporary end-of-line facility near Union Station to support the replacement bus operations from both Queens Quay East and Queens Quay West during the construction of the underground Area A. Further, TTC supports the implementation of transit-priority measures including bus lanes on Yonge Street as well as other elements such as transit signal priority to optimize travel times for customers.

Additionally, the proposed work at Queens Quay-Ferry Docks LRT Station is expected to be implemented in stages. The interim scope of work includes the enhanced access to street level from the southwest corner of the west platform.

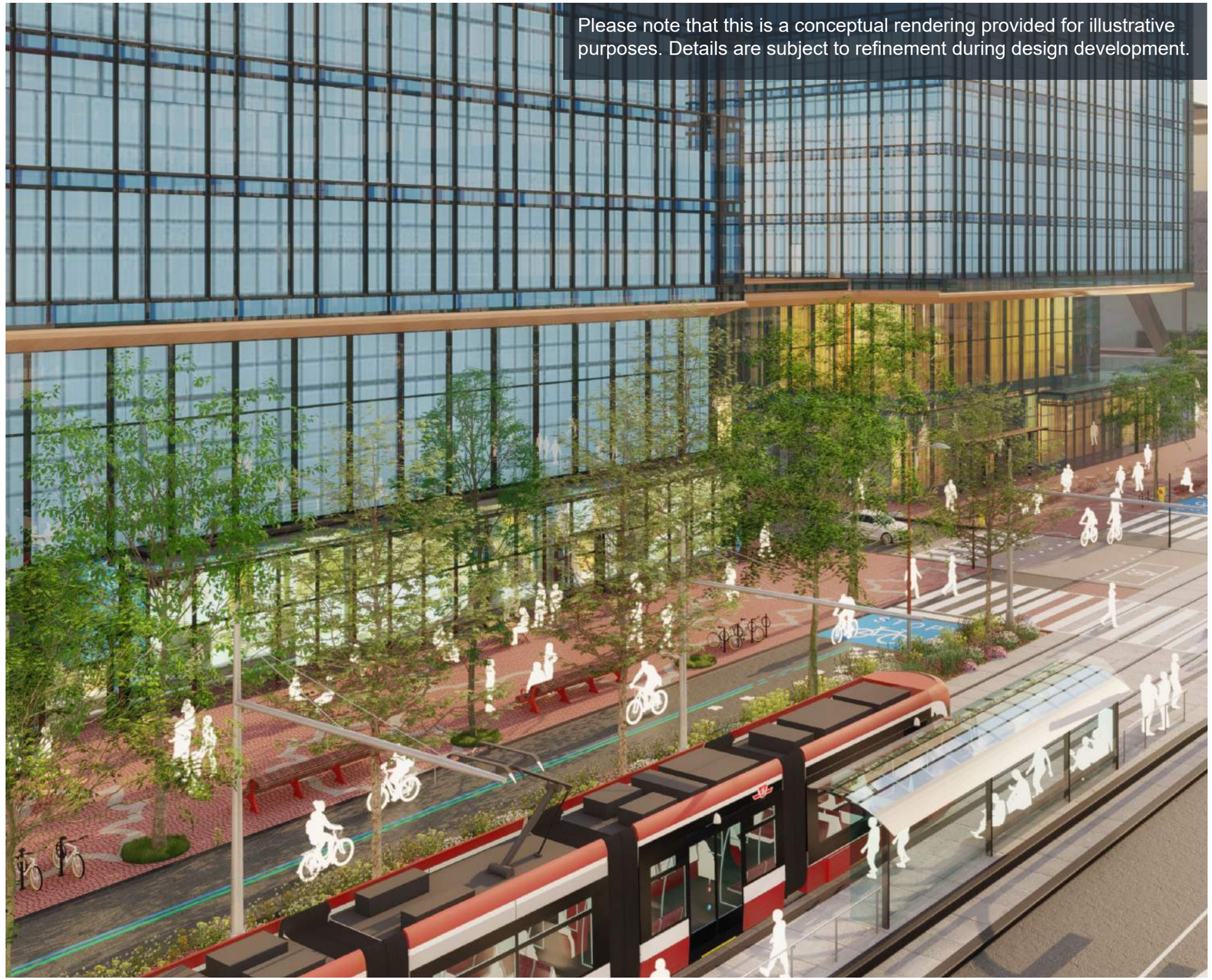


Exhibit 2.10 Rendering of an at-grade streetcar stop © West 8 + DTAH

2.3.2.2 Bus routes

Several bus routes will provide supplemental transit service in and around the Project footprint (Exhibit 2.11). The bus routes described in this section are subject to refinement in future Project design phases to reflect service demands.

- **Bus route 19** will primarily run north-south along Bay Street, providing connections to Line 1 (Yonge–University) at Union LRT Station and to Line 2 (Bloor-Danforth) at Bay Station.
- **Bus route 97B** will primarily run north-south along Yonge Street, providing transfer opportunities at several stations on Line 1 (Yonge–University).
- **A new bus route** will provide north-south service along Church Street and Cooper Street once the connection between the two streets is built. The bus route number is to be determined (TBD).
- **Bus route 75** will run north-south along Sherbourne Street, connecting at its northern terminus to Line 2 (Bloor–Danforth) at Sherbourne Station.
- **Bus route 65** will primarily run north-south on Parliament Street, connecting at its northern terminus to Line 2 (Bloor–Danforth) at Castle Frank Station.

The locations of bus stops will be considered throughout detailed design. Lay-bys will be considered to support efficient traffic flow.

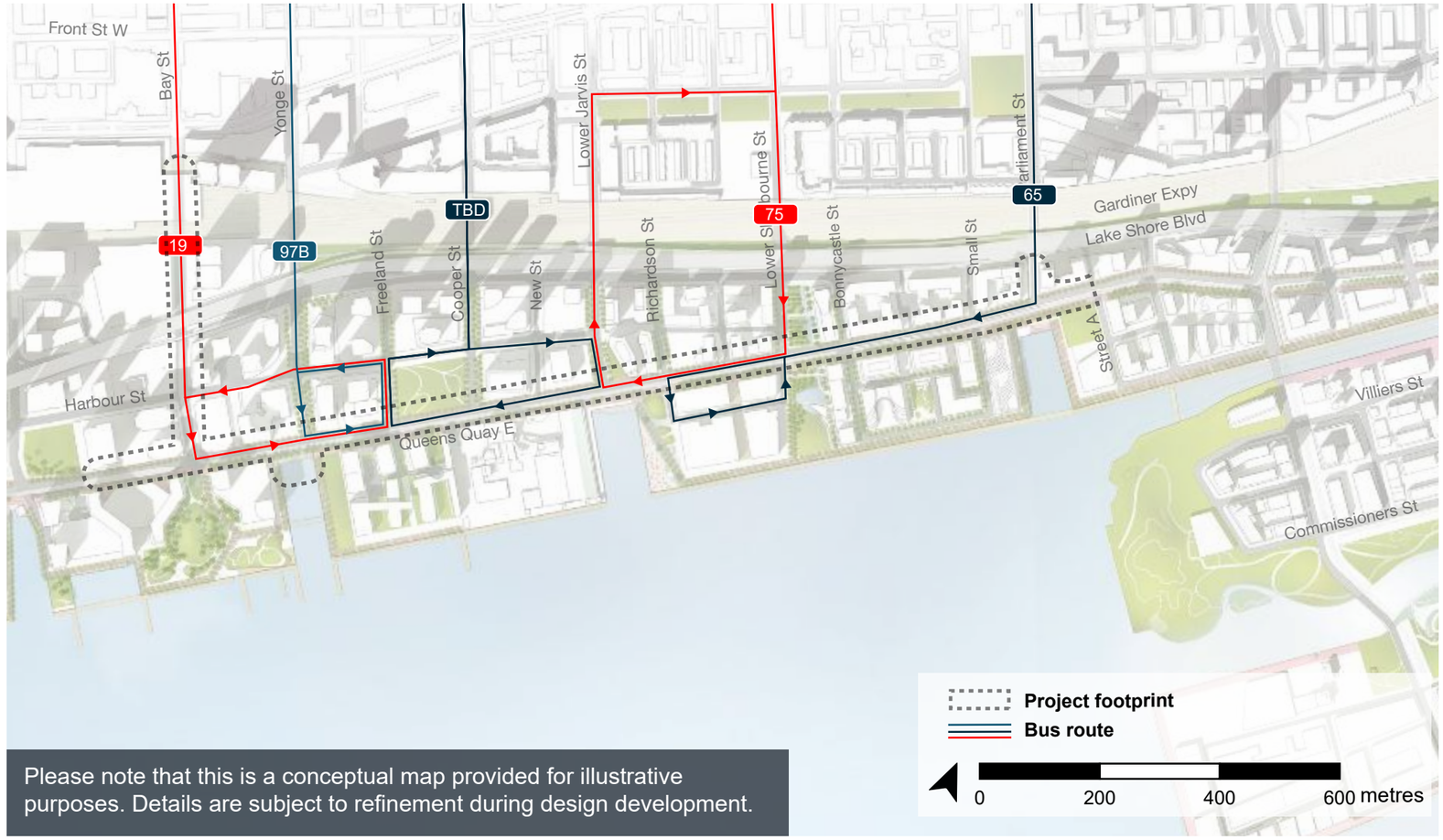


Exhibit 2.11 Proposed bus service

2.3.3 Portals

The Project includes two portals: the existing west portal located on Queens Quay West between Bay Street and York Street, and a new east portal located on Queens Quay West between Bay Street and Yonge Street (Exhibit 2.12). The portals are critical Project infrastructure, facilitating grade change as streetcars move between the below-ground and surface portions of the alignment.

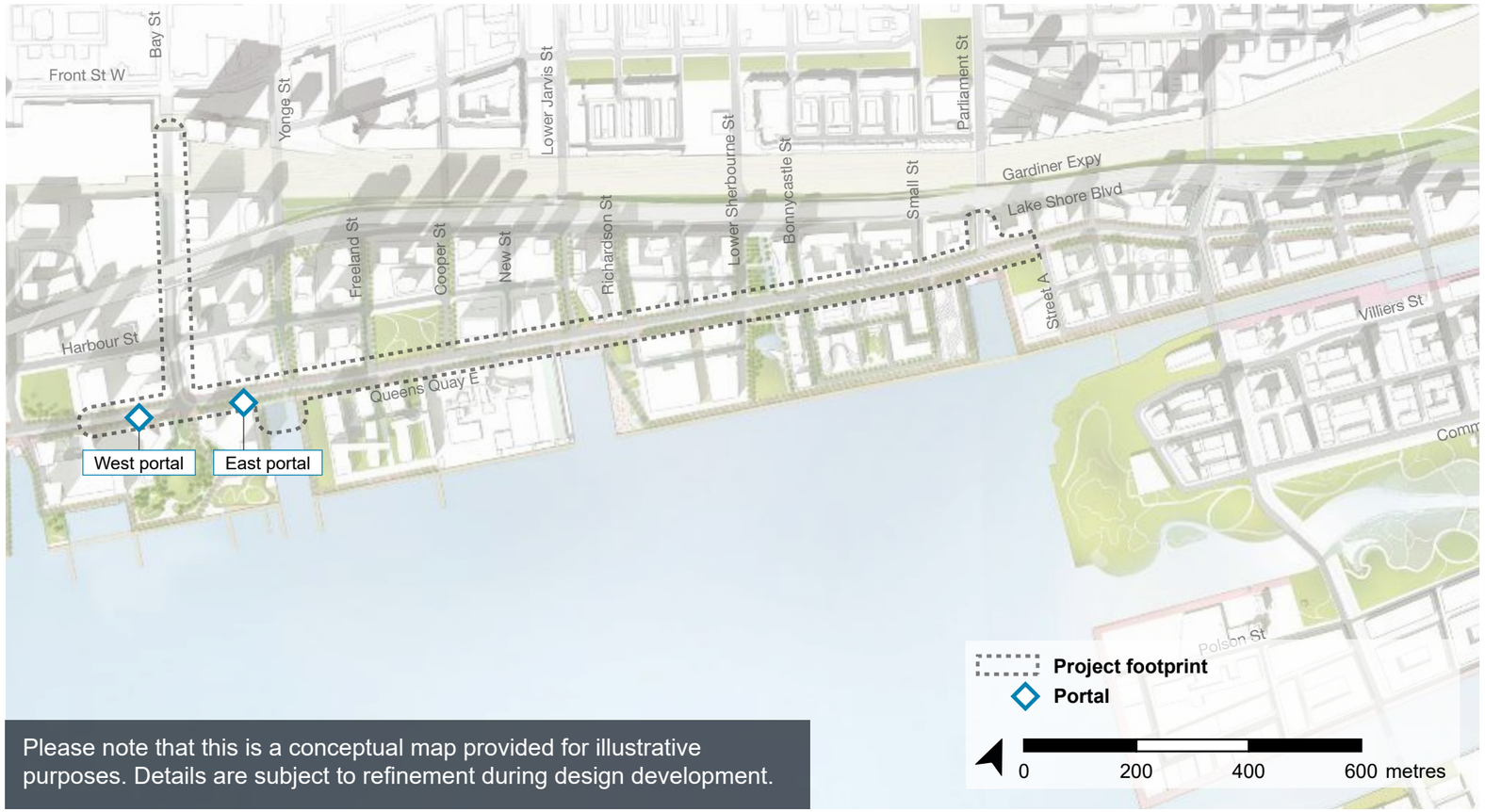


Exhibit 2.12 Portal locations

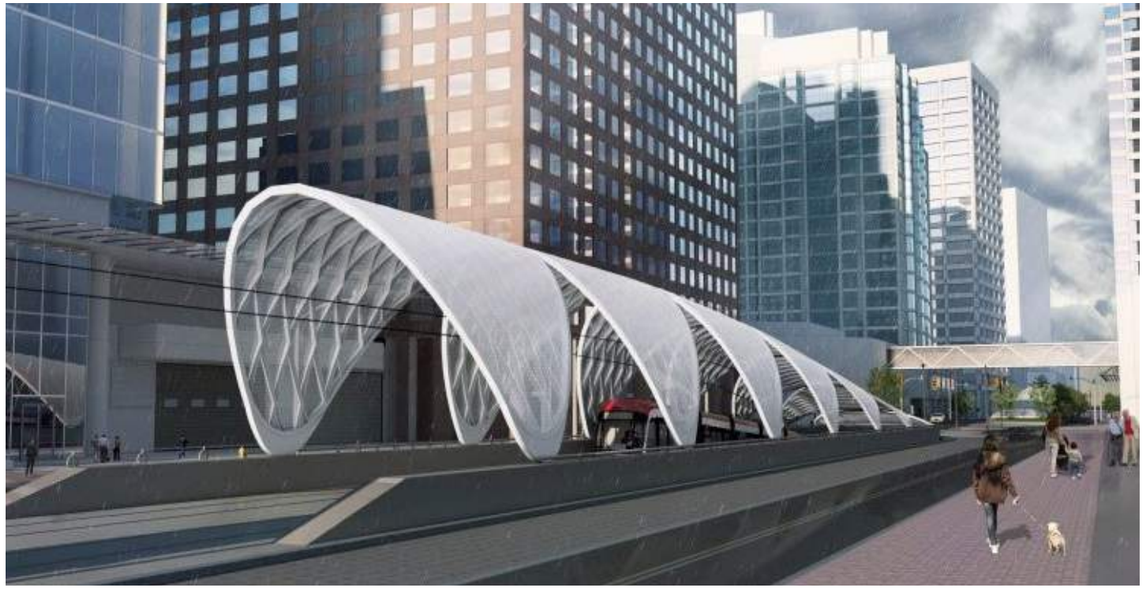


Exhibit 2.13 Rendering of the west portal © WSP and SAI

Exhibit 2.14 Rendering of the view from inside the east portal © WSP and SAI

2.3.3.1 West portal

The existing west portal is situated along Queens Quay West to the west of Bay Street. The west portal is located south of 88 Queens Quay West and 10 Bay Street and north of 33 Harbour Square. The existing portal structure is made of exposed concrete with a steel railing that extends along the top and forms a continuous guard. The overhead catenary system is supported by steel posts and cross tie cables.

Interim scope

The Project proposes the reconstruction of the west portal to accommodate a revised track alignment required to service the reconfigured and expanded Union LRT Station and Queens Quay-Ferry Docks LRT Station and tunnel. The west portal reconstruction will also enable through movements of streetcars between Queens Quay West and Queens Quay East.

Full scope

Longer-term, the west portal will have a canopy intended to create a recognizable gateway feature to announce the arrival at the waterfront (Exhibit 2.13). The canopy's form follows the portal track profile with a curved offset that rises from the west to a high point at its eastern opening.

2.3.3.2 East portal

Interim scope

A new east portal will be constructed on Queens Quay West between Bay Street and Yonge Street. The location and design of the portal requires the closure of existing driveways at the Westin Harbour Castle Hotel and relocation of the driveways to the east side of the hotel, which necessitated the Yonge Slip infill work. The new portal location does not require modifications to the access to residential properties.

Full scope

The east canopy is anticipated to follow the same configuration and design of the west portal (Exhibit 2.14). Together, the canopies will signal arrival at this significant civic space at the foot of Bay Street and highlight the pathway to the ferry terminal.

2.3.4 Slips

The Project includes one slip—the Yonge Slip—which will be partially infilled to enable the construction of the Project (Exhibit 2.15). The Yonge Slip will be transformed into a high-quality space with several public amenities. Note that although Jarvis Slip and Parliament Slip are considered in some supporting studies for this TPAP, they are not included in the Project footprint.

Exhibit 2.15 Yonge Slip location

Exhibit 2.16 Rendering of Yonge Slip © West 8 + DTAH

2.3.4.1 Yonge Slip

A partial slip infill at Yonge Street will provide vehicular access to the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal to enable the closure of the existing driveways and the construction of the east portal. The resultant land will be accessible via a new south leg at the signalized Yonge Street intersection (Exhibit 2.16). Coach buses, taxis and deliveries that are currently accommodated off Queens Quay West will be accommodated in a new drop-off area located on the slip infill. The functional arrangement of the drop-off is designed to support truck access to the hotel loading dock on the east face of the building and to provide space for up to four coach buses and four taxis. The area is also designed to accommodate curbside loading.

Enhancements to the public realm at Yonge Slip are also included in this undertaking, in part to provide appropriate mitigation of concerns regarding impacts resulting from lakefilling activities, as raised by residents and stakeholders through the consultation process. The public realm design for the Yonge Slip infill balances “back of house” requirements with a compelling experience and celebration of its role as the beginning and end of the longest street in the world. At the water’s edge, a unique WaveDeck will create a lakeside dock where people can gather, sit, and enjoy the views of the Island and Lake Ontario. A kayak or canoe launch and water taxi stands may also be integrated into the WaveDeck design.

The location of all functions on the Yonge Slip infill will consider preserving open views of the water from the foot of Yonge Street.

2.3.5 Traction power substations

Operation of the proposed streetcar system will require the placement and construction of multiple TPSS.

An underground TPSS is planned to be located at either Union LRT Station or Queens Quay-Ferry Docks LRT Station to serve the expanded vehicle service.

Additionally, one at-grade TPSS is planned within Block 2 of the Quayside development (Exhibit 2.17). Final location of the TPSS will be selected in coordination with Waterfront Toronto, TTC, and the Quayside Development partner during the design of the Quayside development. The TPSS will be separately owned by the TTC with unrestricted access for system maintenance.

The following design criteria will be considered when siting the TPSS:

- Locate as close as possible to the streetcar guideway. Location fronting Lake Shore Boulevard East is preferred from a public realm and development perspective.
- Do not locate along active street frontages, including Queens Quay East, Bonnycastle Street, and Small Street.
- Provide a driveway, laneway, or on-street lay-by for vehicular access to the TPSS.
- Provide two standard vehicle parking stalls in proximity to the TPSS, to be used exclusively by TTC. Surface location is preferred.
- Provide direct loading access to the main exterior wall of the TPSS to accommodate a heavy single unit (HSU) truck at grade. Space to be accessible at all times for emergency maintenance.
- Provide an unobstructed path of travel from the fire department vehicle to the primary entrance of the TPSS of 45 m or less.
- Provide an access driveway and loading space to be integrated with the public-realm design.
- Accommodate an inground duct bank leading from the TPSS to the streetcar guideway on Queens Quay. Exact routing to be identified during design development.

Ongoing coordination with the TTC and Waterfront Toronto is expected through future design phases to confirm design requirements and inform construction sequencing and scheduling considerations. Refer to Appendix C for additional details regarding the Project's at-grade TPSS.

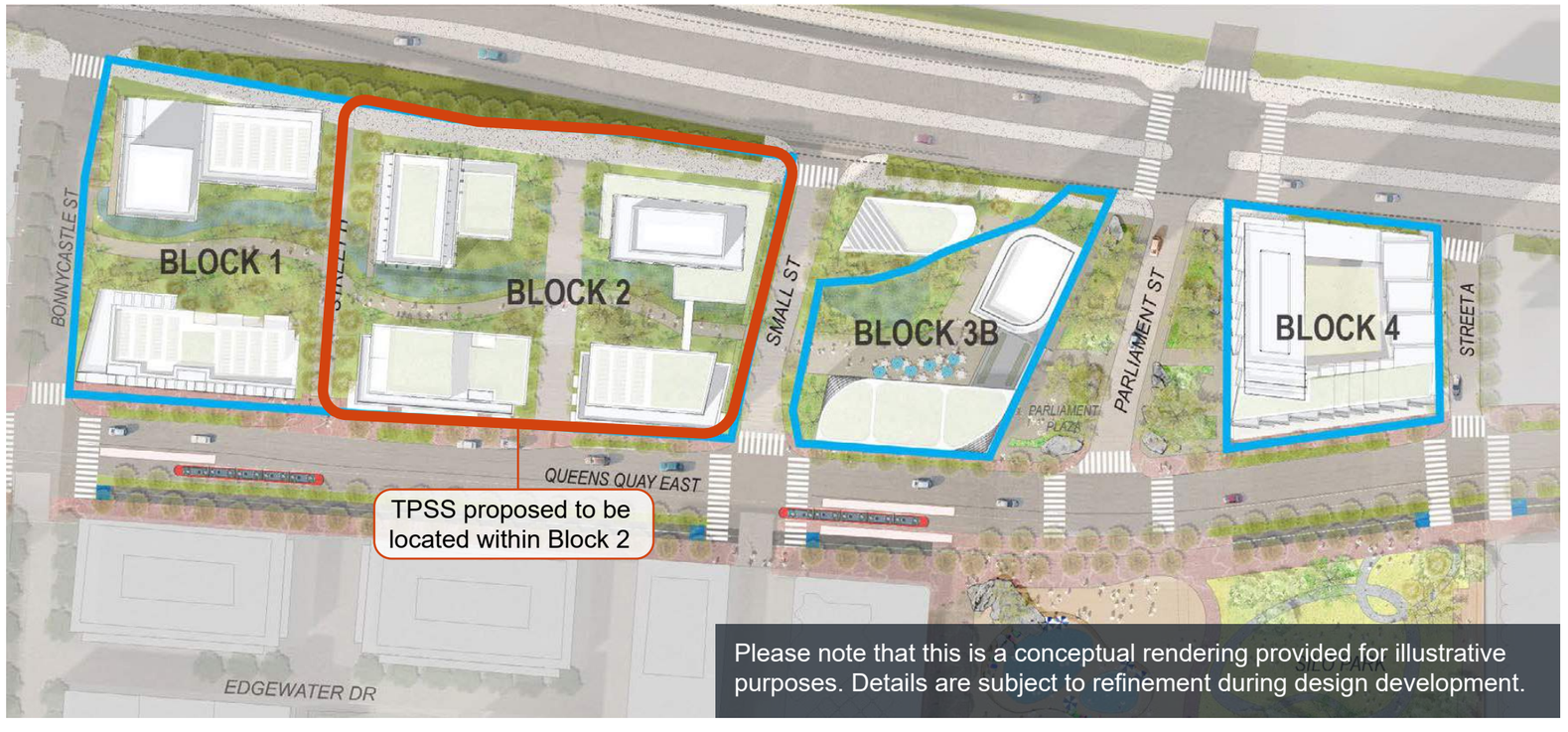


Exhibit 2.17 Approximate TPSS location in Area B © Waterfront Toronto

2.3.6 Intersections

The streetcar infrastructure proposed in this Project will run through several signalized intersections (Exhibit 2.18). The following components will be considered during the design of intersections.

- **Operational concept:** The operational concept of Queens Quay East will be consistent with Queens Quay West. East-west movements will be prioritized along the corridor to provide maximum green time for east-west transit, cyclists, pedestrians, and traffic.
- **Turning movements:** Turns from Queens Quay East to the south will be controlled with protected-prohibited phasing to mitigate conflicts with transit in the guideway, cyclists in the MGT, and pedestrians along the promenade. Additionally, turns to the south will only be permitted via one turning movement—either eastbound rights or westbound lefts—at each intersection. Turns to the north will be permissive or protected-permissive depending on the situation.
- **Crosswalks:** To enhance pedestrian connectivity, crosswalks will be integrated in as many intersections as possible, but some intersections do not include crosswalks across Queens Quay East. Additional details regarding crosswalks are provided in the following sections.
- **Bike connections**: Bike connections will be provided at key locations between the MGT and bike facilities on intersecting north-south streets.
- **Large vehicle accommodation:** The Project design will accommodate access routes for WB-20 trucks to and from the Redpath Sugar Plant and Loblaws along a prescribed route. Medium single unit (MSU) trucks will be accommodated at all intersections and HSU trucks will be accommodated at most intersections. Buses will be accommodated where required.
- **Transit stops**: As noted in Section 2.3.2.1.3, intersections with transit stops will include two platforms, one for each direction of travel. The specific platform configurations are subject to refinement in detailed design, but will be accessible via controlled pedestrian crossings.

Please note that intersection configurations are subject to refinement during detailed design.

Please note that this is a conceptual map provided for illustrative purposes. Details are subject to refinement during design development.

Exhibit 2.18 Signalized intersections

2.3.6.1 Single-stage pedestrian crossing

The current Project design includes single-stage crossings at Queens Quay East / Lower Jarvis Street and Queens Quay East / Parliament Street. (Exhibit 2.19). Multiple alternative designs were considered, but single stage crossings have been incorporated because they:

- are more consistent with other intersections along the corridor;
- reduce safety concerns for users with visual impairments; and
- require less space as they do not feature refuge islands.

Additionally, the City of Toronto Traffic Signal Operation Policies and Strategies notes that “the City shall require single-stage crossings except in situations where a single-stage crossing would result in capacity issues due to the longer cycle length required, and where there are no additional safety issues being introduced”.

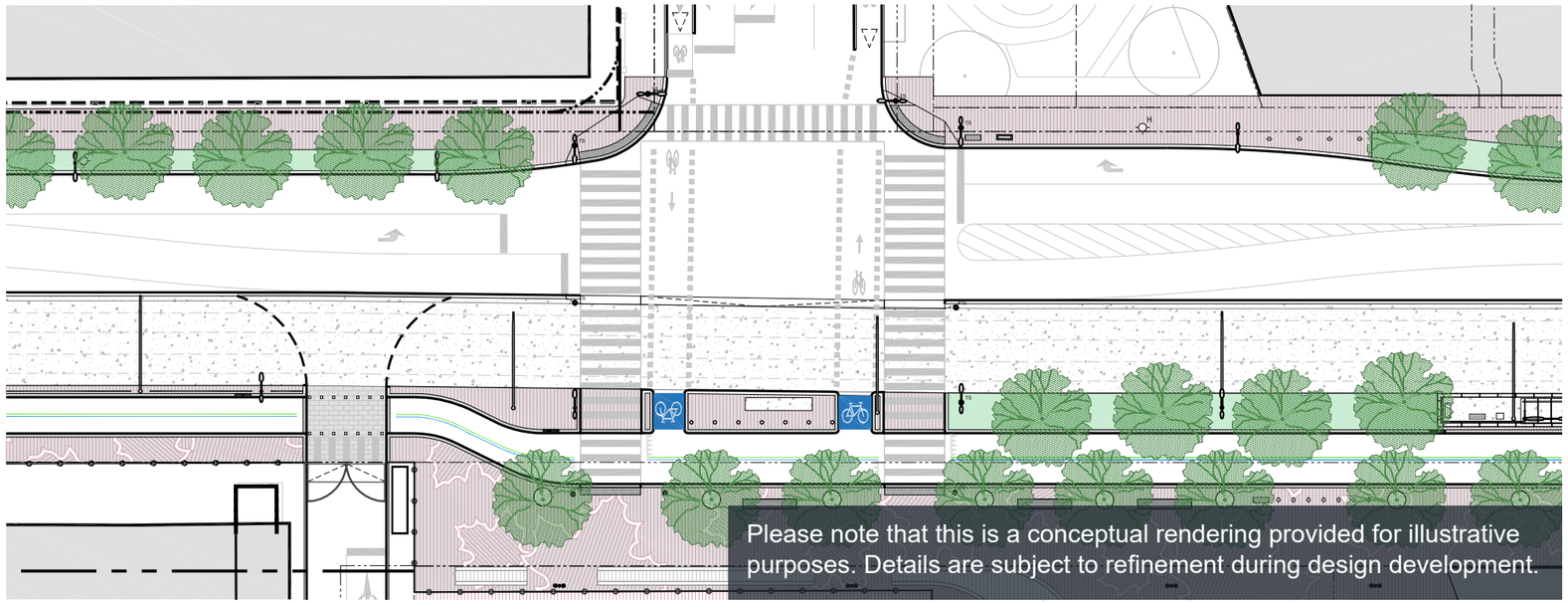


Exhibit 2.19 Single-stage crossing

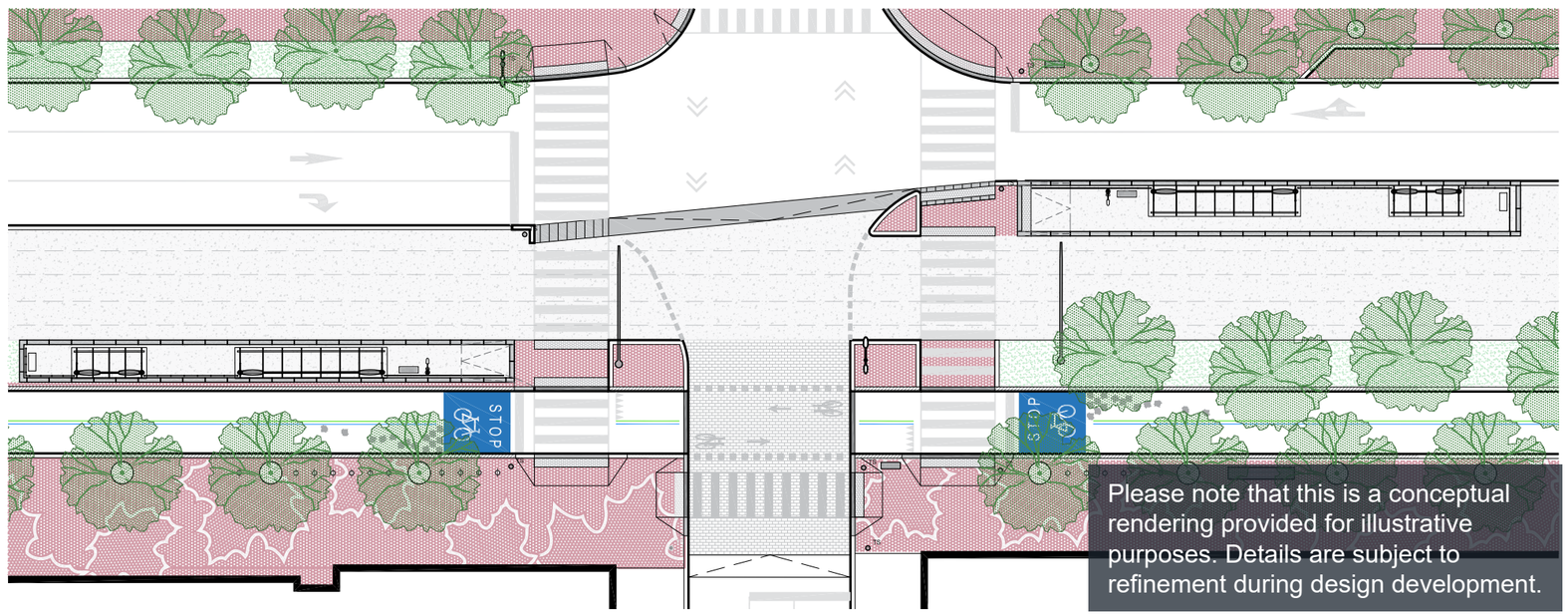


Exhibit 2.20 Delineated crossing

2.3.6.2 Delineated crossings

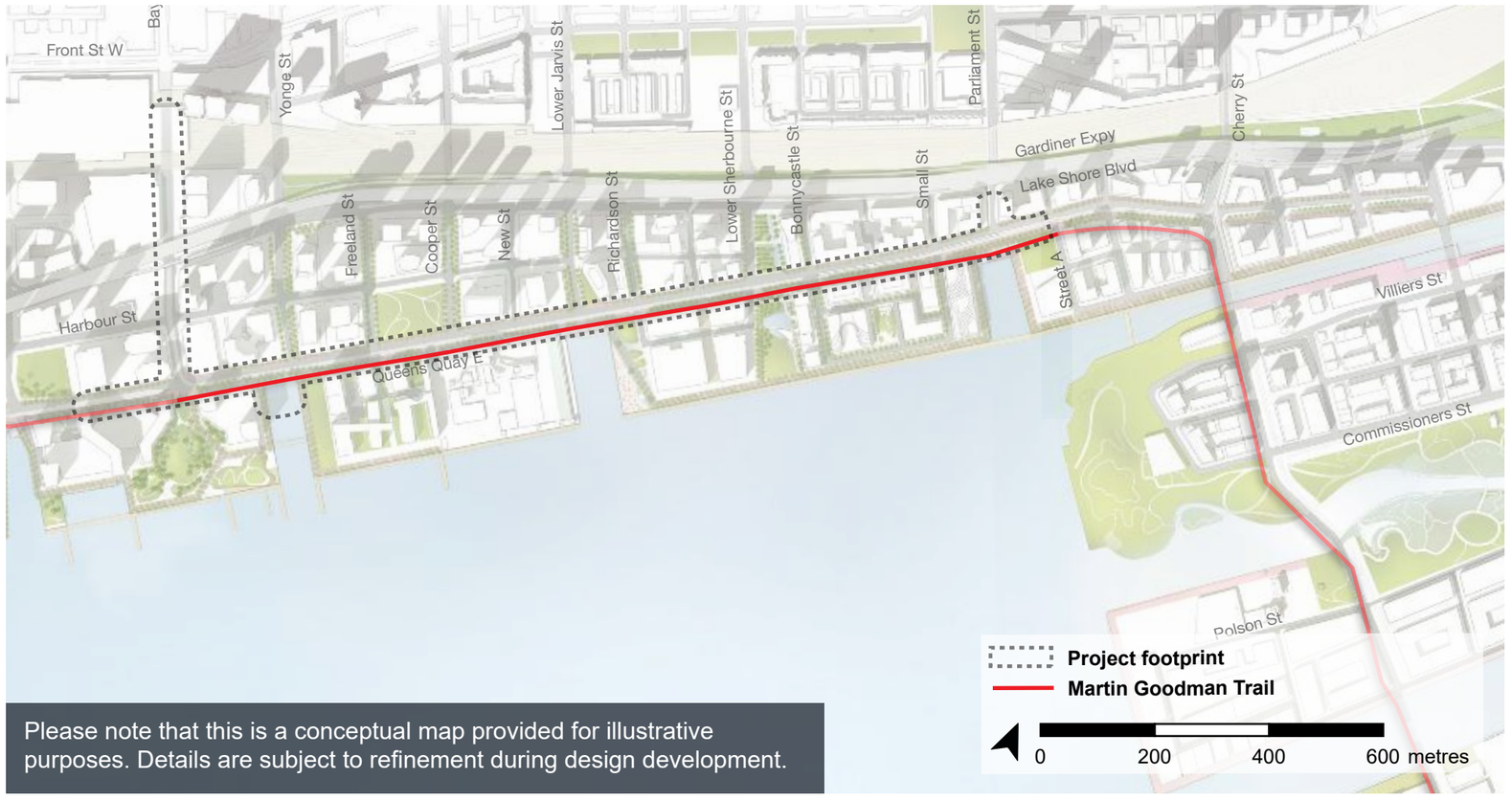
When Queens Quay West was implemented, north-south crosswalks were not extended across the MGT. Consequently, pedestrian space was not clearly delineated from bike space, leading to conflicts between the two modes near crosswalks. Additionally, since the implementation of Queens Quay West, there have been significant advances in intersection and complete-streets guidance from a variety of organizations including the National Association of City Transportation Officials (NACTO) and the City of Toronto. The lessons from Queens Quay West and the updated guidance have informed the design for Queens Quay East, which includes delineated crossings through the MGT (Exhibit 2.20). The clearly delineated crossings will provide increased clarity for pedestrians and cyclists, leading to reduced conflicts between the two modes.

2.3.7 Active transportation facilities

As part of the proposed Project, the MGT—a bi-directional multi-use trail on the south side of Queens Quay East—will be enhanced (Exhibit 2.21 and Exhibit 2.22). A wide planting bed of trees and understorey plantings will separate the MGT from the streetcar tracks. As with Queens Quay West, a second line of trees intermixed with site furnishings like benches and bicycle parking will run along the south side of the MGT, creating a tree-lined trail throughout the Queens Quay corridor. To support the increasing cycling volumes, the proposed typical pavement width is 4.2 m, wider than along the waterfront's western end. The MGT along Queens Quay East is proposed to be slightly lower than the pedestrian boulevard to the south and the planting strip to the north.

The Project also proposes the addition of uni-directional bike lanes along Parliament Street. Space on the west side of Parliament Street is being preserved for a future bi-directional bike facility.

The MGT will feature connections to north-south bike lanes on Bay Street, Yonge Street, Lower Jarvis Street, Lower Sherbourne Street, and Parliament Street. At Cooper Street, where raised bicycle lanes are proposed as part of the Lower Yonge Precinct plan, various options on how to provide the north-south connection to the MGT were explored and discussed with the City. It was agreed that until Cooper Street is extended through the rail corridor and becomes a through north-south bicycling route beyond the Lower Yonge Precinct, no formal connection to the MGT is required. In the future, the City's preferred connection is to provide an off-street connection through the southeast corner of the future park west of Cooper Street.



Please note that this is a conceptual map provided for illustrative purposes. Details are subject to refinement during design development.

Exhibit 2.21 Active transportation facilities

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

Exhibit 2.22 Rendering of the MGT
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3.0 Existing conditions

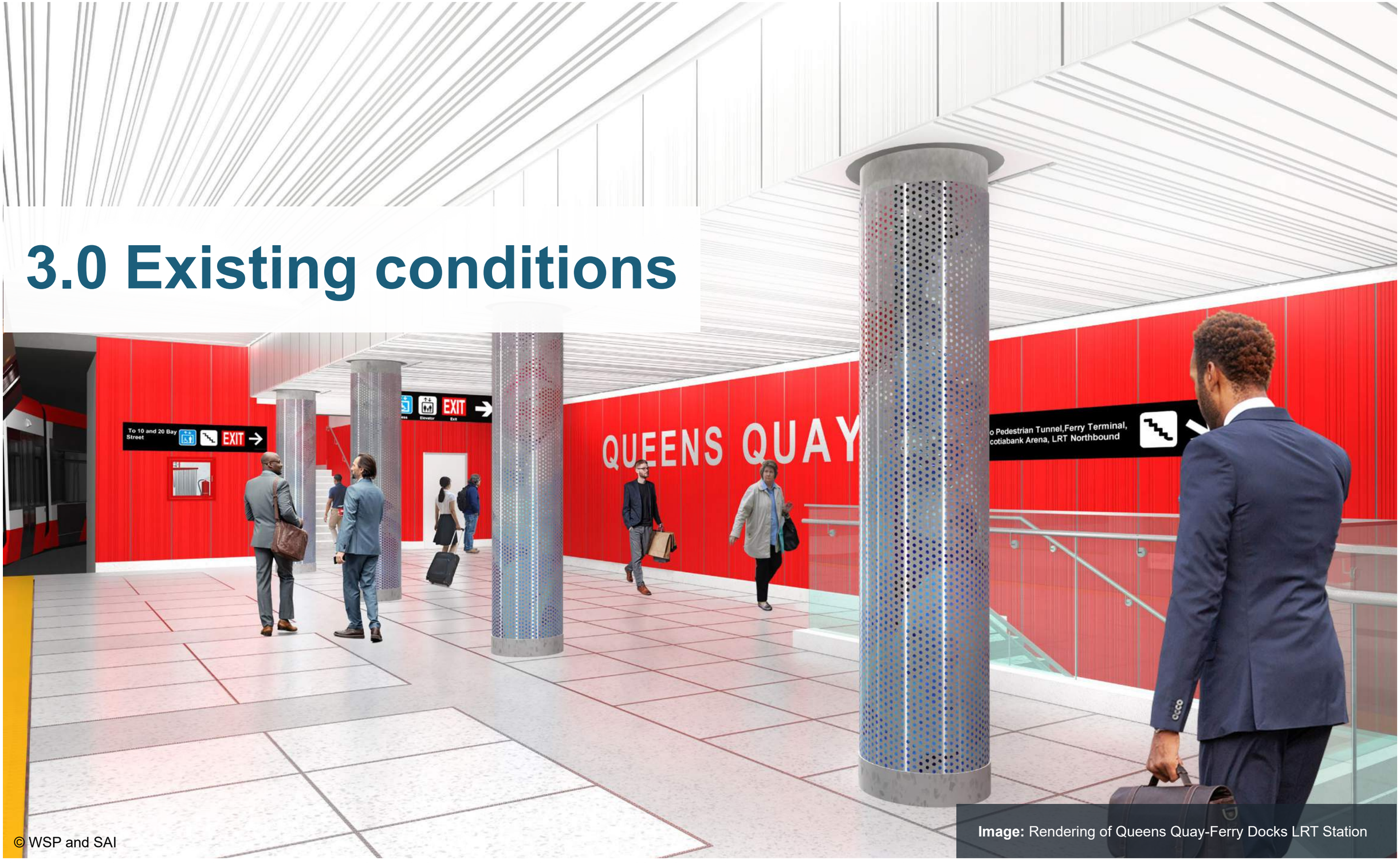

Image: Rendering of Queens Quay-Ferry Docks LRT Station

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

3.0 Existing conditions

The Project is located on infilled land created in the late nineteenth and early twentieth centuries. The majority of the Project study area consists of urban brownfield sites that have been recently redeveloped or are undergoing development to accommodate the area's growing population. While the area is expected to have limited archaeological value, it includes several heritage sites. The Project study area is largely void of wildlife on land, but does provide habitat for several aquatic species. The Project study area currently lacks higher-order transportation connections.

3.1 Overview

This section outlines the existing environmental conditions of the Project study area. Its primary purpose is to create a baseline for evaluating potential environmental impacts and determining strategies for environmental mitigation and monitoring. The analysis of the current environmental conditions was conducted using a combination of desktop studies and fieldwork investigations carried out by environmental experts. The methods followed established industry standards, and where relevant, adhered to provincial guidelines and protocols.

3.2 Background

Toronto's waterfront has historically been used for settlement, farming, hunting, and fishing by Indigenous groups including the Five Nations Iroquois and the Mississaugas. For ten millennia, Indigenous groups settled at the mouths of the Humber and Rouge Rivers. In the 1700s the British crown recognized local populations as owners of the north shore of Lake Ontario in the area of Toronto and entered into negotiations to facilitate settlement after the American Revolution.[a]

The Town of York, Toronto's predecessor, was founded in 1793 and occupied the area between present-day Front, George, Duke, and Berkeley streets. To the east of the town (in present-day West Don Lands) was "Government Park," bounded by the Don River, the harbour, Parliament Street, and Carleton Street. Over time, development expanded inland, while the waterfront was primarily preserved for commercial and transportation functions.

In 1820, the first major wharf structures were constructed at the foot of Peter, Church, and Frederick streets. By 1842, additional harbour infrastructure was constructed, including wharves at Bathurst Street, John Street, Simcoe Street, York Street, Yonge Street, and Church Street. Several manufacturing facilities were sited adjacent to the waterfront to benefit from proximity to trade routes. By the 1830s and 1840s, much of the waterfront land was occupied, limiting the growth of the manufacturing and shipping industries.

In response, massive landfilling campaigns began in the 1850s. For the next century, Toronto's shoreline moved progressively south to create new space for rail infrastructure and to facilitate the development of deep-water piers. Following the Second World War and continued industrial development along the harbour's edge, Toronto's waterfront became less desirable, and people moved farther from the downtown core. New roads were constructed to transport people between suburban houses and central city jobs. The Gardiner Expressway, one of the highways constructed during the road-building campaign, became a major barrier between the city and the waterfront.

Following centuries of infill, industrialization, and environmental degradation, the work proposed as part of the Project will facilitate substantial improvements to the natural environment. New open spaces will reconnect people to the waterfront, providing opportunities for relaxation and recreation. Trees and vegetation will be planted throughout the Project study area to improve air quality, provide shade, and reduce run-off. Electrified transit will provide an alternative to private motor vehicles, reducing harmful emissions and particulate air pollution.

a. Please note that this short description does not encapsulate the entire history of Indigenous groups in this area, nor has it been written from an Indigenous perspective.

3.3 Matters of provincial importance and constitutionally protected Aboriginal or treaty rights

Throughout the TPAP, proponents must identify how the transit project may affect:

- Matters of provincial importance that relate to the natural environment or have CHVI; and
- Constitutionally protected Aboriginal or treaty rights.

Exhibit 3.1 identifies matters relevant in determining provincial importance (as provided in the Guide to Environmental Assessment Requirements for Transit Projects) and notes the sub-section of Chapter 3 in which they are discussed. Potential impacts and benefits of the Project on the matters of provincial importance and associated mitigation measures are discussed in Chapter 4.

Matter of provincial importance	Chapter 3 sub-section
A park, conservation reserve or protected area	Not relevant to the Project. There are no provincial parks, conservation reserves or protected areas within the Project study area.
Extirpated, endangered, threatened, or species of special concern and their habitat	Not relevant to the Project. There are no extirpated, endangered, threatened, or species of special concern within the Project study area.
A wetland, woodland, habitat of wildlife or other natural heritage area (e.g., prairie)	Relevant to the Project. See Section 3.4 for a discussion of the aquatic environment in the Yonge Slip.
An area of natural or scientific interest (earth or life science)	Not relevant to the Project. There are no areas of natural or scientific interest within the Project study area.
An area or region of surface water or groundwater or other important hydrological feature	Relevant to the Project. See Section 3.4 for a discussion of surface water and groundwater within the Project study area.
Areas that may be impacted by a known or suspected on- or off-site source of contamination such as a spill, gasoline outlet, an open or closed landfill site, etc.	Relevant to the Project. See Section 3.4 for a discussion of contaminated sites within the Project study area.
Protected heritage property	Relevant to the Project. See Section 3.5.2 for a discussion of protected heritage property within the Project study area.
Built heritage resources	Relevant to the Project. See Section 3.5.2 for a discussion of built heritage resources within the Project study area.
Cultural heritage landscapes	Relevant to the Project. See Section 3.5.2 for a discussion of cultural heritage landscapes within the Project study area.
Archaeological resources and areas of potential archaeological interest	Relevant to the Project. See Section 3.5.1 for a discussion of archaeological resources and areas of potential archaeological interest within the Project study area.
An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act*	Not relevant to the Project. The Project study area does not fall within an area designated as an escarpment natural area or escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act*.
Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001* applies	Not relevant to the Project. The Project study area does not fall within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001* applies.
Property within an area described as a key natural heritage feature or a key hydrologic feature in the Protected Countryside by the Greenbelt Plan under the *Greenbelt Act, 2005*	Not relevant to the Project. The Project study area does not fall within an area described as a key natural heritage feature or a key hydrologic feature in the Protected Countryside by the Greenbelt Plan under the *Greenbelt Act, 2005*.

Exhibit 3.1 Matters of provincial importance

3.4 Natural environment

The Project is located within a highly urbanized environment typical of a major city with impermeable surfaces; high-volume multimodal transportation activity; and high-density residential, commercial, and institutional land uses. The Project study area has seen extensive growth and redevelopment in recent years. Several large parklands and recreational open spaces have been incorporated into redevelopment efforts.

The following sections describe existing conditions of the natural environment.

3.4.1 Physical environment

The following sections describe the existing soil and groundwater conditions within the physical environment study area (see Section 1.7). This information has been compiled from geoenvironmental reports.

3.4.1.1 Geology

3.4.1.1.1 Area A

The physical environment study area lies within the physiographic area known as the Iroquois Plain. The subsurface soils are generally comprised of surficial fills underlain by glacial tills comprised of clayey silt to silty clay. The glacial tills are underlain by interbedded layers and/or seams of sand, silt, and clay. Thickness, composition, and sequence of interbedded layers/seams may vary locally due to historic migration of the Scarborough Lake shoreline. The glaciolacustrine stratum is underlain by glacial till deposits generally comprised of sandy silty clay, trace gravel and shale fragments. Till deposits contain occasional lenses/pockets of glacio-fluvial sand and gravel and glacio-lacustrine stratified silt and clay.[17, 18, 19]

Fill materials extended to depths ranging from 2.7 metres below ground surface (mBGS) to 7.6 mBGS and consist of a heterogeneous mixture of sandy silt/silty sand and silty clay, with varying amounts of rubble and waste materials (i.e., concrete, brick, slag, glass, metal, wood, organics, etc.) observed in the upper 3.0 mBGS to 4.0 mBGS.

The overburden soils are underlain by shale, minor limestone, and siltstone, of the Upper Ordovician Georgian Bay Formation representing the bedrock of the area. Based on published literature and results of available geotechnical investigations, the bedrock in the Area A area is typically encountered at elevations in the order of about 67 metres above sea level (mASL) to 68 mASL. Elevation of the bedrock may vary locally, especially, at the location of buried river and/or glaciation channels where bedrock surface may be encountered at greater depths.

3.4.1.1.2 Area B

Subsurface soils beneath the site are described as coarse-textured lacustrine deposits consisting of sand, and gravel with minor silt and clay in geological records prepared by the Ontario Geological Survey. The map of the Physiography of Southern Ontario shows the site to be located within a region of Till Moraine. The Ontario Geological Survey identifies bedrock underlying the site as shale, limestone, dolostone and siltstone of the Georgian Bay Formation.[17, 18, 19]

Based on the results of field investigations conducted on land, the asphalt, grass, and compacted gravel surfaces in Area B are underlain by a layer of fill up to approximately five metres thick. The fill layer is believed to have been sourced from dredged lake sediments and municipal domestic and industrial construction waste materials, and consists of a sand and gravel matrix with inclusions of brick, asphalt, concrete, and other waste materials. The fill layer is underlain by a series of sand, silt, and clay layers with intermittent organic layers that show significant variation between subsurface investigation locations. These layers can be characterized by their shared lacustrine depositional origin, and are commonly grey in appearance. These lacustrine sands, silts, and clays are underlain by a weathered shale bedrock which demonstrates an increased competency with depth. The shale bedrock was encountered at 8.17 to 11.58 mBGS across the site.

In the slips within and adjacent to the site, sediment was encountered at approximately seven to eight metres below water surface. The sediment layer consists of a clayey silt, and is approximately two to three metres thick, overlying the shale bedrock layer which is found at a depth of approximately 10 to 12 m below water surface.

3.4.1.2 Groundwater

The groundwater flow direction in the physical environment study area is generally toward Lake Ontario.

3.4.1.2.1 Area A

Union LRT Station Project Area

Six boreholes were instrumented with monitoring wells for long-term groundwater measurements in the Union LRT Station area. The groundwater levels in the monitoring wells ranged between 2.2 and 6.5 mBGS or between elevation 72.8 and 76.5 mASL.

Queens Quay–Ferry Docks LRT Station & Tunnel Portal Project Area

Fourteen boreholes were instrumented with monitoring wells and three cluster wells were installed for long term groundwater measurements in the area of Queens Quay-Ferry Docks LRT Station and the portals. The groundwater levels in the monitoring wells ranged between 1.9 and 7.9 mBGS or between elevation 68.3 and 74.7 mASL.

3.4.1.2.2 Area B

Locally, flow is towards the southwest and anticipated to be dominated by a gradient towards Lake Ontario, with the potential for some local variation due to buried utilities, conduits, and other subsurface features on the site. The measured depth to groundwater ranged from 1.68 to 2.95 mBGS (71.6 to 74.8 mASL) in monitoring wells in Area B.

3.4.1.3 Soil, sediment, and groundwater quality

Numerous environmental investigations of the site or portions of the site have been conducted historically and were summarized in more recent reports reviewed as part of this study. Previous Phase One Environmental Site Assessment reports investigated large portions of the site and identified numerous areas of potential concern related to existing or historic potentially contaminating activities (PCAs) from previous commercial and industrial uses at the site and surrounding areas. The primary source of PCAs is extensive industrial activity in the area prior to the 1990s, with operations including dye, ink,

chemical, pharmaceutical, and solvent manufacturing/use; iron and metal processing; bulk storage of fuels and grains; freight and shipping operations; waste disposal; and rail spurs and wharfs.

Several Phase Two Environmental Site Assessment reports have also been completed for the various areas of the site. Sites within the Project footprint that could contain soil or groundwater impacted by contaminants have been identified through a review of relevant geotechnical and environmental reports. The following sections highlight key locations of contamination that could be intersected or disturbed during construction and operation of the proposed Project.

It is understood that the future infrastructure works will not result in the redevelopment of the site to a more sensitive land use, therefore the filing of a Record of Site Condition under the requirements of O. Reg. 153/04 will not be required, as prescribed under Section 168.3.1 of the Environmental Protection Act. However, O. Reg. 153/04 was utilized as a guidance document for the execution of the most recent environmental reports reviewed, and for comparison of soil, sediment, and groundwater data.

The applicable generic Site Condition Standards (SCS) for soil and groundwater are the 'Table 3 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition' for industrial/commercial/community property use and coarse-textured soils (Table 3 SCS). As a preliminary screening measure for the evaluation of future soil management options, the soil analytical data has also been compared to the MECP criteria defined as the 'Table 3.1: Ceiling Values for Full Depth Excess Soil in a Non-Potable Ground Water Condition' for industrial/commercial/community property uses. The applicable generic SCS for sediment or soil and groundwater areas in proximity to a water body are 'Table 9: Generic Site Conditions Standards for Use within 30 m of a Water Body in a Non-Potable Ground Water Condition' (Table 9 SCS).

3.4.1.3.1 Area A

Based on the desktop review of the historical documents, it is estimated that soils in the physical environment study area would be impacted by metals and inorganics, petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), Acid/Base/Neutral Compounds including polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and Organochlorine pesticides. Visible non-aqueous phase liquids (NAPLs), soil staining/unusual discoloration were not noted in the reports reviewed. Visual evidence of contamination, including fragments of brick, plastic, wood, metal, clay tile, concrete, coal, clay pipes, pottery, glass, ceramic were identified in portions of the physical environment study area described in the reports reviewed. Hydrocarbon-like odours were also noted at one location.

Results of most recent investigations,[20, 21, 22] carried out at a portion of the physical environment study area confirmed soil is impacted by various contaminants including metals, mercury, electrical conductivity, sodium absorption ratio petroleum hydrocarbons, VOCs, and PAHs at several locations, where concentrations exceed the Table 3 and/or Table 9 SCS.

The chemical analysis results also indicate exceedances of the Table 3.1 Excess Soil Quality Standards.

The results of groundwater sampling identified some exceedances of SCS for PAHs, VOCs, and metals parameters.

3.4.1.3.2 Area B

Based on the most recent environmental reports reviewed for portions of Area B,[23, 24] PAHs exceeded Table 3 and/or Table 9 SCS in several locations between 1.2 and 4.6 mBGS. Other parameters such as PHCs, cyanide, electrical conductivity and various metals parameters were exceeded in some locations between similar depths. These referenced parameters, as well as benzene, also exceeded Table 3.1 Excess Soil Quality Standards in many locations.

The results of the sediment investigation identified metals, PCBs, and PAHs in exceedance of Table 9 SCS for the majority of the sediment samples collected.

Based on groundwater sampling, concentrations of contaminants of concern in groundwater were generally less than the Table 3 SCS with the exception of PHCs at one location.

Prior environmental reports within Area B identified exceedances of Table 3 and 9 SCS throughout the area for a variety of contaminants in soil to a depth of 8.2 mBGS. Additionally, prior investigations identified free phase coal tar in soil at depths of approximately 2.4 to 9.8 mBGS in the area of the intersection of Queens Quay East and Small Street.

Groundwater samples were compared to the City of Toronto Sanitary and Storm Sewer Use By-law (100-2016). The concentrations of all parameters met the Sanitary Sewer Use By-law; however, several metals and inorganics parameters in exceedance of the Storm Sewer Use By-law were identified.

3.4.2 Aquatic environment

The City of Toronto obtains its drinking water from Lake Ontario, a surface water source. Waterfront Toronto has reviewed the Project relative to the Intake Protection Zones IPZ-1 and IPZ-2 identified in the Toronto and Source Region Protection Area Approved Assessment Report dated March 2, 2022. The Project is outside of both intake protection zones, with the nearest zones (Island 4 and Island 5) situated in the outer harbour south of the Toronto Islands over 3.5 km through open water from the proposed location of the Project.

The Project is near the Inner Harbour shoreline of Lake Ontario, which has experienced several alterations. Several slips are located along the edge of the Inner Harbour shoreline, one of which (Yonge Slip) is included within the aquatic environment study area.

3.4.2.1 Yonge Slip

The Yonge Slip is located south of the Yonge Street and Queens Quay East intersection. Bathymetric surveys at Yonge Slip were conducted in April 2021 to measure the lakebed topography. Its bottom elevation ranges from 66 mASL to 68.5 mASL, with water depths of approximately 6 m along the north edge dockwall to 8.6 m at the southern mouth of the slip.

The west and north walls consist of timber crib and concrete copebeams. The cribs are in reasonable condition and the copebeams are in poor condition. The east wall was built with steel sheet pile. The sheet pile is in reasonable condition, with noted pitting and spalling at the water line, and the copebeam is in poor condition. A storm sewer outlets into the slip. The substrate consists of soft silt and gravel. Sediment depths range from 1.3 m to 4.8 m thick and consists of soft silt and gravel.

Data recorded at Jarvis and Parliament slips between 2008 and 2015 indicated the presence of warmwater, coolwater, and coldwater fish species classified as ‘generalists,’ meaning they are capable of thriving on a range of different foods and within different environments (Exhibit 3.2). Emerald Shiner (Notropis atherinoides) and Alewife (Alosa pseudoharengus) were the most common species captured. None of the identified species recorded are species at risk. No sampling was conducted at Yonge Slip, but it is expected to have a similar fish community to Jarvis Slip and Parliament Slip due to its proximity and similar conditions.

Refer to Appendix D for additional details on the aquatic environment in Yonge Slip.

Species	Location(s) captured	Year(s) captured
Alewife (Alosa pseudoharengus)	Parliament Slip, Jarvis Slip	2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015
Chinook Salmon (Oncorhynchus tshawytscha)	Parliament Slip	2008, 2010, 2012
Common Carp (Cyprinus carpio)	Jarvis Slip	2012
Emerald Shiner (Notropis atherinoides)	Parliament Slip, Jarvis Slip	2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015
Gizzard Shad (Dorosoma cepedianum)	Parliament Slip, Jarvis Slip	2009, 2011, 2012, 2013, 2014, 2015
Longnose Gar (Lepisosteus osseus)	Jarvis Slip	2009
Northern Pike (Esox lucius)	Parliament Slip, Jarvis Slip	2008, 2012, 2014
Rainbow Smelt (Osmerus mordax)	Parliament Slip, Jarvis Slip	2008, 2009, 2014, 2015
Round Goby (Neogobius melanostomus)	Parliament Slip	2014
Spottail Shiner (Notropis hudsonius)	Parliament Slip	2008
Threespine Stickleback (Gasterosteus aculeatus)	Jarvis Slip	2014

Exhibit 3.2 Toronto Harbour fish community data obtained via electrofishing and trapping conducted by Toronto and Region Conservation Authority from 2008 to 2015

3.4.3 Terrestrial environment

3.4.3.1 Area B

There are few significant terrestrial environmental features in Area B due to its highly urbanized nature. There is sparse vegetation, beyond some urban street trees within the existing public right-of-way and some grassed areas within the pedestrian promenade. In total, there are 235 trees within Area B (Exhibit 3.3). Some healthy varieties of Maples have been planted as part of adjacent parkland development at Sugar Beach near Jarvis Street and along the Sherbourne Commons frontage. A row of relatively healthy White Ash are located just north of the existing Queens Quay East north property line at Lower Sherbourne Street. Further east, a series of Trembling Aspens were planted along the grass boulevard on the south side of Queens Quay East between Bonnycastle Street and Small Street as part of an interim MGT improvement project in 2015. Small-diameter, or “small-caliper,” trees of this particular species were selected at the time for their fast growing nature and short lifespan, in anticipation that the future Queens Quay East reconstruction would require their removal or relocation. The lack of habitat is expected to preclude species at risk in the area. Refer to Appendix E for additional details on the terrestrial environment in Area B.

3.4.4 Significant/protected natural features

No Areas of Natural and Scientific Interest or Environmentally Significant Areas are located within the Project footprint.

Category*	Number of trees
City of Toronto - private trees	14
City of Toronto - park trees	30
City of Toronto - ravine trees	0
City of Toronto - street trees	159
City of Toronto - unregulated trees	32
TRCA - O. Reg. 166/06	41
Boundary trees	5
Endangered, rare or protected species	0

*Categories are not mutually exclusive

Exhibit 3.3 Area B tree categories

3.5 Cultural environment

The cultural environment includes archaeological resources, built heritage resources (BHRs), and cultural heritage landscapes (CHLs). Cultural resources have been assessed through several studies, including Stage 1 Archaeological Assessments (AAs), Cultural Heritage Reports, Cultural Heritage Evaluation Reports (CHER), and Heritage Impact Assessments (HIAs). Each type of study and their findings are discussed in more detail below.

3.5.1 Archaeological resources

3.5.1.1 Area A

A Stage 1 AA was undertaken in 2021 by WSP Environment & Infrastructure (formerly Wood) for Area A. Stage 1 AAs consist of a review of geographic, land use, and historical information for the property and the relevant surrounding area; a property visit to inspect its current condition; and contacting MCM to find out whether or not there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2 - 4 AAs) as necessary. The Area A Stage 1 AA is included in Appendix F.

The Stage 1 AA determined that:

- 0.15 hectares (2.3%) of the Area A archaeology study area has been previously assessed and the portion containing and adjacent to the Harbour Square Wharf (CW7) was recommended for archaeological monitoring;
- 5.13 hectares (78.5%) of the Area A archaeology study area has been previously assessed and requires no further archaeological assessment; and
- The remaining 1.26 hectares (19.2%) of the Area A archaeology study area has low archaeological potential due to deep and extensive previous disturbance and requires no further archaeological assessment.

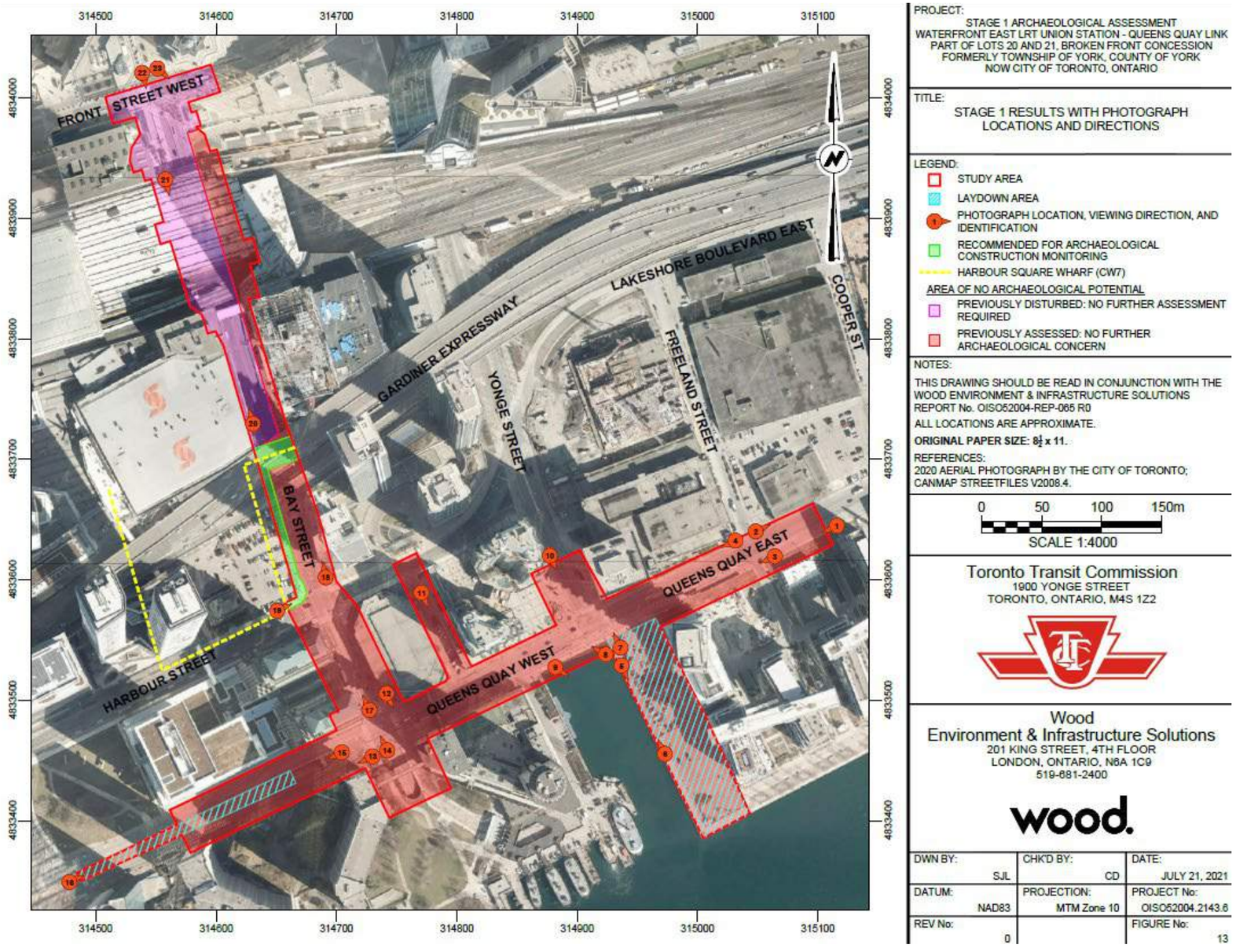

Exhibit 3.4 Area A Stage 1 AA results

3.5.1.2 Area B

A Stage 1 AA was undertaken in 2021 by Archaeological Services, Inc. for Area B. As noted above, a Stage 1 AA consists of a review of geographic, land use, and historical information for the property and the relevant surrounding area; a property visit to inspect its current condition; and contacting MCM to find out whether or not there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2 - 4 AAs) as necessary. The Area B Stage 1 AA is included in Appendix F.

The Stage 1 analysis determined that Area B is partly situated on the western limit of the general archaeological potential zone defined around the former Don Breakwater. These lands require a program of archaeological construction monitoring to identify any intact remains of the 1870 Don Breakwater. The remainder of the Area B archaeology study area does not retain archaeological potential on account of deep and extensive disturbance or being previously assessed. These lands do not require further archaeological assessment.

Should the Project extend beyond the current archaeology study area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

Note: Despite their inclusion in the Area B Stage 1 AA, Jarvis and Parliament slips are not included within the Project footprint.

Exhibit 3.5 Area B Stage 1 AA results

3.5.2 Built heritage resources and cultural heritage landscapes

There are several BHRs and CHLs within the cultural heritage study areas.

3.5.2.1 Area A

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was undertaken in 2021 by WSP Environment & Infrastructure (formerly Wood) for Area A. The purpose of this Cultural Heritage Report is to establish the historical context of Area A, identify known and potential BHRs and CHLs through information gathering and fieldwork, create an inventory of BHRs and CHLs, and complete a preliminary impact assessment and recommend mitigation measures. A total of 14 BHRs and CHLs, were identified within the Area A cultural heritage study area as shown in Exhibit 3.6 and as listed below in Exhibit 3.7. Entries in the inventory are labeled as cultural heritage resources (CHR) and include both BHRs and CHLs.

The Cultural Heritage Report found that direct adverse impacts are anticipated to four protected heritage properties. Standalone HIAs were recommended and subsequently conducted for the following properties:

- CHR 1 (Union Station HCD)
- CHR 2 (Union Station, 65-71 Front Street West)
- CHR 3 (Dominion Public Building, 1 Front Street)
- CHR 4 (Postal Delivery Building, 40 Bay Street)

All HIAs were undertaken in 2021 by WSP Environment & Infrastructure (formerly Wood). The Cultural Heritage Report and HIAs are included in Appendix G.

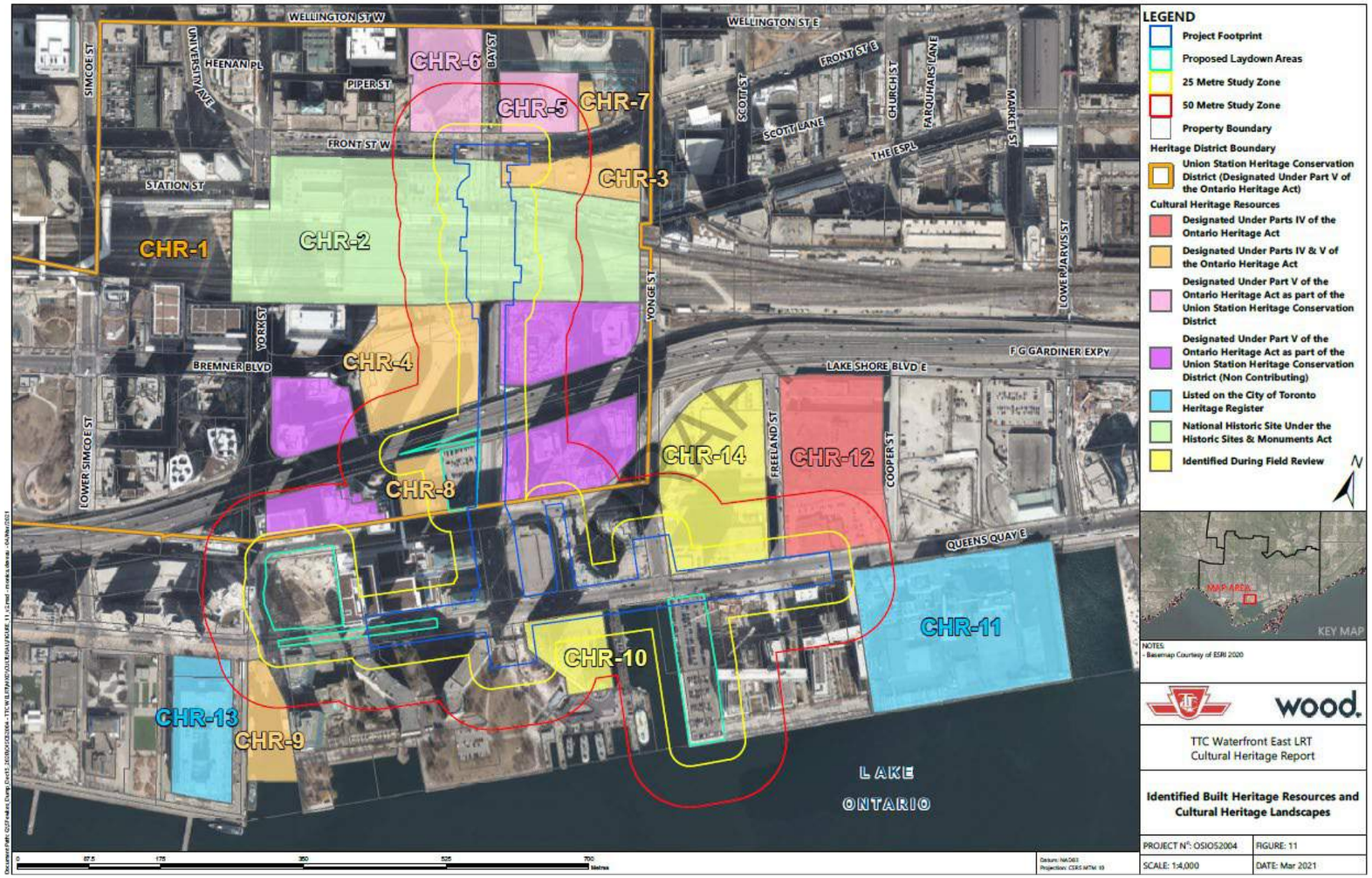

Exhibit 3.6 Area A built heritage resources and cultural heritage landscapes

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
CHR 1	• Heritage Conservation District (HCD) • Cultural Heritage Landscape	• Union Station HCD • Bounded by Wellington Street West (north), Yonge Street (east), Lake Shore Boulevard West/Harbour Street (south), Simcoe Street/ Reese Street (west)	• Designated under Part V Ontario Heritage Act through By-law No. 634-2006	The Union Station HCD was established in 2006 and is designated under Part V of the Ontario Heritage Act through By-law 634-2006 (ERA Architects Inc. 2006). The Statement of Cultural Heritage Value, as presented in Section 7.0 of the HCD Plan is provided below: **Statement of Cultural Heritage Value:** The heritage character of the Union Station District illustrates several periods of development. The architectural legacies and development patterns underline the prominence of Union Station as a node of urban activity. Since the opening of the station, the district has remained a focus of pedestrian activity in downtown Toronto. Different phases of development have resulted in varied streetscapes. These open space patterns describe the district's historical relationship to adjacent downtown districts and its important role as a multimodal transportation hub. Today the district's significant public space provides an opportunity to celebrate its important historical identity. A strong Beaux-Arts presence around Union Station creates one of the most stylistically cohesive areas in the City of Toronto. The civic-minded architecture speaks strongly to the prominence of Union Station as a centre of urban activity. As a transportation hub linked to the TTC and the PATH system, Union Station has catalyzed the development of some of largest examples of modern architecture and urban design in the world. Post-war office towers such as BCE Place and modernist developments like the CN tower represent a distinct shift in built form. The John Street Roundhouse and other red brick industrial buildings are interspersed throughout the district and act as reminders of an era in which the district played a substantially different role within the city. Many architectural eras and styles coexist within the Union Station HCD. One does not predominate – yet they are unified in their monumentality.	 (ERA Architects Inc. 2006:36)
CHR 2	• Cultural Heritage Landscape	• Union Station (65-71 Front Street West)	• Designated under Part V of the Ontario Heritage Act as part of the Union Station HCD (By-law 634-2006) as a 'Contributing Building' • Designated under Part IV of the Ontario Heritage Act (By-law 948-2005)	Union Station Complex is a monumental, five-storey structure occupying a city block in downtown Toronto. Constructed 1914-1919, the complex officially opened in 1927 and was fully operational in 1930. The heritage property is composed of the station building (headhouse), its moat and teamways as well as the platforms and trainshed which covers the elevated railway tracks. Constructed by the Toronto Terminal Railways and designed by a consortium of architects comprised of Ross & Macdonald, Hugh G. Jones and John Lyle, the Union Station Complex is the finest Beaux-Arts railway station in Ontario and one of the best examples of Beaux-Arts architecture in the county. Currently, the Union Station Complex serves as the hub for national, provincial, urban, and inter-city passenger transportation. Union Station is designated under Part V of the Ontario Heritage Act as a 'Contributing Building' in the Union Station HCD (By-law 634-2006). Union Station is also a National Historic Site under the Historic Sites and Monuments Act. The Statement of Cultural Heritage Value and list of Heritage Attributes as presented in the Metrolinx Heritage Committee Decision Form is presented below: **Cultural Heritage Value:** The Union Station Complex is of CHVI for its historical, design and contextual values.	 North and east elevations of Union Station

Exhibit 3.7 Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
			• Designated as a Provincial Heritage Property of Provincial Significance by Metrolinx • National Historic Site of Canada under the Historic Sites and Monuments Act by Parks Canada 1975-11-28) (R.S.C., 1985, c. H-4)	*Historical Values* The Union Station Complex demonstrates historic values at the local and provincial levels. Construction of the massive facility was a response to the rapidly expanding rail networks in Ontario during the early 20th century and corresponding urban growth of Toronto. Railways had a dramatic effect on emerging urban centres, particularly in south-central Ontario and Toronto's dominance in this area was a result of its numerous rail connections. Railways also played an integral role in the industrialization process - opening up new markets while, at the same time creating a demand for fuel, iron and steel, locomotives, and rolling stock. By 1927 when Union Station officially opened, it was handling 180 trains per day and between 60,000-75,000 passengers making it the busiest in the province. Union Station is directly associated with several organizations and individuals significant to the City of Toronto and to the province. Chiefly, Canada's major railway companies (CPR, GTR/CN), the TTR and its engineer John Robert Ambrose as well as the architectural firm of Ross & MacDonald, and architect John Lyle. *Design Values* The Union Station Complex demonstrates design values at the local and provincial levels. The station building (headhouse) is a representative example of Beaux-Arts transportation facility, embodying the main tenets of the style in a single structure. This includes the exceptional quality of its design, symmetrical plan, prominent siting and use of exaggerated Classical forms and detailing. Further, it is a rare example of Beaux-Arts architecture executed at the full, monumental scale associated with the style. It is the largest and most opulent railway station in Ontario. Designed to represent one unified structure, the station building is three distinct units, with the station function occupying the centre section and office functions to the east and west. The front façade is 230 m (752 feet) and features a colonnade of 22 gigantic Roman Doric columns. The steel frame structure is clad in Indiana limestone and demonstrates a hierarchy of treatment with an embellished front façade (Front Street), plainer east (Bay Street) and west (York Street) facades, and unadorned rear façade. The trainshed is a representative example of a Bush trainshed which was used in larger Canadian railway stations. Toronto's trainshed is notable for its through-traffic design. The trainshed was planned as part of the 1913-14 design of the station building. *Contextual Values* The Union Station Complex has contextual values at the local level. Occupying the entire block between Bay and York streets, the Union Station Complex is the defining feature of the area. As the first of several large-scale buildings in the area, its scale, style and extensive use of limestone created the precedent for subsequent buildings including the Royal York Hotel and the Dominion Public Building. In addition, the Union Station Complex is one component of a larger transportation network which includes the high-level viaduct and associated subways (bridges) as well as the signal towers at John, Scott and Cherry streets. As a hub for passenger train travel at the local, provincial and national levels, the Union Station Complex is well-known to residents of, and visitors to, Toronto.	 North and west elevations of Union Station

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				Heritage Attributes: The heritage attributes essential to the cultural heritage values of the Union Station Complex are: *Design and Physical Value* As a rare and representative example of Beaux-Arts the property contains the following attributes: • symmetrical form of a central loggia, flanked on the east and west by offices and pavilions • a monumental sense of scale, as conveyed through the headhouse's massive rectangular footprint, oversized interior space and exaggerated stylistic elements • a clear horizontal emphasis, achieved through: o a bold, continuous projecting cornice and largely uninterrupted roofline, lacking vertical punctuation o an acute length to height ratio along the principal façade • the exterior and interior use of classical design elements, including: o tripartite divisions of base, column and entablature o the Doric order employed within the loggia and porticos o double pilasters and arched doorways punctuating east and west pavilions o decorative masonry motifs including egg and dart mouldings, dentils, scrolls, laurel wreaths and meanders Great Hall utilizing exposed copper or painted iron frames • the use of Indiana limestone for the channeled, ashlar and decorative masonry • the use of rich materials throughout; marble, travertine, terrazzo, clay tile, copper, and cast iron • exterior and interior use of low-relief motifs cast into doorframes • the Great Hall, including: o its vast open space rising numerous storeys to a shallow barrel-vault o barrel-vaulted arches at each end terminating with massive arched windows illumination from diffuse, ambient lighting o decorative details including Corinthian columns, entablature carved with station names, clerestory and coffered Guastavino tiles o built in ticket booths • the exterior office fenestration, diminishing in size with every higher storey • monumental fenestration around doorways, and illuminating the Great Hall utilizing exposed copper or painted iron frames • the high level of craftsmanship as seen in the carved masonry and Guastavino vaults	

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				As a representative train station and transportation hub the property contains the following attributes: • the ground level moat, set below Front Street • a clear, functionally informed hierarchy of internal spaces • distinct circulation paths for arriving and departing passengers • the trainshed including the through-track configuration, arched trusses spanning columns between the tracks, all remaining exterior facades and smoke ducts, and the organization, location, materials and design of elevators, stairwells and rooftop penthouses. *Historical and Associative Value* • its direct relationship with the Royal York Hotel, as a railway hotel built by the CPR • the direct associations with the railways, through names and coats of arms inscribed above the loggia • the significance of the project to the portfolios of Ross & MacDonald and John Lyle *Contextual Value* • its relationship with the Dominion Public Building, creating a continuous Beaux-Arts streetscape between York Street and Yonge Street (Fig. continuous front) • its occupation of the entire south side of Front Street between Bay Street and York Street • the elevated tracks and trainshed, lining up with the USRC viaduct to the east • its role in defining the Beaux-Arts character of the area **Metrolinx Heritage Property Location:** The Union Station Complex is located on Front Street in downtown Toronto. It occupies the entire block between Yonge and York streets. Directly to the east is this Dominion Public Building (built 1925-1930). The station is located in the centre of the USRC, a 7-kilometre stretch of track between the Don River (to the east) and Bathurst Street (to the west).	
CHR 3	Built Heritage Resource	Dominion Public Building (1 Front Street West)	• Designated under Part IV Ontario Heritage Act with By-law 423-2017	The Dominion Public Building (1 Front Street West) is designated under Part IV of the Ontario Heritage Act through By-law 423-2017 and under Part V of the Ontario Heritage Act as a 'Contributing Building' in the Union Station HCD under By-law 623-2006. The Dominion Public Building is also a Classified Federal Heritage Building under FHBRO. The following Statement of Cultural Heritage Value and list of heritage attributes is taken By-law 423-2017: Description of Property: • Anchoring the southwest corner of Yonge Street and Front Street West, the Dominion Public Building is a large-scale federal government building that was commissioned by the Government of Canada's Department of Public Works and originally served as Toronto's Custom's House. Completed in two phases in 1929-31 (centre and east pavilions) and 1934-35 (west pavilion), the north section of the building on Front Street West rises five stories, while the rear section extends six stories to address the change in grade.	 North elevation of the Dominion Public Building

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
			• Designated under Part V of the Ontario Heritage Act as part of the Union Station HCD through Bylaw By-law 634-2006 • 'Contributing Building' in the Union Station HCD • Classified Federal Heritage Building by the Parks Canada Federal Heritage Buildings Review Office (FHBRO) in 1983.	Statement of Cultural Heritage Value: • The Dominion Public Building has cultural heritage value for its role as the federal government's Toronto Customs House for the administration, taxation, inspection and storage of imported and exported goods. Conceived by the federal government as a Customs House only, the Dominion Public Building was completed as the third and largest Customs House in the city, as well as the first to incorporate the public offices and the examining warehouse in the same building. The construction of the Dominion Public Building during the Great Depression of the 1930s was a reflection of the significance of Toronto to the nation's economic status and recovery. • The associative value of the Dominion Public Building is also through its connection to T.W. Fuller, who served from 1927 to 1936 as the Chief Architect of the Federal Department of Public Works, which was responsible for the in-house design of nearly all public architecture in Canada in the late 19th and early 20th centuries. During the Great Depression, the Chief Architect oversaw monumental projects in the country's major centres, including Toronto where the Dominion Public Building remains Fuller's best-known work. • From a design standpoint, the Dominion Public Building is valued as a rare and exceptional example in Canada of Beaux-Arts Classicism, the international style popularized for monumental architecture in the late 18th and early 19th centuries. The Dominion Public Building has the hallmarks of the style with its imposing scale, the symmetrical organization of the facades, the hierarchy of spaces from grand to utilitarian, the decorative detailing inspired by precedents, and its placement in a highly visible and prominent setting. As a rare and early surviving example of a public building in Toronto constructed by the federal government in the early 20th century, the Dominion Public Building was among the first applications of Beaux Arts Classicism to a federal design. The dominion Public Building stands as an important physical reminder of the imposing public spaces created by the federal government, combining the monumentality and grandeur of the Front Street portion of the building (including the interior Long Room) with the practicality and accessibility of the warehouse component to the rear. Designed in two phases, over time the Dominion Public Building changed from a Customs House to a multi-use federal building, and the interior alterations dating to the 1980s and 1990s are part of the evolution of the building. • With the neighbouring Union Station (which was officially opened in 1927), the Dominion Public Building establishes the character of the area along Front Street, west of Yonge Street. Following the Great Fire of 1904 that destroyed most of the existing buildings in this area, Toronto's Civic Improvement Committee commissioned a plan (1911) by architect John M. Lyle that was based on the principles of the City Beautiful Movement and that envisioned Front Street as a grand boulevard with expansive tracts reserved for monumental architecture that included a new Union Station and Customs House (the Dominion Public Building). According to the federal government, "The Dominion Public Building and Union Station together form probably the most imposing Beaux Arts streetscape in Canada."	

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				• Contextually, the Dominion Public Building is historically, visually, physically and functionally linked to its important setting on the south side of Front Street where it anchors the southwest corner of Yonge Street (Toronto's "main street") and extends across the entire city block to Bay Street. As the third Customs House on the site, the Dominion Public Building occupies what was historically among the most sought-after locations in Toronto with its proximity to the city's financial district directly north, Union Station as its neighbour on the west, and the railway corridor and harbour to the south. The Dominion Public Building, with its office and warehouse components aligned to access Front, Yonge and Bay streets, forms an important precinct. • As a monumental federal government building in a prominent location beside the complementing Union Station, the Dominion Building is a local landmark Heritage Attributes: The heritage attributes of the building known historically as the Dominion Public Building on the property at 1 Front Street West are: • The placement, setback and orientation of the building on the south side of Front Street West where it extends from Yonge Street to Bay Street • The scale, form and massing of the irregularly shaped plan that rises five stories along Front Street to the flat roofline and follows the curve of Front Street west of Yonge Street • The partially raised stone base with window openings, which extended in height where the changes south of Front Street • On the reinforced concrete structure and above the granite clad foundation, the limestone cladding that is channeled on the extended first (ground) floor and smoothly dressed in the stories above, with stone and metal detailing • The tripartite organization of the north elevation on Front Street into the centre pavilion and the adjoining east and west pavilions, with the west pavilion rounded at the northwest corner and the east pavilion truncated at the northeast corner • The horizontal division of the north elevation by the cornices above the extended first story and beneath the parapet • The centre pavilion, with five-story projecting frontispiece composed of six freestanding Ionic columns supporting the entablature inscribed "Dominion Public Building A.D. MCMXXX" • At the base of the centre frontispiece, the two-story main entrance where the three round-arched openings contain paired bronze doors beneath large transoms with metal mullions incorporating rope detailing and cast metal beavers (as symbols of Canada) • The single secondary entrances on the north elevations of the east and west pavilions that repeat the detailing introduced on the central entrance. The east elevation on Yonge Street, which extends 12 bays and is divided into three parts with a recessed centre section • The five-bay west elevation facing Bay Street	

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				• The fenestration on the north, east and west elevations, which is arranged between Ionic pilasters and features double-height round arched openings with keystones in the first floor, and single, paired and triple flat-headed openings with spandrel panels in the remaining floors, and the metal window mullions with the rope detailing in the first and second floors • The classical detailing on the elevations facing Front, Yonge and Bay streets, including the carved acanths leaves, the dentils and the stone lion's heads • On the rear (south) elevation, the end bays (east and west) that continue the decorative detailing and fenestration from the east and west elevations • The central utilitarian section of the south wall with fenestration and raised centre section • On the interior, the organization and layout of the public spaces on the first floor, including the three marble-clad lobbies • The detailing in the east vestibule and lobby, with the marble floors, dado and door and window surrounds, including the marble door pediment inscribed "Long Room", the bronze window mullions between the lobby and the Long Room, the "enquiry" window in the lobby, and the classical detailing • In the east pavilion, the two-story Long Room, with the marble floors, dado and door and window and surrounds, the marble counters with brass wickets, the double row of square columns with pilasters and the Corinthian capitals, the entrances with the bronze doors and classical detailing, the metal window mullions, the second-story gallery with brass balustrade, and the coffered plaster ceiling with the dentils and mouldings.	
CHR 4	Built Heritage Resource	Postal Delivery Building (40 Bay Street)	• Designated under Part IV of the Ontario Heritage Act through By-law No. 360-90 • Designated under Part V of the Ontario Heritage Act as part of the USHCD through By-law No. 634-2006 • 'Contributing Building' in the USHCD	The Postal Delivery Building (40 Bay Street) is designated under Part IV of the Ontario Heritage Act through By-law 360-90 and under Part V of the Ontario Heritage Act as a 'Contributing Building' in the Union Station HCD through By-law 634-2006 (ERA Architects Inc. 2006). The following reasons for designation are provided in By-law 360-90: The property at 40 Bay Street (Postal Delivery Building) is designated on architectural and historical grounds. The Postal Delivery Building was constructed in 1939-40 according to the designs of Toronto architect Charles Dolphin and Public Works architect C.D. Sutherland. The building served as the central mail distribution centre in Toronto for the Canadian Postal Service. The building, constructed of limestone and polished granites, is distinguished by its horizontal bands of fenestration and its bas relief sculpture, characteristic of the Art Moderne and Art Deco styles. Set on an irregular site at the intersection of Bay Street and Lake Shore Boulevard West, the elevations are treated in a similar manner. In the centre of each wall, multiple fenestration is inset between stone piers, while the rounded corners of the building feature two bands of wraparound metal windows. The principal entrances flank the southeast corner. Attention is focused on the east elevation with the name band and bronze Canadian coat-of-arms. The stylized sculptural program reflects the history of communication and transportation in Canada through a progressive series of corner panels. The Postal Delivery Building is a significant public commission, designed by a local architect in conjunction with the Department of Public Works. The sculptural program is one of the most extensive in the City of Toronto, demonstrating the role of the federal government as a patron of the arts.	 East elevation of the Postal Delivery Building

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
CHR 5	Built Heritage Resource	Brookfield Place (161-181 Bay Street)	• Designated under Part V of the Ontario Heritage Act as part of the USHCD through By-law No. 634-2006 • 'Contributing Building' in the USHCD	Brookfield Place (161 Bay Street) is designated under Part V of the Ontario Heritage Act as a 'Contributing Building' in the Union Station HCD through By-law 634-2006. The property description below is taken from the Union Station HCD heritage inventory (ERA Architects Inc. 2006). Brookfield Place is a Post-War era Post-Modern building that containing twelve designated heritage properties. Brookfield Place, formerly known as BCE Place is an office, commercial, retail and cultural complex designed by SOM of Chicago, Spanish architect Santiago Calatrava and B+H Architects of Toronto. The complex takes up the entire bounded by Front, Bay, Wellington, and Yonge streets. The centre sits in one of the most prestigious locations in the city, bridging the Union Station District, the financial district, and the St. Lawrence neighbourhood. Completed in 1991, the 5 acre site is the most contemporary large development in the Financial District, and displays many of the changes in ideology and typology within the genealogy of Toronto office complexes. The most prominent contribution of this development is the integration of twelve designated heritage structures into the site most prominently visible along Yonge and Wellington streets, the creation of at-grade retail space, and the inclusion of a large indoor public promenade and square known as the Allen Lambert Galleria. The project's 2.5 million square feet of office space is located in two office towers and surrounding podium. The towers, known as Canada Trust and Bay Wellington Towers, are clad in granite and post-modern styling. They are located at the south/west and north/east ends of the site respectively. The five-story podium defines the perimeter of the site and makes up the northern and western elevation. The podium relates to both lower blocks of Commerce Court South to the north, and to the Dominion Public Building to the south. The complex's Wellington and Yonge Street elevations are predominately made up of heritage facades that existed on the site at the time of construction. As well, the façade of Merchant's Bank c1845 originally located at 13-15 Wellington was fully restored and reassembled within the Allen T. Lambert Galleria giving the interior public space of Brookfield Place a particular heritage quality. The public promenade and 'heritage square' were designed by renown Spanish architect Santiago Calatrava and feature an articulated white steel and glass arcade which spans the entire site from Bay to Yonge Street. "Heritage Square" is bounded by the interior elevation of the podium offices and incorporated heritage buildings. It features retail space, restaurants and other services, as well as access to a below grade concourse and PATH system. The Calatrava designed space is one of the most spectacular public spaces in the city of Toronto. Brookfield Place contains several important cultural institutions including the Hockey Hall of Fame and the Canadian Chamber of Commerce – both incorporated into existing heritage structures. The southern portion of the site contains a large outdoor plaza – bounded by the Canada Trust Tower to the west, the Allen Lambert Galleria to the north, the Heritage block to the east, and the Dominion Public Building across Front Street to the south. This space is currently zoned for another office tower.	 South elevation of Brookfield Place

Exhibit 3.7 continued Area A cultural heritage resources

<table>
<tr><th>CHR Number</th><th>Type</th><th>Name / Location</th><th>Heritage Recognition</th><th>Description of Known or Potential CHVI</th><th>Photographs / Digital Image</th></tr>
<tr><td></td><td></td><td></td><td></td><td>List of Brookfield Place Designated Heritage Properties:
<table>
<tr><th>Address</th><th>Name</th><th>Construction date</th></tr>
<tr><td>1 Wellington Street West (46 Yonge Street)</td><td>The Argyle Inn</td><td>1849 alt. 1865</td></tr>
<tr><td>3/11 Wellington Street West</td><td>Warehouse Store</td><td>1855</td></tr>
<tr><td>5,7,9 Wellington Street West</td><td>Charles Moore and Co.</td><td>1871</td></tr>
<tr><td>15 Wellington Street West</td><td>Commercial Bank</td><td>1845</td></tr>
<tr><td>30 Yonge Street</td><td>Bank of Montreal</td><td>1886</td></tr>
<tr><td>36 Yonge Street</td><td>Moffat, Murray and Co.</td><td>1844 alt. 1928</td></tr>
<tr><td>38 + 40 Yonge Street</td><td>John Crawford Block</td><td>1852</td></tr>
<tr><td>42 Yonge Street</td><td>John Hagerty Building</td><td>1851 alt. 1879</td></tr>
<tr><td>44 Yonge Street</td><td>William Cawthra Building</td><td>1850</td></tr>
</table></td><td></td></tr>
<tr><td>CHR 6</td><td>Built Heritage Resource</td><td>Royal Bank Plaza (200 Bay Street)</td><td>• Designated under Part V of the Ontario Heritage Act as part of the USHCD
• ‘Contributing Building’ in the USHCD</td><td>The Royal Bank Plaza (200 Bay Street) is designated under Part V of the Ontario Heritage Act as a ‘Contributing Building’ in the Union Station HCD through By-law 634-2006. The property description below is taken from the Union Station HCD heritage inventory (ERA Architects Inc. 2006).
The Royal Bank Plaza is a Post-War era Post-Modern style building.
The Royal Bank Plaza was completed in 1976 by Webb Zerafa Menkes & Housden Architects of Toronto. It encompasses the eastern portion of the block defined by Bay, Wellington, Front and York streets, and is bounded by the Royal York Hotel and TD-Waterhouse Tower.
The Royal Bank Plaza is significant in that it marks many firsts in Toronto’s office tower development. The project was the first major bank tower to be constructed on Front Street and away form the King Street corridor. This brought Front Street into the post-war era. Further it was the first major project in the financial district to break from the ‘modernist box’, and opt for two towers atop a significant podium, rather than the predominant ‘tower in the plaza’ formation. The project also brought the PATH system south; connecting the Toronto Dominion Centre with the Royal York hotel and Union Station. Originally the Podium between the towers contained a grand multi story volume accessible to the pubic. This has subsequently filled in with office floors.
Aesthetically, Royal Bank Plaza is one of the most easily recognized and striking buildings on the Toronto skyline. Consisting of a glass envelope of faceted mirrored panels, it is illuminated with refracted images of the city around it. Unique to the project is the innovative use of gold in the glazing, which acts to reduce the heating load. The metal also renders refracted light in a bright golden hue even in the greyest of winter days.
An elevated public plaza at the building’s western side between the Royal Bank Tower and the Royal York Hotel allows generous views of Union Station to the south and the TD Centre to the north. However, this plus 15 system never functioned as intended and access is now limited to business</td><td> 
South elevation of Royal Bank Plaza</td></tr>
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Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				hours. Furthermore, it acts as an impediment to the north south pedestrian flows as well as being a substantial visual barrier between the TD Centre plaza and Union Station. The Royal Bank Plaza is a signature building in the Toronto skyline. It sits on an extremely prominent site, at the foot of Bay Street and in direct view of Union Station. It breaks from classic modernism, reconceptualized the form of an office complex in the financial district and was the first of the pots war megaprojects to be designed solely by a Canadian firm.	
CHR 7	Built Heritage Resource	Gowans Kent Building (20 Front Street)	• Designated under Part IV of the Ontario Heritage Act through By-law No. 108-83 • Designated under Part V of the Ontario Heritage Act as part of the USHCD through By-law No. 634-2006	The Gowans Kent Building is designated under Part IV of the Ontario Heritage Act through By-law 108-83 and under Part V of the Ontario Heritage Act as a 'Contributing Building' in the Union Station HCD through By-law 634-2006 (ERA Architects Inc. 2006). The following text is taken from By-law 108-83. The Gowans building is a Pre-War era Beaux-Arts style building. The Gowans Kent Building at No. 20 Front Street West is designated on architectural grounds. Built in 1923, the Gowans Kent Building was designed by Architects MacVicar and Heriot, for Cassidy's Ltd., functioning as office, chinaware showroom and warehouse for thirty years. Classically influenced, the stone detailing of the facade is distinctive with four arched openings inset with finely crafted metal entrances and display windows. The mouldings, key stones, spandrels, and cornice are other features that contribute to the significance of this building in context with the scale and materials of the Dominion Public Building and Union Station on Front Street West.	 South elevation of Gowans Kent Building
CHR 8	Built Heritage Resource	Toronto Harbour Commission Building (60 Harbour Square)	• Designated under Part V of the Ontario Heritage Act as part of the USHCD • 'Contributing Building' in the Union Station HCD	The Toronto Harbour Commission Building (60 Harbour Square) is designated under Part V of the Ontario Heritage Act as a 'Contributing Building' in the Union Station HCD through By-law 634-2006 (ERA Architects Inc. 2006). The property description below is taken from the Union Station HCD heritage inventory (ERA Architects Inc. 2006). The Harbour Commission Building is a Pre-War era Beaux-Arts style building. The Harbour Commission Building was completed in 1917, and was designed by Chapman of Chapman & McGriffin Architects. The Harbour Commission was chartered in 1912, with the mandate of overseeing the massive public works involved in "modernizing Toronto's disorganized harbour of ramshackle wharfs". The Commission headquarters was located directly one the shore of Lake Ontario. As projects of harbour modernization and industrial activity continued from the 1920s through 1950s, the resultant series of shore infilling placed the building farther and farther from the shore. Its current location is many hundreds of metres from the lake, north of the Gardiner Expressway. The building is important for both historical and architectural reasons. It is representative of the grand Beaux-arts style used for public architecture. It is also one of the few visible remainders of the era predating the infilling of the harbour.	 South elevation of the Toronto Harbour Commission Building

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
CHR 9	Built Heritage Resource	Toronto Ferry Company Waiting Room (145 Queens Quay West)	• Designated under Part IV of the Ontario Heritage Act through By-law No. 1249-2007 • Heritage Easement registered in 1991	The Toronto Ferry Company Waiting Room is designated under Part IV of the Ontario Heritage Act through By-law 1249-2007. The following text is taken from By-law 1249: **Description:** The property at 145 Queens Quay West is worthy of designation under Part IV of the Ontario Heritage Act for its CHVI, and meets the criteria for municipal designation prescribed by the Province of Ontario under the three categories of design, historical, and contextual value. Located on the south side of Queens Quay West at the foot of York Street, the single-story building known historically as the Toronto Ferry Company Waiting Room was constructed in 1907 by the City of Toronto. The property was listed on the inaugural City of Toronto Inventory of heritage Properties in 1973, and a Heritage Easement Agreement was registered in 1991. **Statement of Cultural Heritage Value:** The Toronto Ferry Company Waiting Room has design value as a rare example of a building type associated with the development of the Central Waterfront. As described in the heritage easement agreement, it is “the oldest standing structure and only building originally constructed for a harbour-oriented use that is still located beside the water of Toronto Bay.” Historically, the Toronto Ferry Company Waiting Room is linked to Toronto’s waterfront, where it has served a number of functions in different locations since its construction in 1907. Originally located at the foot of Bay Street, the building was built by the City of Toronto and leased to the Turbine Ferry Company as a freight shed. In 1911, the structure was acquired by the newly formed Toronto Harbour Commission, which leased it to the Toronto Ferry Company the following year. The building was cut in half in 1927, and the south section moved by barge to its current site at the foot of York Street. Following alterations, it was used for various purposes by the Toronto Harbour Commission, including housing the water level gauge. Between 1953 and 1980, the Royal Canadian Yacht Club leased the building as the City Station for its launches., “Kwasind” and “Hiawatha”. While the east side of York Slip was prepared for a condominium development in 1988, the Toronto Ferry Company Waiting Room was temporarily moved to Terminal 51. The next year, the building was returned by barge and reinstated on new concrete foundations on the York Slip site. The Toronto Ferry Company Waiting Room was restored under the supervision of Toronto architects Natale, Scott, Browne as an information centre for the Toronto Harbour Commission and for other commercial services related to the public enjoyment of the waterfront. With its diminutive appearance and location on Queens Quay West, the Toronto Ferry Company Waiting Room is a landmark on the Central Waterfront. Directly west, the Toronto Terminal Building (1928) at 207 Queens Quay is also recognized on the City’s heritage inventory. **Heritage Attributes:** The heritage attributes of the Toronto Ferry Company Waiting Room are found on the exterior walls and roof, consisting of: • The single-storey plan under a gable roof with extended eaves and shingles.	 North elevation of the Toronto Ferry Company Waiting Room

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				• The corrugated prefinished steel siding, reminiscent of the original steel finishes. • The door and window openings on the exterior walls, with the main entrance on the principal (north) façade, and three garage-style door openings with transoms and reproduction sliding doors on the west elevation. • The rear (south) wall, identifying the line where the building was severed in 1927 with the glazing added in 1989. The wood decking around the building is identified in the heritage easement agreement and included in the Reasons for Designation	
CHR 10	Cultural Heritage Landscape	Westin Harbour Castle Complex (1 Harbour Square)	• Identified during field review	The Westin Castle Hotel was built in 1972, repurposing industrial land into a 30-acre residential and commercial development. It is a 38-storey twin-towered poured concrete structure opened in April 1975 as the Harbour Castle Hotel. The hotel is built in the International style of architecture developed in the 1920s-1930s. The style is characterized by an emphasis on volume over mass. Buildings of this style use lightweight, mass-produced, industrial materials, reject all ornament and colour, have repetitive modular forms, and use flat surfaces, typically alternated with glass. The structure is also heavily influenced by the Brutalist architectural style that emerged during the 1950s. Structures of this style generally employ exposed building materials including concrete and exhibit a predominately monochrome colour palette. The large parking structure directly abutting Queens Quay East has brutalist architectural style. The structure is a landmark along the central Toronto waterfront that is an excellent example of modern brutalist architecture. The structure is also an early representative example of the commercial and residential infill of the area following the de-industrialization of the harbour front. The raised pedestrian linkages between buildings that provide sheltered pedestrian connections to nearby structures are also a rare remnant of above ground pedestrian links that were installed downtown prior to the proliferation of the underground PATH system.	 East elevation of the Westin Castle Hotel  West elevation of the Westin Castle Hotel
CHR 11	Cultural Heritage Landscape	Redpath Sugar Refinery (95 Queens Quay East)	• Listed on the City of Toronto's Inventory of Heritage Properties (June 1984)	The Redpath Sugar Refinery (Canada and Dominion Sugar Refineries) was built in and designed by Gordan S. Adamson and Associates. The complex is a visually prominent and well-known landmark in the eastern part of Queens Quay. It opened in 1958. The complex occupies 4.25 hectares of land on the Toronto waterfront and consists of one eight-storey building, two five-storey buildings, a chimney stack, and several outbuildings and storage silos. Large silos and a massive conveyor-built provide an outstanding example of this area's 20th century industrial past. The main storage factory building boasts access to an industrial manmade inlet and harbour and displays a large marine mural displaying humpback whales and other sea life. The largest building has a white painted brick façade facing north fronting Queens Quay East and has a large iconic 'Redpath' cursive logo. The dark brown brick chimney stack is massive in scale and looms over the entire complex.	 North and west elevations of the Redpath Sugar Refinery

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
CHR 12	Cultural Heritage Landscape	LCBO Complex (55 Lake Shore Boulevard East [north of Queen's Quay Boulevard East between Freeland and Cooper streets])	• Designated under Part IV of the Ontario Heritage Act through By-law No. 45-2021	The LCBO Complex is designated under Part IV of the Ontario Heritage Act through By-law 45-2021 on February 5, 2021. By-law 45-2021 was not available for viewing at the time of this writing therefore the following text is taken from the Revised Reasons for Inclusion - 55 Lake Shore Boulevard East (City of Toronto 2018): **Statement of Significance:** *Description* Located east of Yonge Street and occupying the city block bounded by Lake Shore Boulevard East (north) and Queen's Quay East (south) between Cooper and Freeland streets, the property at 55 Lake Shore Boulevard East contains a commercial and industrial complex that was commissioned by the LCBO and completed in 1954 according to the plans of the Toronto architectural partnership of Mathers and Haldenby. The LCBO Complex consists of the four-storey office building facing Lake Shore Boulevard East that is linked by an overhead pedestrian bridge to the three-storey warehouse to the south. At the southwest corner of the property, the detached single-storey building was designed as a garage, repurposed in 1958 for a retail store (replacing the outlet that was originally located inside the office building), and subsequently modified. The property at 55 Lake Shore Boulevard East was listed on the City of Toronto's Inventory of Heritage Properties (now known as the Heritage Register) in 2005. *Statement of Significance* The property at 55 Lake Shore Boulevard East has cultural heritage value for the design of the combined commercial and industrial complex, which was purpose-built for the LCBO with its Modern styling, high degree of craftsmanship and functional organization of the individual buildings. The Modern design employs symmetry and shared cladding to link the components of the site, which are distinguished individually by their scale, fenestration and detailing. The LCBO Complex is valued for its historical association with the acclaimed Toronto architectural partnership of Mathers and Haldenby, which prepared the plans for the complex in 1950. Headed by Alvan Sherlock Mathers (1895-1965) and Eric Wilson Haldenby (1893-1971) and following its formation in the 1920s, the firm was recognized for the wide range of projects it executed, including its contributions to the University of Toronto's St. George campus and the industrial complexes for Coca-Cola Limited across Canada. The commission for the LCBO's headquarters in Toronto was followed by Mathers and Haldenby's combined office and warehouse facility (1961) for Christie Brown and Company in Etobicoke. The value of the property at 55 Lake Shore Boulevard East is through its association with the LCBO, the provincially-owned agency that, with the Liquor License Board of Ontario, commissioned the complex. In operation since 1927, the LCBO consolidated its activities in this location with its office headquarters and the massive warehouse that included facilities for the distilling, bottling and storage of its own brand of liquor. As the largest purchaser of liquor and spirits in the world, the LCBO oversaw its retail and distribution system across the province from this complex at 55 Lake Shore Boulevard East.	 East elevation of the LCBO Complex

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				The associative value of the property at 55 Lake Shore Boulevard East is also through its contribution to the transformation of Toronto's waterfront after World War II. Prior to this, in the early 20th century, the waterfront had been extended and modernized with dredging, lakefill, breakwaters, permanent dock walls and slips that provided multiple points of access for water, rail and road transportation. The section east of Yonge Street was prepared for the impending opening of the St. Lawrence Seaway (1959) where large tracts of land were acquired for commercial and manufacturing facilities, including the marine terminals on the Queen Elizabeth Docks (no longer extant) and the LCBO Complex, which led to the post-war revitalization of Toronto's waterfront. Contextually, the LCBO Complex supports and maintains the historic character of Toronto's central waterfront as it was expanded and modernized in the 20th century. Anchored on the east end by the extant silo of the Victory Soya Mills (completed 1948), this section of the waterfront east of Yonge Street is associated with the large-scale facilities that marked its post-World War II development and the opening of the St. Lawrence Seaway. The LCBO Complex is an important surviving reminder of the ongoing transformation of the central waterfront during this era. The LCBO Complex is historically, visually, functionally and physically linked to its setting where it occupies the entire block bounded by Lake Shore Boulevard East, Queen's Quay East and Cooper and Freeland streets and was situated to access the water, rail and road links along Toronto's central waterfront. In this location, it reflects the commercial and industrial heritage of the area, along with the neighbouring Redpath Sugar Complex (1957) at 95 Queen's Quay East, which is also recognized on the City's Heritage Register. **Heritage Attributes:** The Office Building with: • The placement, setback and orientation of the structure on the south side of Lake Shore Boulevard East between Cooper and Freeland streets where it is connected to the warehouse to the south by an overhead pedestrian bridge • The scale, form and massing of the four–storey building with the rectangular-shaped plan • The flat roofline with the stone coping and the penthouse with the brick cladding • The materials, with the buff brick cladding and the brick, stone and metal detailing, which complements the adjoining warehouse • The principal (north) entrance to the building, which is centred in the wall in the glazed porch with the granite detailing and the cantilevered roof, with the metal "Province of Ontario" crest on the right (west) side • On all of the elevations, the symmetrical arrangement of the window openings, which are recessed and set in stone frames • On the north elevation, the flat-headed window openings, which are reduced in height in the first (ground) floor with the continuous stone lintels and sills, and have metal balustrades in the upper three stories • The side elevations (east and west), which display flat-headed window openings with stone trim and, in the upper stories, metal balustrades	

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
				• On the west elevation, the entrance (originally designed for the retail store), which is set in the raised porch with the glazing, metal detailing and cantilevered roof • The east elevation, where the single entrance with the flat-headed surround is centered in the first (ground) floor • On the rear (south) elevation, the cargo door opening at the west end of the first (ground) floor, and the window openings, including those in the second floor that are reduced in height above the adjoining single-storey building that was designed as a truck-loading bay for the warehouse (south) • The overhead pedestrian bridge with the copper cladding and the flat-headed openings connecting the south wall of the office building to the north wall of the warehouse • On the interior, the entrance lobby (north) with the stone and metal detailing (the lobby was partially altered in the 1990s) The Warehouse with: • The placement, setback and orientation of the structure, which is placed south of the office building, to which it is connected by the overhead pedestrian bridge, and extends from Cooper Street (east) to Freeland Street (west) • The scale, form and massing of the three–storey building with the rectangular shaped plan • The flat roofline with the stone coping and the brick-clad penthouse • The materials, with the concrete construction, the buff brick cladding, and the brick, stone and metal detailing, which complements the adjoining office building • On all of the elevations, the regular placement of the window openings, which are recessed and placed in stone surrounds • The west elevation on Freeland Street, with the mixture of the flat-headed window openings with the stone trim, the punched windows and, in the first storey, the paired window openings that are protected by the canopy and placed beside the cargo door • On the south elevation facing Queen's Quay East, the flat-headed window openings with the continuous lintels and sills at the west end, the punched windows in the remainder of the wall, and the entrances in the first (ground) floor (which are additions) • The east elevation on Cooper Street, with the flat-headed window openings with the continuous stone lintels and sills in the first and third stories, the punched windows in the second floor, the two tall window openings for the stairwells (which have been blocked in), and the flat-headed entrance at the south end with the rolling steel door (designed to accommodate rail cars) • The north elevation facing the office building, with the glazed entrance porch at the west end of the first floor (which has been altered), the flat-headed window openings with the stone trim, some of which have metal balustrades, and the punched windows at the east end of the wall • At the north end of the warehouse where it is connected to the office building (north), the single-storey building designed as a truck-loading bay with the brick cladding, the covered roof with the skylights, the canted corners, the openings for rolling doors (east and west) and, on the northeast corner, the flat-headed window openings with the continuous stone lintels and sills • The overhead pedestrian bridge with the copper cladding and the flat-headed openings connecting the north wall of the warehouse to the south wall of the office building	

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
CHR 13	Built Heritage Resource	Terminal Building (207-211 Queens Quay)	• Listed on the City of Toronto's Inventory of Heritage Properties (20 June 1973)	The Terminal Building was opened in 1928 by Moores & Duneford of New York. The structure was originally built as a marine terminal with office, warehouse, and cold-storage facilities. The building is an art-deco style federal building that has been repurposed for commercial and residential use. The original poured concrete structure is eight-storeys high, although additional storeys were added during renovations in 1983. The original elevations are an example of post-modern architecture in the early 20th century. This was in fact the first poured concrete building commissioned in Canada. The northern elevation of the building faces Queens Quay West and has a prominent symmetrically placed clock tower extending several storeys over the eight-storey mass of building. The first floor consists of a row of eight bay windows while higher storeys have smaller plain windows. The decorative attributes of the northern façade include straight lines and geometric shapes as does the remainder of the building's original poured concrete façade. The 1980s addition of additional floors can be seen when looking at the building from all elevations but is set back substantially from the art-deco façade. The rear elevation of the building visible from the east, south, and west is largely comprised of the original eight-storey poured concrete structure completed in the art-deco style. However, in 1983 architect Zeldler Roberts added four floors to the original height of the structure and added additional art-deco elements to the east, south, and west elevations including new rounded glass atriums. The new roof of the additional floors set back from the façade of the building are finished in green cladding. The 1980s renovations were awarded the Governor General's Medal of Architecture in 1986 and the Ontario Association of Architects' architectural Excellence Award in 1989. These renovations are sympathetic to the original design and the in some cases, as with the glass atriums add to the buildings original design. Open spaces along the southern elevation create an atmosphere whereby the buildings melds and utilizes the park like atmosphere along the modern Toronto shoreline. During the 1960s and 1970s the building was purchased by the Government of Canada and repurposed into residential and office space. The cold storage area that is separate from the main building and not within or adjacent to the Study Area was largely demolished and repurposed to become The Power Plant gallery and Harbour Front Theatre. The original building was accessible to railways along its northern elevation at Queens Quay West and steamships along its eastern, southern, and western harbour elevations. Today the building is a residential and commercial structure with high quality art-deco design that melds and improves the park atmosphere along the Toronto waterfront.	 North elevation of the Terminal Building

Exhibit 3.7 continued Area A cultural heritage resources

CHR Number	Type	Name / Location	Heritage Recognition	Description of Known or Potential CHVI	Photographs / Digital Image
CHR 14	Built Heritage Resource	Toronto Star Building (1 Yonge Street)	• Identified during field review	The Toronto Star Building is a 100 m tall 25-storey mid-century office building built in the International style of architecture with brutalist influences. The building was opened in 1971 after the original Toronto Star building located at 80 King Street was demolished to make room for the First Canadian Place. The International style of architecture was developed in the 1920s-1930s. The style is characterized by an emphasis on volume over mass. Buildings of this style use lightweight, mass-produced, industrial materials, reject all ornament and colour, have repetitive modular forms, and use flat surfaces, typically alternated with glass. Brutalist architecture emerged during the 1950s and includes structures generally employing exposed building materials including concrete exhibiting a predominately monochrome colour palette. The newspaper originally known as the Evening Star and then the Toronto Daily Sun was created in 1892 and is the flagship newspaper of Toronto. This building represents a period of growth in the area adjacent to the Union Station HCD near the waterfront in Toronto. During this period the area began to be infilled with commercial office structures as the area became increasingly de-industrialized. This structure represents an excellent example of the prominent type of architecture at a time of transition in the area and is home to a flagship newspaper making it a landmark in the central Toronto waterfront landscape.	 South elevation of the Toronto Star Building

Exhibit 3.7 continued Area A cultural heritage resources

3.5.2.2 Area B

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was undertaken by Archaeological Services Inc. for Area B. The purpose of the report is to present an inventory of all known and potential BHRs and CHLs, identify existing conditions of the Area B cultural heritage study area, provide a preliminary impact assessment, and propose appropriate mitigation measures. A total of six BHRs and CHLs were identified within the Area B cultural heritage study area as shown in Exhibit 3.8 and as listed below in Exhibit 3.9.

A CHER was recommended for BHR 1, the Westin Harbour Castle Hotel, as the Cultural Heritage Report found that it could be directly and adversely impacted by the Project. The CHER was undertaken in 2023 by Archaeological Services Inc. The report includes an evaluation of the cultural heritage value of the property as determined by the criteria in O. Reg. 9/06 of the *Ontario Heritage Act*. This evaluation determined that the property at 1 Harbour Square considered on its own does not meet the criteria outlined in O. Reg. 9/06. Therefore it does not retain CHVI in and of itself. It is possible that the Harbour Square development as a whole, and including the subject property, may retain CHVI. In any case, as there are no Project impacts proposed for other Harbour Square properties, further work is not warranted.

The Cultural Heritage Report and CHER are included in Appendix G.

Note: Despite their inclusion in the Area B Cultural Heritage Report, Jarvis and Parliament slips are not included within the Project footprint.

Exhibit 3.8 Area B built heritage resources and cultural heritage landscapes

Feature ID	Type of property	Name / Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs / Digital Image
BHR 1	Commercial hotel	Westin Harbour Castle Hotel (1 Harbour Square)	Potential BHR - Identified during field review	The Westin Harbour Castle was erected in 1972 by the Campeau Corporation. It is a large hotel that uses concrete as the principal building material. It has potential historical and/or contextual value as a key early project – as part of the Harbour Square development – that supported the revitalization of this formerly industrial portion of Toronto's waterfront starting in the 1970s. It represents a completed component of a period of ambitious planning for the new waterfront, with commercial, residential, and recreational spaces to go along with new tourist attractions (McClelland & Stewart, 2007).	 Westin Harbour Castle, looking southwest from east of Yonge Street
BHR 2	Commercial	Toronto Star Building (1 Yonge Street)	Potential BHR - Identified during field review	The Toronto Star Building at 1 Yonge Street was erected in 1971 following the demolition of the Toronto Star's former building at 80 King Street West. It was the administrative offices for the Toronto Star, and, until 1992, home to the newspaper's printing press. It has potential heritage value as a representative example of the International style in the City of Toronto. The building is made of concrete, has symmetrically-placed windows, and is 25 storeys tall. It was designed by the architectural firm of Webb Zerafa Menkes, who have developed many important buildings in Toronto and elsewhere.	 Toronto Star Building, looking west from Freeland Street
BHR 3	Commercial and industrial	LCBO Complex (55 Lake Shore Boulevard East)	Known BHR - Designated under Part IV of the Ontario Heritage Act. See Bylaw 45-2021.	The property encompasses the city block bounded by Lake Shore Boulevard East to the north, Cooper Street to the east, Queens Quay East to the south, and Freeland Street to the west. This property is a combined commercial and industrial complex and includes three structures: a four-storey office building facing Lake Shore Boulevard East, a warehouse (which connects to the office building via an overhead pedestrian bridge) to the south, and a garage and retail outlet in the southwest corner of the property.[b] The complex is representative of the Modern style and was designed by Alvan Sherlock Mathers and Eric Wilson Haldenby (City of Toronto, 2021). It was completed for the LCBO in 1954. The only building on the property that is located within the study area is the garage and retail outlet at the south end of the property. According to the designation report for the property, this building was initially "designed as a garage, repurposed in 1958 for a retail store (replacing the outlet that was originally located inside the office building), and subsequently modified" (City of	 Garage and retail outlet on the LCBO property within the study area, looking east from Freeland Street

Exhibit 3.9 Area B built heritage resources and cultural heritage landscapes

b. At the time of finalization of the Cultural Heritage Report, a large portion of this complex had been demolished.

Feature ID	Type of property	Name / Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs / Digital Image
				Toronto, 2021). The designation by-law notes that the modifications to this building have impacted its integrity, and as such, it is not identified as a heritage attribute on the property. The property has associative value through its early contribution to the transformation of Toronto's harbour and waterfront. The property has contextual value through its support of Queens Quay East's large-scale industrial facilities which emerged in the post-Second World War period and is "an important surviving reminder of the ongoing transformation of the central harbour and waterfront during this era" (City of Toronto, 2021).	
BHR 4	Industrial	Redpath Sugar Refinery (95 Queens Quay East)	Known BHR - Listed on Municipal Heritage Register	The Redpath Sugar Refinery was completed in 1957. The property consists of a diverse array of structures and equipment associated with refining, processing, and loading sugar. It was listed on the City of Toronto's Heritage Register in 1984. While the reasons for listing report was not made available for this report, the property has potential design or physical value as a unique example of a large-scale industrial site that demonstrates a high degree of technical achievement. It has potential historical or associative value as the architectural firm responsible for the design of this complex was Gordon S. Adamson Associates, who have also designed other administrative, industrial, educational, and residential buildings in Toronto. The engineers were H.G. Acres & Co Ltd. Finally, it has potential contextual value by supporting and maintaining the large scale historic industrial character of this portion of Toronto's waterfront and because it is physically, functionally, visually, and historically linked to its surroundings.	 Redpath Sugar Refinery, looking west from entrance into Loblaws parking lot across Queens Quay East  Redpath Sugar Refinery, looking west from Lower Jarvis Street

Exhibit 3.9 continued Area B built heritage resources and cultural heritage landscapes

Feature ID	Type of property	Name / Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs / Digital Image
BHR 5	Engineering work	Gardiner Expressway over Parliament Street	Potential BHR - Identified during field review	The Gardiner Expressway was constructed by Pitts Engineering between 1955 and 1966, with the stretch through the study area completed in 1964-65. Its physical characteristics include below-grade sections, at-grade sections, and above-grade sections, with the subject portion of the expressway as an above-grade section with Parliament Street traversing underneath. The Gardiner Expressway has potential heritage value in that it may demonstrate a high degree of technical achievement. Further, it may have historical/associative value in its direct association with Frederick G. Gardiner, a City of Toronto Councillor and chairman of the regional government of Metropolitan Toronto. Gardiner spearheaded the construction of the expressway, which ultimately was named in his honour. It retains its historical and contextual functions as an expressway connecting the Queen Elizabeth Way in the west with the Don Valley Parkway in the east.	 Gardiner Expressway, looking north along Parliament Street underpass
BHR 6	Industrial	Victory Soya Mills Silos (351 Lake Shore Boulevard East)	Known BHR - Designated under Part IV of Ontario Heritage Act. See Bylaw 183-2021.	This industrial property was formerly the Victory Soya Mills operation. The silos, constructed by Sunsoy Products Limited in the early 1940s as part of the war effort, are the only remaining extant structures that were formerly part of this industrial complex. The site's silos have design value: they are made of reinforced concrete, cylindrical in shape, and monumental in scale. They are, according to the designation by-law, "a rare surviving example in Toronto of a type of structure unique to North America". The site has associative value in that Sunsoy Products Limited was established by the prominent industrialist and philanthropist E.P. Taylor and the Victory Mills were a crucial company in the soybean industry and grain trade in Toronto. The property was also a key industry on Toronto's waterfront during the important industrial phase of the waterfront's evolution. The site also has contextual value in supporting the industrial character of this section of the waterfront and from their placement on the Parliament Street Slip.	 Victory Soya Mills Silos, looking east from Queens Quay East

Exhibit 3.9 continued Area B built heritage resources and cultural heritage landscapes

3.6 Emissions

3.6.1 Air quality

MECP regulates contaminants in air and sets limits—Ambient Air Quality Criteria (AAQC)—to protect communities who live close to these sources. Contaminants of concern include nitrogen oxides, including nitrogen dioxide; Particulate Matter (PM_{10} and $PM_{2.5}$); Carbon Monoxide; and Sulphur Dioxide.

Ambient air quality is expected to be influenced by mostly anthropogenic sources at the local and regional scales, including:

- Vehicle traffic in the vicinity;
- Comfort heating, from all the residential and commercial buildings nearby;
- Construction activity in the vicinity of the Project study area;
- Project construction phase, including tunneling; and
- Project operational phase.

The baseline concentrations were established based on the available recent robust dataset in the vicinity of the Project. The data were processed to obtain the 90th percentile for the contaminants with one-hour and 24-hour averaging AAQC, and mean value for the contaminants with annual averaging AAQCs.

All baseline values are well below the air quality criteria, except for benzene and benzo(a)pyrene. The baseline concentrations for benzo(a)pyrene and benzene are already approaching, or exceeding, the AAQC and the additional emissions from the Project are appreciably lower than this baseline.

Refer to Appendix H for additional details on air quality.

3.6.2 Noise and vibration

On May 27, 2021, sound levels were measured in the vicinity of the proposed Project to establish a baseline of ambient sound levels for use in the assessment of the Project's potential noise and vibration impacts. Sound levels measured include both vehicle noise and LRT noise. Exhibit 3.10 shows the measurement locations and measured sound levels, as follows:

- **Location A: at-grade light rail passbys and vehicle noise.** LRT streetcar passbys measured 75 A-weighted decibels (dBA_{max}), meaning the maximum sound level recorded was 75 dBA. The limit defined in TTC Design Manual DM-0106-00's for a single passby event is 80 dBA averaged over the duration of the passby, which is approximately 3-4 seconds long. This result gives high confidence that LRT passbys will achieve the TTC noise limits.
- **Location B: existing light rail passbys and vehicle noise as the light rail enters and exits the existing portal.** Combined passbys measured between 64 and 75 dBA_{max}. This gives high confidence that LRT passbys at portal locations will also achieve the TTC noise limits.
- **Location C: ambient noise levels in the absence of nearby light rail activities**. Measured sound levels were between 68 and 69 dBA equivalent sound level ($L_{Aeq,(15\text{-}min)}$). These values are representative of an urban environment with vehicle noise and will be considered during the detailed design stage when assessing the noise impact of the LRT.

Refer to Appendix I for additional details on noise and vibration.

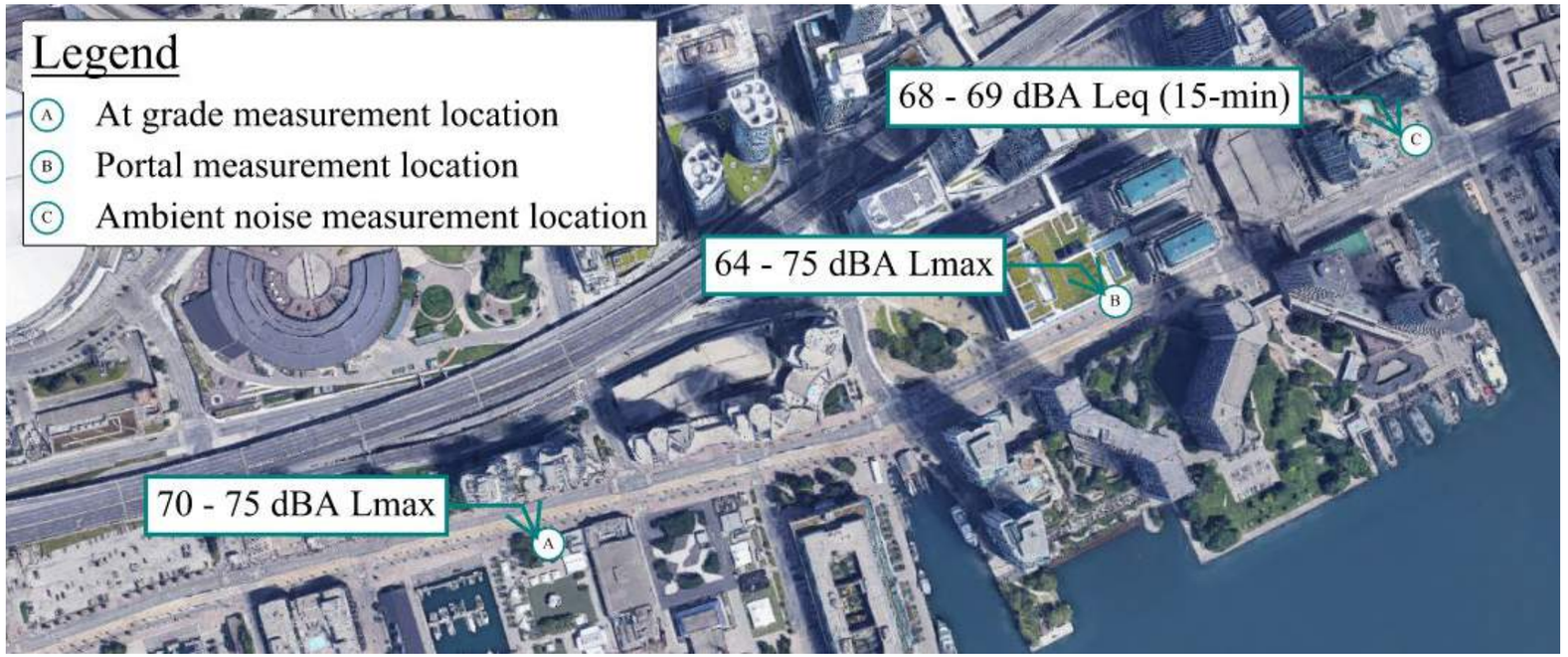


Exhibit 3.10 Noise measurement locations

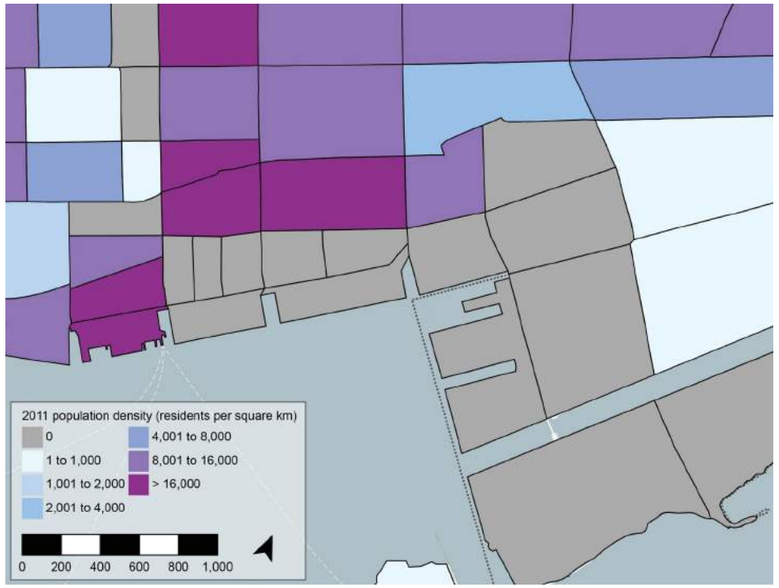


Exhibit 3.11 2011 population

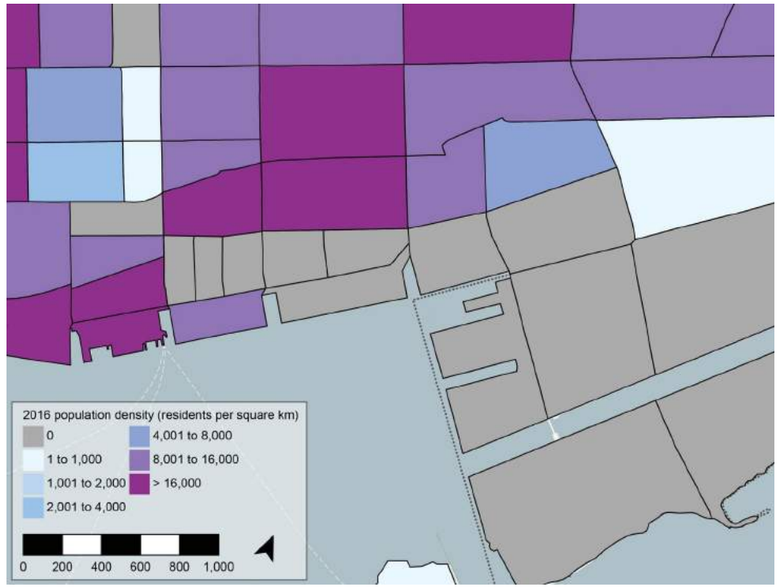


Exhibit 3.12 2016 population

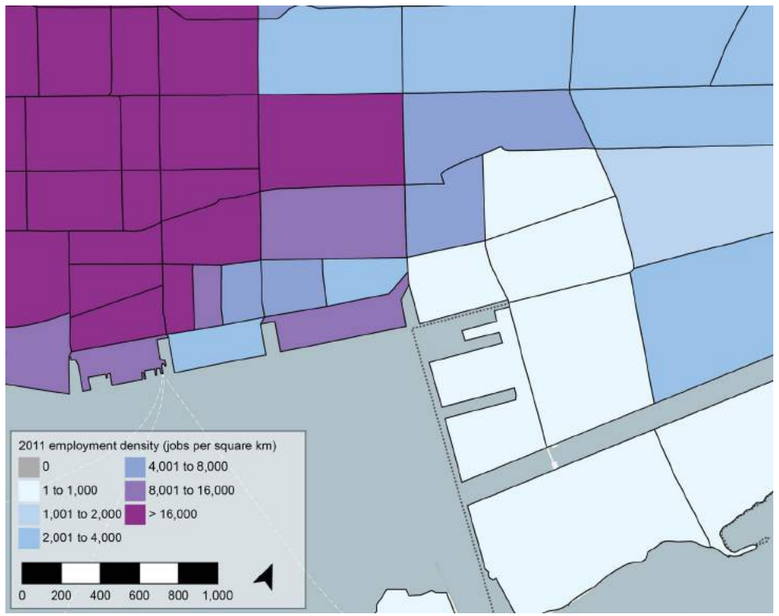


Exhibit 3.13 2011 employment

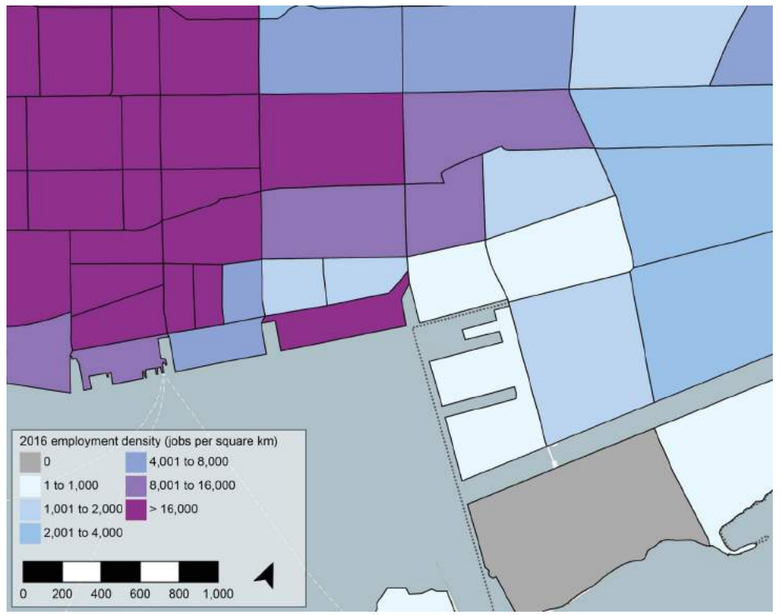


Exhibit 3.14 2016 employment

3.7 Socio-economic environment and land use

3.7.1 Population and employment

The population around the Project footprint has grown quickly over the last decade and continued growth is expected. In 2011, there were approximately 8,300 people living around the Project footprint.[25] The majority of these residents were clustered around Bay Street (Exhibit 3.11). There were no residents in the Lower Yonge and East Bayfront Precincts.

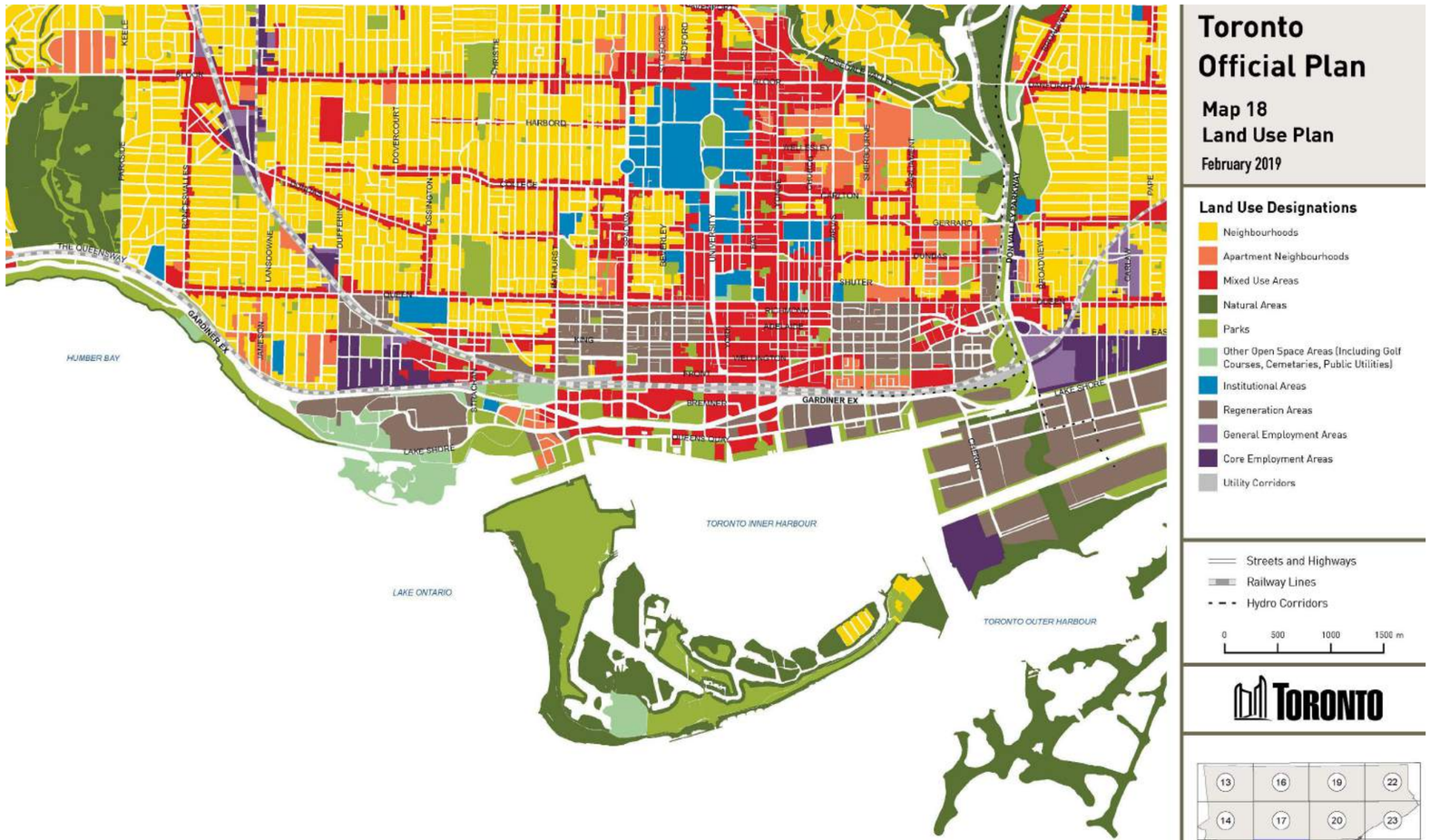
In 2016, the population around the Project footprint grew to approximately 13,000.[26] The number of residents grew around Bay Street and in the Lower Yonge Precinct (Exhibit 3.12). The population has continued growing since 2016 with the completion of several major residential developments.

Employment within the area of study has grown as well. In 2011, there were approximately 25,000 jobs around the Project footprint.[27] The majority of jobs were concentrated around Bay Street and in the Lower Yonge Precinct (Exhibit 3.13). In 2016, the number of jobs around the Project footprint grew to approximately 34,000.[28] The distribution of jobs remained similar to that of 2011 (Exhibit 3.14).

Growth in population and employment is expected to continue over the next 20 years. According to the Greater Toronto Area (GTA) Transport model, the eastern waterfront (including the Lower Yonge and East Bayfront precincts) is expected to have a greater combined population and employment density by 2041 than the western waterfront (between Yonge Street and Bathurst Street) does today (Exhibit 3.15).

Area	Population density (people/ hectare)	Employment density (jobs/hectare)	Combined population and employment density
Eastern waterfront (2041)	556	463	1,019
Western waterfront (2016)	229	268	497

Exhibit 3.15 Waterfront population and employment densities



Toronto Official Plan

Map 18
Land Use Plan
February 2019

Land Use Designations

- Neighbourhoods
- Apartment Neighbourhoods
- Mixed Use Areas
- Natural Areas
- Parks
- Other Open Space Areas (Including Golf Courses, Cemeteries, Public Utilities)
- Institutional Areas
- Regeneration Areas
- General Employment Areas
- Core Employment Areas
- Utility Corridors

- Streets and Highways
- Railway Lines
- Hydro Corridors

0 500 1000 1500 m

TORONTO

Key Map

Not to Scale

Exhibit 3.16 Toronto Official Plan Land Use Plan

3.7.2 Land use

A significant amount of development is underway around the Project, transforming underused brownfield sites into vibrant, mixed-use communities. Several developments have been completed in recent years while many others have been proposed or are under construction.

3.7.2.1 Land-use planning

New development is guided by Toronto's Official Plan, the Central Waterfront Secondary Plan, and Precinct Plans.

3.7.2.1.1 Toronto's Official Plan

The Official Plan defines 11 land use designations, four of which are present around the Project footprint. The relevant land use designations are described below and illustrated in Exhibit 3.16.

- **Mixed use areas:** These areas include residential uses, offices, retail and services, institutions, entertainment, recreation and cultural activities, and parks and open spaces.
- **Regeneration areas:** Commercial, residential, live/work, institutional, and light industrial uses can be included in regeneration areas, which attract investment, encourage the re-use of buildings, and animate streets.
- **Core employment areas:** Employment areas are home to economic activities and places of business.
- **Parks:** This designation includes parks and open spaces ranging from small community parks to larger areas of urban wilderness.

The Project study area encompasses lands within the Lower Don: Don River, Special Policy Area (SPA).

3.7.2.1.2 Central Waterfront Secondary Plan (2003)

Current land use designations are prescribed in the Central Waterfront Secondary Plan. Three types of land uses and one special study area are designated around the Project footprint. They are described below and illustrated in Exhibit 3.17.

- **Parks and open space areas:** These areas are designated for parks, open spaces, natural areas, and plazas. Acceptable land uses can include compatible community, recreation, cultural, restaurant, and entertainment facilities.
- **Regeneration areas:** These are lands that may be subdivided into smaller blocks for mixed-use development ranging from industries, housing, community services, parks, offices, and commercial/retail uses. These lands are subject to Precinct Implementation Strategies.
- **Existing use areas:** These areas are governed by existing *Official Plan*, zoning controls, and other related Planning Act processes and they are consistent with directions set out in the *Central Waterfront Secondary Plan*. These lands are not subject to Precinct Implementation Strategies.
- **Foot of Yonge special study area:** The land on both sides of the Yonge Slip are to be designed to include major public amenities, distinctive cultural buildings, appropriate tourist facilities, and a range of public uses and other development. The Yonge Slip is envisioned as a new public plaza and a tourist destination.

One of the Central Waterfront Secondary Plan's core principles is creating dynamic and diverse new communities. A key project under this principle is the East Bayfront, a prominent new neighbourhood.

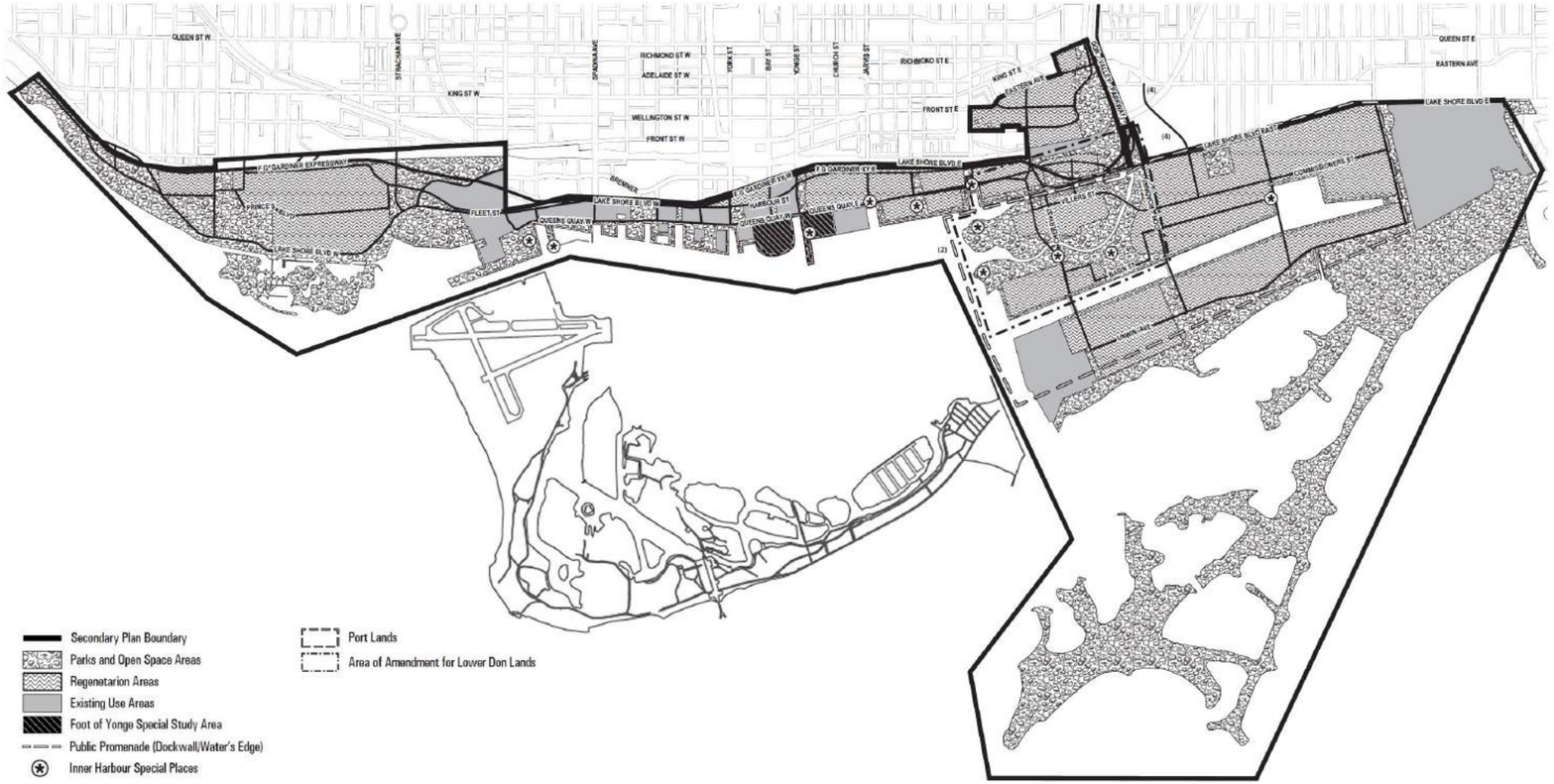


Exhibit 3.17 Central Waterfront Secondary Plan land use map

3.7.2.1.3 Precinct plans

Guided by the concepts in the Central Waterfront Secondary Plan, Precinct Plans provide block-by-block details for roads, schools, parks, and residential and commercial developments. The basic intention behind precinct planning is to provide the necessary urban design, planning and development guidance to permit the actual revitalization of individual precincts of the Toronto waterfront following the direction of the Central Waterfront Secondary Plan.

The following precinct plans for areas in the vicinity of the Project have been developed (Exhibit 3.18):

- East Bayfront Precinct Plan
- Lower Yonge Precinct Plan
- Keating Channel Precinct Plan

These Precinct Plans are discussed in greater detail in Appendix A.

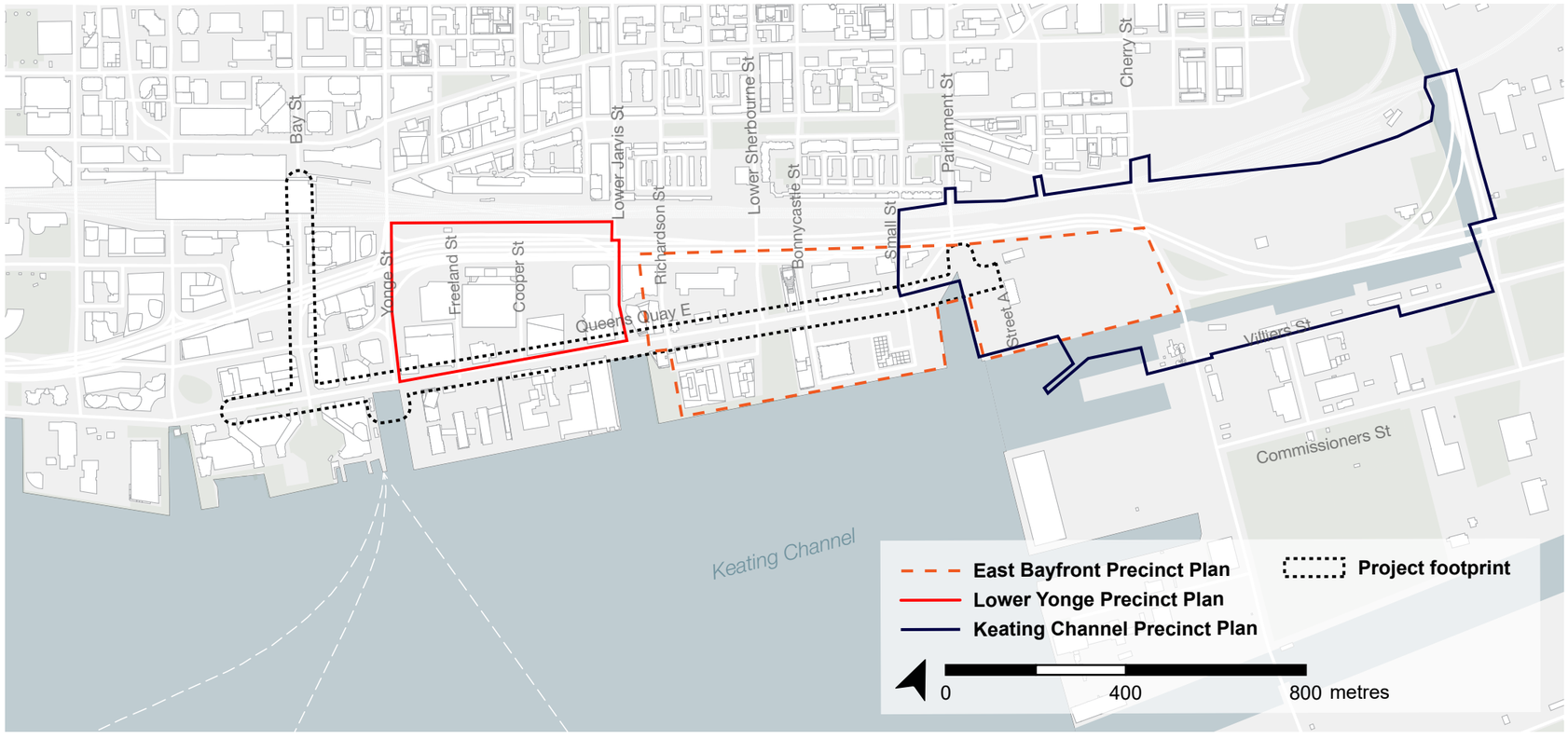


Exhibit 3.18 Precinct plan boundaries

3.7.2.2 Existing and planned land uses

3.7.2.2.1 Existing land uses

A range of land uses exists around the Project footprint. These land uses include:

- **Residential:** Existing residential uses in and around the Project footprint are concentrated west of Parliament Street along Queens Quay East. Residential space is often located in mixed-use buildings, as is typical in Mixed Use Areas and Regeneration Areas as defined by the *Official Plan* and the *Central Waterfront Secondary Plan*.
- **Commercial:** Commercial developments in and around the Project footprint include a mixture of longstanding and new businesses. Many of these are clustered near Bay Street and Yonge Street.
- **Industrial:** Despite its industrial past, there is only one major industrial site (Redpath Sugar Plant) in and around the Project footprint.
- **Community services and facilities:** At present, there are only a few community services and facilities in and around the Project footprint. As residential and mixed-use developments are added, they may be served by new community services, which will be increasingly easy to access with the implementation of the Project.
- **Institutional:** Existing institutional land uses in and around the Project footprint include the George Brown College School of Design and the George Brown College Health Sciences Campus.
- **Recreational:** Several recreational land uses are adjacent to the Project footprint. These include, but are not limited to, the Yonge Slip, Sugar Beach, the Water's Edge Promenade and the MGT.

3.7.2.2.2 Under-construction and planned developments

The Project footprint is undergoing rapid development. A range of new residential, commercial, institutional, and recreational uses are either under construction or planned. This development will increase the number of people living and working in the area.

There are several multi-acre development sites situated around the Project footprint. Once developed, the sites are envisioned as vibrant mixed-use communities, linking downtown and the waterfront. For two of the sites, Waterfront Toronto is partnering with private-sector firms responsible for the development of the sites. The two sites are described below and are illustrated in Exhibit 3.19.

- **Bayside:** Bayside is a mixed-use community located on a 13-acre site immediately adjacent to Toronto's waterfront between Sherbourne Commons, Parliament Slip, and Queens Quay East. The development, whose implementation is being led by Hines, will feature 190,000 square metres (m^2) of housing, restaurants, retail space, office space, and cultural venues. To date, two residential buildings – Aqualina and Aquavista – have been completed at the site and two others – Aquabella and Aqualuna – are under construction. At the time of this review, the substantial completion of T3 Bayside was scheduled for Fall 2023. Aqualuna will be under construction until 2025. In addition, there are two sites to be developed – a second office site and a proposed purpose-built market rental and affordable rental site.
- **Quayside:** Quayside is a 12-acre site centred around the foot of Parliament Street. Bound by Bonnycastle Street, Queens Quay East, Lake Shore Boulevard East, and the Victory Soya Mills Silos, Quayside will be a dynamic, inclusive, and sustainable community including retail and entertainment space, restaurants, and cultural venues. Through a competitive procurement process, Waterfront Toronto selected local developers Dream Unlimited and Great Gulf Group, together known as Quayside Impact, to develop the mixed-use community.

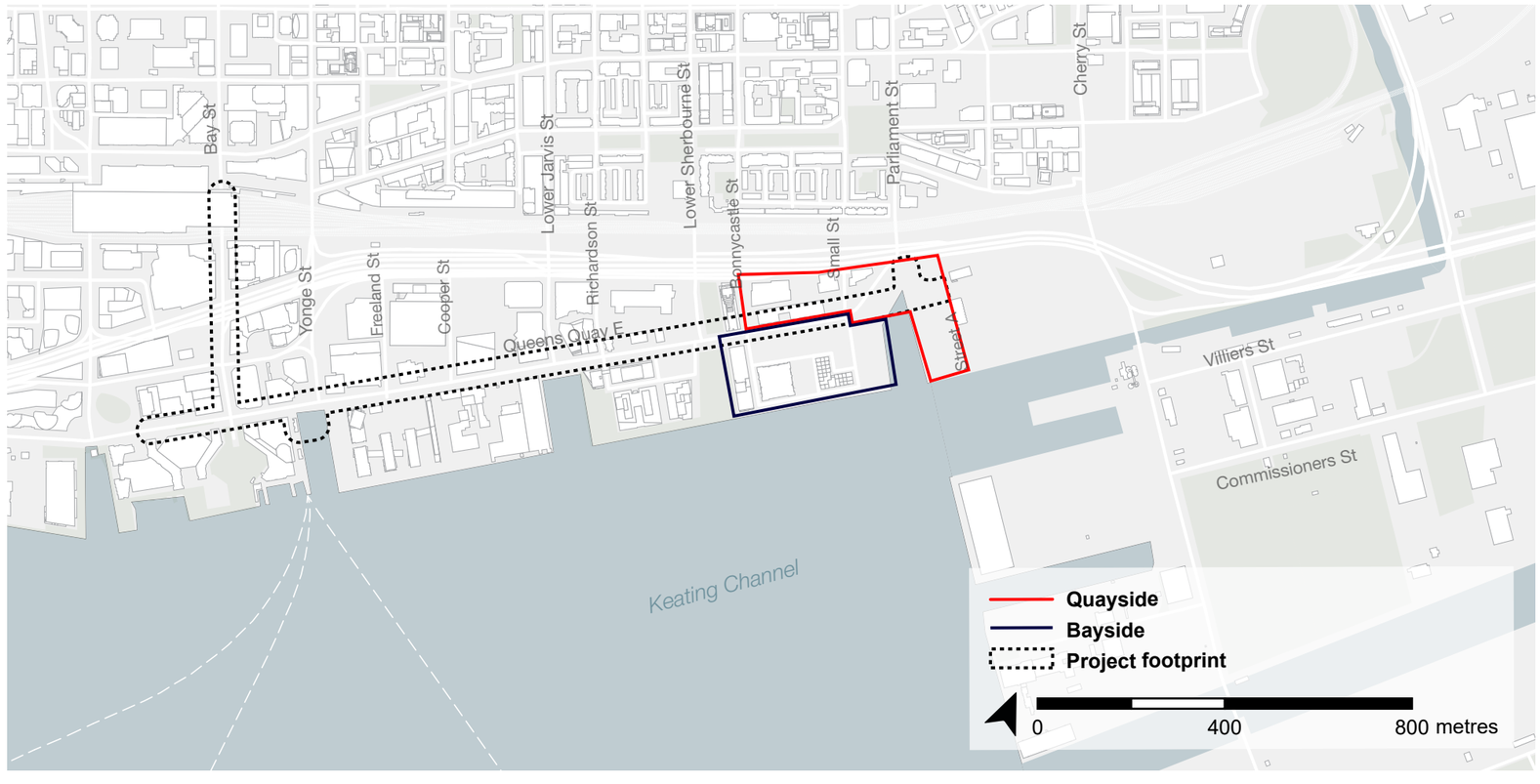


Exhibit 3.19 Major development sites

3.8 Utilities and municipal infrastructure

3.8.1 Area A

The list of existing utilities that are currently located in the vicinity of the Union LRT Station works include:

- Water (City of Toronto)
- Storm Sewer (City of Toronto)
- Sanitary Sewer (City of Toronto)
- Telecommunications (Bell, Rogers, Cogeco, Zayo, Beanfield, Teraspan)
- Power (Toronto Hydro)
- Gas (Enbridge)
- Steam (Enwave)
- Filtered Water (Lake Shore Boulevard) (City of Toronto)

The list of existing utilities that are currently located in the vicinity of the Queens Quay-Ferry Docks LRT Station expansion and tunnel portal works include:

- Watermain (City of Toronto)
- Storm Sewer (City of Toronto)
- Sanitary Sewer (City of Toronto)
- Telecommunications (Bell, Rogers, Telus, MTS Allstream, Beanfield-Metroconnect, Group Telecomm)
- Power (Toronto Hydro)
- Power (Hydro One)
- Gas (Enbridge)

There are no petroleum wells in the Area A study area.

3.8.2 Area B

The list of existing utilities that are currently located in the vicinity of Queens Quay East and Parliament Street include:

- Water
- Storm sewers
- Sanitary servicing
- Gas
- Telecommunications (Beanfield/Cogeco, Bell, GT, MTS Allstream, Rogers, Telus, and Zayo Telecommunications)
- Toronto Hydro
- Hydro One
- Steam (Enwave)

There are two planned changes to utilities in this area that will require coordination during the Project:

- Toronto Water is currently preparing preliminary system design for the Don & Waterfront wet weather flow system. The system is designed to capture CSOs into a deep tunnel system to be conveyed for treatment and stored during extreme rainstorms rather than directly discharging into the Inner Harbour and other watercourses as they are currently functioning. The proposed scope includes the Inner Harbour West Tunnel, from Strachan Avenue to Ashbridges Bay treatment plant, running generally below Queens Quay at 30 mBGS within the Project study area. A series of storage shafts and connections points to the tunnels are also required, including connections to existing CSOs at Yonge Street, Lower Jarvis Street, Lower Sherbourne Street, and Small Street within Area B.
- Hydro One has recently completed the draft Environmental Study Report for the Power Downtown Toronto Class Environmental Assessment – a proposed replacement of the existing 115-kilovolt underground transmission cables between Terauley Transformer Station (near Bay Street and Dundas Street) and Esplanade Transformer Station (near Lower Sherbourne Street and The Esplanade). The proposed work is required to replace aging underground cables that were installed in the 1950s and are reaching their end of life and involves the installation of an underground tunnel at approximately 25 mBGS in the bedrock within existing road allowances to house the replacement cables. Three associated shafts will be constructed to provide access to the tunnel for operation and maintenance of the cables. The proposed work also includes de-energizing, disconnecting and capping the existing 115-kilovolt cables that run along York Street and Queens Quay. The completion of this cable replacement project would mean that the existing shallow high voltage cables that currently run along the length of Queens Quay from York to Lower Sherbourne can be decommissioned and presumably removed in the future. Based on the information available from the Hydro One project website, the construction of the new transmission cables is currently expected to be completed in 2026.

There are no petroleum wells in the Area B study area.

3.9 Transportation network

Existing transit, pedestrian, bike, and vehicle networks provide the area in and around the Project footprint with multi-modal transportation options.

3.9.1 Transit network

Several TTC subways, buses, and streetcars; GO Transit trains; and VIA Rail trains operate in or around the Project footprint (Exhibit 3.20). However, the Project footprint lacks higher order transit connections along Queens Quay East or into the Port Lands.

3.9.1.1 VIA Rail service

VIA Rail trains operating between Toronto and points east travel along the USRC and stop at Union Station.

3.9.1.2 GO Transit service

GO Transit operates three commuter rail services—the Richmond Hill Line, the Stouffville Line, and the Lakeshore East Line—along the USRC east of Union Station. The nearest GO station is Union Station, the largest transportation hub in the Greater Toronto Area. GO Transit also operates several bus routes out of its main bus terminal located at 81 Bay Street.

3.9.1.3 TTC subway service

3.9.1.3.1 Line 1 (Yonge-University)

Line 1 (Yonge-University) runs from the northern area of Yonge Street and Finch Avenue East, south to Union Station, and north again to the area of Highway 7 and Jane Street. Line 1 has 38 stations and connects with Line 2 at Bloor-Yonge, St. George, and Spadina stations and with Line 4 at Sheppard-Yonge Station.

3.9.1.4 TTC streetcar service

3.9.1.4.1 509 Harbourfront

The 509 streetcar operates east-west service between Union LRT Station (Line 1 Yonge–University) and Exhibition Loop via Bay Street, Queens Quay West, Bathurst Street, and Fleet Street. Starting at Union LRT Station, the route operates in a streetcar tunnel (shared with Route 510) under Bay Street and services an underground streetcar stop at the intersection of Bay Street and Queens Quay West (Queens Quay-Ferry Docks LRT Station). The route then turns west and emerges from the tunnel through a portal on Queens Quay West located west of Bay Street. From there, the route operates in a dedicated right-of-way in the middle of Queens Quay West and continues west to the Exhibition Loop. This route is part of the TTC's 10 Minute Network meaning that a streetcar serves this route at least once every ten minutes. In 2021, the 509 streetcar served 5,400 customers per weekday.

3.9.1.4.2 510 Spadina

The 510 streetcar route operates between Union LRT Station (Line 1 Yonge–University) and Spadina Station (Line 2 Bloor–Danforth) via Bay Street, Queens Quay West, and Spadina Avenue. Starting at Union LRT Station, the route operates in a streetcar tunnel (shared with Route 509) under Bay Street and services an underground streetcar stop at the intersection of Bay Street and Queens Quay West (Queens Quay-Ferry Docks LRT Station). The route then turns west and emerges from the tunnel through a portal on Queens Quay West located west of Bay Street. From there, the route operates in a dedicated right-of-way in the middle of Queens Quay West and continues north on Spadina Avenue. This route is part of the TTC's 10 Minute Network meaning that a streetcar serves this route at least once every ten minutes. In 2021, the 510 streetcar served 15,730 customers per weekday.

3.9.1.4.3 504 King

The 504 streetcar provides east-west service along King Street. The 504A branch operates between Dundas West Station to the Distillery Loop via Dundas Street West, Roncesvalles Avenue, King Street, Sumach Street, and Cherry Street. This route is part of the 10 Minute Network, meaning that a streetcar serves the route at least once every ten minutes. In 2021, the 504 streetcar served 44,390 customers per weekday.

3.9.1.5 TTC bus service

3.9.1.5.1 19 Bay

The 19 Bay bus route generally operates in a north-south direction between the area of Dupont Street/Bedford Road and the area of Queens Quay East/Lower Sherbourne Street. The route serves two subway stations: Bay Station (Line 2 Bloor-Danforth) and Union Station (Line 1 Yonge-University). Near the Project footprint, the bus travels on Bay Street, Queens Quay East, and Dockside Drive. This route operates seven days per week. In 2021, the route served 3,089 customers per weekday.

3.9.1.5.2 65 Parliament

The 65 Parliament bus route generally operates in a north-south direction between Castle Frank Station (Line 2 Bloor-Danforth) and the area of Queens Quay East/Lower Sherbourne Street. Near the Project footprint, the bus travels on Parliament Street, Queens Quay East, and Dockside Drive. This route operates seven days per week. In 2021, the route served 3,545 customers per weekday.

3.9.1.5.3 72 Pape

The 72 Pape bus route generally operates in a north-south direction between Pape Station (Line 2 Bloor-Danforth) and Union Station (Line 1 Yonge-University). Branch 72B travels near the Project footprint on Lake Shore Boulevard, Parliament Street, Queens Quay East, Bay Street, and Yonge Street. Route 72 operates seven days a week. In 2021, the route served 5,986 customers per weekday.

3.9.1.5.4 75 Sherbourne

The 75 Sherbourne bus route provides north-south service between South Drive/Glen Road and Queens Quay East/Lower Jarvis Street. The route serves Sherbourne Station (Line 2 Bloor-Danforth). Near the Project footprint, the route travels on Lower Sherbourne Street, Queens Quay East, and Lower Jarvis Street. The route operates seven days a week. In 2021, the route served 5,181 customers per weekday.

3.9.1.5.5 97B and 97C Yonge

The 97B and 97C Yonge bus routes provide north-south service along Yonge Street. Near the Project footprint, 97B and 97C buses travel on Yonge Street, Queens Quay West, and Bay Street. These routes only operate Monday to Friday during peak periods. In 2021, all of the route 97 branches (not just the 97B and 97C branches) served 1,834 customers per weekday.

3.9.1.5.6 202 Cherry Beach

The 202 Cherry Beach bus operates between Union Station (Line 1 Yonge-University) and Cherry Beach. Near the Project footprint, the bus travels on Bay Street, Queens Quay East, Parliament Street, Lake Shore Boulevard East, and Cherry Street. This route operates seasonally seven days a week from early May to early October.

3.9.1.5.7 320 Yonge Night Bus

The 320 Yonge Night Bus operates between the area of Yonge Street/Steeles Avenue and the area of Yonge Street/Queens Quay East. Near the Project footprint, the bus travels on Yonge Street, Queens Quay West, and Bay Street. This route is part of the Blue Night Network, indicating that it provides 30-minute or better service from approximately 1:30 am to the start of subway service seven days a week.

3.9.1.5.8 365 Parliament Night Bus

The 365 Parliament Night Bus operates between Castle Frank Station (Line 2 Bloor-Danforth) and the area of Queens Quay East/ Lower Sherbourne Street. Near the Project footprint, the bus travels on Parliament Street, Queens Quay East, and Dockside Drive. This route is part of the Blue Night Network, indicating that it provides 30-minute or better service from approximately 1:30 am to the start of subway service seven days a week.

3.9.1.6 Ferry service

The City of Toronto Parks, Forestry and Recreation Division operates three ferry routes between mainland Toronto and Centre Island, Hanlan's Point, and Ward's Island in the Toronto Islands. All three routes operate out of the Jack Layton Ferry Terminal, located in the Toronto Harbour behind the Westin Harbour Castle Hotel.

Service levels vary throughout the year. During the winter, ferry service is provided to Ward's Island every 30 minutes to one hour and no service is provided to Hanlan's Point or Centre Island. During the summer, service is provided on all three routes with a frequency ranging from every 15 minutes to every hour.

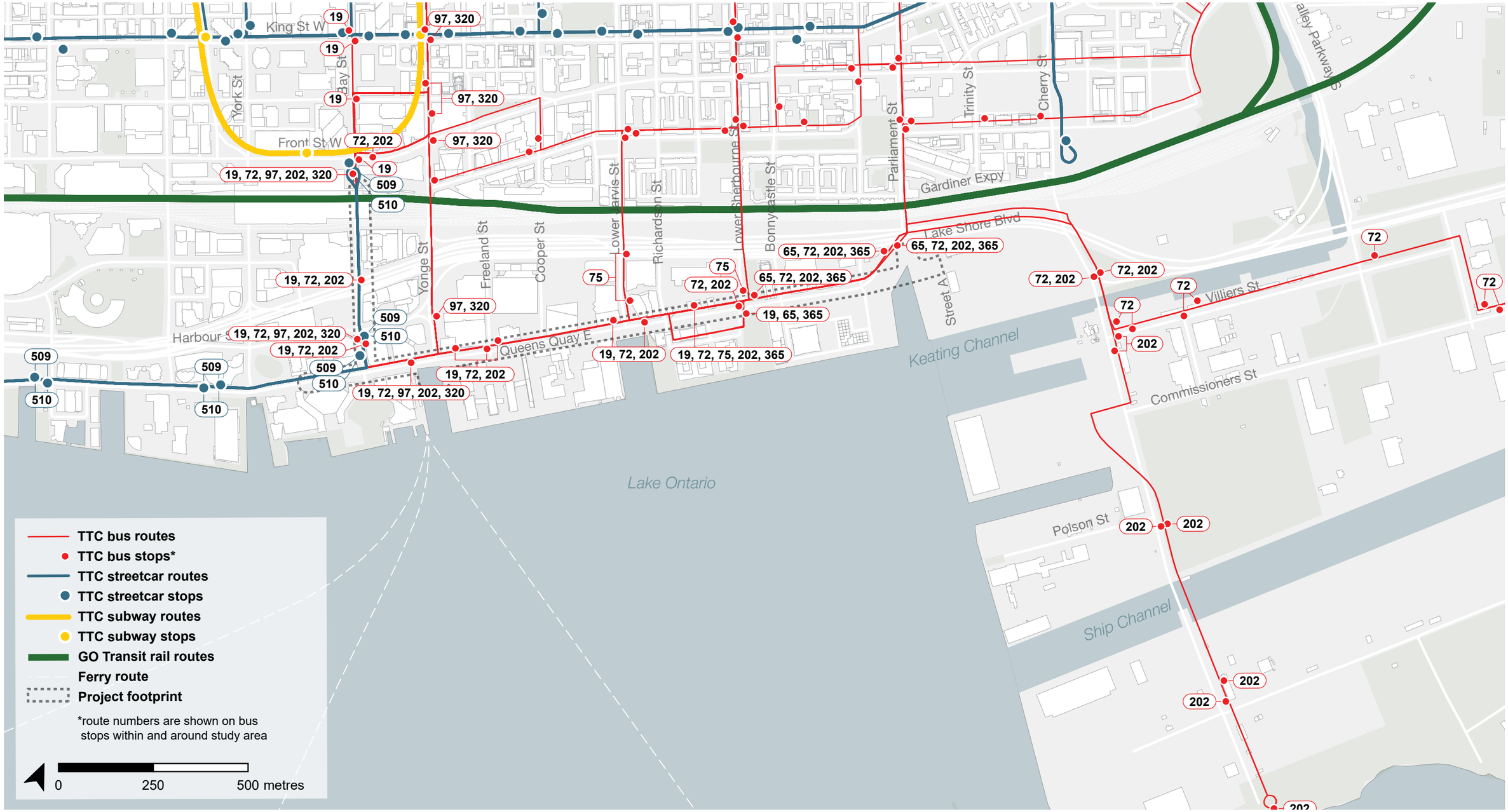


Exhibit 3.20 Transit network in and around Project footprint

3.9.2 Pedestrian network

Sidewalks are provided on existing public streets within and around the Project footprint except on portions of Richardson Street (Exhibit 3.21).

Crosswalks are provided at signalized intersections. Most signalized intersections feature crosswalks across all four streets.

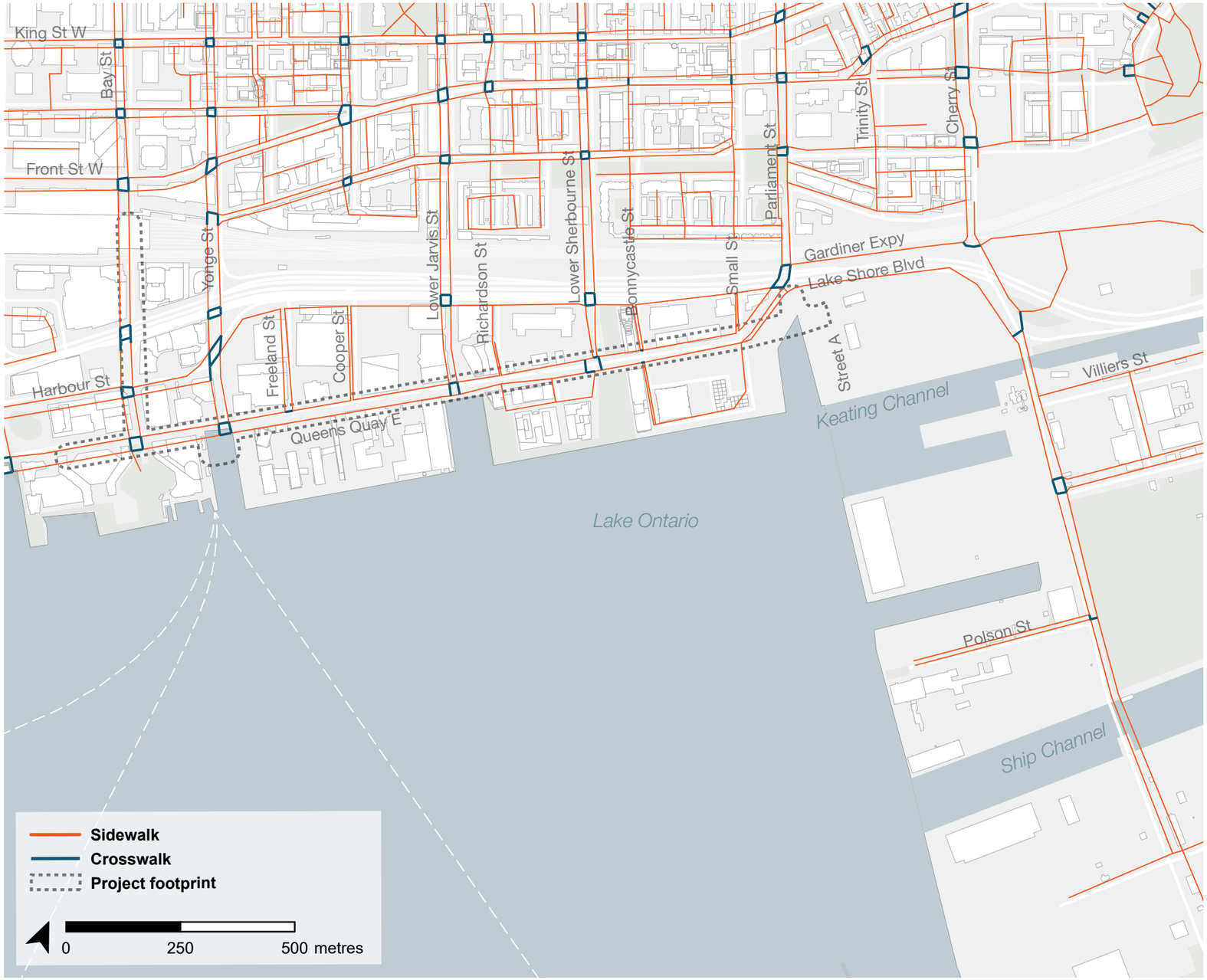


Exhibit 3.21 Pedestrian network in and around Project footprint

3.9.3 Bike network

The City of Toronto's bike network includes several types of bike infrastructure, three of which are present near the Project (Exhibit 3.22).

Major multi-use trails are off-street facilities that may be used for biking. There are two major multi-use trails near the Project:

- The MGT runs along the south side of Queens Quay East to Parliament Street and Lake Shore Boulevard East.
- The Harbour Street Trail runs along the south side of Harbour Street between Bay Street and Rees Street.

Bike lanes are located on roadways and designated for the exclusive use of cyclists. They are not physically separated from vehicle traffic. The following streets near the Project footprint feature bike lanes:

- Bay Street between Front Street West and Queens Quay West;
- Yonge Street between Front Street East and Queens Quay East; and
- Lower Sherbourne Street between Lake Shore Boulevard East and Queens Quay East.

Cycle tracks are separate lanes for bicycles that are adjacent to the roadway, but separated from vehicular traffic. No streets immediately adjacent to the Project footprint have cycle tracks. Slightly farther from the Project footprint, Lower Sherbourne Street north of Lake Shore Boulevard East, The Esplanade, and Adelaide Street feature cycle tracks.

3.9.3.1 Bike Share Toronto

Bike Share Toronto is a bike sharing service that provides 24/7 access to over 7,100 bikes at 680 stations as of August 2023. There are nine Bike Share Toronto stations south of Lake Shore Boulevard between Bay Street and Street A with room for over 200 bikes (Exhibit 3.22).

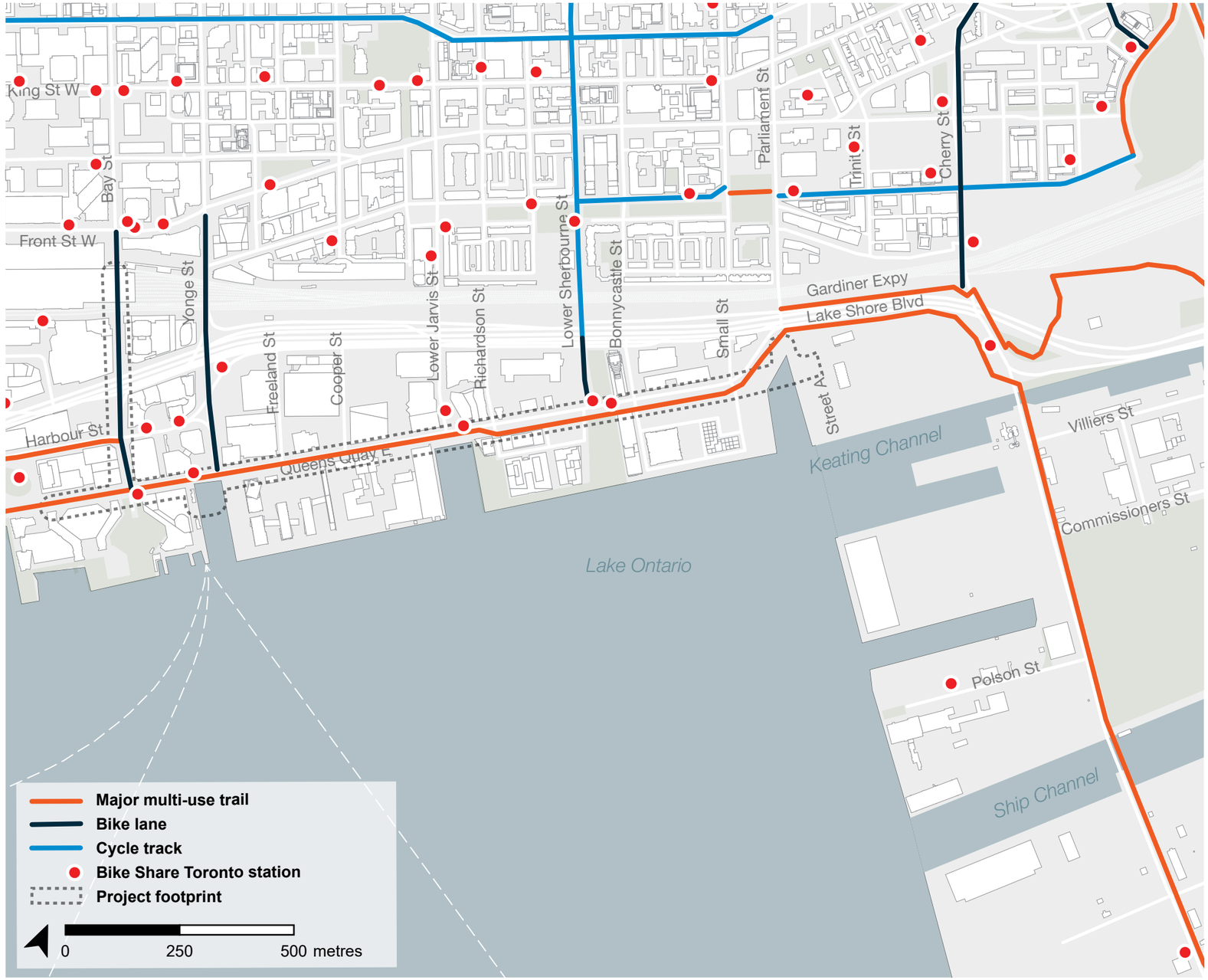


Exhibit 3.22 Bike network in and around Project footprint

3.9.4 Road network

The key streets and roadways within and around the Project footprint are shown in Exhibit 3.47 on page 98.

3.9.4.1 Expressways

3.9.4.1.1 Gardiner Expressway

The Gardiner Expressway is an east-west oriented, basic six-lane elevated roadway with on and off ramps at Bay Street, Yonge Street, Lower Jarvis Street and Lower Sherbourne Street. The Gardiner Expressway is one of the principal roadways providing regional access to downtown Toronto. The Gardiner Expressway links to the Queen Elizabeth Way, to the Don Valley Parkway, and to Lake Shore Boulevard East. It carries high traffic volumes and operates as a controlled access, free-flow facility. The posted speed limit is 90 kilometres per hour (kph).

3.9.4.2 Major arterial streets

3.9.4.2.1 Lake Shore Boulevard East

Lake Shore Boulevard East is an east-west oriented, basic six-lane divided roadway that runs through the East Bayfront Precinct parallel to and either beneath or to the south of the Gardiner Expressway. Lake Shore Boulevard East carries relatively large volumes of traffic. Lake Shore Boulevard East connects with each of the main north-south streets in the Project footprint (Yonge Street, Lower Jarvis Street, Lower Sherbourne Street and Parliament Street) at signalized intersections. Freeland Street, Cooper Street, Richardson Street, Bonnycastle Street, and Small Street connect with eastbound Lake Shore Boulevard East at STOP sign-controlled intersections. The posted speed limit is 60 kph. The eastbound lanes of Lake Shore Boulevard East become Harbour Street west of Yonge Street.

3.9.4.2.2 Harbour Street

Harbour Street is a four-lane, eastbound major arterial that runs from Yonge Street to Lower Simcoe Street. Harbour Street becomes Lake Shore Boulevard West to the west of Lower Simcoe Street and becomes Lake Shore Boulevard East to the east of Yonge Street. Harbour Street has a bidirectional, off-street bike facility on the south side of the street between Bay Street and Lower Simcoe Street. The posted speed limit is 50 kph.

Exhibit 3.23 Lake Shore Boulevard East looking northeast from Parliament Street

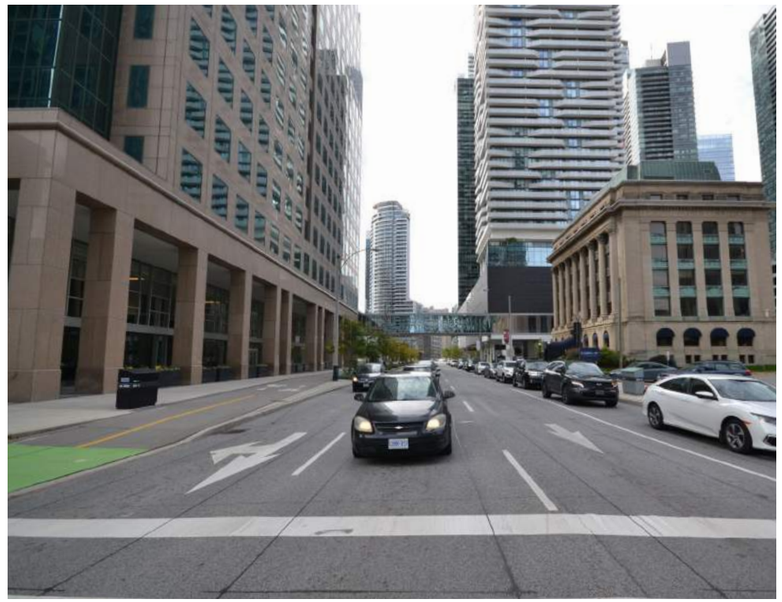


Exhibit 3.24 Harbour Street looking west from Bay Street

Exhibit 3.25 Lower Jarvis Street looking south from King Street East

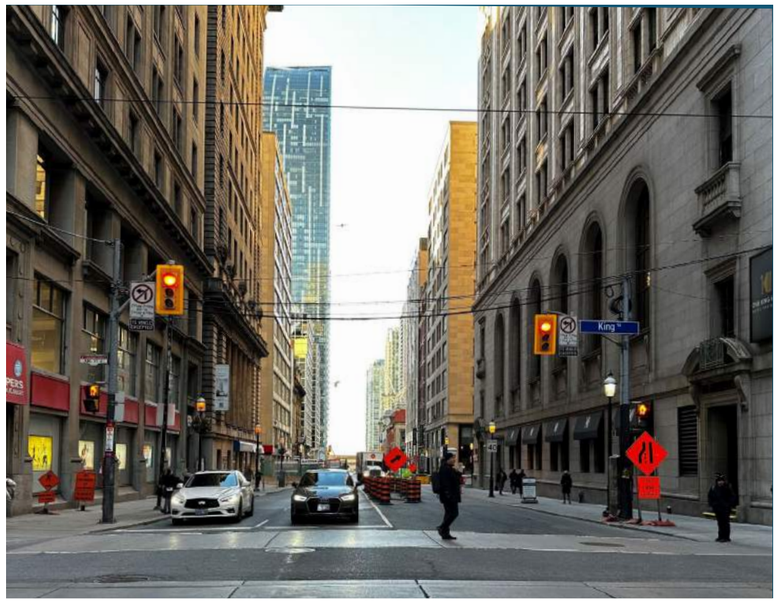


Exhibit 3.26 Yonge Street looking south from King Street

Exhibit 3.27 Bay Street looking south from Front Street West

3.9.4.2.3 Lower Jarvis Street (north of Lake Shore Boulevard East)

Lower Jarvis Street north of Lake Shore Boulevard East is a major arterial that runs through an underpass structure below the main rail-line to Front Street. Lower Jarvis Street becomes Jarvis Street north of Front Street and extends north to Bloor Street East. Lower Jarvis Street is a basic four-lane roadway that provides a key linkage between the waterfront and downtown. The posted speed limit is 40 kph.

3.9.4.2.4 Yonge Street (north of Harbour Street/Lake Shore Boulevard East)

Yonge Street north of Harbour Street/Lake Shore Boulevard East is a four-lane major arterial. Yonge Street passes under the main rail-line and extends north of the city boundaries, providing a key north-south connection. Yonge Street has on-street bike lanes in both directions. The posted speed limit is 40 kph.

3.9.4.2.5 Bay Street (north of Harbour Street)

Bay Street north of Harbour Street is a four-lane major arterial that passes under the main rail-line and extends north to Davenport Road. Bay Street has on-street bike lanes in both directions south of Lake Shore Boulevard West. Bay Street's posted speed limit is 40 kph.

Exhibit 3.28 Queens Quay East looking southeast from Cooper Street

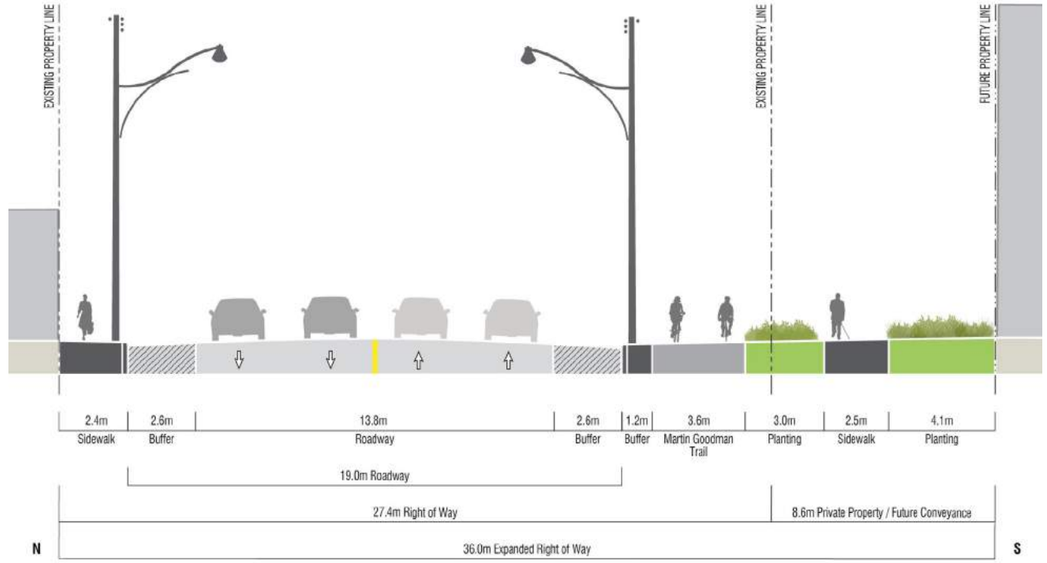


Exhibit 3.29 Queens Quay East typical cross-section

3.9.4.3 Minor arterial streets

3.9.4.3.1 Queens Quay

Queens Quay is an east-west oriented, basic four-lane roadway that runs parallel to Lake Shore Boulevard across central Toronto. Queens Quay connects from Lake Shore Boulevard West at Bathurst Street and runs through the East Bayfront Precinct to connect back to Lake Shore Boulevard East at Parliament Street. The street is named Queens Quay West to the west of Yonge Street and Queens Quay East to the east of Yonge Street. Queens Quay has a bi-directional, off-street bike facility along its south side. The speed limit is 40 kph.

Exhibit 3.29 shows the typical cross-section of Queens Quay East and Exhibit 3.30 shows a cross-section of Queens Quay East where it is narrower, between Yonge Street and Jarvis Street.

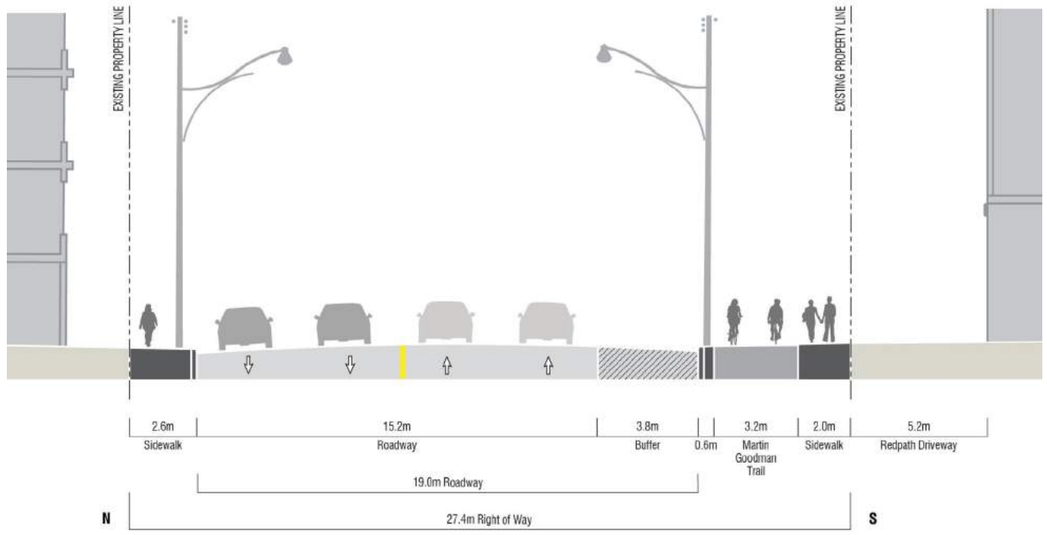


Exhibit 3.30 Queens Quay East narrow cross-section

Exhibit 3.31 Lower Sherbourne Street looking north from Queens Quay East

Exhibit 3.32 Parliament Street looking northeast from Merchant's Wharf

Exhibit 3.33 Yonge Street looking north from Queens Quay East

3.9.4.3.2 Lower Sherbourne Street

Lower Sherbourne Street is a north-south oriented roadway with a variable number of lanes. At the intersection with Queens Quay East, Lower Sherbourne Street has one southbound lane. A northbound lane is introduced mid block between Queens Quay East and Lake Shore Boulevard East. North of Lake Shore Boulevard East, Lower Sherbourne Street is a basic, two-lane roadway. Lower Sherbourne Street extends north to Front Street East, after which it is called Sherbourne Street. Lower Sherbourne Street has on-street bike lanes in both directions. The posted speed limit is 40 kph.

3.9.4.3.3 Parliament Street

Parliament Street is a north-south oriented, basic four-lane roadway that extends from Queens Quay East / Small Street to Bloor Street East. Parliament Street has a speed limit of 50 kph.

3.9.4.3.4 Yonge Street (south of Harbour Street/Lake Shore Boulevard East)

Yonge Street south of Harbour Street / Lake Shore Boulevard East is a four-lane minor arterial. Yonge Street extends south to Queens Quay. Yonge Street has on-street bike lanes in both directions. The posted speed limit is 40 kph.

3.9.4.3.5 Bay Street (south of Harbour Street)

Bay Street south of Harbour Street is a two-lane minor arterial that extends south to Queens Quay West. Bay Street has on-street bike lanes in both directions. Bay Street's posted speed limit is 40 kph.

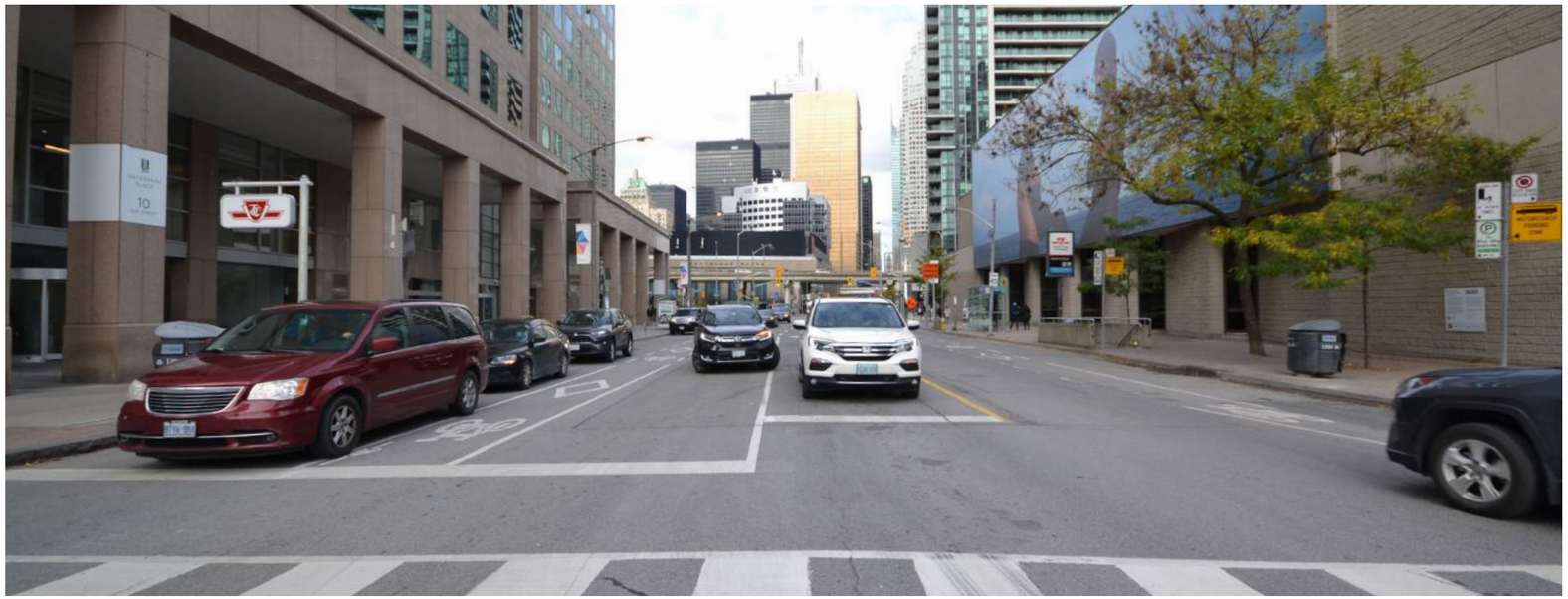


Exhibit 3.34 Bay Street looking north from Queens Quay East

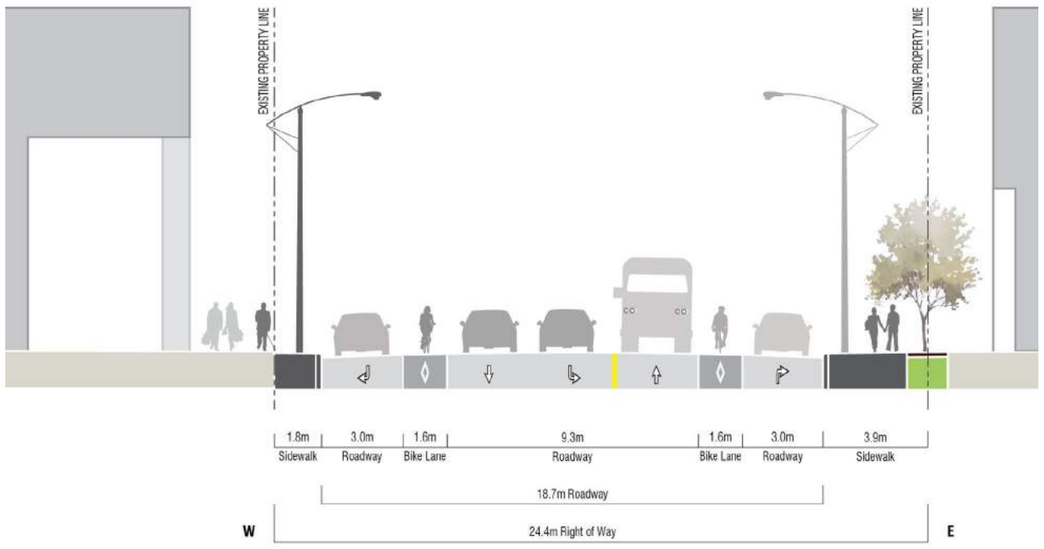


Exhibit 3.35 Bay Street cross-section

Exhibit 3.36 Lower Jarvis Street looking north from Queens Quay East

Exhibit 3.37 Freeland Street looking north from Queens Quay East

3.9.4.4 Collector streets

3.9.4.4.1 Lower Jarvis Street (south of Lake Shore Boulevard East)

The section of Lower Jarvis Street south of Lake Shore Boulevard East is a four-lane collector street. The posted speed limit is 40 kph.

3.9.4.4.2 Freeland Street

Freeland Street is a two-lane collector street extending from Lake Shore Boulevard East to Queens Quay East. Freeland Street has a posted speed limit of 30 kph.

3.9.4.5 Local streets

There are four local north-south oriented streets connecting Lake Shore Boulevard East and Queens Quay East in and around the Project footprint:

- **Cooper Street**
- **Richardson Street**
- **Bonnycastle Street**
- **Small Street**

They are all two-lane roads with a 20 m right-of-way. The speed limits range from 30 kph to 50 kph. Their intersections with Lake Shore Boulevards East and Queens Quay East operate under two-way (side street) STOP control. Access to Lake Shore Boulevard East is limited to right turns only.

Exhibit 3.38 Cooper Street looking north from Queens Quay East

Exhibit 3.39 Richardson Street looking north from Queens Quay East

Exhibit 3.40 Bonnycastle Street looking north from Queens Quay East

Exhibit 3.41 Small Street looking north from Queens Quay East

3.9.4.6 Other streets

There are a few additional small streets in and around the Project footprint whose classification is currently listed as pending. These primarily provide access to specific buildings or parking garages. These roads include:

- **Dockside Drive**
- **Merchants' Wharf**
- **Knapp Lane**

3.9.4.7 Private streets

There are two privately owned streets in and around the Project footprint. These roads include:

- **Edgewater Drive**
- **Kanadario Lane**

Exhibit 3.43 Merchants' Wharf looking south from Edgewater Drive

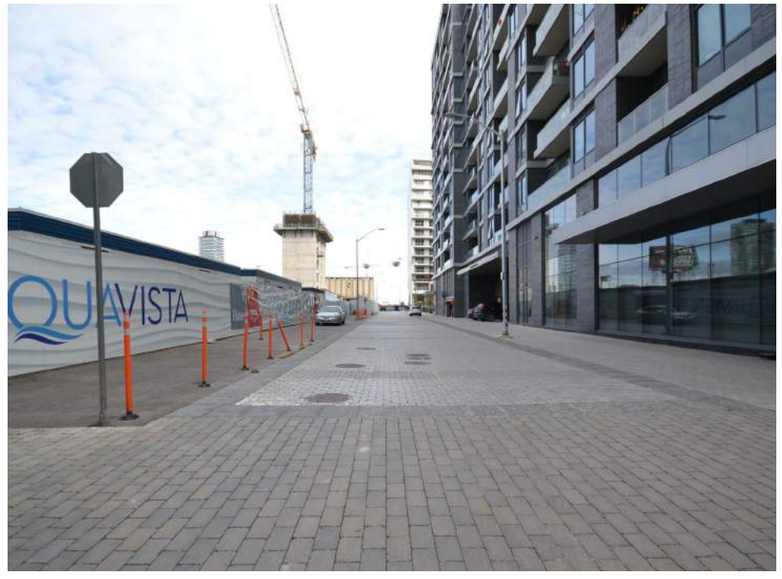


Exhibit 3.45 Edgewater Drive looking east from Merchants' Wharf

Exhibit 3.42 Dockside Drive looking south from Queens Quay East

Exhibit 3.44 Knapp Lane looking south from Dockside Drive

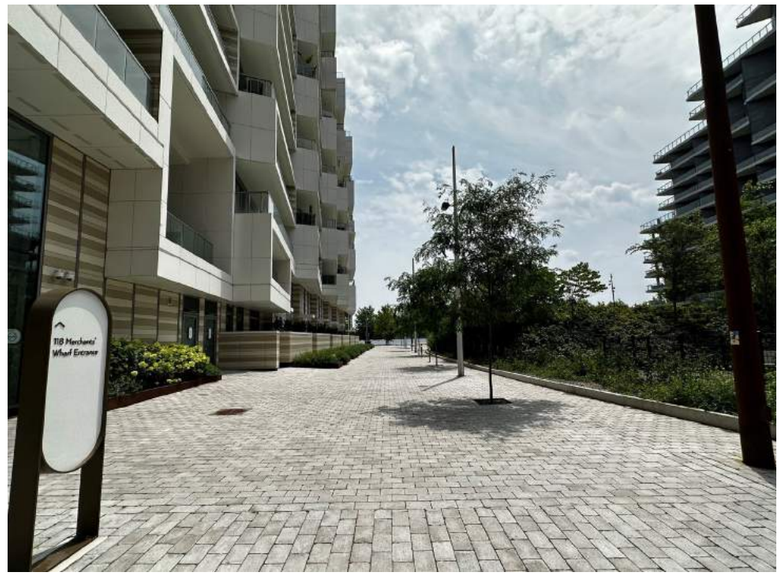


Exhibit 3.46 Kanadario Lane looking south from Edgewater Drive

3.9.4.8 Local accesses

There are several local private accesses off of Bay Street, Queens Quay East, and Parliament Street. The following local accesses are of particular importance due to their interaction with the Project:

- **Westin Harbour Castle Hotel driveways** (south side of Queens Quay West between Bay and Yonge Street)
- **Westin Harbour Castle Conference Centre driveway** (north side of Queens Quay West between Bay Street and Yonge Street)
- **Residences of the World Trade Centre driveways** (north side of Queens Quay West between Bay Street and Yonge Street)
- **Jack Layton Ferry Terminal driveway** (south side of Queens Quay West between Bay and Yonge Street)
- **Redpath Sugar Refinery driveways** (south side of Queens Quay East between Freeland Street and Cooper Street)

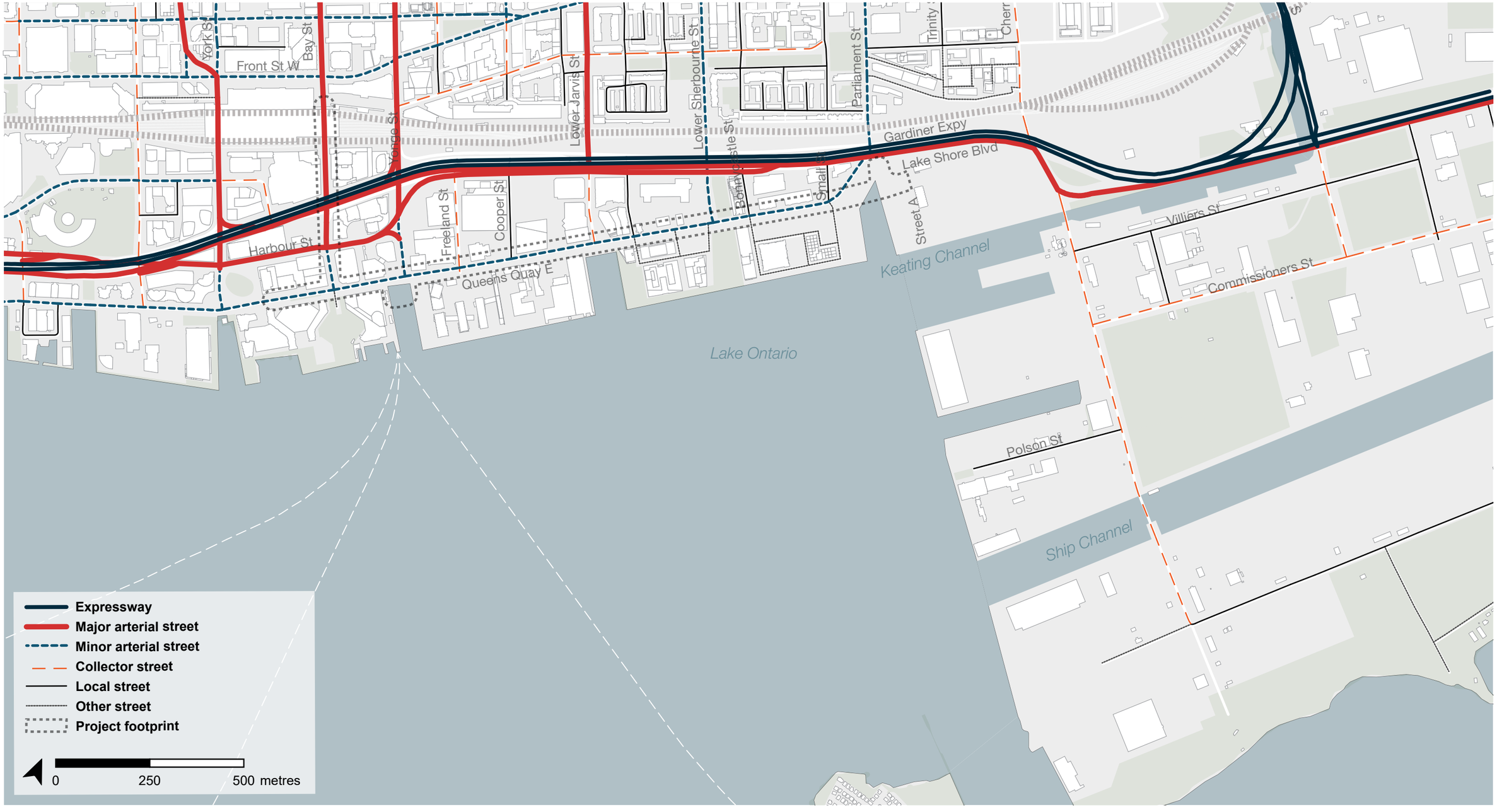


Exhibit 3.47 Road network in and around Project footprint

3.9.4.9 Planned road modifications and new roads

Several future road modifications and new road connections have been planned in and around the Project footprint as part of various precinct plans and Class EA master plans. These future connections are described below:

- **Extension of Harbour Street** as a pedestrian- and bicycle-friendly "main" street from Yonge Street to Lower Jarvis Street (Lower Yonge Precinct Plan)
- **Conversion of Harbour Street** between York Street and Yonge Street into a two-way street (Lower Yonge Precinct Plan)
- **Creation of a local "New Street"** between Cooper Street and Lower Jarvis Street (Lower Yonge Precinct Plan)
- **Elimination of the "S" curve** and regularization of the Yonge Street / Harbour Street and Yonge Street / Lake Shore Boulevard intersections (Lower Yonge Precinct Plan)
- **Removal of the Bay Street on-ramp** to the eastbound Gardiner Expressway (Lower Yonge Precinct Plan)
- **Shortening of the Gardiner Expressway eastbound Lower Jarvis Street off-ramp** to land at Yonge Street (Lower Yonge Precinct Plan)
- **Extension of Cooper Street** across Lake Shore Boulevard, under the Gardiner Expressway and through the rail corridor embankment to connect with Church Street to the north (Lower Yonge Precinct Plan)
- **Potential "straightening" of Yonge Street and Cooper Street**, south of Harbour Street (Lower Yonge Precinct Plan)
- **Creation of George Street** stretching from Lake Shore Boulevard East to Queens Quay East between Richardson and Lower Sherbourne (East Bayfront Precinct Plan; this street is called Street A in the EBF Transit Class EA)
- **Creation of Aitken Place** stretching from Lake Shore Boulevard East to Queens Quay East between Bonnycastle Street and Small Street (East Bayfront Precinct Plan; this street is also called Street D in the EBF Transit Class EA)
- **Extension of Queens Quay East** past Cherry Street (East Bayfront Precinct Plan; Keating Channel Precinct Plan)
- **Creation of east-west laneways** south of Queens Quay East (East Bayfront Precinct Plan)
- **Creation of Street A** stretching from Queens Quay East to Lake Shore Boulevard between Parliament Street and Trinity Street (Keating Channel Precinct Plan)
- **Reconfiguration of the Gardiner Expressway and Lake Shore Boulevard East** between Lower Jarvis Street and Logan Avenue (Gardiner Expressway & Lake Shore Boulevard Reconfiguration Environmental Assessment) which includes (but is not limited to):
    - o maintaining the existing elevated expressway between Lower Jarvis Street and Cherry Street
    - o removing the existing Gardiner-Don Valley Parkway connection
    - o rebuilding the connection along an alignment closer to the rail corridor
    - o reconstructing Lake Shore Boulevard East in a new alignment closer to the rail corridor

3.9.4.10 Existing intersection control

Existing area intersection control measures are illustrated in Exhibit 3.48.

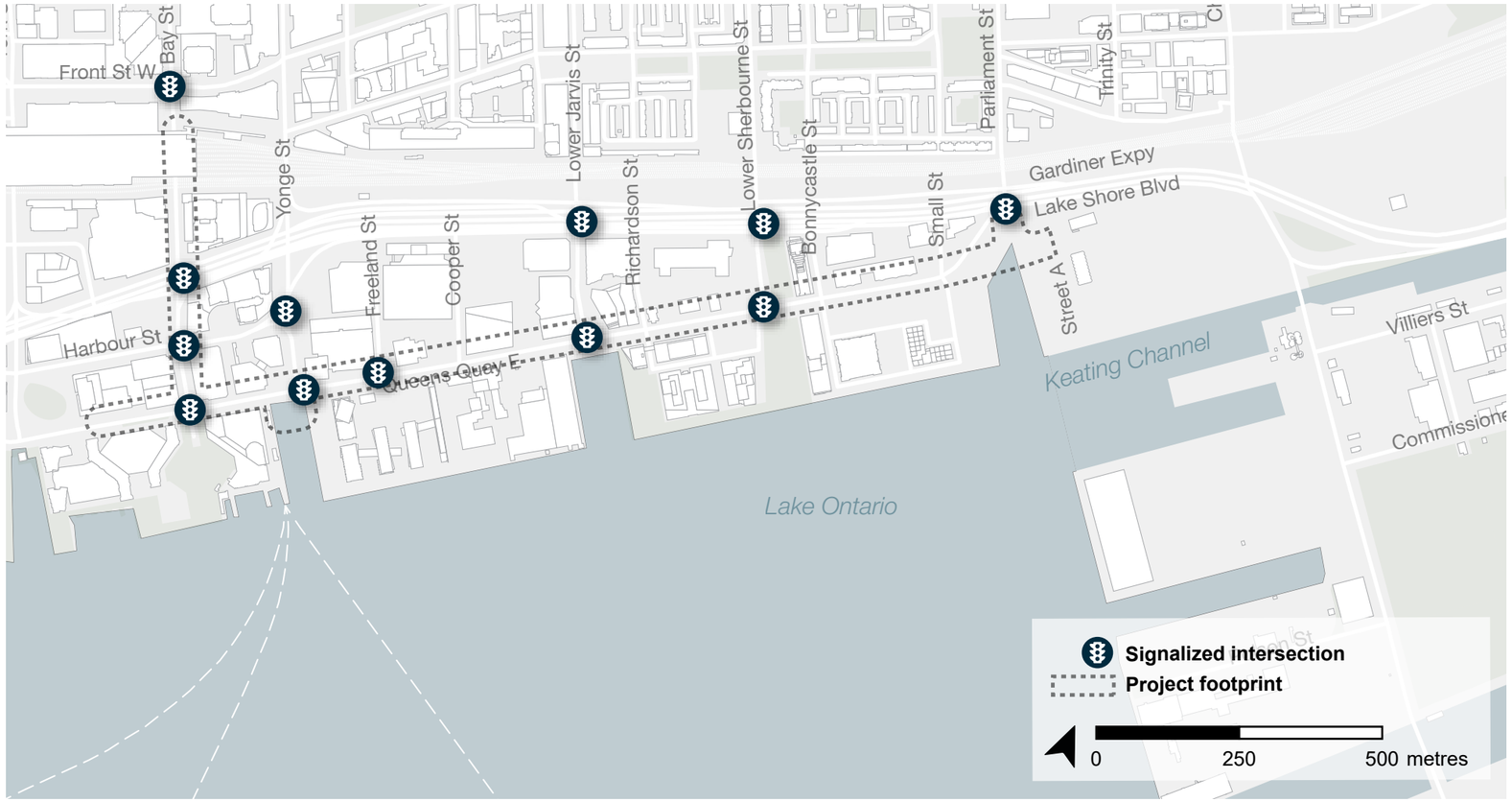


Exhibit 3.48 Existing signalized intersections

3.9.5 Traffic volumes

New traffic counts were conducted in November 2021 for most intersections within the Project footprint. However, it was not possible to conduct traffic counts at all intersections within the Project footprint due to some temporary closures and road work. Pre-pandemic historic counts from several sources and dates were used to supplement the new counts and to obtain a complete picture of historic traffic volumes at each of the intersections.

Overall, eastbound volumes are lower than westbound volumes for both the morning and afternoon peak hours. This is likely attributable to the significant percentage of pass-through trips that use westbound Queens Quay East to access the Gardiner Expressway via the Bay Street on-ramp. Eastbound and westbound through trips on Queens Quay are generally highest between Freeland Street and Lower Sherbourne Street.

Exhibit 3.49 and Exhibit 3.50 illustrate the total vehicle volumes at each intersection in the existing condition for the morning and afternoon peak hours.

Additional details regarding traffic volumes are included in Appendix J.

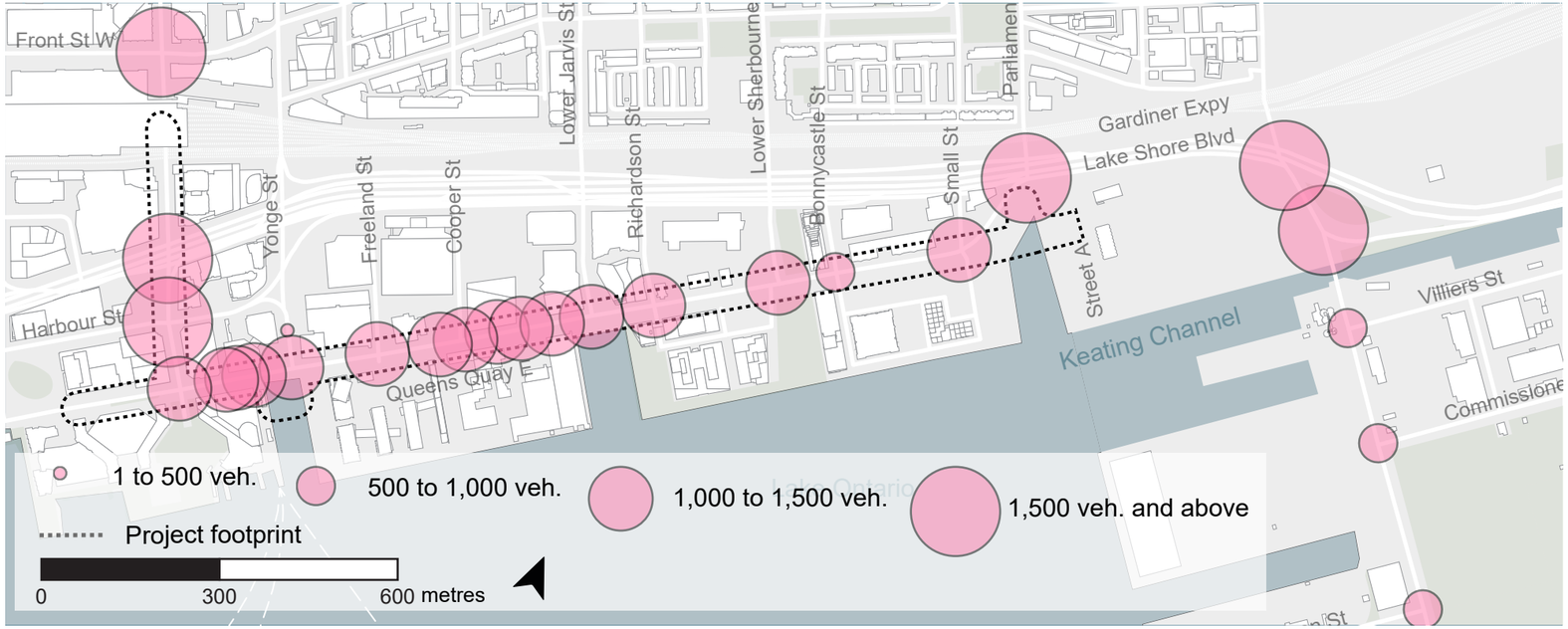


Exhibit 3.49 Morning peak hour vehicle volumes

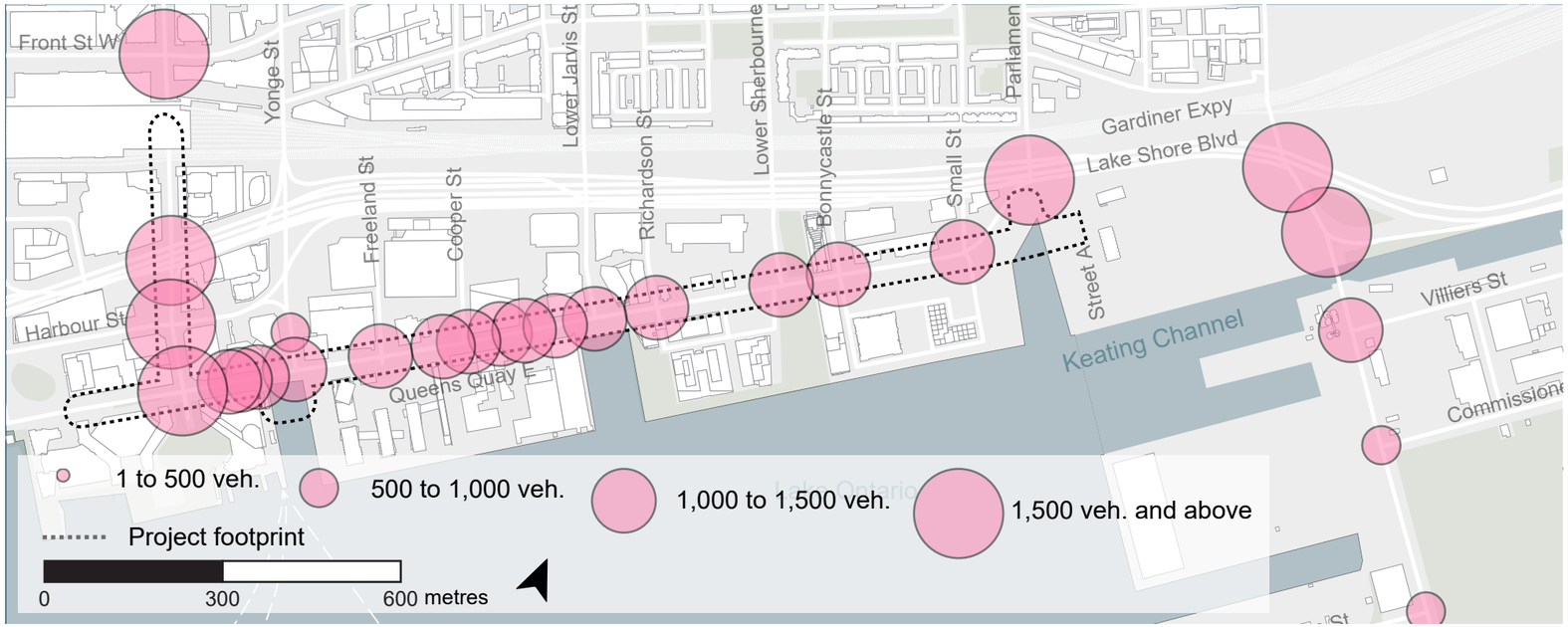


Exhibit 3.50 Afternoon peak hour vehicle volumes

3.9.6 Other transportation networks

3.9.6.1 Westin Harbour Castle Hotel & Conference Centre coaches

Coaches and charter buses associated with the Westin Harbour Castle Hotel & Conference Centre use the dedicated motorcoach loading zones on the north and south sides of Queens Quay West between Bay Street and Yonge Street. The Queens Quay Bus Management Strategy identified a typical bus accumulation of three to four buses in the summer of 2010. Bus activity occurred during approximately 40 percent of the total survey time.

3.9.6.2 Toronto Island ferry terminal buses

Camp and school programs operate on Toronto Island during the summer and buses bringing children to the Toronto Island Ferry Terminal use parking and loading zones along Queens Quay West and Bay Street. This bus activity is typically limited to morning drop-offs and late afternoon pick-ups on weekdays. Parking demand for buses is lower in the morning as the bus dwell time is relatively short. Demand increases in the afternoon when buses wait for an extended period of time for the arrival of passengers from the ferry terminal. The Queens Quay Bus Management Strategy noted a peak accumulation of 15 buses on weekday afternoons.

The majority of the Toronto Island Ferry Terminal buses are related to the YMCA program that operates on the Island. The program currently operates 10 buses, and has plans to expand up to 15 buses. The YMCA buses arrive between 8:45 and 9:15 in the morning and stay for fifteen to twenty minutes. In the afternoon, the YMCA buses arrive at 3:30 and leave at 4:00.

3.9.6.3 Redpath Sugar Refinery trucks

No streets in the Project footprint currently have heavy-vehicle restrictions.

The Redpath Sugar Refinery is serviced by large trucks. Inbound trucks typically arrive via Harbour Street to Yonge Street to Queens Quay East. Outbound trucks leaving the facility typically turn right onto Queens Quay East and either turn left onto Lower Jarvis Street or Parliament Street.

4.0 Impacts, mitigation measures, and monitoring activities

Image: Rendering of Yonge Slip

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

4.0 Impacts, mitigation measures, and monitoring activities

The Project is expected to have a net positive impact on the Project study area by facilitating higher-order transit service and adding new public spaces. Potential negative impacts are mitigable, and appropriate measures have been identified to minimize negative externalities during construction and operations phases.

4.1 Overview

The following chapter documents the potential impacts of the Project and the proposed mitigation measures during construction and operations. This chapter also includes a discussion of monitoring activities which can verify the effectiveness of the proposed mitigation measures.

The Project design is currently at the 30% stage and as such, is preliminary. As noted in Chapters 1 and 2, the TPAP recognizes that the Project will continue to evolve to a higher level of detail during the detailed design and construction phases. However, should the Proponents wish to make a change to the transit project that is inconsistent with the EPR, the Proponents must prepare an addendum to the EPR.

In order to verify the effectiveness of mitigation measures during Project construction and operations, the Contractor will be required to create an Environmental Management Plan (EMP). This EMP will outline the actions to be taken to ensure mitigation measures are followed as well as monitor the effectiveness of these measures. The EMP will include mitigation measures and monitoring requirements for each type of impact. It will also include a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor as well as the requirements for regular reporting to document site conditions and compliance with required mitigation measures.

For all projects within the Waterfront Toronto Designated Waterfront Area, Waterfront Toronto has created an EMP framework that sets out the processes and procedures designed to mitigate environmental effects that might result from project-related activities. It is expected that the Contractor will use this framework to create the project-specific EMP. A key component of the Waterfront Toronto EMP is the series of Environmental Protection Plans (EPPs), which include guidance to mitigate and monitor impacts relating to the following:

- Air Quality and Dust Management
- Archaeological and Built Heritage Resources Management
- Contaminated Soils Management
- Erosion and Sediment Control
- Fuel and Lubricants Management
- Groundwater Management
- Methane Control
- Noise and Vibration Management
- Project-related Waste Management
- Stormwater / Surface Water Management
- Traffic Management
- Vegetation Management

These EPPS are expected to be used by the Contractor in preparing project-specific requirements within the project-specific EMP. Mitigation measures are to be implemented and monitored through construction. This will include regular site monitoring and reporting to verify the effectiveness of mitigation measures. It will also outline the process for identifying non-conformances and corrective measures to address these. The following sections outline key mitigation requirements and monitoring activities recommended for inclusion in the project-specific EMP. Some of these mitigation measures correspond directly to the Waterfront Toronto EPP series titles while others differ slightly (e.g., recommended soil management measures will pertain not only to contaminated soil, but excess soil, and imported fill).

4.2 Matters of provincial importance and constitutionally protected Aboriginal or treaty rights

As noted in Chapter 3, proponents must identify how the transit project may affect:

- Matters of provincial importance that relate to the natural environment or have CHVI; and
- Constitutionally protected Aboriginal or treaty rights.

Exhibit 4.1 identifies some matters that may be relevant in determining provincial importance (as provided in the Guide to Environmental Assessment Requirements for Transit Projects) and notes the section of chapter 4 in which they are discussed.

Matter of provincial importance	Chapter 4 sub-section
A park, conservation reserve or protected area	Not relevant to the Project. There are no provincial parks, conservation reserves or protected areas within the Project study area.
Extirpated, endangered, threatened, or species of special concern and their habitat	Not relevant to the Project. There are no extirpated, endangered, threatened, or species of special concern within the Project study area.
A wetland, woodland, habitat of wildlife or other natural heritage area (e.g., prairie)	Relevant to the Project. See Section 4.3 for a discussion of the aquatic environment in the Yonge Slip.
An area of natural or scientific interest (earth or life science)	Not relevant to the Project. There are no areas of natural or scientific interest within the Project study area.
An area or region of surface water or groundwater or other important hydrological feature	Relevant to the Project. See Section 4.3 for a discussion of groundwater and surface water in the Project study area.
Areas that may be impacted by a known or suspected on- or off-site source of contamination such as a spill, gasoline outlet, an open or closed landfill site, etc.	Relevant to the Project. See Section 4.3 for a discussion of contaminated sites within the Project study area.
Protected heritage property	Relevant to the Project. See Section 4.4.2 for a discussion of protected heritage property in the Project study area.
Built heritage resources	Relevant to the Project. See Section 4.4.2 for a discussion of built heritage resources in the Project study area.
Cultural heritage landscapes	Relevant to the Project. See Section 4.4.2 for a discussion of cultural heritage landscapes in the Project study area.
Archaeological resources and areas of potential archaeological interest	Relevant to the Project. See Section 4.4.1 for a discussion of archaeological resources and areas of potential archaeological interest in the Project study area.
An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act*	Not relevant to the Project. The Project study area does not fall within an area designated as an escarpment natural area or escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act*.
Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001* applies	Not relevant to the Project. The Project study area does not fall within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001* applies.
Property within an area described as a key natural heritage feature or a key hydrologic feature in the Protected Countryside by the Greenbelt Plan under the *Greenbelt Act, 2005*	Not relevant to the Project. The Project study area does not fall within an area described as a key natural heritage feature or a key hydrologic feature in the Protected Countryside by the Greenbelt Plan under the *Greenbelt Act, 2005*.

Exhibit 4.1 Matters of provincial importance

4.3 Natural environment

Given the existing urban conditions and the intense development activities throughout the Project study area, the Project will provide an overall improvement to the existing natural environment. New street trees and substantial planting are proposed as part of the work, along with the addition of aquatic habitat enhancement features within the Yonge Slip.

4.3.1 Physical environment

4.3.1.1 Impacts

4.3.1.1.1 Construction

Area A

Construction related activities in Area A such as excavation, filling, and dewatering, may disturb surface and subsurface soil and groundwater. Shallow excavations for relocation and/or installation of new utilities and services may be undertaken as open cut provided they are carried out in accordance with the Occupational Health and Safety Act, applicable at the time of construction. If space restrictions prevent cutting back the slopes or the slopes become unstable, a shoring support system, designed and installed in accordance with the Occupational Health and Safety Act, current at the time of construction will be required to support the excavation side slopes.

It is expected that space limitations will necessitate that most excavations within the overburden soils will require temporary excavation support with lateral support provided by internal bracing and/or tiebacks. The bedrock can be excavated with a near vertical face.

Ground movement will result from various aspects of construction, including but not limited to movement of temporary shoring, and settlement as a result of dewatering and rock swelling.

Due to the high-water table surrounding the site, dewatering is considered necessary in order to ensure stability of the soil face during construction and to minimize the amount of water seepage into the excavation. While the details of the dewatering system will be developed by the contractor, it is anticipated that a series of wells will be drilled down to rock elevations, which ranges from elevation 70.0 mASL at the south end to 73.0 mASL at the north end. Water will primarily be drawn from the water bearing soil layer above the rock.

The TTC preliminary geotechnical investigation report indicates that the amount of water to be drawn is approximately 150 to 300 cubic metres (m^3)/day with the associated ground settlement within the zone of influence due to dewatering to be verified in the final geotechnical analysis. Water quantities pumped during dewatering may be greater than 50 m^3/day and likely less than 400 m^3/day, in which case, an Environmental Activity and Sector Registry (EASR) may be required to permit the construction dewatering as stipulated by MECP. An EASR for construction dewatering would apply to the entire Project and, therefore, construction would need to be staged such that the dewatering demands of the entire Project do not exceed the 400 m^3/day limit at any time. If simultaneous dewatering is required that would result in the Project water takings exceeding the 400 m^3/day rate, then a Permit to Take Water (PTTW) would be required from the MECP to permit this level of water taking.

Area B

Construction related activities in Area B such as excavation, filling, and dewatering, may disturb surface and subsurface soil and groundwater. This could result in ground movement and settlement, impact surface and subsurface structures, and result in generation of excess soil or mobilization of pre-existing contaminants. Of particular importance is the area of Small Street and Queens Quay East where free phase coal tar had previously been identified.

The proposed design includes a grade raise of up to one metre towards the east end of the Queens Quay East extension, which will require fill.

Due to the presence of shallow groundwater, which is expected to be influenced directly by Lake Ontario water levels, dewatering would be required in order to facilitate open-cut construction activities so that the groundwater is drawn down to safe levels. Dewatering systems would be required for open trench construction. Improper dewatering practices may cause impacts to the physical environment. This could include lack of controlled containment of water resulting in potential discharge to municipal sewer systems or surface flow. Water may have higher level of suspended solids or contaminants. Proper dewatering plans as recommended in the mitigation measures will ensure impacts are avoided or minimized.

The Project also includes infilling in the Yonge Slip which will impact the slip infrastructure and sediments in the work area.

In both Area A and Area B, higher risk activities such as the relocation of fuel pipelines are not anticipated. Storage and handling of fuel have specific handling procedures and are not permitted near watercourses under Waterfront Toronto's EMP and will be carefully monitored during construction. The construction and operation of the WELRT is not anticipated to present an incremental increase in risk relative to the existing condition of the Queens Quay East municipal right-of-way.

4.3.1.1.2 Operations

Area A

No impacts to geology or groundwater are anticipated for Area A during operations as there will be no interactions with soils or bedrock, and no or negligible interaction with groundwater.

Area B

Operational impacts in Area B are limited to potential impacts to utilities from pre-existing contaminants in soil and groundwater. Segments of Queens Quay East will be constructed through coal tar impacted soil and groundwater. These subsurface contaminants can impact the performance of the utility materials over time if penetrated through downstream utility operations (i.e., water treatment facilities).

4.3.1.2 Mitigation measures

Although the majority of the Designated Waterfront Area is identified as a highly vulnerable aquifer area, the construction and operation of the Project is not anticipated to present an incremental risk beyond typical construction and maintenance activities within the area. Work will be conducted under Waterfront Toronto's EMP to mitigate potential impacts.

4.3.1.2.1 Construction

Area A

It is recommended that temporary shoring for this Project consist of watertight shoring such as secant/interlocking caissons, diaphragm

walls or overlapping jet grouted columns, depending on the stiffness requirements and tolerable movement/settlement limits of adjacent buildings and infrastructure, and dewatering requirements.

Dewatering and groundwater control will be required for excavations and construction works especially in the fill materials, in non-cohesive native deposits, and within the bedrock where open fractures, fault zones or buried channels are encountered. The soils have a variable coefficient of permeability, which is highly dependent on the material encountered within the excavations. The groundwater must meet the City of Toronto Sewer By-law requirements and a permit must be obtained from the City of Toronto prior to discharging into the sewer system.

The on-site soils may be difficult to dewater. Therefore, to prevent collapsing of the side excavation walls, to reduce potential damage to existing utilities and structures, and to minimize dewatering discharge quantities, it may be necessary to install a perimeter groundwater cut-off, such as overlapping jet grouted columns, secant caisson walls or temporary diaphragm walls, extended into the sound shale bedrock.

Soil from Area A will need to be managed. This will include incorporation of an approach to the sampling, analysis, and management of excavated material including waste characterization prior to disposal in accordance with O. Reg. 347, or compliance with the requirements of O. Reg. 406/19 if excess soil is to be re-used.

Material excavated from the site must be monitored by the project delivery lead's Environmental Consultant (a Qualified Person) and tested (if required) for the contaminants of potential concern to confirm its suitability for re-use at the site or off-site, and to document where the material was relocated per O. Reg. 406/19.

Soils and other materials inferred to be contaminated must be stockpiled and covered to mitigate against the generation of dust and surface run-off, if necessary.

The Contractor, as instructed by project delivery lead's Environmental Consultant, will be required to segregate debris, brick, concrete, asphalt, and soil with visual liquid phase hydrocarbons for off-site disposal in accordance with O. Reg. 347.

The administrative controls for activities at the site are limited to the following requirements, all of which are the responsibility of the Contractor.

- With respect to work area access:
    - o Work area access shall be restricted to authorized personnel only; and
    - o Work areas shall be made secure by means of barricades and/or fencing and have at least one person stationed in close proximity to open excavations where potential access by members of the public has not been secured.
- With respect to vehicles brought by Contractor employees:
    - o Contractor employee vehicles shall be restricted to designated parking areas and will not be permitted in work areas except in the case of emergencies; and
    - o Areas for Contractor employee parking shall be agreed upon in advance with the owner of the land where the vehicles are to be parked.
- With respect to restricting work in high wind conditions:
    - o Dust control measures shall be implemented during soil handling and capping activities to reduce the potential for soil particles to become suspended and transported in the air to locations outside the work area.
- With respect to maintaining a database of environmental information to identify impacted materials:
    - o All information collected to locate, identify, and characterize impacted material shall be maintained in an organized, accessible manner. The Contractor will be required to share the information with the Construction Manager and/or the designated project delivery lead's Environmental Consultant or Environmental Monitor as deemed necessary.
- Engineering controls shall be employed in the work zone to reduce the potential for worker contact with contaminated soil or the migration of potentially contaminated soil or sediment due to dust generation, soil tracking, or erosion. The following engineering controls shall apply:
    - o Health and Safety Plan;
    - o Work Practices for Heavy Equipment;
    - o Equipment and Vehicle Decontamination;
    - o Transportation of Contaminated Soil;
    - o Dust Control;
    - o Contamination from Accidental Spills and Releases;
    - o Dewatering Excavations and Contaminated Ground Water;
    - o Runoff Control; and
    - o Erosion and Sediment Control.
- Gas sampling and measurements will be required during geotechnical investigation and station construction to define potential hazards related to presence of subsurface gases, and required related monitoring, mitigation and contingency measures.
- Develop a dewatering plan, if required, that outlines measures to manage contaminated groundwater. The dewatering plan shall be prepared in accordance with required approvals (e.g., PTTW or EASR).
- To prevent collapsing of the side excavation walls, to reduce potential damage to existing utilities and structures, and to minimize dewatering discharge quantities, it may be necessary to install a perimeter groundwater cut-off, such as overlapping jet grouted columns, secant caisson walls or temporary diaphragm walls, extended into the sound shale bedrock.
- Prepare and implement erosion and sediment control plan.
- Develop a soils management plan.
- Develop and implement spill prevention and response plan.
- Develop and implement a Contingency and Emergency Response Plan.

Area B

To address impacts of excavation and fill, a Soil and Excavated Material Management Plan and Dewatering approach shall be prepared to ensure appropriate mitigation of potential impacts. Prior to construction, previous geotechnical and environmental investigations and related recommendations should be used to inform these plans.

Considerations for soil shall include:

- Incorporation of approach to the sampling, analysis, and management of excavated material including waste characterization prior to disposal in accordance with O. Reg. 347, or compliance with the requirements of O. Reg. 406/19 if excess soil is to be re-used. Segregate non-soil materials for re-use or disposal in accordance with these regulations.

- Create a Soil and Excavated Materials Monitoring Plan including a plan to address contaminants during construction; a more comprehensive investigation to determine the extent of the coal tar impacted area may be considered to inform detailed design and mitigate contaminants. Soil should be stockpiled and covered to mitigate dust and surface run-off.
- Ensure appropriate quality of imported fill, if required, including the nature of fill materials and the quality of materials; given the presence of some contaminants in the work area, soil remediation and risk management measures may be required (e.g., clean fill cap barrier; clean fill utility trenches). City of Toronto specifications for clean fill should also be followed.
- Ensure soil and excess material management is overseen by a Qualified Person (per O. Reg. 153/04).
- Complete pre-construction assessment of structures in the dewatering zone and conduct dewatering to minimize impacts to surrounding soil areas.
- Ensure appropriate support of excavation areas and protection of surrounding utilities and structures.

Considerations for groundwater shall include:

- Minimize dewatering, and/or control flow into excavation areas (e.g., trenchless crossings where feasible; consider measures to reduce volume and effects for excavations in proximity to the lake or where high ground water conditions are present).
- Determine existing conditions, water taking quantities, quality and determine extent of affected areas.
- Ensure appropriate discharge options, obtain required approvals (e.g., PTTW, EASR), and ensure compliance with requirements including pre-treatment if required.

Other general mitigation measures shall include:

- Create a plan to prevent and respond to spills.
- Create a contingency plan to be used in the event that planned dewatering methods fail; this may include emergency removal of water using a vacuum truck and may be included in the spill response plan.
- Maintain equipment and vehicles in good working order and clean condition to minimize fluid releases.
- Ensure appropriate handling and storage of petroleum products and other chemicals.
- Minimize erosion, sedimentation, and dust.

With respect to proposed infilling in the Yonge Slip, appropriate investigation and planning related to compressibility and ground improvement requirements will be necessary. Lake sediments will be removed from Yonge Slip. Their removal is being driven by geotechnical considerations rather than environmental ones. Incorporation of existing lakebed sediments into the lakefilled area will likely contribute to a risk of long-term settlement that has the potential to delay construction of the transit line or damage the infrastructure installed through this area. Therefore, dredging the lake sediments and proper management of excess material is the proposed approach. In the pre-planning stage, other options to mitigate this risk were considered but presented concerns based on constructability issues, or uncertainty associated with the timelines to achieve a stable base. For example, preloading with surcharge was considered but thought unlikely to be feasible based on compressibility parameters available. Rigid inclusions were also considered but were determined to potentially present constructability challenges and likely to be cost prohibitive.

Appropriate management of excess sediments and imported fill will be required to ensure quality and adherence with required approvals. Specific consideration should be paid to existing dockwalls to ensure construction activities on adjacent lands does not induce extreme loads over the existing structures.

Mitigation measures proposed to protect soil and groundwater quality and the aquatic environment will also contribute to the protection of drinking water given that Lake Ontario is the source of potable water for the City of Toronto.

4.3.1.2.2 Operations

Area A

No mitigation measures are proposed for the operations phase.

Area B

As segments of Queens Quay East in Area B will be constructed through coal tar impacted soil and groundwater, upgraded utilities materials should be considered, which are more resistant to degradation. Appropriate materials shall be selected.

4.3.1.3 Monitoring activities

4.3.1.3.1 Construction

Area A

It is recommended that a monitoring program be established for the identified infrastructure within the zone of influence of the construction, to determine the performance of the shoring systems used for the Project and the impacts of the planned construction on the adjacent infrastructure. The monitoring program should include a visual assessment of the existing structures and infrastructure, where practical, on a regular basis and the use of inclinometers, extensometers, pile targets, strain gauges, and settlement points for buildings, roadways, underground utilities, bridges, etc., to confirm the performance of the shoring systems.

Piezometers and groundwater wells should be installed to monitor groundwater conditions during construction where dewatering is required. Review and Alert levels must be established on a case-by-case basis by the designers (structural and geotechnical engineers).

In addition to an instrumented monitoring program, a visual assessment of the existing facilities and infrastructure must be carried out prior to construction, as well as on a regular basis during and after construction. These assessments should be carried out by a qualified engineer and should be well documented including photographic records. It is recommended that a condition assessment be carried out for all structures within the influence zone of the excavations.

The instrumentation plan and pre-construction surveys should be completed during detailed design.

Monitoring is also required to ensure other mitigation measures are followed relating to material excavated from the site to confirm its suitability for re-use and to document where the material was relocated. Soils and other materials inferred to be contaminated must be monitored to ensure appropriate stockpiling and covered to mitigate against the generation of dust and surface run-off, if necessary.

Area B

The effectiveness of mitigation measures during construction will be supported by the EMP prepared by the Contractor. This is to ensure mitigation measures are followed as well as to monitor the effectiveness of these measures. The EMP will include monitoring

requirements for each type of impact and the mitigation measures to be taken. It will also include a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor as well as the requirements for regular reporting to document site conditions and compliance with required mitigation measures and take corrective actions as needed.

Monitoring requirements shall include those in the Soil and Excavated Material Management Plan to ensure compliance with the plan and the requirements of O. Reg. 406/19 including appropriate tracking of excess material. Monitoring of dewatering activities including discharge compliance and settlement shall be included and consider impacts on existing utilities and building foundations as well as implementation of additional mitigation measures if required. Extension construction work adjacent to the Gardiner bent may require additional monitoring and construction impact mitigation. Monitoring of other mitigation measures outlined in this section shall be required as part of overall EPPs and subject to regular monitoring by the Contractor.

4.3.1.3.2 Operations

Area A

Ground and groundwater conditions should continue to be monitored post construction into the operational phase. No direct contaminated sites monitoring activities are proposed for Area A Project operations. However, where soil and groundwater samples are collected in or adjacent to the Area A physical environment study area by TTC or others, as components of construction monitoring or due diligence reporting, these laboratory analysis findings, if made available, can be reviewed as a comparison with previous study findings.

Area B

Ground and groundwater conditions should continue to be monitored post construction into the operational phase.

4.3.2 Aquatic environment

4.3.2.1 Impacts

4.3.2.1.1 Construction

Area A
No impacts to the aquatic environment are anticipated during construction in Area A.

Area B
At Yonge Slip, infill of approximately 3,500 m^2 is required to support the new access configuration for the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal. New dockwalls will be installed at Yonge Slip to enclose the proposed slip infill. This could impact physical conditions in the slip and habitat for aquatic species. Refer to Appendix D for additional details on the impacts of construction on the aquatic environment in Area B.

4.3.2.1.2 Operations

Area A
No impacts to the aquatic environment are anticipated during operations in Area A.

Area B
The inclusion of various habitat enhancement features will significantly improve the overall function and quality of habitat within the Slip.

4.3.2.2 Mitigation measures

4.3.2.2.1 Construction

Area A
Not applicable.

Area B
A rock berm is proposed along the face of the new dockwalls to provide additional structural support and provide and create an opportunity for aquatic habitat enhancement. The rock berm will be coordinated with the footprint of the WaveDecks above to avoid navigational constraints to the rest of the slip.

In-water timing windows are typically used to restrict in-water construction activities to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. The in-water timing window for the Toronto Harbour is anticipated to be from June 1 to September 14. However, based on the described habitat within the Yonge Slip, this location does not provide habitat to support fish spawning, nor is it located in a migration corridor. For these reasons, the opportunity to waive the in-water timing can be pursued with the reviewing agencies if the in-water portion of the Project schedule cannot be accommodated within the June 1 to September 14 time period.

A fish habitat off-setting plan is anticipated to be required to address lost fish habitat as a result of infilling at the Yonge Slip. Various fish habitat enhancement features may be implemented as part of the off-setting plan to replace the lost fish habitat. These include features such as embedded logs and wood debris, root fans, log cribs, boulder clusters and shoals. Woody material in the form of brush bundles, dead trees and stumps can be utilized in both shallow and deep areas to provide structural habitat. Aggregate material (rock, rubble, gravel) can be strategically placed in a manner which promotes vertical relief, interstitial spaces and irregular outlines. These will increase habitat diversity, which provides important nursery areas for immature and juvenile individuals, reduction of predation through improvements in shelter, significant foraging areas, and shelter from harsh physical conditions.

An additional habitat feature that may be used for off-setting is the installation of a live dockwall. A live dockwall consists of two rows of staggered concrete ledges at different elevations along the length of the new dockwall or rehabilitated dockwall. The concrete would be textured to provide increased surface area for the establishment of algae, aquatic vegetation and aquatic invertebrates. The live dockwall would aim to provide enhanced habitat and diversity along the entire face of the wall, by adding structure and improved cover at a range of elevations and increased feeding opportunities that are otherwise lacking. Additionally, by utilizing the vertical face of the wall, the habitat feature (i.e., dockwall and ledges) would experience less impacts from ongoing siltation than other options that would include substrate/boulder clusters placed on the lakebed of the slips (Exhibit 4.2).

Through the application of Department of Fisheries and Oceans' (DFO) Habitat Ecosystem Assessment Tool (HEAT), if it is deemed

Exhibit 4.2 Example of live dockwall at Seattle waterfront © WSP

that the local habitat enhancements within the slip are insufficient to offset the impacts of the infill, off-site off-setting or compensation will have to be considered to compensate for the impacts to the existing fish habitat. To determine the final impacts to fish habitat and the associated amount of offsetting required, TRCA will be engaged to assist Waterfront Toronto by implementing the HEAT model at a later phase.

The following is a list of typical standard construction mitigation measures that may be applied when working in and/or near water to address potential impacts to fish and fish habitat. Final appropriate mitigation measures shall be included in mitigation and monitoring plans during detailed design and construction.

- Where possible, undertake works, undertakings and activities on land.
- Ensure proper erosion and sediment control measures are installed prior to the start of work and are routinely inspected with maintenance and improvements undertaken in a timely fashion as required.
- The in-water work area will be isolated using acceptable isolation measures (i.e., turbidity curtain) and fish will be excluded from the in-water work area.
- Undertake fish removal from the within the isolated work area.
- Materials placed below the high-water mark must be inspected to ensure they are free of excessive fine sediment and debris, and contaminants prior to installation.
- Where stockpiles of rock or soil are required for long periods of time, the stockpile surfaces will be maintained to stabilize and prevent wash-outs, as well as being surrounded by a row of siltation fencing.
- Machinery and equipment used will arrive on-site in a clean condition, free of fluid leaks, invasive species and noxious weeds.
- Machinery, except marine-based equipment (e.g., barges) are to be washed, refueled, and serviced a minimum of 30 m from waterbodies.
- Washing, refueling and servicing of barges will be undertaken in a manner with suitable spill protection measures present to prevent fuel or deleterious materials from entry into the waterbody. These activities will be avoided during windy or wavy conditions or when the risk of a spill is increased.
- Machinery will be operated in a manner to minimize the risk of deleterious materials from entering waterbodies.
- Fuel will be stored a minimum of 30 m from the waterbody or an appropriately designated fueling area and in a manner, that will minimize the risk of fuel being spilled or released and entering the waterbody.
- The Contractor will be required to have a spill kit on site and have an emergency response plan in the event of a chemical release, including fuels and oils.
- Heeding weather advisories and scheduling work to avoid wet, windy and rainy periods.

4.3.2.2.2 Operations

No aquatic environment mitigation measures are required for either segment during operations. The Project is only expected to positively benefit the aquatic environment long-term by introducing improved fish habitat.

4.3.2.3 Monitoring activities

4.3.2.3.1 Construction

Area A
Not applicable.

Area B
A turbidity monitoring plan may be required when working outside of the in-water timing window or when isolation of the in-water work area can not be achieved. Turbidity monitoring plans monitor turbidity levels within the surface water to satisfy certain thresholds for protection of the aquatic environment. The Canadian Council of Ministers of the Environment and Canadian Environmental Quality Guidelines require that a maximum increase of 8 Nephelometric Turbidity Units (NTU) from background levels at any one time is acceptable when background turbidity levels are between 8 NTUs and 80 NTUs.

4.3.2.3.2 Operations

Area A
Not applicable.

Area B
The new dockwalls will be designed to have a 75-year design life, a significant improvement to the service life of the north edge of the slip where the existing dockwalls have already reached the end of their useful life. The new walls will eliminate the need for ongoing monitoring and maintenance in the near-term. This would be required for the existing walls should they be kept in use since they are near end of life.

4.3.3 Terrestrial environment

4.3.3.1 Impacts

4.3.3.1.1 Construction

Area A
No impacts to the terrestrial environment are anticipated during construction in Area A.

Area B
There are 235 trees in Area B. Of these, 42 trees can be retained and 117 trees will require removal. Recommendations for the remaining 76 trees will be determined upon completion of the finalized plans.

Of the 117 trees requiring removal, eight are by-law regulated, privately-owned trees; four are by-law regulated, City-owned park trees; 84 are by-law regulated, City-owned street trees; and 19 are unregulated, privately-owned trees. The two remaining trees recommended for removal were assessed as standing dead at the time of field observations.

Of the 42 trees that can be retained, five will be injured by the proposed works. Four of the trees to be injured are by-law regulated and one is not.

Additionally, new trees and approximately 5,100 m^2 of planted surface will be added throughout Area B.

4.3.3.1.2 Operations

Area A
No impacts to the terrestrial environment are anticipated during operations in Area A.

Area B
The proposed Project design will increase the number of trees in Area B at an approximate ratio of four new trees for every existing displaced tree. Additionally, proposed planting beds will introduce approximately 5,100 m^2 of planted surface within the limit of work of the Project, representing an approximately 40 percent increase of softscape areas as compared to the existing condition. The planting beds and native-tree planting will contribute to an improved natural environment by creating additional habitat for insects and birds.

4.3.3.2 Mitigation measures

4.3.3.2.1 Construction

Area A
Not applicable.

Area B
All trees to be retained within or adjacent to the limits of Project works are designated for Preservation, Protection, or Injury.

- Preservation: No specific tree protection measures are recommended for five trees, which are located beyond anticipated construction limits and/or are protected by landscape features.
- Protection: Retained trees in proximity to the Project shall be protected by restricting access and land use within tree protection zones (TPZs), through the installation of tree preservation fencing (or hoarding) that satisfies the minimum required distance for each tree, where possible. Fencing is to be established in advance of Project work, including but not limited to material and equipment delivery, staging and storage, demolitions, excavation and grading work, and new construction activity.
- Injury: During site works, retained trees may undergo injury, which is understood to be the encroachment of established tree protection zones, regardless of the extent of actual physical damage sustained by the retained tree. In addition to tree protection fencing, trees designated for injury at Queens Quay East require the implementation of the following supplemental tree protection measures:
    - Tree-Sensitive Demolition – The tree protection zones of five inventoried trees will be impacted by the demolition of the existing hardscapes, resulting in injury to four by-law regulated trees. In order to minimize root zone disturbance, demolition of the hardscapes must be undertaken in a tree-sensitive manner within the TPZs of the above-listed trees. Works within TPZs should be supervised by a Certified Arborist to ensure potential root disturbance is minimized, and to enable timely root pruning if required to prevent root damage.
    - Root-Sensitive Excavation and Root Pruning – The tree protection zones of five inventoried trees will be impacted by excavation to enable the Project, resulting in injury to four by-law regulated trees. Excavation within TPZs shall be accomplished by root-sensitive excavation utilizing hand-digging, hydrovac or pneumatic soil excavation (e.g., Airspade). Excavations must be supervised by a Certified Arborist, who must be enabled to stop works if, during the course of excavation, significant structural or transport roots (greater than approximately 25 millimetres (mm) diameter) are encountered, in order to properly prune the roots.
    - The Project will require the implementation of specific tree protection measures to ensure effective tree preservation.

A City of Toronto ‘Application to Injure or Destroy Trees’ must be filled out detailing the proposed injury or removal of 100 regulated trees. Pursuant to O. Reg. 166/06, 31 tree removals may require permit approval from TRCA.

With the implementation of the above recommendations, no significant adverse effects are anticipated as a result of the Project upon the long-term health and condition of inventoried trees that have been designated for retention.

The design aspires to provide 30 m^3 of planting soil as per the Toronto Green Standards (TGS) version 4, to ensure the best possible planting conditions to support a healthy and mature tree canopy for decades into the future. In specific cases where existing conditions are constrained, no less than 25 m^3 of soil will be provided - this volume is still in accordance with TGS version 3, revised in 2022.

In order to better assess the degree of correlation between shallow groundwater on Queens Quay East and seasonal lake levels, groundwater monitoring is being undertaken with shallow wells through detailed design phases to provide a more accurate picture of existing site conditions and constraints and to inform the planting details prior to construction to minimize potential risk to tree health. Through analysis of previous studies and past project experience, it was observed and hypothesized that there is a direct hydraulic connection between fluctuation of lake water levels and shallow groundwater along Queens Quay East due to the adjacency of Lake

Ontario and the nature of the existing soils. In 2017 and 2019, Lake Ontario experienced record high water levels, with the peak water level recorded at 76.03 m International Great Lakes Datum 1985 (IGLD 85). As a result, the TRCA increased the 100-year flood level to 76.2 m IGLD 85 in 2020. Due to the constraints around existing grades of adjacent buildings in Area B, the proposed finished grades of Queens Quay East are relatively low and in many areas are within 30 centimetres of the 100-year flood.

4.3.3.2.2 Operations

No terrestrial-environment mitigation measures are required during operations for either segment.

4.3.3.3 Monitoring activities

4.3.3.3.1 Construction

Area A
Not applicable.

Area B
Ensure adherence to preservation, protection, and injury measures during construction. Ensure the monitoring plan is included in the EMP.

4.3.3.3.2 Operations

No monitoring activities for either segment are required as a result of the Project's impacts on the terrestrial environment during operations.

4.3.4 Significant/protected natural features

There are no significant or protected natural features in the Project study area. As such, no mitigation measures or monitoring activities are required.

4.4 Cultural environment

4.4.1 Archaeological resources

4.4.1.1 Impacts

4.4.1.1.1 Construction

Area A

As summarized in Section 3.5.1, a Stage 1 AA was undertaken in 2021 by WSP Environment & Infrastructure (formerly Wood) for Area A. The Stage 1 AA determined that:

- 0.15 hectares (2.3%) of the Area A archaeology study area has been previously assessed and the portion containing and adjacent to the Harbour Square Wharf (CW7) was recommended for archaeological monitoring;
- 5.13 hectares (78.5%) of the Area A archaeology study area has been previously assessed and requires no further archaeological assessment; and
- The remaining 1.26 hectares (19.2%) of the Area A archaeology study area has low archaeological potential due to deep and extensive previous disturbance and requires no further archaeological assessment.

Area B

As summarized in Section 3.5.1, a Stage 1 AA was undertaken in 2021 by Archaeological Services, Inc. for Area B. The Stage 1 AA of Area B determined that the Area B archaeology study area is partly situated on the western limit of the general archaeological potential zone defined around the former Don Breakwater, a small area located near the intersection of Lake Shore Boulevard East and Parliament Street. These lands require a program of archaeological construction monitoring to identify intact remains of the 1870 Don Breakwater. The remainder of the Area B archaeology study area does not retain archaeological potential on account of deep and extensive disturbance or being previously assessed. These lands do not require further archaeological assessment. Should the Project extend beyond the current archaeology study area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

4.4.1.1.2 Operations

No impacts to archaeological resources in Area A or Area B are anticipated during Project operations.

4.4.1.2 Mitigation measures

4.4.1.2.1 Construction

Area A

As described below, the mitigation measures to limit potential construction impacts to archaeological resources in Area A are tied to monitoring of excavations. In light of the findings of the Area A Stage 1 AA, the following recommendations are made:

1. The 30 Bay Street/60 Harbour Street property, immediately adjacent to the Study Area was previously assessed and the eastern section of Harbour Square Wharf (CW7) was recommended for archaeological construction monitoring. Because the exact location of any potential Harbour Square Wharf remains is not clear the extension of this recommendation into the current study area is prudent. The following recommendation was made in association with the Harbour Square Wharf (CW7) (ASI 2017):

“During preliminary site work, the site should be visited on a regular basis to inspect the progress of the perimeter shoring and any initial removals/testing, etc. When bulk excavation approaches an elevation of approximately 75.0 m ASL, the presence of a monitoring archaeologist on site will be of sufficient frequency and duration to ensure that any remains of the circa 1899 Harbour Square wharf shore east crib walls, and associated piling, are documented, through photography and the preparation of measured drawings. In the absence of an archaeological monitor on site, any potentially significant archaeological resource encountered during excavations anywhere on the subject property should be preserved intact to allow the archaeologist to record its salient attributed or carry out whatever other form of mitigation is appropriate.

West of this crib wall, the subject property consists of lake fills incorporating household waste collected by the City and harbour dredgings. Lake fill, by its very nature, is not generally regarded as an archaeological resource. However, small-scale artifact recovery may be undertaken at the discretion of the monitoring archaeologist, with the understanding that unique items of material culture that have clear interpretive value should be collected. Recovery of a representative sample of domestic refuse artifacts from generic lake fill deposits may be undertaken if the monitoring archaeologist has entered into an agreement concerning their curation and interpretation with either the development proponent or a public agency. It is not, however, a prerequisite of any monitoring program.”

Area B

As with Area A, the mitigation measures to limit potential construction impacts to archaeological resources in Area B are tied to monitoring of excavations. In light of the results of the Area B Stage 1 AA, the following recommendations are made:

1. Construction excavations in the Area B archaeology study area near Parliament Street which will impact lands at or below approximately 76 mASL, should be subject to a program of archaeological monitoring in order to document any remains of the 1870 Don Breakwater that may be present (Exhibit 3.5).
   a. During preliminary site work the site should be visited on a regular basis by a monitoring archaeologist to inspect the progress of the initial removals/testing, etc. When bulk excavation approaches an elevation of approximately 76 mASL, the presence of a monitoring archaeologist on site should be of sufficient frequency and duration to ensure that any remains of the breakwater and dry dock or any contemporary superstructures that may be present are documented, through photography and the preparation of measured drawings.
2. In the absence of an archaeological monitor on site, any potentially significant archaeological resource that may be encountered during excavations in the vicinity of the breakwater should be preserved intact to allow the archaeologist to record its salient attributes or carry out whatever other form of mitigation is appropriate.

4.4.1.2.2 Operations

Not applicable.

4.4.1.3 Monitoring activities

4.4.1.3.1 Construction

Area A

A monitoring program outlining roles and responsibilities by all parties is required and would need to be prepared, in consultation with the client, contractors and subcontractors, prior to any construction activities in the vicinity of Harbour Square Wharf. The monitoring program should include a contingency plan outlining procedures, documentation, and time requirements in the event that archaeological resources are exposed.

The monitoring program shall outline the roles and responsibilities of all parties:

- Primarily, anyone associated with the development must be advised of the area of archaeological sensitivity and agree to halt all excavation activities in the immediate area of any artifacts or deposits that the archaeologist deems to have potential CHVI until such time that the find(s) can be adequately investigated. If these artifacts/deposits are found not to have CHVI, the contractor/subcontractors would be informed in a timely manner so that work can continue.
- Secondly, the contractor/subcontractors should be notified in advance of how and when to contact the consultant archaeologist if archaeological finds/deposits are made when the archaeologist is not present on the property.

If the proposed development of 30 Bay Street/60 Harbour Street occurs in advance of ground disturbing activities associated with the Project and confirms that the north-south running section of the east side of Harbour Square Wharf does not extend into the current Area A archaeology study area, no archaeological construction monitoring of this portion of the wharf structure would be required. However, archaeological construction monitoring of the east-west running section of the Harbour Square Wharf structure that extends across the Bay Street right-of-way would still be required.

Refer to Appendix F for additional details on the impacts of construction on archaeological resources in Area A.

Area B

During preliminary site work the site should be visited on a regular basis by a monitoring archaeologist to inspect the progress of the initial removals/testing, etc. When bulk excavation approaches an elevation of approximately 76 mASL, the presence of a monitoring archaeologist on site should be of sufficient frequency and duration to ensure that any remains of the breakwater and dry dock or any contemporary superstructures that may be present are documented, through photography and the preparation of measured drawings.

In the absence of an archaeological monitor on site, any potentially significant archaeological resource that may be encountered during excavations in the vicinity of the breakwater should be preserved intact to allow the archaeologist to record its salient attributes or carry out whatever other form of mitigation is appropriate.

Refer to Appendix F for additional details on the impacts of construction on archaeological resources in Area A.

4.4.1.3.2 Operations

Not applicable.

4.4.2 Built heritage resources and cultural heritage landscape

4.4.2.1 Impacts

4.4.2.1.1 Construction

Area A

As described in Section 3.4.2, a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was undertaken in 2021 by WSP Environment & Infrastructure (formerly Wood) for Area A. A total of 14 BHRs and CHLs, were identified within the Area A archaeology study area. Exhibit 4.3 summarizes potential impacts of the Project on BHRs and CHLs within Area A.

Additionally, four HIAs were completed that identified direct and indirect impacts to resources and recommended mitigation measures:

- The **Union Station Complex HIA** identified four direct adverse impacts and one indirect adverse impact anticipated due to open cut excavation, demolition activities, and construction work proposed within the Union Station headhouse and below grade in the West Teamway and trainshed areas. Impacts are related to the addition of new access points within the Union Station headhouse (construction of 'Stair M', 'Elevator 3', 'Stair N' and retention of 'Elevator 13'). Alterations are also proposed to the columns supporting the Union Station trainshed over Bay Street.
- The **Dominion Public Building HIA** identified three direct adverse impacts and one indirect adverse impact due to open cut construction within the property and construction of a new wall for the streetcar loop which will abut the southwest corner of the Dominion Public Building and include the construction of a new curb within the parking lot at the rear of the building.
- The **Postal Delivery Building HIA** identified one direct adverse impact and one indirect adverse impact resulting from land disturbance in the immediate vicinity of the historical north and east facades of the building.
- The **Union Station HCD HIA** determined that the Union Station HCD is designated under Part V of the *Ontario Heritage Act* through By-law 634-2006 and is subject to the Union Station HCD Plan (ERA Architects Inc. 2006). The HIA determined that two direct adverse impacts and one positive impact are anticipated as a result of the Project due to open cut construction within the HCD and landscape rehabilitation plan to restore the public realm post construction.

Refer to Appendix G for additional details on the impacts of construction on CHRs in Area A.

Area B

As described in Section 3.4.2, a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was undertaken by Archaeological Services Inc. for Area B. A total of six BHRs and CHLs were identified within the Area B archaeology study area. Exhibit 4.4 summarizes potential impacts of the Project on BHRs within Area B.

Direct impacts to the Westin Harbour Castle Hotel (BHR 1) are proposed through the replacement of concrete pavement with granite unit paving to building face and the relocation of the driveway entrance and associated building alterations, including the removal of concrete slabs, walls, and bollards, and the relocation of utilities. This may result in adverse direct impacts to potential heritage attributes. As such, a Cultural Heritage Evaluation Report was undertaken to determine if this potential BHR has CHVI. This evaluation determined that the property at 1 Harbour Square considered on its own does not meet the criteria outlined in O. Reg. 9/06. Therefore it does not retain CHVI in and of itself. It is possible that the Harbour Square development as a whole, and including the subject property, may retain CHVI. In any case, as there are no Project impacts proposed for other Harbour Square properties, further work is not warranted.

Refer to Appendix G for additional details on the impacts of construction on CHRs in Area B.

4.4.2.1.2 Operations

No impacts are anticipated on CHRs during Project operations.

4.4.2.2 Mitigation measures

4.4.2.2.1 Construction

Area A

The construction mitigation measures for CHRs in Area A are detailed in Exhibit 4.3.

The following additional mitigation measures were identified in the HIAs:

- **Union Station Complex**: Recommended mitigation measures for this property include: 1) Avoidance of heritage attributes, 2) Design guidelines to conserve heritage attributes, 3) Site plan approval and planning mechanisms, and 4) Approvals and permits from Parks Canada, MCM, and the City of Toronto (as appropriate).The HIA for Union Station Complex (65-71 Front Street West) also determined that Parks Canada is the Approval Authority for the Union Station Complex and work proposed within this property is subject to a Collateral Agreement (2006) between Parks Canada, the City of Toronto, and Metrolinx. Municipal and provincial approvals may also be required (subject to confirmation from the City of Toronto and MCM).
- **Dominion Public Building**: Recommended mitigation measures for this property include: 1) Avoidance of the building to conserve heritage attributes, 2) Protection measures, and 3) Recommendations for agency review and commenting.
- **Postal Delivery Building**: Recommended mitigation measures include: 1) Design guidelines to conserve heritage attributes, 2) Protection measures, and 3) Recommendations for agency review and commenting.
- **Union Station HCD**: Recommended mitigation measures include: 1) Design guidelines to be consistent with the guidelines for the public realm contained in the Union Station HCD Plan, and 2) Recommendations for agency review and approval. A heritage permit from the City of Toronto may also be required given that the WELRT work is located within an HCD. The requirement for a heritage permit should be confirmed through consultation with Heritage Preservation Services at the City of Toronto.

Area B

The construction mitigation measures for CHRs in Area B are detailed in Exhibit 4.4.

Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified CHRs. Establishing no-go zones with fencing and issuing instructions to construction crews to avoid the CHRs should be considered to mitigate unintended negative impacts to all CHRs.

4.4.2.2.2 Operations

Not applicable.

4.4.2.3 Monitoring activities

4.4.2.3.1 Construction

Area A

As noted in Exhibit 4.3, vibration monitoring is recommended for several properties located in proximity to proposed construction activity. The vibration monitoring should include pre-condition survey, vibration monitoring during construction, and post-condition survey. Vibration monitoring should be completed by a qualified geotechnical engineer.

Area B

As noted in Exhibit 4.4, indirect impacts may occur to several CHRs as a result of their location adjacent to the proposed alignment. To ensure the structures on these properties are not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that the structures will be subject to vibrations, (1) a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the Project to lessen vibration impacts related to construction; and where potential adverse vibration impacts cannot be avoided (2) a qualified engineer should include this property in the condition assessment of structures within the vibration zone of influence for this Project.

4.4.2.3.2 Operations

Not applicable.

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 1	• HCD • Cultural Heritage Landscape	• Union Station HCD • Bounded by Wellington Street West (north), Yonge Street (east), Lake Shore Boulevard West/Harbour Street (south), Simcoe Street/ Reese Street (west)	• Designated under Part V Ontario Heritage Act through By-law No. 634-2006	**Anticipated Impact:** New accesses resulting from the Union LRT Station Loop Expansion to accommodate up to four new platforms, including new crossover tracks **Type of Impact:** *Direct Adverse Impacts (land disturbance, alterations, introduction of new elements)* resulting from the following: • Construction of Union LRT Station Loop (open cut) • Connection to 1 Front Street • Exit to Teamway • Alterations to the northbound platform • Anticipated impacts to the east of the emergency egress. • Connection to 20 Bay Street and/or Stairs to the Street • Connection to 11 Bay Street *Indirect Adverse Impacts (potential vibration damage)* resulting from construction work.	**Preferred Option:** *Avoidance:* Proposed work within the Union Station HCD should be planned in a manner that avoids direct impacts to 'Contributing Properties' and heritage attributes of the district. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure and known heritage properties in the HCD (i.e. Union Station). Accordingly, alternative mitigation options are recommended below. **Alternative Option:** *HIA:* Direct impacts are anticipated to portions of the HCD due to below and at-grade construction work associated with the WELRT. In addition, open cut construction is anticipated within the HCD in the vicinity of Union Station, the Dominion Public Building, and the Postal Delivery Building. This represents a potential permanent alteration to the public realm of the district. Accordingly, an HIA must be prepared. The HIA will be completed in accordance with the MCM Information Bulletin 3: Heritage Impact Assessments for Provincial Heritage Properties (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the cultural heritage value and heritage attributes of the Union Station HCD with a focus on mitigating potential impacts to the public realm. *Vibration Monitoring:* Construction work is proposed within, and adjacent to, multiple buildings and structures within the HCD. A qualified geotechnical engineer should identify a vibration zone of influence that accounts for potential impacts to 'contributing' and 'noncontributing' buildings in the HCD. Where required, vibration monitoring should consist of a pre-construction survey, vibration monitoring during construction, and a postconstruction survey.

Exhibit 4.3 Potential impacts to and mitigation measures for cultural heritage resources in Area A

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 2	• Cultural Heritage Landscape	• Union Station (65-71 Front Street West)	• Designated under Part V of the Ontario Heritage Act as part of the Union Station HCD (By-law 634-2006) as a 'Contributing Building' • Designated under Part IV of the Ontario Heritage Act (By-law 948-2005) • Designated as a Provincial Heritage Property of Provincial Significance by Metrolinx • National Historic Site of Canada under the Historic Sites and Monuments Act by Parks Canada (1975-11-28) (R.S.C., 1985, c. H-4)	**Anticipated Impact:** New accesses resulting from the Union Station WELRT Loop Expansion to accommodate up to four new platforms, including new crossover tracks. **Type of Impact:** *Direct Adverse Impacts (land disturbance, alterations, introduction of new elements)* anticipated resulting from the following: • Potential connection to 1 Front Street • Exit to Teamway, • Alterations to the northbound platform • Anticipated impacts to the east of the emergency egress • Alterations to the track alignment. *Indirect Adverse Impacts (potential vibration damage)* resulting from construction work within, and immediately adjacent to, Union Station.	**Preferred Option:** *Avoidance:* The proposed work should be planned in a manner that avoids direct impacts to the heritage attributes of Union Station. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure and building components associated with Union Station. Accordingly, alternative mitigation options are recommended below. **Alternative Option:** *HIA:* Direct impacts are anticipated to this resource. Accordingly, an HIA must be prepared. The HIA will be completed in accordance with the MCM Information Bulletin 3: Heritage Impact Assessments for Provincial Heritage Properties (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the cultural heritage value and heritage attributes of Union Station. *Protection measures*: This property should be noted on Project drawings as a "protected heritage property" to identify the heritage status of the property to Project personnel. In addition, protective fencing should be installed during construction to protect the heritage attributes of the property. *Vibration Monitoring:* Construction work is proposed immediately within, and immediately adjacent to, this property. Vibration monitoring should be carried out by a qualified geotechnical engineer. Vibration monitoring should consist of a pre-construction

Exhibit 4.3 continued Potential impacts to and mitigation measures for cultural heritage resources in Area A

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 3	Built Heritage Resource	Dominion Public Building (1 Front Street West)	• Designated under Part IV Ontario Heritage Act with By-law 423-2017 • Designated under Part V of the Ontario Heritage Act as part of the Union Station HCD through Bylaw By-law 634-2006 • 'Contributing Building' in the Union Station HCD • Classified Federal Heritage Building by the Parks Canada FHBRO in 1983.	**Anticipated Impact:** Proposed property acquisition of approximately 18 m^2 to accommodate the Union Station Loop and proposed future property acquisition of approximately 30 m^2 to accommodate a future entrance to the adjacent building. **Type of Impact:** *Direct Adverse Impacts (land disturbance, alterations, introduction of new elements)* resulting from property acquisition and planned connection to the WELRT north loop infrastructure. *Indirect Adverse Impacts (potential vibration damage)* resulting from construction work to accommodate the Union Station Loop.	**Preferred Option:** *Avoidance:* The proposed work should be planned in a manner that avoids direct impacts to the heritage attributes of the Dominion Public Building. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure and building components associated with Union Station and the planned connection to 1 Front Street. Accordingly, alternative mitigation options are recommended below. **Alternative Option:** *HIA:* Direct impacts are anticipated to this resource. Accordingly, an HIA must be prepared. The HIA will be completed in accordance with the MCM Information Bulletin 3: Heritage Impact Assessments for Provincial Heritage Properties (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the cultural heritage value and heritage attributes of the Dominion Public Building. *Protection measures:* This property should be noted on Project drawings as a "protected heritage property" to identify the heritage status of the property to Project personnel. In addition, protective fencing should be installed during construction to protect the heritage attributes of the property. *Vibration Monitoring:* Construction work is proposed, within, and immediately adjacent to, this property. Vibration monitoring should be carried out by a qualified geotechnical engineer. Vibration monitoring should consist of a pre-construction survey, vibration monitoring during construction, and a post-construction survey.

Exhibit 4.3 continued Potential impacts to and mitigation measures for cultural heritage resources in Area A

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 4	Built Heritage Resource	Postal Delivery Building (40 Bay Street)	• Designated under Part IV of the Ontario Heritage Act through By-law No. 360-90 • Designated under Part V of the Ontario Heritage Act as part of the USHCD through By-law No. 634-2006 • 'Contributing Building' in the USHCD	**Anticipated Impact:** Proposed property acquisition of approximately 115 m^2 to accommodate a portion of the tunnel and shoring. **Type of Impact:** *Direct Adverse Impacts (land disturbance, alterations, introduction of new elements)* resulting from property acquisition and planned construction of tunnel and shoring. *Indirect Adverse Impacts (potential vibration damage)* resulting from construction work required to accommodate a portion of the tunnel and shoring.	**Preferred Option:** *Avoidance:* The proposed work should be planned in a manner that avoids direct impacts to the heritage attributes of the Postal Delivery Building. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure along Bay Street immediately adjacent to, and within the property limits, of this building given its connection to the existing transit network. Accordingly, alternative mitigation options are recommended below. **Alternative Option:** *HIA:* Direct impacts are anticipated to this property. Accordingly, an HIA must be prepared. The HIA will be completed in accordance with the MCM Information Bulletin 3: Heritage Impact Assessments for Provincial Heritage Properties (2017) to identify alternatives and mitigation and monitoring commitments to avoid or lessen impacts on the cultural heritage value and heritage attributes of the Dominion Public Building. *Protection measures:* This property should be noted on Project drawings as a "protected heritage property" to identify the heritage status of the building to Project personnel. In addition, protective fencing should be installed during construction to protect the Bay Street façade of the building. *Vibration Monitoring*: Construction work is proposed, within, and immediately adjacent to, this property. Vibration monitoring should be carried out by a qualified geotechnical engineer. Vibration monitoring should consist of a pre-construction survey, vibration monitoring during construction, and a post-construction survey.
CHR 5	Built Heritage Resource	Brookfield Place (161-181 Bay Street)	• Designated under Part V of the Ontario Heritage Act as part of the USHCD through By-law No. 634-2006 • 'Contributing Building' in the USHCD	**Anticipated Impact:** Work is planned within approximately 12 m of Brookfield Place. **Type of Impact:** *Indirect Adverse Impacts (potential vibration damage)* resulting from construction work in close proximity to this building.	**Preferred Option:** *Avoidance:* The proposed work should be planned in a manner that avoids direct impacts to the heritage attributes of Brookfield Place. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure and construction activities in the immediate vicinity of this building. Accordingly, alternative mitigation options are recommended below. **Alternative Option:** *Vibration Monitoring*: Construction work is planned within approximately 12 m of this building. Given the close proximity of work, vibration monitoring should be carried out for this property by a qualified geotechnical engineer. Vibration monitoring should consist of a pre-construction survey, vibration monitoring during construction, and a post-construction survey.

Exhibit 4.3 continued Potential impacts to and mitigation measures for cultural heritage resources in Area A

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 6	Built Heritage Resource	Royal Bank Plaza (200 Bay Street)	• Designated under Part V of the Ontario Heritage Act as part of the USHCD • 'Contributing Building' in the USHCD	**Anticipated Impact:** Work is planned within approximately 12 m of Royal Bank Plaza. **Type of Impact:** *Indirect Adverse Impacts (potential vibration damage)* resulting from construction work in close proximity to this building.	**Preferred Option:** *Avoidance:* The proposed work should be planned in a manner that avoids direct impacts to the heritage attributes of the Royal Bank Plaza. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure and construction activities in the immediate vicinity of this building. Accordingly, alternative mitigation options are recommended below. **Alternative Option:** *Vibration Monitoring*: Construction work is planned within approximately 12 m of this building. Given the close proximity of work, vibration monitoring should be carried out for this property by a qualified geotechnical engineer. Vibration monitoring should consist of a pre-construction survey, vibration monitoring during construction, and a post-construction survey.
CHR 7	Built Heritage Resource	Gowans Kent Building (20 Front Street)	• Designated under Part IV of the Ontario Heritage Act through By-law No. 108-83 • Designated under Part V of the Ontario Heritage Act as part of the USHCD through By-law No. 634-2006	No anticipated impacts.	None.

Exhibit 4.3 continued Potential impacts to and mitigation measures for cultural heritage resources in Area A

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 8	Built Heritage Resource	Toronto Harbour Commission Building (60 Harbour Square)	• Designated under Part V of the Ontario Heritage Act as part of the USHCD • 'Contributing Building' in the Union Station HCD	**Anticipated Impact:** A laydown area is proposed in the parking lot on the east side of the Toronto Harbour Commission Building. **Type of Impact:** *Indirect (temporary isolation from the Union Station HCD)* due to use of adjacent property as a staging area.	**Preferred Option:** *Avoidance*: The proposed work staging area should be planned in a manner that avoids direct impacts to the heritage attributes of the Toronto Harbour Commission Building. *Protection measures*: This property should be noted on Project drawings as a "protected heritage property" to identify the heritage status of the building to Project personnel. If warranted, protective fencing should be installed along the east elevation of this building during construction to protect this building while the staging area is in place.
CHR 9	Built Heritage Resource	Toronto Ferry Company Waiting Room (145 Queens Quay West)	• Designated under Part IV of the Ontario Heritage Act through By-law No. 1249-2007 • Heritage Easement registered in 1991	No anticipated impacts.	None.
CHR 10	Cultural Heritage Landscape	Westin Harbour Castle Complex (1 Harbour Square)	• Identified during field review	**Anticipated Impact:** Proposed subsurface property acquisition to accommodate proposed staircase and elevator shaft to the Queens Quay-Ferry Docks LRT Station. No direct impacts to the Westing Harbour Castle Hotel are anticipated since property acquisition and planned work are located below grade. **Type of Impact:** *Indirect (potential vibration damage)* due to use of adjacent property as a staging area.	**Preferred Option:** *Avoidance:* The proposed work should be planned in a manner that avoids direct impacts to the Westin Harbour Castle Hotel. However, it is recognized that the nature of this Project requires the permanent alteration of existing infrastructure along Queens Quay immediately adjacent to, and within the property limits, of this building. Accordingly, alternative mitigation options are recommended below. *Protection measures:* This property should be noted on Project drawings as a "potential heritage property" to identify the heritage status of the building to Project personnel. In addition, protective fencing should be installed along the west elevation of this building in the vicinity of the planned staircase and elevator shaft to protect this building during construction. *Vibration Monitoring:* Construction work is proposed, within, and immediately adjacent to, this property. Vibration monitoring should be carried out by a qualified geotechnical engineer. Vibration monitoring should consist of a pre-construction survey, vibration monitoring during construction, and a post-construction survey.

Exhibit 4.3 continued Potential impacts to and mitigation measures for cultural heritage resources in Area A

CHR Number	Type	Name / Location	Heritage Recognition	Description and description of potential/anticipated impact	Mitigation measures
CHR 11	Cultural Heritage Landscape	Redpath Sugar Refinery (95 Queens Quay East)	• Listed on the City of Toronto's Inventory of Heritage Properties (June 1984)	No anticipated impacts.	None.
CHR 12	Cultural Heritage Landscape	LCBO Complex (55 Lake Shore Boulevard East [north of Queen's Quay Boulevard East between Freeland and Cooper streets])	• Designated under Part IV of the Ontario Heritage Act through By-law No. 45-2021	No anticipated impacts.	None.
CHR 13	Built Heritage Resource	Terminal Building (207-211 Queens Quay)	• Listed on the City of Toronto's Inventory of Heritage Properties (20 June 1973)	No anticipated impacts.	None.
CHR 14	Built Heritage Resource	Toronto Star Building (1 Yonge Street)	• Identified during field review	No anticipated impacts.	None.

Exhibit 4.3 continued Potential impacts to and mitigation measures for cultural heritage resources in Area A

Feature ID	Location / Name	Heritage Status and Recognition	Type and description of potential/anticipated impact	Mitigation measures
BHR 1	Westin Harbour Castle (1 Harbour Square)	Potential BHR – Identified during field review	Proposed limits of impact along the south side of Queens Quay East will result in approximately 170 m^2 of surface improvements on the Westin Harbour Castle hotel property. The impacts include replacing concrete pavement with granite unit paving to the building face. The proposed work will also result in the relocation of the driveway entrance and associated building alterations, including the removal of concrete slabs, walls, and bollards, and the relocation of utilities. This will result in **adverse direct impacts** to potential heritage attributes. **Indirect impacts** to this property are possible due to construction activities upon and in proximity to the BHR which may result in limited and temporary adverse vibration impacts.	**Direct impacts:** Should it be determined that there is no other technically feasible option other than to undertake the proposed impacts and building alterations, it is recommended that a Cultural Heritage Evaluation Report be undertaken during the TPAP to determine if this potential BHR has CHVI. If the property is determined to have CHVI, a HIA should be undertaken by a qualified person as early as possible during detailed design, and developed in consultation with, and submitted for review to, the MCM and interested parties including the municipal heritage planner and/or municipal heritage committee and Indigenous Nations, as appropriate. **Indirect impacts**: To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that any structures will be subject to vibrations: 1) a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the Project to lessen vibration impacts related to construction; and where potential adverse vibration impacts cannot be avoided (2) a qualified engineer should include this property in the condition assessment of structures within the vibration zone of influence for this Project.
BHR 2	Toronto Star Building (1 Yonge Street)	Potential BHR – Identified during field review	Proposed limits of impact along the north side of Queens Quay East will result in approximately 1.6 m encroachment onto this property due to minor site-regrading and replacement of disturbed concrete pavement. The proposed limits of impact will result in the installation of new granite unit paving on the sidewalk in front of the Toronto Star Building at 1 Yonge Street. An access agreement is required at 1 Yonge to allow people to walk on portions of the 1 Yonge property in order to provide sufficient clearway around trees/site furnishings and around the existing colonnade. No new physical accesses will be added to 1 Yonge. No **direct impacts** are anticipated to the potential heritage attributes of the property. **Indirect impacts** to this property are possible due to construction activities in proximity to the BHR which may result in limited and temporary adverse vibration impacts. No other adverse indirect impacts were identified.	**Indirect impacts:** To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that any structures will be subject to vibrations: 1) a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the Project to lessen vibration impacts related to construction; and where potential adverse vibration impacts cannot be avoided (2) a qualified engineer should include this property in the condition assessment of structures within the vibration zone of influence for this Project.

Exhibit 4.4 Potential impacts to and mitigation measures for built heritage resources and cultural heritage landscapes in Area B

Feature ID	Location / Name	Heritage Status and Recognition	Type and description of potential/anticipated impact	Mitigation measures
BHR 3	LCBO Complex	Known BHR – Designated under Part IV of the Ontario Heritage Act. See Bylaw 45-2021	Proposed limits of impact along the north side of Queens Quay will result in encroachment onto the property at 2 Cooper Street, as a memorandum of understanding is being pursued by the City of Toronto to expand the paved right-of-way 1 m onto the 2 Cooper site. 1.6 m of public property will be conveyed immediately south of 2 Cooper Street and will receive minor site regrading and new granite paving. The only building on this property that is within the study area – namely the garage and retail outlet of the L.C.B.O. at 2 Cooper Street – is specified in the designation by-law as not being a heritage attribute. As such there will be **no indirect or direct impacts** because there are no heritage attributes to receive the impacts. The remaining two buildings on the property which are heritage attributes are located outside of the study area, to the north of the garage and retail outlet building and at a sufficient distance to the proposed work that no adverse direct or indirect impacts to them are anticipated.	As no heritage attributes are anticipated to be impacted, no mitigation is required.
BHR 4	Redpath Sugar Refinery (95 Queens Quay East)	Known BHR – Listed on Municipal Heritage Register	The proposed limits of impact along the south side of Queens Quay East will not result in any encroachment onto this property. As such, no **direct impacts** are anticipated to the potential heritage attributes of the Redpath Sugar Refinery. **Indirect impacts** to this property are possible due to construction activities in proximity to the property which may result in limited and temporary adverse vibration impacts. No other adverse indirect impacts were identified.	**Indirect impacts**: To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that any structures will be subject to vibrations: 1) a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the Project to lessen vibration impacts related to construction; and where potential adverse vibration impacts cannot be avoided (2) a qualified engineer should include this property in the condition assessment of structures within the vibration zone of influence for this Project.
BHR 5	Gardiner Expressway over Parliament Street	Potential BHR – Identified during field review	The proposed impacts along Parliament Street include site re-grading, new road bed and granite curbs, and new granite and concrete unit paving. The resulting visual conditions will be similar to existing conditions. As such, no **direct impacts** are anticipated to the potential heritage attributes of the Gardiner Expressway. **Indirect impacts** to this property are possible due to construction activities in proximity to the BHR which may result in limited and temporary adverse vibration impacts. No other adverse indirect impacts were identified.	**Indirect impacts:** To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that any structures will be subject to vibrations: 1) a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the Project to lessen vibration impacts related to construction; and where potential adverse vibration impacts cannot be avoided (2) a qualified engineer should include this property in the condition assessment of structures within the vibration zone of influence for this Project.

Exhibit 4.4 continued Potential impacts to and mitigation measures for built heritage resources and cultural heritage landscapes in Area B

Feature ID	Location / Name	Heritage Status and Recognition	Type and description of potential/anticipated impact	Mitigation measures
BHR 6	Victory Soya Mills Silos (351 Lake Shore Boulevard East)	Known BHR – Designated under Part IV of the Ontario Heritage Act. See Bylaw 183-2021.	The proposed limits of impact will result in construction of a road and transit infrastructure on the property adjacent to this BHR on the west side at 333 Lake Shore Boulevard East. Additionally, a laydown area is planned during construction for this adjacent property. The planned construction will not result in a change to the setting or visual conditions of the BHR, as roads and transit stops are already located in the vicinity. As such, no **direct impacts** to the BHR's heritage attributes are anticipated. **Indirect impacts** to this property are possible due to construction activities in proximity to the BHR which may result in limited and temporary adverse vibration impacts. Indirect impacts to this property are also possible due to the laydown area in proximity to the BHR, which may result in limited and temporary adverse visual impacts.	**Indirect impacts:** To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance assessment conclude that any structures will be subject to vibrations: 1) a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the Project to lessen vibration impacts related to construction; and where potential adverse vibration impacts cannot be avoided (2) a qualified engineer should include this property in the condition assessment of structures within the vibration zone of influence for this Project. The laydown area should be minimized and located as far away from the silos on BHR 6 as possible.

Exhibit 4.4 continued Potential impacts to and mitigation measures for built heritage resources and cultural heritage landscapes in Area B

4.5 Emissions

4.5.1 Air quality

4.5.1.1 Impacts

As outlined in existing conditions, baseline values are well below the respective air quality criteria, with the exception of benzene and benzo(a)pyrene, which are already approaching, or exceeding the AAQC. The additional emissions from the Project are expected to be appreciably lower than the baseline.

4.5.1.1.1 Construction

The construction activities associated with the Project may generate dust emissions, which are typically associated with construction activities such as handling of soils or aggregates, traffic through construction zones, and other related activities. However, such emissions are expected to be short-term in duration.

Airborne contaminants of concern to construction projects include particulate matter, nitrogen dioxide, carbon monoxide, benzo(a)pyrene, and VOCs (specifically benzene, 1-3 butadiene, formaldehyde, acetaldehyde, and acrolein). These contaminants have standards and AAQCs in Ontario that were set based upon potential health or environmental effects of exposure to these pollutants.

4.5.1.1.2 Operations

The area adjacent to the Project will be developed regardless of higher-order transit implementation as Toronto and the surrounding region are experiencing high demand for housing. Without the proposed development, trips that could otherwise be absorbed by higher-order transit and bicycles would likely be automobile and bus trips. In this scenario, air quality would worsen with an increasing population dependent on automobile transport.

Once the Project is completed, it will provide several non-auto travel options including electrified transit, improved segregated bicycle facilities, and a generous promenade, thus providing an opportunity to reduce automobile dependency. The reduction in automobile dependency will deliver benefits in terms of reduced congestion which will lower emissions. Additionally, the Project includes the introduction of significant new tree and undergrowth planting which will help offset carbon dioxide emissions.

4.5.1.2 Mitigation measures

4.5.1.2.1 Construction

As per the requirements of O. Reg. 419/05 Air Pollution – Local Air Quality, emissions to the atmosphere are to be controlled to prevent negative impacts. Dust emissions from the construction phase shall be mitigated through the development of a dust mitigation plan to document good management practices and standard dust control measures and to minimize off-site impacts at the nearest sensitive receptors. These may include utilizing water-sprays, sweeping, cleaning, wheel-washing, covering materials, and control of traffic routes and speeds. The dust mitigation plan must ensure activities like stockpiling and material handling are properly managed including verifying meteorological forecasts to determine which construction activities are to be performed, particularly during high wind events. With respect specifically to activities like stockpiling and material handling, the controls will be consistent with the Waterfront Toronto EMP for Project-Related Activities (August 2022).

The site layout should be planned so that machinery and dust causing activities are located as far away from receptors as possible. A two-metre minimum site hoarding should be erected around construction compounds. An adequate water supply should be supplied to the site for effective dust suppression through wet methods. The dust control measures shall be put in place prior to the initiation of construction activities to prevent the uncontrolled generation of dust.

The environmental control measures, as outlined in Section 7.1.5 of the *Waterfront Toronto Environmental Management Plan for Project-Related Activities*, should be implemented where applicable. Toronto Public Health (TPH) may be consulted during the preparation of dust control plans to ensure methods sufficiently mitigate the potential for health effects from the generation of dust during the construction phase.

Mitigation measures that target the on-site engines should help to reduce the incremental contribution of ambient concentration for contaminants of concern associated with construction projects in the Project area.

Exposure for contaminants of concern should be assessed for off-site sensitive ground level and elevated receptors potentially exposed to emissions associated with Project (300 m distance on each side of the Project footprint should be considered the zone of influence, per the Metrolinx Guideline).

The United States Environmental Protection Agency AERMOD model and/or the CAL3QHCR model (as applicable) should be used for air dispersion modelling of contaminant emissions from the Project. The appropriate model should be selected after the Project team receives and reviews the Project data, depending on the applicability and modelling requirements.

In Ontario, local air quality is regulated under the Environmental Protection Act and O. Reg. 419 Air Pollution – Local Air Quality. This air quality assessment requires a comparison of the predicted effects, which are the air concentrations predicted by air dispersion modelling, to applicable air quality criteria. For this assessment, it is appropriate to compare the modelled effects to the respective Ontario AAQCs; noting that there are also federal air quality criteria (Canadian Ambient Air Quality Standards). The air quality assessment should also consider climate change and regional air quality impacts when assessing the potential impacts of the Project. This may include comparing greenhouse gas (GHG) emissions from the proposed undertaking with the provincial GHG totals reported by Environment Canada.

There will be sources of GHG emissions associated with both the construction and operations phases of the Project associated with the energy use, which will be supplied by fossil fuels and electricity from the Ontario grid. The relevant GHGs include carbon dioxide, methane, and nitrous oxide, all of which are generated during fossil fuel combustion. Due to the small scale of the project, the GHG emissions are not appreciable when compared with the overall Canadian or Ontario GHG inventories and will have no measurable effect on atmospheric carbon dioxide levels.

An air quality management plan should be prepared prior to construction phase of the Project. Applying an equity, diversity, and inclusion lens to the assessment process is appropriate to capture groups are at greater risk due to age and/or underlying medical

conditions. A best management practice plan should be prepared to identify dust and odour impacts associated with the construction phase of the Project and mitigation measures.

These plans will form part of the EMP and will identify potential sensitive receptors surrounding the proposed construction site, including:

- Residences
- Hotels/motels
- Nursing/retirement homes
- Hospitals
- Noise sensitive buildings such as schools and places of worship.

Based on the above types of sensitive receptors the exact list of receptors should be developed during the detailed design phase of the project when the construction schedules, allocation of construction equipment, and construction areas become available. The AERMOD air dispersion modelling should be used to predict the impact on sensitive receptors. Based on modelling results in combination with the baseline air quality data the mitigation strategies should be developed for all contaminants of concern.

4.5.1.2.2 Operations

No air-quality mitigation measures are proposed during operations.

4.5.1.3 Monitoring activities

4.5.1.3.1 Construction

An ambient air monitoring plan shall be prepared as part of the EMP. The Contractor should undertake regular on-site and off-site inspection, where receptors are nearby, to monitor dust and record inspection results. For the ambient monitoring plan, it is recommended to:

- Monitor baseline conditions to capture representative concentrations under varying meteorological conditions.
- Where possible, to site monitors both upwind and downwind of construction activities.
- Include a section that describes what action will be taken if contaminated soil is discovered during construction activities.

It is known that there are some existing contaminants in soil in the site area. The controls around air quality and dust management will be consistent with the Waterfront Toronto EPP referenced above and are appropriate where soil contamination is present.

4.5.1.3.2 Operations

Not applicable.

4.5.2 Noise and vibration

4.5.2.1 Impacts

4.5.2.1.1 Construction

Increases in ambient noise levels at nearby receptor locations are expected in association with construction activities. These increases are anticipated to be temporary in nature and are considered to be a short-term nuisance to area residents. The proponents will endeavour to abide by existing municipal noise by-laws for the duration of construction activities to the extent practical.

Assessing the risks related to noise and vibration emissions requires a progressive approach to assessment and mitigation. The first step is to identify major noise and vibration producing construction activities. The following activities, equipment, and site conditions associated with the construction of the Project may result in noise or vibration emissions:

- Deep foundation;
- Excavations;
- Demolition;
- Operation of diesel fueled construction equipment and generators; and
- On-site haul truck and other vehicular traffic.

The work activities are generally known but subject to more detailed development through the course of the proposed work relative to emerging considerations and logistics. Subsequent updates to the construction activities and schedule should be reviewed and, if needed, re-evaluated to identify the more detailed construction impacts.

4.5.2.1.2 Operations

It is recognized that wheel squeal noise can occur on curved track sections such as the one that connects the Queens Quay - Ferry Docks Station to the east portal. As the curved tracks are below-grade impacts to sensitive receptors are not anticipated.

Area A

Noises from streetcar operation inside the streetcar tunnel will remain insignificant on the surface.

The predicted performance at the future portal on Queens Quay East is based on measurements taken at the existing portal on Queens Quay West, guidance from the Federal Transit Administration manual, and noise and vibration engineering principles. The airborne noise levels emitted from the portal will differ from similar at-grade location in two ways – slower operating speeds and sound reverberation (multiple reflections) off the portal walls. Based on observations at the existing Queens Quay West portal, streetcars operate between 10 and 25 kph at the portal section. At these speeds noise levels are predicted to be comfortably within the criteria +3 decibels (dB) to account for the effect of sound reverberation. Noise measurements taken at the existing portal confirm these predictions.

The weight and size of transit support structures affects the vibration radiated by that structure. In general, vibration levels are lower for heavier structures, such as the concrete cut box of the portal. Speeds are also much lower in the vicinity of the portal than at sections of tangent track. For these reasons the vibration levels at the portal are predicted to be similar or better than those predicted for at-grade locations.

Overall, the portal section is not predicted to require noise or vibration mitigation based on the criteria set out in the TTC Design Manual.

Refer to Appendix I for additional details on the benefits of the Project and impacts on noise and vibration in Area A.

Area B

The Area B noise and vibration impact assessment considers the predicted noise and vibration performance of the proposed LRT Project in the following scenarios:

- At-grade tangent track at speeds of 60 kph, 40 kph and 25 kph
- At-grade special track (crossover) at speeds of 15 kph
- At the future Queens Quay East portal location

The performance is assessed against the TTC Design Manual noise and vibration criteria.

Airborne noise levels have been predicted for the future scenario of the Project using the Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual for LRT noise levels and the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) for vehicle traffic noise levels. The following conclusions were made:

- The Project is anticipated to achieve the proposed design goal of not surpassing the ambient L_{eq} values for residences situated at least 15 m from the track centreline and 6 m from the road centreline in all scenarios during daytime, as well as during nighttime for both the 25kph and 40kph scenarios.
- When the streetcar is traveling at 60 kph or on special track during nighttime, it is anticipated to generate a maximum noise level of 59 dBA ($L_{eq,8h}$), which is 4 decibels higher than the design goal of ambient.
- However, the protocol limit for requiring noise mitigation is 5 dB above the maximum of ambient ($L_{eq,8h}$) or 50 dBA ($L_{eq,8h}$), whichever is greater. Considering that the predicted nighttime ambient noise level due to traffic is 55 dBA ($L_{eq,8h}$), mitigation is only required for levels above 60 dBA ($L_{eq,8h}$), hence the Project is not expected to trigger the protocol.

Several noise measurements were taken of streetcar passby events on Queens Quay West to determine the passby sound level (L_{passby}). The following conclusions were made:

- Streetcar passbys measured 75 dBA L_{max}, meaning the peak sound level recorded during the passby was 75 dBA. The criterion for a single passby event is 80 dBA averaged over the duration of the passby (approximately 3-4 seconds). Hence, the streetcar passby achieves the criterion.

Groundborne vibration levels have also been predicted using guidance from the Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual. The following conclusion was made:

- Based on the criterion of 0.10 mm per second Root Mean Square (RMS) velocity at not less than 15 m from the centreline of the track, groundborne vibration is predicted to achieve the proposed design goal without additional mitigation measures. The most onerous condition, 60 kph zone, is predicted to achieve the criteria at 12 m from the centreline of track, comfortably within the 15 m requirement.

Refer to Appendix I for additional details on the benefits of the Project and impacts on noise and vibration in Area B.

4.5.2.2 Mitigation measures

4.5.2.2.1 Construction

Based on the potential for sensitive receptors to be located within the identified zones of influence for both construction noise and vibration, Noise and Vibration Control Measures (NVCM) are recommended for the Project. The intent of the NVCM document is to provide a framework for risk management and mitigations relative to potential noise and vibration impacts from construction. The NVCM should be considered a living document that would evolve with the progression of the Project through detailed design and execution.

In order to address the risks related to construction noise and vibration, a three-stage approach is generally recommended:

- Planning: to identify potential risks from construction activities and define monitoring requirements where necessary;
- Monitoring: to verify that during construction activities noise and vibration levels are minimized and control measures, if in place, are effective; and
- Communications: to engage with community and stakeholders on potential noise and vibration from construction activities, as well as to address complaints that may arise during the construction stage.

Mitigation measures for noise and vibration include:

- The construction noise and vibration limits referenced in the City of Toronto's By-law 514-2008 will be adhered to and if there will be a need to complete work outside of the hours allowed in the by-law, the Proponents shall seek the required exemptions and permits directly from the City of Toronto in advance of works preformed outside the allowable times.
- Construction equipment will meet the sound level criteria from NPC-300 and NPC-115, and will be well maintained and operated with effective muffling devices as needed.
- A Complaint Response Protocol will be put in place for the Project that includes procedures for receiving and addressing construction noise complaints. This protocol will include contact information, records management and issues resolution.
- The construction schedule, along with regular updates, will be communicated to the public and approval agencies.

Additional construction best practices which can be included in the NVCM and followed to minimize construction noise and vibration risks include:

- Work Scheduling and Isolation:
    - o Construction activities are scheduled and planned such that activities that generate higher levels of noise and/or vibration occur during day-time hours where feasible.
    - o Utilize temporary sound barriers or hoarding as necessary to limit off-site noise emissions from specific work areas for small scale localized but high noise generating work.
    - o Ensure construction equipment with significant noise and vibration emissions are operated as far as possible from sensitive receptors.
- Demolition Considerations:
    - o Minimize drop heights of demolition waste materials into bins or trucks and whenever possible in order to reduce noise levels and line the bottoms of bins or trucks with rubber mats.
    - o Using saws to break up existing asphalt and concrete instead of hydraulic hammers or jack hammers, wherever possible and practical.
- Vehicle and Machinery Operations:
    - o Maintain equipment in good working order and exclude from site visually non-compliant emitters.
    - o Perform engine preventative maintenance per Original Equipment Manufacturer recommendations.
    - o Identify designated truck routes which avoid proximity to potential receptors and identify appropriately low speed limits via signage.
    - o Minimize drop heights during loading and unloading of trucks.
    - o Use industry standard equipment and vehicle idle reduction initiatives, as possible. Provide direction for equipment which must be left running to have the maximum practical separation distance from potential receptors.
    - o Use only equipment with all manufacturer available noise control technology options installed and in good working order.
    - o Make every effort to reduce or eliminate tailgate banging.
    - o Optimize access to sites to reduce whenever possible backup. If backup of equipment is necessary, use of broad-band backup alarms on site is preferred.

Refer to Appendix I for the complete NVCM.

4.5.2.2.2 Operations

Area A
No mitigation measures are proposed.

Area B
No mitigation measures are proposed.

4.5.2.3 Monitoring activities

4.5.2.3.1 Construction

The noise and vibration monitoring requirements will be confirmed at detailed design in accordance with City of Toronto Municipal Code Chapter 591 Noise, City of Toronto Municipal Code Chapter 363 Building Construction and Demolition, and Vibration Control By-law, 514-2008.

4.5.2.3.2 Operations

Area A
Not applicable.

Area B
Not applicable.

4.6 Socio-economic environment and land use

4.6.1 Population and employment

4.6.1.1 Impacts

4.6.1.1.1 Construction

Residents and businesses in and around the Project footprint may experience nuisance effects and safety concerns related to noise, dust, vibration and traffic during construction activities. There will be an increased number of workers and traffic and increased lighting required for construction activities. Furthermore, there is the potential for safety concerns based on additional hazards as a result of visual distractions associated with detours and land restrictions required for construction, which may lead to an increase in traffic delays and possible traffic collisions. Construction zones have the potential to obstruct sight lines to properties resulting in security concerns. These nuisance effects are expected to be short term during the proposed construction.

Employment opportunities will be created through the construction of the proposed infrastructure.

4.6.1.1.2 Operations

Large amounts of population and employment growth are expected in the areas adjacent to the Project, increasing the demand for higher-order transit. According to the GTA Transport Model, Lower Yonge and East Bayfront are expected to house 28,600 residents by 2031 and 30,700 residents by 2041 (Exhibit 4.5).

The Project will serve residents of all incomes due to affordable housing targets. The overall goal in the Lower Yonge and East Bayfront Precincts is for affordable rental units to comprise 25 percent of all housing units.

According to the GTA Transport model, the number of jobs in and around the Project footprint is expected to grow as well, reaching approximately 22,900 by 2031 and 25,600 by 2041 (Exhibit 4.5).

The infrastructure improvements proposed as part of the Project support the population and employment projections for surrounding areas.

4.6.1.2 Mitigation measures

4.6.1.2.1 Construction

Impacts to residents and businesses in and around the Project footprint will be minimized during construction. The ability to maintain access to local businesses for both pedestrians and vehicles will be considered as construction phases are finalized. A Traffic and Transit Management Plan (TTMP) will be developed as part of the overall EMP. It will include pedestrian, cyclist, and traffic control plans. Stakeholders will continue to be engaged to ensure adequate access is provided at all times during construction.

It is recommended to establish a project Communication Protocol and integrated Complaints Protocol to include community engagement before work commences. Communications serve to minimize complaints and increase the public's understanding of the Project by providing regular, timely and proactive updates of the construction and anticipated impacts. A Complaints Protocol should also be prepared that proactively addresses how to manage and respond to concerns. Where concerns may be predicted in advance, targeted consultation, if applicable, may be required.

The establishment of a City of Toronto Construction Hub for the Project will help improve road safety and coordinate the public right-of-way. Construction Hubs have coordinators who:

- conduct logistical planning of the right of way;
- coordinate resources to manage work zones;
- support developers, businesses and residents with "single point of contact" resolution;
- review and comment on Construction Management Plans/ EMPs;
- connect travelers with real-time information;
- forecast changes in the neighbourhood and collaborate with enforcement officers; and
- communicate impacts early and often and to key neighbourhood stakeholders.

Neighbour-hood	Population		Employment	
	2031	2041	2031	2041
Lower Yonge	16,600	16,600	15,000	15,000
East Bayfront	12,000	14,100	7,900	10,600

Exhibit 4.5 2031 and 2041 population and employment estimates

4.6.1.2.2 Operations

No mitigation measures are proposed during operations.

4.6.1.3 Monitoring activities

4.6.1.3.1 Construction

The pedestrian, bike, and vehicle conditions should be monitored as part of the on-site compliance management process to ensure the implementation of, and adherence to, the TTMP as part of the overall EMP.

4.6.1.3.2 Operations

Not applicable.

4.6.2 Land use

4.6.2.1 Impacts

No modifications to official plan policies, land use designations, or boundaries applying to SPA lands are being sought as part of this Project.

4.6.2.1.1 Construction

The redevelopment of the eastern waterfront is guided by several precinct plans, including the East Bayfront Precinct Plan and the Lower Yonge Precinct Plan. As such, the general alignments of the public rights-of-way are well established and no change in land use will be required to accommodate the infrastructure from those presented in the above noted reports.

4.6.2.1.2 Operations

Many developments in and around the Project footprint are under construction or recently completed. The Project will provide critical transit connections for the residents and employees of these new developments, enabling the use of sustainable transportation and reducing the number of car trips in the area. The implementation of the Project will help realign the eastern waterfront with the *Official Plan's* transit-first development approach.

4.6.2.2 Mitigation measures

No mitigation measures are proposed.

4.6.2.3 Monitoring activities

Not applicable.

4.6.3 Property

4.6.3.1 Impacts

4.6.3.1.1 Construction

Two areas have been identified for use during construction of the Project (Exhibit 4.6).

The first laydown area, 7 Queens Quay East, is proposed due to its size and adjacency to the construction areas. This proposed laydown area is currently a surface parking lot owned by Waterfront Toronto and covers approximately 7,000 m^2. Due to the phased nature of construction, the laydown area for the construction within Area A and Area B is not required concurrently.

The second laydown area is located immediately east of Parliament Slip in Block 5 of the Quayside development. Quayside will be occupying the site for the duration of the Quayside Infrastructure and Public Realm work. Therefore, timing of the site availability may be limited and will require coordination with the Quayside construction manager. Additionally, the Keating Channel Pedestrian Bridge is planned to be completed by early 2026, after which point access to the bridge will need to be maintained.

Should use of a different laydown area be required due to the unavailability of one of the laydown areas identified here, the Proponents will undertake the necessary coordination and consultation with impacted land owners and stakeholders. A change in the location of laydown areas will not necessarily require an addendum to this EPR.

Exhibit 4.6 Temporary laydown areas

4.6.3.1.2 Operations

Area A

In Area A, there are approximately 15 properties impacted by the Project. Exhibit 4.7 summarizes currently known property requirements.

Area B

The Central Waterfront Secondary Plan proposed a 40 m right-of-way for Queens Quay East. The current plan for the street is a 38 m right-of-way with a two-metre development setback. The Project will require conveyances and land taking to achieve a 38 m right-of-way along portions of Queens Quay East. Property requirements will affect some parcels. Conversations with stakeholders are ongoing. Where possible, required properties will be secured through Planning Act approvals. The future Queens Quay East right-of-way is being identified through Official Plan Amendment number 517.

Additionally, there are multiple properties for which access agreements are required and others that will be impacted by surface works. In some cases, land will be transferred between owners. Ownership transfer or an access agreement at Yonge Slip is required. One building (the Westin Harbour Castle Hotel) will require alterations. Finally, slip infill will occur at Yonge Slip.

Exhibit 4.8 summarizes the land impacts and ongoing consultation with affected stakeholders. Should additional lands be required, the Proponents will undertake the necessary coordination and consultation with impacted land owners and stakeholders. A change in property requirements will not necessarily require an addendum to this EPR.

4.6.3.2 Mitigation measures

Consultation with stakeholders impacted by property takings are ongoing. The Proponents will ensure the necessary approvals and/or agreements are in place.

4.6.3.3 Monitoring activities

No monitoring activities are proposed.

Property	Owner	Description	Property Impacts	Type of Impact	Status
55 Front Street West (Union Station)	City of Toronto	The 16,011 m^2 parcel is located on the southwest side of Bay Street. The property is currently occupied by Union Station which is connected to the PATH network and leads to the GO and VIA Trains as well as the TTC subway.	A stratified jurisdictional transfer of approximately 599 m^2 may be required in order to accommodate the Union Station Loop expansion. In addition, approximately 121 m^2 may be required for temporary construction.	Municipal Transfer	Discussions between TTC and City required to determine extent of jurisdictional transfer requirements.
Union Station Underground & Railway Tracks	Metrolinx	The 28,104 m^2 parcel is located on the west side of Bay Street. The property is currently occupied as a rail corridor/platform and concourse.	A stratified taking of approximately 317 m^2 may be required for the entrance pathway from concourse/ street level to the platform level.	Easement	
	City of Toronto	The 28,104 m^2 parcel is located on the west side of Bay Street. The property is currently occupied as a rail corridor/platform and concourse.	A stratified jurisdictional transfer of approximately 1,027 m^2 may be required for platform level expansion and street level protection of infrastructure. In addition, approximately 501 m^2 may be required for temporary construction.	Municipal Transfer	
50 Bay Street	Metrolinx	The 2,546 m^2 and 6,687 m^2 parcels are located on the west side of Bay Street. The property is currently occupied as a walkway/concourse to Union Station & Scotiabank Arena.	Approximately 76 m^2 and 110 m^2 respectively may be required for temporary construction laydown and hoarding. Pedestrian walkway and access to the building must be maintained.	Easement	Design team to explore use of City right-of-way to reduce impact to pedestrian walkway and building access.
40 Bay Street	Private owner	The 14,510 m^2 parcel is located on the west side of Bay Street. The property is currently occupied by an existing building (Scotiabank Arena).	Approximately 438 m^2 may be required for temporary construction laydown and hoarding. Pedestrian walkway and access to the building must be maintained.	Easement	Design team to explore use of City right-of-way to reduce impact to pedestrian walkway and building access.
1 Front Street West (Union Station)	Private owner	The 7,768 m^2 parcel is located on the northeast corner of Front Street and Bay Street. The property is currently occupied by an existing building with a proposed development.	Approximately 10 m^2 may be required to accommodate the Union Station Loop.	Fee Simple	
141 Bay Street (Northern CIBC Square Tower)	Private owner	This 22,571 m^2 parcel is located on the east side of Bay Street and is currently occupied by a rail corridor and bus terminal. The site is being redeveloped into a 50-storey office tower (CIBC Square) with a one acre elevated park that will connect 141 Bay Street to 81 Bay Street. The parcel is owned by Metrolinx (rail corridor) and Hines 141 Bay Property Inc. & 141 Bay Street Property Inc. have air rights to the property to connect their proposed development to 81 Bay Street.	A stratified fee simple taking of approximately 220.5 m^2 may be required to accommodate the teamway and entrances into the proposed 141 Bay Street Development. A negative support easement of approximately 220.50 m^2 may be required to protect TTC infrastructure. In addition approximately 110 m^2 may be required for temporary construction.	Fee Simple & Easements	These property acquisitions should be acquired nominally through the Planning Act.

Exhibit 4.7 Property impacts in Area A

Property	Owner	Description	Property Impacts	Type of Impact	Status
Bay East Teamway	Metrolinx	This 22,571 m^2 parcel is located on the east side of Bay Street and is currently occupied by a rail corridor and bus terminal. The site is being redeveloped into a 50-storey office tower (CIBC Square) with a one acre elevated park that will connect 141 Bay Street to 81 Bay Street. The parcel is owned by Metrolinx (rail corridor) and Hines 141 Bay Property Inc. & 141 Bay Street Property Inc. have air rights to the property to connect their proposed development to 81 Bay Street.	A stratified fee simple taking of approximately 838.5 m^2 may be required to accommodate the platform and entrance connection from the teamway. A negative support easement of approximately 701 m^2 may be required to protect TTC infrastructure. In addition, approximately 202 m^2 may be required for temporary construction.	Fee Simple & Easements	
81 Bay Street (Southern CIBC Square Tower)	Private owner	This 2,055 m^2 parcel is located on the west side of Bay Street and is currently an office building that is under development (CIBC Square).	A stratified taking of approximately 5 m^2 may be required to accommodate an emergency access entrance route to the building from the platform and 5 m^2 may be required for negative support above grade to protect TTC Infrastructure. In addition, approximately 408 m^2 may be required for temporary construction laydown and hoarding.	Fee Simple & Easements	This property requirement is to be reviewed further by TTC and its design team.
20 Bay Street	Private owner	This 4,082 m^2 parcel is located on the west side of Bay Street, at the southwest corner of Harbour Street at Bay Street. The property is currently occupied by a 24-storey office building that also provides access to Union Station through the PATH network.	Permanent easements of approximately 3 m^2 may be required to accommodate an entrance door into the building from the pedestrian level and a proposed emergency egress from the platform level through the building. A temporary easement of approximately 260 m^2 may be required to accommodate subsurface construction and at grade laydown and hoarding areas.	Easements	This property requirement is to be reviewed further by TTC and its design team.
10 Bay Street	Private owner	This 2,918 m^2 parcel is located on the west side of Bay Street, at the northwest corner of Queens Quay West at Bay Street. The property is currently occupied by a 18-storey office building that also provides access to Union Station through the PATH network.	A permanent easement of approximately 35 m^2 may be required to accommodate the extension of the elevator shaft down another level and a negative support easement of approximately 48 m^2 may be required to protect for TTC infrastructure. A temporary easement of approximately 569 m^2 may be required for construction laydown and hoarding. See Exhibit 4.8 for Area B impacts to this property.	Easements	There is an existing staircase and elevator shaft at this property and any alterations are subject to the existing access agreement between TTC and the owner.

Exhibit 4.7 continued Property impacts in Area A

Property	Owner	Description	Property Impacts	Type of Impact	Status
11 Bay Street	The Corporation of the City of Toronto	This 5,942 square metre parcel is located on the east side of Bay Street at the northeast corner of Queens Quay West at Bay Street. The property is currently occupied by a two-storey convention centre/event space.	Permanent easements of approximately 26.5 m^2 may be required to accommodate a future entrance and emergency exit to the building and negative support easements of approximately 26.5 m^2 may be required to protect TTC infrastructure. Approximately 379 m^2 may be required for temporary construction laydown and hoarding.	Municipal Transfer or Ground Lease Amendment	This property requirement is to be reviewed further by TTC and its design team. CreateTO & CREM to advise on the acquisition of this property requirement.
11 Queens Quay West (Jack Layton Ferry Terminal)	City of Toronto	This 41,913.95 m^2 parcel is located south of Queens Quay West along the shoreline and includes the Ferry Terminal and surrounding green space.	A jurisdictional transfer of approximately 146 m^2 may be required to accommodate, shoring, the staircase and elevator shaft from the surface to the Queens Quay-Ferry Docks LRT Station.	Municipal Transfer	This property requirement is to be reviewed further by TTC and its design team.
33 Harbour Square	Private owner	This 10,456 m^2 parcel is located south of Queens Quay West and forms part the entrance to the parkade for 1 Harbour Square.	A stratified fee simple taking of approximately 101 m^2 may be required to accommodate the staircase to the Queens Quay-Ferry Docks LRT Station. Easements of approximately 97 m^2 may be required for maintenance and protection of TTC infrastructure.	Fee Simple & Easements	This property requirement is to be reviewed further by TTC and its design team.

Exhibit 4.7 continued Property impacts in Area A

Property	Owner	Description	Property Impacts	Type of Impact	Status
10 Bay Street	Private owner	This 2918 m^2 parcel is located on the west side of Bay Street, at the northwest corner of Queens Quay West at Bay Street. The property is currently occupied by an 18-storey office building that also provides access to Union Station through the PATH network.	• See Exhibit 4.7 for Area A easements required. • Access agreement of 0.79 m^2 required to provide sufficient pedestrian clearway. • Surface improvements of 128 m^2 are proposed as part of the public realm revitalization.	• Access Agreement • Surface improvements	Access requirement to be further refined as design progresses and will be communicated with impacted stakeholder.
1 Harbour Square	Westin Harbour Castle Hotel	This 7,788 m^2 parcel is located on the south side of Queens Quay East, west of Yonge Slip and directly north of the Jack Layton Ferry Terminal. The property is occupied by a twin-towered 34-storey hotel building. An elevated glass walkway connects this property to the existing convention centre building at 11 Bay Street on the opposite side of Queens Quay directly north of Westin Harbour Castle Hotel.	• Requires relocation of vehicular driveway entrance to hotel motorcourt from Queens Quay frontage to east side of building, including: o Removal of non-structural building elements. o Alterations to existing motorcourt driveway ramp to suit new entrance. o Reconfiguration of incoming gas service. o Relocation and addition of wayfinding signage. • Surface improvements of 170 m^2 are proposed as part of the public realm revitalization.	• Alterations to Building Structure • Surface improvements	Consultation with impacted stakeholder has commenced and is ongoing.
10 Yonge Street / 10 Queens Quay West	Private owner	The property is bounded by Harbour Street to the north, Yonge Street to the east and Queens Quay to the south. Residences of the World Trade Centre consist of two residential towers, one at 36 storeys and one at 27 storeys, containing 407 dwelling units. A part of the at-grade level of the building is comprised of a commercial component, which is occupied by various businesses. A large portion of the property includes a publicly accessible plaza at the northwest corner of Yonge Street and Queens Quay East, situated over underground parking garage with access stairs and ventilation grates located within the plaza at grade. Two vehicular access points to the underground parking garage are located on Yonge Street and Queens Quay West.	• Access agreement of 52 m^2 along the frontage of the open plaza to provide sufficient pedestrian clearway. • Surface improvements of 207 m^2 are proposed as part of the public-realm revitalization.	• Access Agreement • Surface improvements	Access requirement to be further refined as design progresses and will be communicated with impacted stakeholder.

Exhibit 4.8 Property impacts in Area B

Property	Owner	Description	Property Impacts	Type of Impact	Status
5 Queens Quay, Yonge Slip	Ports Toronto, City of Toronto	A number of parcels located at the foot of Yonge Street, along the south side of Queens Quay including: 1. Water lot at the foot of Yonge Street, owned by Ports Toronto. An existing metal deck is currently mounted along the north dockwall overhanging the water, and an existing Combined Sewer Outfall discharges through the north wall into the lake. 2. A 884 m^2 parcel east of Westin Harbour Castle Hotel, currently owned by City of Toronto, that provides vehicular access to the Jack Layton Ferry Terminal and servicing access to the hotel. 3. A 943 m^2 parcel located along the west dockwall of Yonge Slip, owned by Ports Toronto. A 1-storey restaurant building is located at the north end of the parcel along Queens Quay East frontage. Another 1-storey office building is located at the south end of the parcel. A surface parking lot, partly covered by a roof structure is located between the two buildings. 4. A 557 m^2 parcel located along the east dockwall of Yonge Slip, owned by Ports Toronto, currently exists as a publicly accessible paved walkway and access to water taxi docks within Yonge Slip.	1. Ownership transfer or access agreement is required for the water lot. Lake fill of 3,500 m^2 is required to provide vehicular access and additional public realm amenity at Yonge Slip. 2. Ownership transfer of the whole parcel between City of Toronto departments may be required, pending ownership assumptions of proposed works. 3. Ownership transfer or permanent easement from Ports Toronto of approximately 720 m^2 of the parcel will be required to accommodate the proposed Yonge Slip plaza and associated public-realm improvements. Requires removal of existing 1-storey restaurant at the Queens Quay East frontage at north end of parcel. 4. Ownership transfer or permanent easement from Ports Toronto of the 557 m^2 parcel to accommodate proposed public-realm improvements.	• Slip Infill • Water lot purchase • Ownership Transfer • Permanent Easement	
7 Queens Quay East	Waterfront Toronto	This 3715 m^2 parcel is located on the south side of Queens Quay, east of Yonge Slip. It is currently occupied by a paid surface parking lot. This parcel is expected to be a future public park upon future funding.	• Land ownership transfer to City of Toronto Parks, Forestry and Recreation of 1,048 m^2 upon completion of public realm and park integration.	• Coordination of property requirement is ongoing with landowner	
128 Queens Quay East, 10 Lower Jarvis Street	Private owner	This 1.66-hectare site, located on the northwest corner of Lower Jarvis Street and Queens Quay East, is currently occupied by a 3-storey high Loblaws grocery store.	• Access agreement for 50 m^2 required for interim phase to provide sufficient pedestrian clearway. • Surface improvements of 175 m^2 are proposed as part of the public realm revitalization.	• Interim Access Agreement • Surface Improvements	Access requirement to be further refined as design progresses and will be communicated with impacted stakeholder.

Exhibit 4.8 continued Property impacts in Area B

Property	Owner	Description	Property Impacts	Type of Impact	Status
130/134 Queens Quay East	Daniels Corporation	This 0.64-hectare parcel, located on the northeast corner of Lower Jarvis Street and Queens Quay East, is phase 1 and the southern block of the Daniels Waterfront – City of the Arts development. It includes a building of 8 to 14 storeys containing retail and commercial office spaces.	• Access agreement for 0.69 m^2 is required to provide sufficient pedestrian clearway at the proposed Queens Quay East and Lower Jarvis Street intersection. • Surface improvements of 81 m^2 are proposed as part of the public-realm revitalization.	• Access Agreement • Surface Improvements	Access requirement to be further refined as design progresses and will be communicated with impacted stakeholder.
Jarvis Street Slip (105 Queens Quay East)	City of Toronto	This 1,069 m^2 parcel is located along the south side of the Queens Quay frontage at the Jarvis Slip, between Redpath property and Dockside Drive.	• Surface improvements are proposed as part of the public realm revitalization.	• Access Agreement • Surface Improvements	
12/16/26 Bonnycastle Street (Monde)	Private owner	This 0.39-hectare parcel is located at the northwest corner of Queens Quay East and Bonnycastle Street. A 44-storey residential building occupies the site.	• Surface improvements of 26 m^2 are proposed as part of the public realm revitalization.	• Surface improvements	Access requirement to be further refined as design progresses and will be communicated with impacted stakeholder.

Exhibit 4.8 continued Property impacts in Area B

4.7 Utilities and municipal infrastructure

4.7.1 Impacts

4.7.1.1 Construction

4.7.1.1.1 Area A

The recommended option for the service relocations for the Union LRT Station work accommodates utility relocations within the Bay Street right-of-way and does not require easements to locate service mains in the adjacent private property. However, the proposed service utility relocations will result in some temporary impacts to adjacent private properties. Exhibit 4.9 summarizes the temporary impacts to adjacent private properties with respect to municipal utilities.

Third-party stakeholders that are expected to be impacted by the Project include the various utility companies with buried infrastructure within the Project footprint. The degree of impact will vary. The proposed option requires the relocation of utilities within the Bay Street right-of-way within the Union LRT Station Section. In many cases the existing utilities will require relocation due to new permanent structures, while in other cases they will require temporary relocation to accommodate construction Support of Excavation (SOE) systems and structural supports. Refer to the Reference Concept Design utility design brief for further details. It is expected that each utility company will require review and approval of the proposed temporary utility routing utilized during construction as well as the new permanent utility locations. The following is a list of third-party utilities that will have services that will require both temporary support during construction (with support of temporary relocated service during construction) and permanent relocation.

- City of Toronto (water/storm/sanitary)
- Toronto Hydro (electrical)
- Bell (communications)
- Rogers (communications)
- Group Telecomm (communications)
- Enbridge (gas)

The recommended service relocations for the Queens Quay-Ferry Docks LRT Station and tunnel portal works accommodate utility relocations within the Bay Street and Queens Quay West right-of-ways. The proposed service utility relocations will result in some temporary impacts to adjacent private properties. Exhibit 4.10 summarizes the temporary impacts to adjacent private properties with respect to municipal utilities.

Third-party stakeholders that are expected to be impacted by the proposed Queens Quay-Ferry Docks LRT Station works include the various utility companies with buried infrastructure within the Project footprint. The degree of impact will vary. The proposed option requires the relocation of all utilities within the Queens Quay-Ferry Docks LRT Station and tunnel portal works area.

In many cases the existing utilities will require relocation due to the Queens Quay-Ferry Docks LRT Station and the east and west portal works. In some cases, the existing utilities will need temporary relocation and temporarily supported during construction. It is expected that each utility company will require review and approval of the proposed temporary and permanent utility relocations during construction. The following is a list of third-party utilities that will have services that will require both temporary relocation during construction (with support of temporary relocated service during construction) and permanent relocation.

- City of Toronto (water/storm/sanitary)
- Toronto Hydro (electrical)
- Bell (communications)
- Rogers (communications)
- Group Telecomm (communications)
- MTS Allstream (communications)
- Zayo (communications)
- Enbridge (gas)

Property	Impact
Union LRT Station	Sanitary Service - relocation of service on east side of building (west side of Bay Street) will need to be relocated to accommodate station expansion. Temporary disruption will be required to complete relocation.
Union LRT Station	Storm Service – relocation of service on west side of Bay Street will require adjustments to storm sewer and connected services in teamway. Temporary pumping during construction will likely be required.
Scotiabank Arena	Water Service – temporary disruption to water service will occur with relocation/reinstatement of water main. Temporary service is expected to be required.
Scotiabank Arena	Sanitary Service – temporary disruption to sanitary service will occur with removal of sanitary service as a result of station expansion. Temporary service is expected to be required.
181 Bay Street	No impacts to services, 181 Bay Street. Development to be serviced from Yonge Street
45/81 Bay Street	No impact to services, 45/81 Bay Street Development will be serviced from Lakeshore.

Exhibit 4.9 Existing servicing and property impacts (Union Station LRT Loop)

Furthermore, the recommended utility relocations for the Queens Quay-Ferry Docks LRT Station and tunnel portal works will need to be circulated/coordinated with Waterfront Toronto to ensure the designs match and scope of works is coordinated. The location of proposed trees and streetlighting poles in the south boulevard of Queens Quay by Waterfront Toronto will need to be verified during detailed design to ensure there are no conflicts with proposed utilities in the boulevard.

4.7.1.1.2 Area B

The Project will require service utility relocations in Area B as well. Impacted service utilities are expected to include watermains, sanitary servicing, storm sewers, Toronto Hydro, gas, telecommunications, Hydro One, and District Energy.

There is an existing CSO at the northern extent of the Yonge Slip. It is currently assumed that this CSO will need to remain functional throughout construction.

Impacts of the Project will continue to be identified in greater detail during detailed design stages and in continued consultation with utilities.

4.7.1.2 Operations

4.7.1.2.1 Area A

Removal and reinstatement of Toronto Hydro ducts and chambers directly above Union Station will result in temporary disruption to the power supply to Union Station. As Queens Quay is currently fed from Union Station it will also see temporary power disruption. Refer to the Electrical Reference Concept Design submission report for further information regarding existing and proposed power supply within the WELRT systems.

Within the Queens Quay-Ferry Docks LRT Station expansion, the existing hydro duct banks along Bay Street between Queens Quay and Harbour Street will be maintained.

4.7.1.2.2 Area B

Toronto Green Streets are roads or streets that incorporate Green Infrastructure (GI), which includes natural and human-made elements such as trees and low impact development (LID) stormwater infrastructure to improve and protect the ecological and hydrological functions and processes. The proposed Queens Quay East throughout Area B is a Green Street Infrastructure project that utilizes LIDs to improve various hydrological processes such as water balance, water quality, and water quantity.

The LIDs proposed include:

- Wide-open planting beds.
- Engineered soil cells that structurally support the surface pavement while providing the necessary soil volume to support the continuous tree canopy proposed as part of the design.
- Integration of a passive irrigation system that collects surface runoff and distributes it into the rootzone of the proposed planting.

The proposed LIDs/GI will enable several benefits, including:

- Preserving the natural water budget and reducing runoff volume.
- Addressing the quality of stormwater runoff before discharging to the municipal sewer system and the ultimate receiving system.
- Addressing the amount of stormwater runoff discharged to the municipal storm system and aiding in alleviating localized flooding.

4.7.2 Mitigation measures

4.7.2.1 Construction

4.7.2.1.1 Area A

The following items will be pursued as mitigation measures during the detailed design phase to ensure proper relocation/replacement of utilities:

- Continue coordinating meetings with third-party utilities and other stakeholders through the Public Utilities Coordinating Committee process. Monitor progress of third-party utility relocations.
- Develop (or obtain from City of Toronto) a storm water model for impacted areas in order to verify (for detailed design) the stormwater flows from areas upstream of the Project study area (e.g., the storm water flows from the 750 mm diameter storm sewer immediately upstream of Union LRT Station).

Property	Impact
11 Bay Street	Storm Service – temporary disruption to 300 mm storm service will occur with removal of 750 mm storm sewer and reconnecting into proposed 375 mm storm sewer flowing easterly on north side of Queens Quay. Temporary pumping during construction will likely be required.
11 Bay Street	Sanitary Service – location for the proposed 250 mm sanitary service connection near Harbour Street for 11 Bay Street re-development to be coordinated. Sanitary Service connection to 11 Bay Street needs to stay out of the station expansion zone, to avoid cost to have us relocate during station construction.
10 Bay Street	Sanitary Service – temporary disruption to existing 200 mm sanitary service will occur with removal/ reinstatement of 300 mm sanitary sewer to flow westerly on north side of Queens Quay. Temporary pumping during construction will likely be required.
10 Bay Street	Storm Service – temporary disruption to existing 300 mm storm service will occur with removal of storm sewer and reconnecting into proposed 300 mm to 450 mm storm sewer flowing westerly on north side of Queens Quay. Temporary pumping during construction will likely be required.
33 Harbour Square	Sanitary Service – temporary disruption to existing 300 mm sanitary service will occur with removal/ reinstatement of 450 mm sanitary sewer on south side of Queens Quay. Temporary pumping during construction will likely be required.
1 Harbour Square	Sanitary Service – temporary disruption to existing sanitary service laterals will occur with removal/ reinstatement of 450 mm sanitary sewer on south side of Queens Quay. Temporary pumping during construction will likely be required.

Exhibit 4.10 Existing servicing and property Impacts (Queens Quay-Ferry Docks LRT Station and tunnel portals)

- Prepare required documents for Site Plan Approval.
- Subsurface Utility Engineering Level A Test Pits to verify location, depths and sizes of existing utilities to allow for further refinement of existing utility locations. In particular, it will be critical to establish existing utility attributes at areas where new utilities are to cross existing utilities which are to be maintained.
- Temporary Servicing and Support Details in conjunction with the City of Toronto and relevant third party utilities. Proposed temporary utility locations and temporary chamber locations to be verified with relevant utility owners.
- Assess risk and establish true 'zone of influence' of the SOE system and construction dewatering with input from Structural and Geotechnical disciplines as the detailed design of the SOE system and construction dewatering develops. Re-assess extents of utilities to be relocated and/or supported and develop mitigation measures as/when required. Develop Monitoring Plans in conjunction with geotechnical and the various relevant utilities to establish parameters for construction regarding vibration and settlement.
- City of Toronto is also performing a sewer replacement on Yonge Street from Queens Quay to King Street and is scheduled to commence in 2024. Although this work is not deemed in conflict with the Project, it should be considered and checked as part of detailed design.
- Continue coordinating meetings with Waterfront Toronto to coordinate tree planting zones and restoration design of Bay Street.
- Coordinate with structural on detailed design of the SOE system so that existing utilities that cross the SOE system (secant pile walls etc.) and are to remain can be maintained.
- Further analyze Sanitary Capacity to run a design rainfall event through the InfoWorks model to gain an understanding of baseline and proposed capacity constraints during wet weather conditions.
- Coordinate with landscaping during detailed design to ensure adequate clearances are met and avoid potential conflicts with trees and tree soil trenches.

Removal and reinstatement of Toronto Hydro ducts and chambers above Union Station should be scheduled to coincide with new electrical works at Union Station which will result in disruption to power supply to Queens Quay station, in order to minimize impacts to power supply to Queens Quay.

4.7.2.1.2 Area B

Initial outreach with third-party utilities is underway to inform affected parties of potential future relocation and to understand and coordinate planned infrastructure improvements. The design of new or relocated utilities will typically be undertaken by each utilities' design consultants, but coordination on timing and sequencing of utility work will be important in implementation planning for the Project. Each utilities' relocation plans will require integration into the overall construction planning to mitigate impacts and disruption.

Temporary protections and support will be required throughout the corridor during construction for utilities and servicing that are to remain. Of note are the existing Hydro One 115-kilovolt lines, which may still be in use depending on the timing of the transit construction. Proposed streetscape may need to be deferred until such time the existing lines are decommissioned. Between Yonge Street and Lower Sherbourne Street, the proposed north curb and associated catch basins are located in close proximity to the existing Hydro One ducts and careful support of the high voltage cables during construction will be required.

It is currently assumed that the existing CSO at the Yonge Slip would need to remain functional throughout construction. The initial concept for the sequence of the Yonge Slip infill is as follows to maintain the operations of the outfall:

- Install CSO support piles and substructure.
- Install steel sheet pile wall and anchoring system leaving opening at location for new CSO.
- Install a frame in the opening in the new steel sheet pile wall and at the old timber crib to accept new CSO extension.
- Place clear stone in fill area including area around support piles up to bottom elevation of the CSO.
- Tension wall anchoring system according to contract specifications.
- Install CSO on support piles and extend to face of new steel sheet pile wall.
- Place remaining stone fill behind the steel sheet pile wall and around CSO.

Property	Impact
Near 5 Queens Quay West	Sanitary Service – temporary disruption to existing sanitary service laterals will occur with removal/ reinstatement of 450 mm sanitary sewer on south side of Queens Quay. Temporary pumping during construction will likely be required.
Laneway between 11 Bay Street & 10-12 World Trade Centre	Storm Sewer – temporary disruption to 300 mm storm sewer in the laneway between 11 Bay Street and all storm laterals to 10-12 World Trade Centre building will occur with removal of 750 mm storm sewer and reconnecting into proposed 375 mm to 450 mm storm sewer flowing easterly on north side of Queens Quay. Temporary pumping during construction will likely be required.
10-12 World Trade Centre	Sanitary Sewer – temporary disruption to sanitary lateral to 10-12 World Trade Centre building will occur with removal of 300 mm sanitary sewer and reconnecting into proposed 300 mm sanitary sewer flowing easterly on north side of Queens Quay. Temporary pumping during construction will likely be required.
1 Harbour Square	Water Service – temporary disruption to existing water service lateral crossing Queens Quay will occur as the existing water service lateral will need to be rerouted to pass above the new east tunnel. A temporary water service line shall be provided to Westin Harbour Castle during construction.

Exhibit 4.10 continued Existing servicing and property Impacts (Queens Quay-Ferry Docks LRT Station and tunnel portals)

Construction is expected to be carried out with marine based equipment. Alternatively, a temporary diversion for the CSO can be implemented but is deemed less feasible due to the spatial constraints within the existing lands at the foot of Yonge Street and the presence of existing timber crib dockwalls posing as significant obstructions.

4.7.2.2 Operations

4.7.2.2.1 Area A

Protection of new/temporary power feed to Queens Quay-Ferry Docks LRT Station during construction will be required in order to secure power supply to Queens Quay-Ferry Docks LRT Station. TTC operations during the period of temporary power supply should ensure no damage or disruption to the temporary power supply cables.

4.7.2.2.2 Area B

Consider upgraded utility materials that are more resistant to degradation from impacted soil and groundwater in certain areas of Queens Quay East (coal tar impacted area).

4.7.3 Monitoring activities

4.7.3.1 Construction

During construction it will be up to the Contractor to provide protection to utilities that remain in service and monitor for issues on a regular basis. Monitoring should cover displacement and vibration and should ensure the stability and integrity of each utility in accordance with each respective utility owner.

Construction monitoring activities conducted by the Contractor shall be continued during the entire construction phase up to completion. The Contractor shall communicate to TTC any operations of streetcars in the Project footprint before completion which result in displacement or vibration which exceeds parameters of any utility owner.

4.7.3.2 Operations

4.7.3.2.1 Area A

No Project specific monitoring activities of Area A utilities are proposed.

4.7.3.2.2 Area B

No Project specific monitoring activities of Area B utilities are proposed.

4.8 Transportation infrastructure

4.8.1 Transit network

4.8.1.1 Impacts

4.8.1.1.1 Construction

During construction, interim adjustments to transit operations will be needed during the Union-Queens Quay tunnel closure. In particular, adjustments to the existing Queens Quay West right-of-way may be required to support buses utilizing the existing infrastructure.

On Queens Quay East, existing bus service will be maintained until the streetcar guideway is constructed. Once the guideway is built, it will be used by existing and future bus routes to provide service along Queens Quay East, prior to the commencement of streetcar service. Once construction on the east and west portals is completed, streetcars will be able to provide service directly from Queens Quay West to Queens Quay East while Queens Quay-Ferry Docks LRT Station and Union LRT Station are still under construction. Direct service between Queens Quay West and Queens Quay East is not expected to be maintained following the re-opening of Queens Quay-Ferry Docks LRT Station and Union LRT Station.

During construction of the underground Area A, TTC has identified a need for a temporary end-of-line facility in the vicinity of Union LRT Station to support the replacement bus operations from both Queens Quay East and Queens Quay West. This may require adjustments to parking and curb modifications as well as the inclusion of washroom and water facilities for bus operators. The requirements for and ability to accommodate this end-of-line facility will need to be further assessed during future design stages.

4.8.1.1.2 Operations

Higher-order transit

The addition of the LRT guideway will address the current lack of higher-order transit in the eastern waterfront, which will increase access to the Lower Yonge and East Bayfront Precincts and support new development along the corridor.

Expanded infrastructure capacity

The Union Station – Queens Quay Link is a fundamental connection within the overall Waterfront Transit Network, serving both existing Waterfront West LRT service and the planned WELRT. Expansion of the Union LRT Station Loop and Queens Quay-Ferry Docks LRT Station increases platform capacity, improves the customer experience, and provides operational flexibility, benefiting users across the entire Waterfront Transit Network.

Transit-first development

The LRT guideway will also respond to the *Official Plan's* transit-first development approach by implementing transit prior to the completion of residential and commercial development in order to encourage the use of sustainable transportation modes and reduce car reliance and congestion.

Speed, travel time, and service reliability

As noted in Section 2.3.6.1, the current design proposes conventional, single-stage-crossing intersection configurations for several reasons.

While two-stage crossings show benefits for transit in the form of shorter travel times and increased reliability, the benefits are minor and are not expected to impact demand for transit. Single-stage crossings provide a range of benefits for pedestrians, cyclists, and public realm, including shorter and more intuitive crossings that are consistent with the rest of the corridor and fewer easement and/or property requirements.

4.8.1.2 Mitigation measures

4.8.1.2.1 Construction

As the Project progresses through detailed design, mitigation measures including alternative stops and detour routes will need to be developed to provide continued service during construction. A TTMP, which will be developed during detailed design, will identify detours/lane closures/restrictions and identify measures to maintain adequate bus service.

The temporary bus service on Queens Quay West may require adjustments to physical infrastructure including signal heads and positive guidance elements as well as signal timing changes. On Queens Quay East, the cross-section should provide space to operate a frequent, high quality bus service including transit priority measures where possible.

Further, TTC supports the implementation of transit-priority measures including bus lanes on Yonge Street as well as other elements such as transit signal priority to optimize travel times for customers.

4.8.1.2.2 Operations

Speed, travel time, and service reliability

The TTC has identified that the anticipated transit vehicle travel speeds and reliability (determined in the analysis in Appendix J) could be further optimized to better serve the high transit mode shares targeted to support dense residential and commercial development within the Project study area. To mitigate future reduction of transit travel speed and improve reliability within the area, the following measures should be considered for further refinement in the detailed design of the Project:

- Rationalizing and optimizing stop locations and spacing, without changes to service coverage area of the lands between the rail corridor and water's edge, while still providing controlled pedestrian crossings to and from transit stops.

- Applying modifications and design refinement to reduce the volume of pedestrian encroachment onto the LRT tracks, including those which are being studied and monitored through pilot projects on Queens Quay West.
- Optimizing traffic signal timing to prioritize transit, and exploring further opportunities, such as block signaling, beyond City-standard practice for improved transit signal priority.

The TTC has identified that the target average transit vehicle travel speed should be 15 kph. Furthermore, the transit service reliability should be improved such that the coefficient of variation of headways is 0.30 or better (i.e. vehicles slightly off headway).

4.8.1.3 Monitoring activities

4.8.1.3.1 Construction

Transit operations will be monitored during each construction stage for impacts to bus operations or stop locations. Solutions should be identified to optimize service as necessary.

4.8.1.3.2 Operations

Post construction monitoring of transit operations to identify and mitigate excessive delays or detrimental queues is recommended.

4.8.2 Pedestrian network

4.8.2.1 Impacts

4.8.2.1.1 Construction

Sidewalks may be narrowed and/or temporarily closed during construction. Crosswalks may also be temporarily closed during construction.

4.8.2.1.2 Operations

Area A
As Bay Street will be reconstructed to match the existing conditions, no impacts to pedestrians are expected during operations.

Area B
The addition of signalized intersections along the corridor will create new crossing locations for pedestrians, increasing connectivity between the waterfront and points north. The design also increases connectivity between the MGT and the Water's Edge Promenade via Sugar Beach.

The proposed pedestrian promenades are significantly larger than the existing pedestrian facilities. Additionally, the design includes new public spaces – such as the Yonge Slip – where pedestrians may gather.

4.8.2.2 Mitigation measures

4.8.2.2.1 Construction

Changes to or closures of pedestrian facilities will be clearly communicated. Where facilities are closed, alternate, AODA-compliant routes will be provided to maintain pedestrian accessibility. The TTMP to be developed during detailed design will include mitigation measures for pedestrians.

4.8.2.2.2 Operations

No mitigation measures are proposed. The Project itself is a mitigation for the poor pedestrian environment that exists today.

4.8.2.3 Monitoring activities

4.8.2.3.1 Construction

The pedestrian conditions will be monitored as part of the on-site compliance management process.

4.8.2.3.2 Operations

In-service review of pedestrian conditions should be conducted during operations.

4.8.3 Bike network

4.8.3.1 Impacts

4.8.3.1.1 Construction

The bicycle lanes along Bay Street between Front Street and Queens Quay West may be temporarily removed during construction, and the cyclists will be directed to dismount and walk through the construction zone. The MGT will be maintained along the entirety of Queens Quay East for the full duration of construction.

4.8.3.1.2 Operation impacts

The enhanced MGT, a critical piece of the larger Great Lakes Waterfront Trail, will invite cyclists to travel east-west along the corridor in a multi-use trail parallel to the south pedestrian sidewalk/ promenade on Queens Quay East. The MGT's slight grade separation from the pedestrian promenade will signal to pedestrians that faster moving cyclists are using the MGT and discourage cyclists from riding off of the MGT onto the south sidewalk. The widening of the asphalt trail will also make the smooth asphalt surface more attractive for wheelchair users who may experience discomfort on surfaces with unit paving or concrete and make it an attractive choice for other faster-moving users including runners, rollerbladers, skateboarders, and new forms of urban mobility such as e-scooters. Additionally, new connections between the MGT and bike facilities on north-south streets will improve connectivity between the waterfront and points north.

4.8.3.2 Mitigation measures

4.8.3.2.1 Construction

Changes to or closures of bike facilities will be clearly communicated. Adequately-signed detour routes will be provided where facilities are closed. The TTMP to be developed during detailed design will include mitigation measures for cyclists.

4.8.3.2.2 Operations

No mitigation measures proposed. The Project itself is a mitigation for the poor bike environment that exists today.

4.8.3.3 Monitoring activities

4.8.3.3.1 Construction

The bike conditions will be monitored as part of the on-site compliance management process.

4.8.3.3.2 Operations

In-service review of bike conditions should be conducted during operations.

4.8.4 Road network

4.8.4.1 Impacts

4.8.4.1.1 Construction

Construction will impact traffic along the entire extent of the corridor. In general, two-way traffic will be maintained with the potential exception of some night/weekend closures. The majority of impacted intersections during construction will have only one operating lane in each direction.

4.8.4.1.2 Operations

Lane reduction on Queens Quay

A key impact of the provision of the streetcar is the reduction in travel lanes along Queens Quay from four lanes to two lanes.

East portal

The new east portal is proposed to be constructed on Queens Quay West between Bay Street and Yonge Street to facilitate streetcars' transition between below-grade and at-grade. This location will require a reconfiguration of the existing Queens Quay West corridor between Bay Street and Yonge Street. The future reconfiguration will have a single lane in each direction, remove the curb side loading zones, and reduce the storage length at the left turn lanes. Additionally, the relocation of the east portal will remove the existing vehicular access to the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal.

The following concerns were raised by local stakeholders regarding the reconfiguration of Queens Quay West:

- The reduction of road lanes on Queens Quay West causing congestion and safety hazard;
- Queuing of resident vehicles accessing Residences of the World Trade Centre (located on the north side of Queens Quay West) causing spillback onto adjacent major intersections; and
- Existing buses currently operating along Queens Quay West in front of Westin Harbour Castle Hotel block traffic and create a safety hazard.

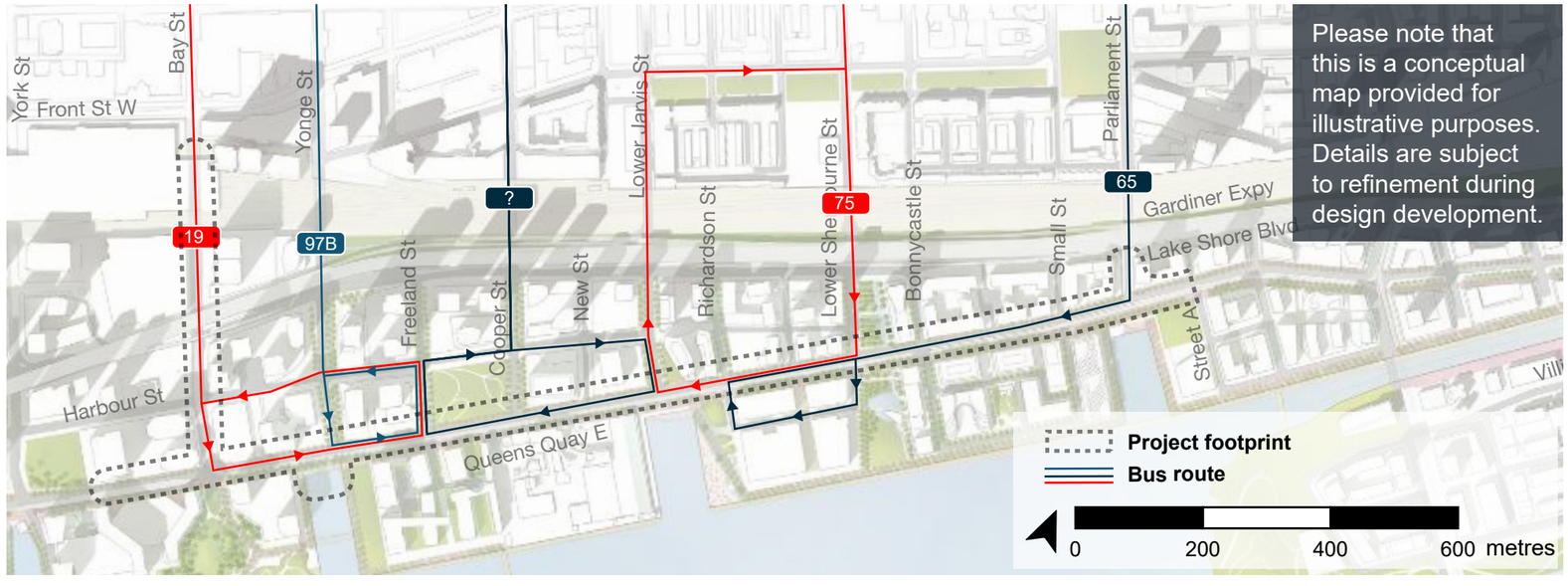
Large vehicle accommodation

A swept path analysis was undertaken to inform the design of Queens Quay East from Bay Street to Parliament Street to ensure the street can accommodate turning maneuvers for large vehicles.

As Queens Quay East is a minor arterial, the City of Toronto's curb radii guidelines require a design vehicle of a MSU truck and a control vehicle of a WB-20 truck. In this case, as limited industrial uses will remain in this area, the design has considered WB-20 accommodation only at certain intersections. Based on the future mixed-use land uses anticipated in the area, HSU trucks were used as the control vehicle.

The design was tested against six vehicle types as described below.

- **MSU truck:** All intersections work well with the MSU truck.
- **HSU truck:** HSU trucks require more space than MSU trucks. The vehicle envelope and swept paths of HSU trucks are similar to those of the garbage trucks that service the residents south of the guideway. Several turning movements were found to be constrained for HSU trucks.
- **Standard single-unit bus and TTC Nova Articulated bus:** Queens Quay East must also accommodate TTC buses. Swept path analysis was carried out for both single unit bus and TTC Nova articulated bus either from the roadway or from the guideway to accommodate future BRT operation. Exhibit 4.11 illustrates the presumed TTC bus routes in and around the Project footprint. Bus movements are generally accommodated.
- **Fire truck:** Swept path analysis of fire trucks was performed both travelling from/to the roadway or from/to the future guideway for emergency vehicle access purpose. Fire trucks have generally similar characteristics to MSUs and therefore don't have issues to resolve in the design.
- **Tractor and semi-trailer (WB-20):** As noted at the beginning of this section, the design has considered WB-20 accommodation only at certain intersections. Trucks will only be able to approach Redpath from the west.



Note: Route 65 was assumed to move clockwise through Dockside Drive at the time of this analysis. Due to design modifications since the time of analysis, Route 65 is now planned to circulate counterclockwise through Dockside Drive. The design is expected to accommodate this routing, and an updated analysis will confirm this during detailed design.

Exhibit 4.11 Presumed TTC bus routes around the Project footprint

4.8.4.2 Mitigation measures

4.8.4.2.1 Construction

During construction, lane closures and congestion can be mitigated using several operational strategies:

- Optimize signals' cycle lengths and timing plans to improve intersection delay;
- Use appropriate means (such as portable variable message signs) to divert traffic away from the construction areas; and
- Interconnect temporary traffic signals at main intersections along Bay Street and Queens Quay to help manage potential queue spillbacks between adjacent intersections.

A detailed TTMP will be completed at a later design stage with contractor input and will be compliant with Ontario Traffic Manual Book 7 Temporary Conditions.

4.8.4.2.2 Operations

Queens Quay lane reduction

The lane reduction will be mitigated by the following measures:

- The addition of new multimodal transportation facilities (including higher-order transit, the MGT, and the pedestrian promenade) which increase the overall capacity of Queens Quay East.
- The extension of Harbour Street (to be delivered as part of a different project) will provide alternative routing options that may be used instead of Queens Quay East. As shown in Exhibit 4.12, vehicles travelling from Queens Quay East (Point 'A') to Bay Street / Lake Shore Boulevard East (Point 'B') will have nine different alternative routes. Moreover, as shown in Exhibit 4.13, vehicles travelling from Queens Quay East (Point 'A') to Yonge Street / Lake Shore Boulevard East (Point 'B') will have seven different alternative routes.
- The planned removal of the existing ramp from northbound Bay Street to eastbound Gardiner Expressway is expected to reduce trips northbound on Bay Street and westbound on Queens Quay as people will need to re-route to Lake Shore Boulevard to gain access to the Gardiner Expressway at Lower Jarvis Street.
- New turning lanes throughout the corridor to prevent queues from forming as a result of turning vehicles blocking through traffic.
- Appropriate signal timing to minimize delays to traffic, transit, and pedestrians.

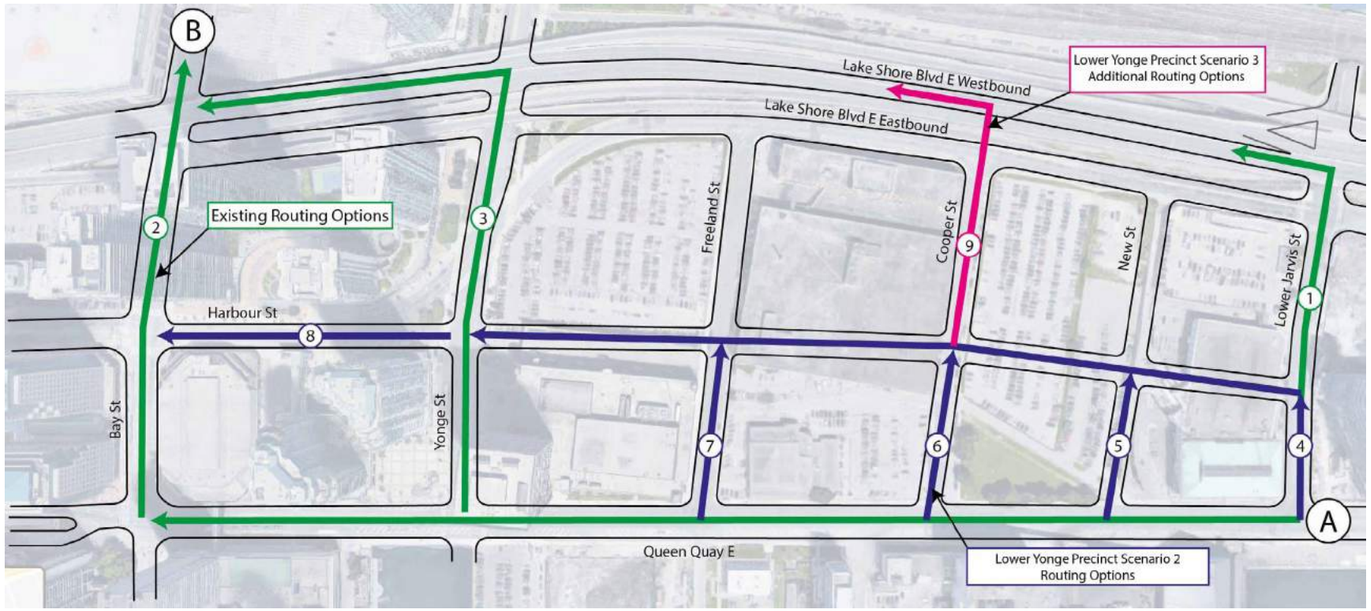


Exhibit 4.12 Queens Quay alternate routing option to travel to Bay Street and Lake Shore Boulevard East

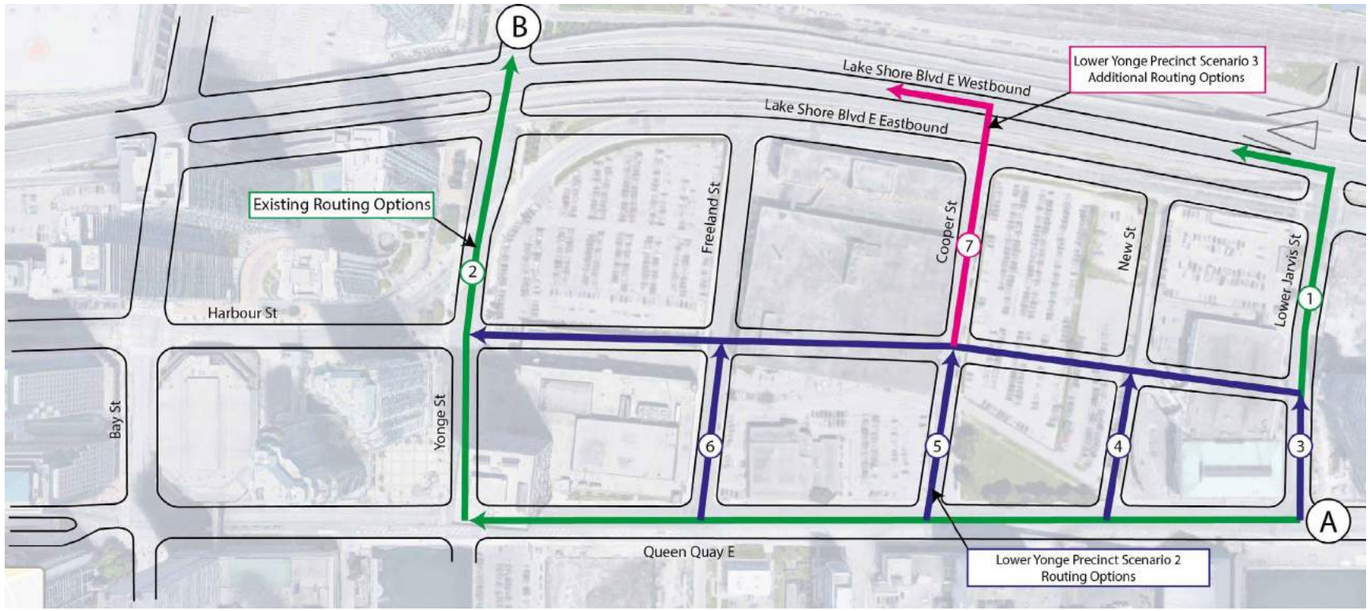


Exhibit 4.13 Queens Quay alternate routing option to travel to Yonge Street and Lake Shore Boulevard East

Queens Quay is expected to operate acceptably after the implementation of these mitigation measures. As such, additional mitigations are not recommended.

Refer to Appendix J for additional detail.

East portal

The following sections summarize the proposed measures to mitigate the impact of the east portal location on Westin Harbour Castle Hotel and Ferry Terminal and 10 Yonge development.

Westin Harbour Castle Hotel and Jack Layton Ferry Terminal

While the proposed location of the east portal will block access to the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal, the Yonge Slip infill provides new access points for both. The slip will be accessible via a new south leg at the signalized Yonge Street intersection. Coach buses, taxis and deliveries that are currently accommodated off Queens Quay West will be accommodated in a new drop-off area located on the slip infill.

The design for the drop-off area on the Yonge Slip infill arranges the coach bus parking perpendicular to Queens Quay (four bus bays). Taxi parking is integrated in a lay-by (four lay-bys) immediately south of the pedestrian boulevard where taxis can queue and enter the Westin Harbour Castle Hotel conveniently. Moreover, the design will support WB-20 access to the Westin Harbour Castle Hotel loading dock on the east face of the building.

The Yonge Slip infill is expected to mitigate impacts of the new east portal location on the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal. As such, no further mitigations are recommended.

Residences of the World Trade Centre

The reconfiguration of the Queens Quay West segment will remove the existing eastbound left-turn lane that is currently available to access the Residences of the World Trade Centre. The planned removal of the eastbound left-turn lane into this development raised concerns that there is insufficient gap in the westbound direction to enable vehicles to turn – causing an eastbound spillback onto the Bay Street / Queens Quay West intersection. The Vissim analysis showed minimal impact from the proposed changes to Queens Quay West between Bay and Yonge streets due to the reductions in through traffic as a result of the Harbour Street extension (refer to Appendix J for more details).

While the existing conditions are often busy, several changes in the future condition will mitigate congestion:

- The Yonge Slip infill will enable the removal of current pick-up/drop-off and motorcoach loading activities from Queens Quay. The consolidation of turning movements into the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal at a new, single signalized intersection will simplify traffic operations between Bay Street and Freeland Street relative to the existing condition, which has separate accesses for the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal.
- As noted above, the addition of multimodal transportation facilities will increase Queens Quay's overall capacity.
- The future traffic volumes on Queens Quay East are anticipated to be substantially lower compared to existing volumes as there are more alternative vehicular routes that are introduced by the Lower Yonge Precinct improvement. As noted above, changes to the road network in the Lower Yonge Precinct (including the extension of Harbour Street and the removal of the Bay Street on-ramp to the Gardiner Expressway) will enable additional routing alternatives. The 2041 EMME (a multi-modal transportation planning software) outputs show that the Lower Yonge Precinct road network changes will significantly reduce traffic on Queens Quay West between Bay Street and Yonge Street, enabling easier left turns into the 10 Yonge development.

The Residences of the World Trade Centre condo board has suggested that swapping the inbound and outbound access points to their parking garage may further reduce potential problems. However, as the transportation analysis did not highlight concerns, this change is not believed to be necessary.

Large vehicle accommodation

- **MSU truck:** No mitigation measures are needed or proposed.
- **HSU truck:** Options to mitigate the constraints identified for HSU trucks include heavy vehicle turn restrictions.
- **Standard single-unit bus and TTC Nova Articulated bus:** Buses will be accommodated where required.
- **Fire truck:** No mitigation measures are needed or proposed.
- **Tractor and semi-trailer (WB-20):** Tractor trailer trucks require access to serve the existing Redpath Sugar Plant and Loblaws sites. As such, a specific truck route was developed (Exhibit 4.14). Queens Quay East has been designed to accommodate a southbound left turn from Yonge Street to accommodate inbound trucks. Trucks leaving Redpath will exit via Lower Jarvis Street while trucks leaving Loblaws have direct egress to Lake Shore Boulevard. Other routing, during busy times, may result in tractor trailer trucks unable to make a turn due to conflicts with other road users. For WB-20 trucks making a southbound left at the Yonge intersection entering to Loblaws, curb modification and potential property easement will be needed. A sketch of the property impact area can be found in Exhibit 4.15. To mitigate the impact of removing westbound left turns into Redpath, the eastbound right-turn lane into the centre access is extended to Redpath's west access. The extension of this lane provides space for an extra truck to queue on Queens Quay East on the approach to the centre access. This should assist with peak operations, particularly during the winter when ships dock in the Port Lands and sugar is trucked to Redpath. The analysis presented in Appendix J suggests that vehicle operations at Redpath's accesses will operate acceptably in the future condition. In general, due to the new signalizations and reduced space west of the west access, it will not be as easy for trucks to queue on Queens Quay East.

4.8.4.3 Monitoring activities

4.8.4.3.1 Construction

Traffic operations and signalization can be monitored during each construction stage to mitigate excessive delays experienced at key intersections as required. The City of Toronto Road Emergency Services Communication Unit (RESCU) system may provide good coverage of the construction area and provide an efficient means of monitoring. Discussion with the City on the potential for this would be beneficial.

4.8.4.3.2 Operations

Post construction monitoring of traffic operations, including counts and site observations, is recommended to identify and mitigate excessive delays or detrimental queues. Post construction lane configurations and signal phases were identified based on the assumed area road improvements and area developments. These assumptions should be compared to conditions at the time construction is completed, to determine the need for updates to these recommendations.

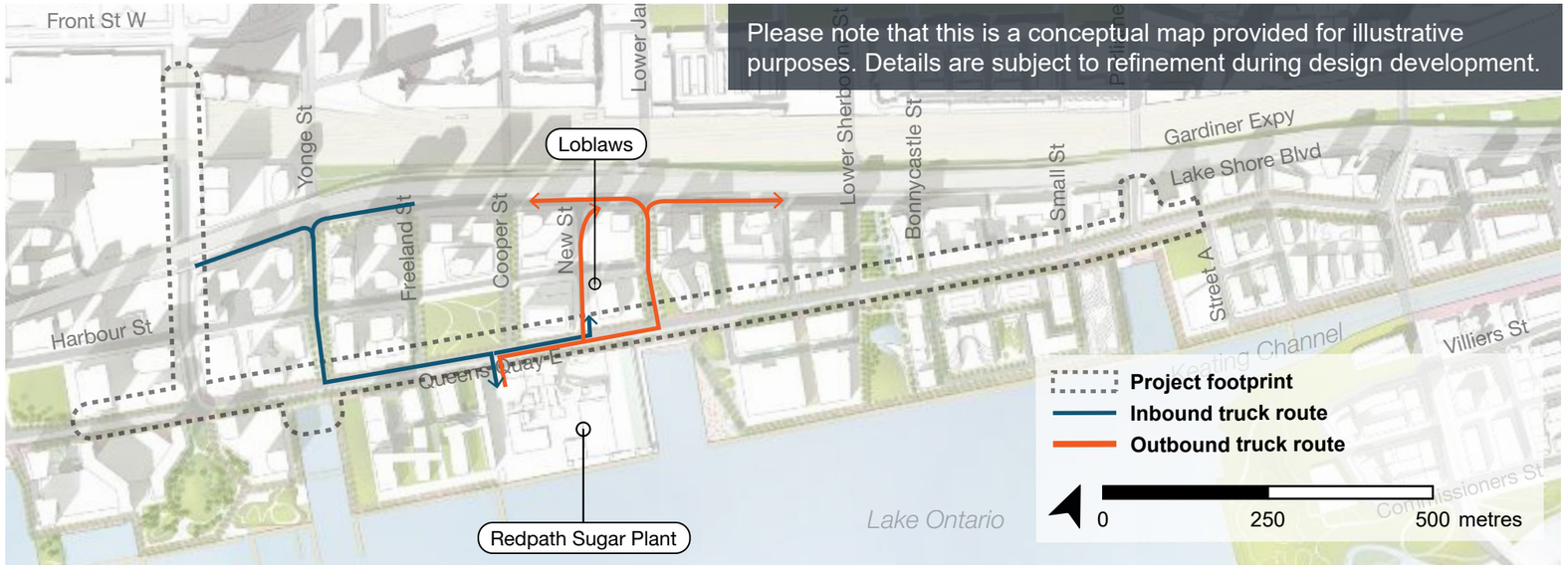


Exhibit 4.14 Inbound and outbound truck routes to Redpath Sugar Plant and Loblaws

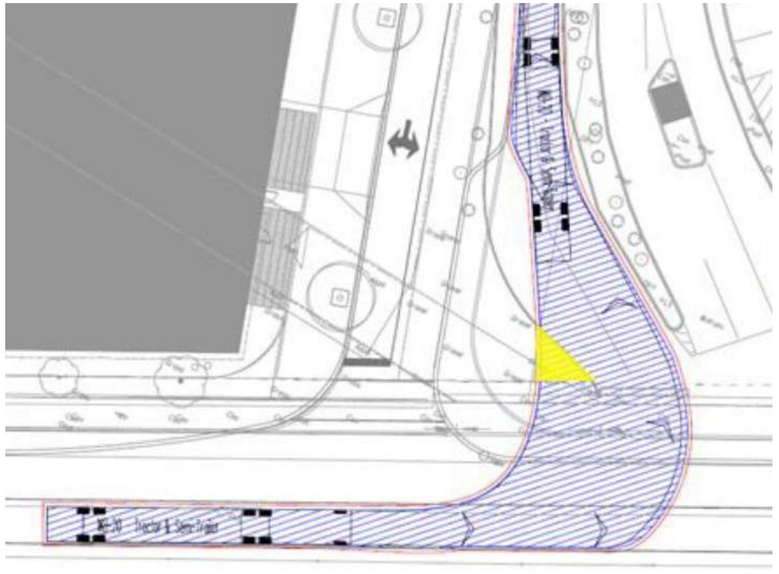


Exhibit 4.15 Property impact resulting from curb modification at Loblaws

5.0 Climate change and sustainability

Image: Rendering of streetcar platform at Union LRT Station

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

5.0 Climate change and sustainability

5.1 Scope

This chapter outlines how climate change considerations have been taken into account during design work to date and proposes recommended commitments for the future design, construction and operation phases. The goal of undertaking this assessment during the TPAP is to evaluate adaptation and mitigation measures which reduce the impact of GHG emissions and account for the future climate change impact on the Project. The scope of this assessment can be summarized as follows:

- A qualitative consideration of the Project's potential impacts on climate change
- A qualitative consideration of the impact of climate change on the Project

The assessment was completed based on the findings and information presented in previous studies, including:

- Waterfront Toronto – Queen's Quay East – Phase 2A: Life Cycle Assessment Embodied Carbon by WSP Canada, October 2021 [1]
- Queens Quay East Preliminary Design and Engineering – Landscape Architecture, Public Realm Design 30% by WEST 8 + DTAH, June 2021 [2]
- PAS 2080: 2016 Carbon Management in Infrastructure [3]
- Draft Interim Geotechnical Design Report - Queens Quay LRT Station Expansion by TTC, June 2021 [4]
- Draft Interim Geotechnical Design Report - East Bayfront Tunnel and Portal by TTC, June 2021 [5]
- Draft Preliminary Geotechnical Design Report - Union LRT Station Expansion by TTC, July 2020 [6]
- Queens Quay East Stormwater Management Report (30%) by WSP, May 2021 [7]

The assessment is not exhaustive and is commensurate with the Project design at the time of authoring. Recommendations are based on the documents listed above, and the information provided in discussions with the design teams. The documents represent preliminary concepts and do not include detailed design.

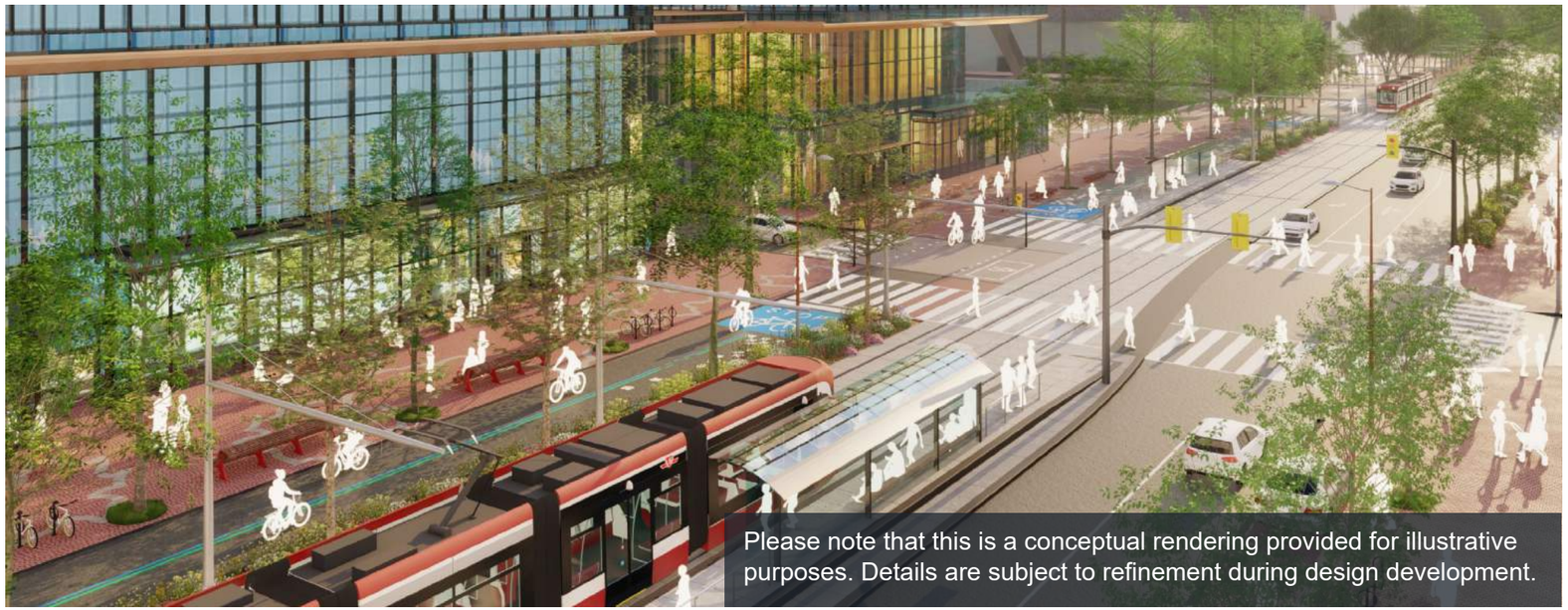


Exhibit 5.1 Rendering of Queens Quay East future conditions © West 8 + DTAH

5.2 Policy context

In 2018 the Ontario Government released their Made-in-Ontario Environmental Plan which sets out the long-term vision for addressing climate change through GHG reduction targets. Ontario has committed to reducing its emissions by 30 percent below 2005 levels by 2030. Key aspects of the plan which may pertain to this Project include:

- Issuing green bonds to help finance public transit initiatives, extreme-weather resistant infrastructure, and energy efficiency and conservation projects.
- A focus on resiliency to extreme weather, particularly stormwater management.

The 2014 Provincial Policy Statement issued under the Planning Act advises planning authorities of the need to consider development that reduces GHG emissions and reduces the potential risk of climate change related events like droughts or intense precipitation.

Other policies and standards which may be applicable to this Project include:

- The City of Toronto's TGS
- MECP's 'Considering Climate Change in the Environmental Assessment Process' guide

5.3 Considering the effects of the Project on climate change

The Earth is approaching its climate change planetary boundary threshold due to anthropogenic activities, such as construction. Since the climate-carbon cycle affects the planet's warming and intensifies environmental impacts, it is imperative to evaluate the Project's effect on climate change. This is aligned with the City of Toronto vision and mission to make Toronto a sustainable and resilient place to live. The following section provides a high-level qualitative assessment of whole life carbon and urban ecology, based on Ontario's EA guide. It also proposes mitigation measures to reduce the Project's impact on climate change, which is paramount to any construction project.

Exhibit 5.2 Rendering of the MGT © West 8 + DTAH

5.3.1 Whole life carbon

For the future built infrastructure assets, the GHG emissions can be evaluated under a whole life carbon approach, from cradle-to-grave. The Project consists of the planning and construction of light-rail transit guideways, portals, bicycle facilities, pedestrian promenades, roadways, and public spaces. As part of the Project, some existing elements will be redesigned, expanded, or reconstructed such as the MGT, Queens Quay-Ferry Docks LRT Station, Union LRT Station LRT Loop, the west portal, utilities, and pedestrian facilities. The Project also requires the building of new features, for example: the east portal, slip infill for public spaces, pedestrian promenades, and TPSS.

Planning and construction activities, which require large quantities of materials, will lead to **embodied carbon emissions**. Construction materials such as concrete, structural steel, steel reinforcement, asphalt and granite necessitate large amounts of energy and fuel consumption for their extraction and fabrication. Other sources of embodied GHG emissions will come from transportation of materials, on-site mobilization, construction activities and end-of-life management. Most of the embodied carbon generation will happen over the construction period before the infrastructure goes into service, especially in the carbon due to material production (also known as upfront carbon). The fact that the majority of built assets' carbon lies in the upfront carbon has been well studied. The reuse of existing structures in the Project will save on the end-of-life emissions from demolition or deconstruction and will avoid the emissions from new material production and assembly.

Over the service life of the LRT infrastructure, electricity and energy used for operations and maintenance will produce **operational carbon emissions**. This includes energy for operating the trains and stations.

By offering an opportunity to reduce automobile dependency by providing an accessible active-transportation and electrified-transit network, the Project aims to reduce **user carbon emissions** in the long term. User carbon is related to the GHG emissions from passenger usage and considers reductions in GHG emissions resulting from modal shifts towards more sustainable modes. The reduction in automobile dependency will deliver considerable benefits in terms of diminished congestion which will lower GHG emissions and improve air quality. The 2041 scenario outputs from the City of Toronto's EMME model support the assumption

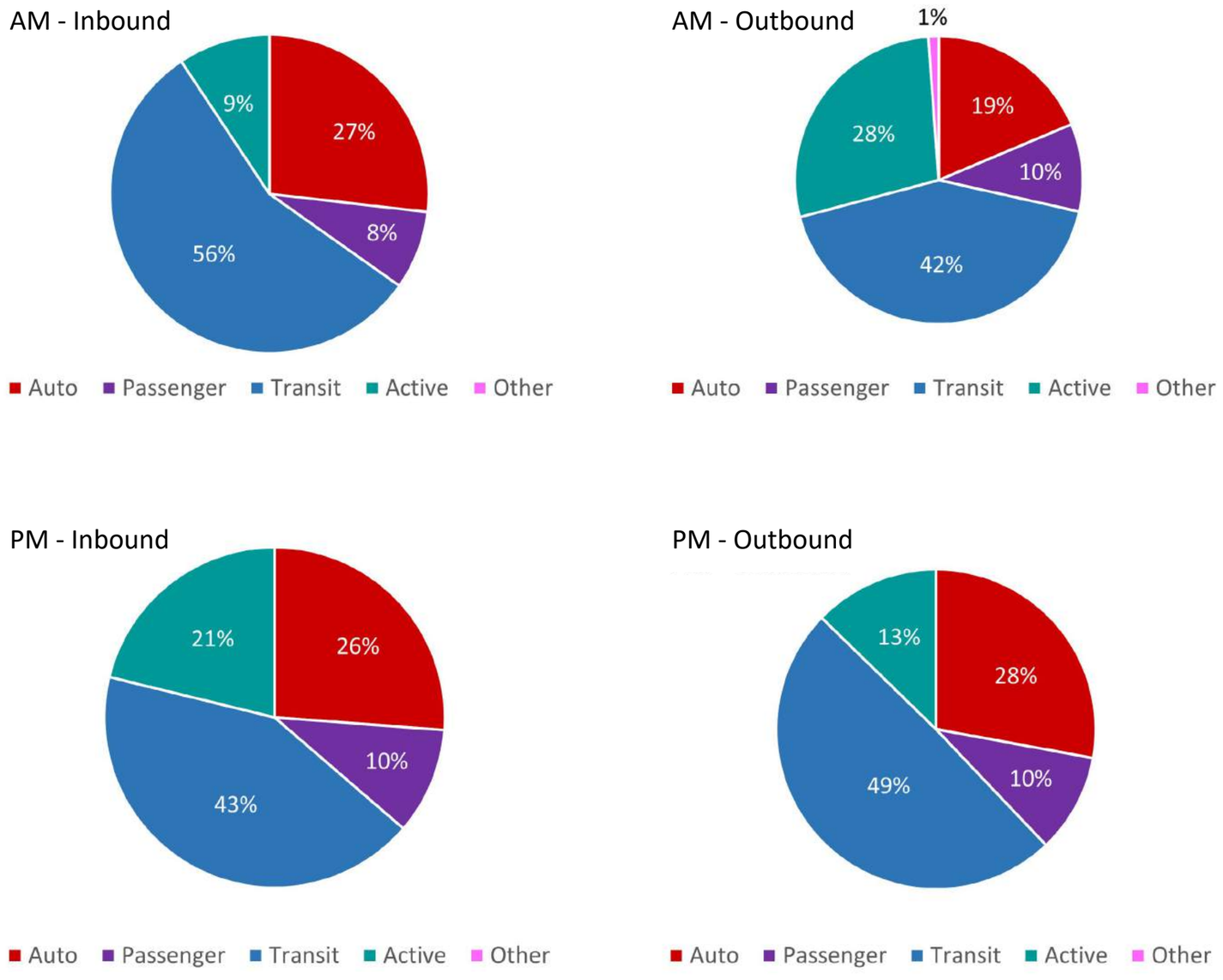


Exhibit 5.3 2041 AM and PM peak hour mode shares for inbound and outbound trips

of significant modal shift to transit and active modes as a result of service provision and overall improvements within the Project footprint (Exhibit 5.3).

Potential savings in user carbon can offset embodied and operational carbon over the service life. The calculation of the payback period provides an estimate as to when the Project will become a GHG emission saver.

The Annual and Net GHG Impact figure shown in Exhibit 5.4 is provided for schematic purposes only. The figure shows the relationship between embodied, operational and user carbon and payback period over the service life of an LRT project. It is not representative of the Project, since a whole life assessment has not been completed at this stage for the Project as a whole. In general, it is assumed that the electricity grid will become more efficient and greener, which will affect both operational and user carbon. The figure does not include end-of-life embodied carbon, which would generate GHG emissions.

Design alternatives and mitigation measures should thus focus on embodied and operational carbon from cradle-to-grave. It is recommended that a GHG mitigation plan be integrated in the Project development. The intent is to assess the whole life carbon of the Project over its service life, and to establish carbon targets and strategies to reduce the global warming impact from industry averages or a business-as-usual reference. The implementation of mitigation methods will depend on market availability.

An initial embodied carbon assessment was completed by WSP for the Queens Quay East area of Area B [1], which compares the proposed design to a baseline scheme. The evaluation identifies concrete as the most impactful material, which is why the design suggests the use of Portland limestone cement as opposed to standard Portland cement.

As stated by WSP in its report [1], the first step to monitoring and mitigating carbon emissions is to quantify them. Similar analyses should be done for the rest of the Project, and results should be compiled for the Project as a whole. Whole life carbon assessments will help to identify and track reductions against a target and to provide some insights on the impact of large multidisciplinary infrastructure on climate change. The Project can compensate its GHG emissions with third party certified carbon offsets to further decarbonize emissions.

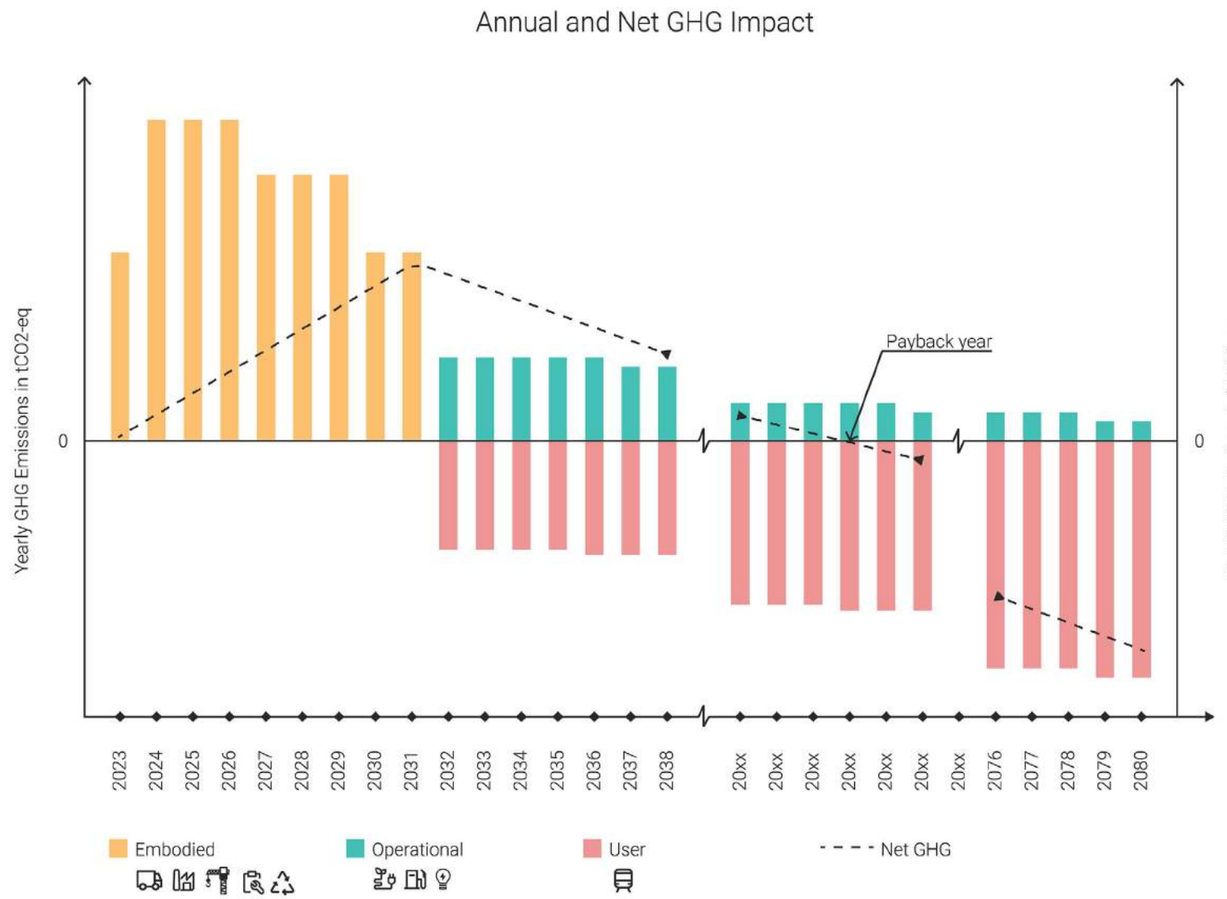


Exhibit 5.4 Annual and net GHG impacts

Exhibit 5.5 summarizes general whole life carbon measures that are either currently integrated in the Project design or recommended for additional reduction. The recommended actions should be considered as early as possible within the design stage and with relevant stakeholders (client, engineers, contractors, suppliers).

The suggested solutions should be evaluated for feasibility and costs over the service life of the infrastructure assets. They also align with Envision and Leadership in Energy and Environmental Design (LEED) credits should the Project aim for sustainability certifications.

Mitigation measures	Recommended actions (bold actions are currently integrated in the design)	Recommended monitoring activities and related actions
Embodied carbon		
Reuse of existing materials and structures	• **Use of existing stations and portals, promenades, and utilities**	During the Design Phase: • Designers should complete a baseline GHG mitigation assessment including an assessment of the embodied carbon of the new infrastructure. Targets could be established. • The recommendations listed can be included as specifications for material procurement and design requirements which would result in a reduction in embodied carbon from the baseline GHG assessment, thereby supporting target achievement.
Maximize building and infrastructure asset use	• Design assets for more than their basic functions if possible (e.g., other projects have used station buildings to host cultural events)	
Use of recycled materials locally sourced to reduce use of virgin materials	• Use recycled concrete • Use recycled asphalt • Use recycled concrete as aggregate	
Specify low carbon concrete and other materials	• Reduce use of cement • Increase Supplementary Cementitious Materials as cement replacement • Use Portland-limestone cement • Use low carbon concrete technologies available on the market, such as CarbonCure, Carbicrete and CarboClave • Switch from prescriptive-based concrete specification to performance-based concrete specification • **Replace high carbon materials with timber or other low carbon materials (ex: structure of the WaveDeck)**	
Optimize structural systems and material use for permanent and temporary structures	• Reduce temporary works to avoid material surplus that will not be part of permanent structures	
Improve construction means and methods to reduce construction waste, as well as electricity and fuel-consumption use from heavy machinery	• Use alternative fuels or electric vehicles • Reduce idle times and improve on-site logistics • Reduce potable water use	During the Construction Phase: • Provisions for construction emissions should be specified in the EMP and monitored.
Select low carbon products and procure from responsible and sustainable sources	• Request third party verified Environmental Product Declaration in compliance with ISO 14040 and 14025 with Global Warming Potential (GWP) values (other impact categories)	During the Design and Construction Phases: • The Environmental Product Declarations should be utilized for the GHG mitigation assessment and may be utilized to determine reductions to the Project's overall embodied carbon based on material selection.

Exhibit 5.5 Potential carbon reduction measures

Mitigation measures	Recommended actions (bold actions are currently integrated in the design)	Recommended monitoring activities and related actions
Operational carbon		
Improve energy performance	• Integrate passive design and cool roofs • Integrate heat recovery • Maximize natural light to reduce electricity • Avoid energy loss • Follow proper commissioning	During the Design Phase: • Energy models should be completed to determine estimated energy consumption of building and traction power loads. This can inform the operational carbon of this Project. • Metering equipment should be specified to measure actual energy consumption. During the Operations Phase: • Commissioning and monitoring of the system should take place to allow for tracking of energy consumption.
Efficient electricity consumption	• Implement light and heat controls, motion sensors • Install LED lighting	
Improve energy use monitoring	• Energy metering	
Increase traction power efficiency	• Optimize regenerative breaking • Optimize energy storage infrastructure	
Whole life carbon		
Carbon offsets	• Select third party certified carbon offsets to decarbonize project	• For projects intending to meet decarbonization goals, offsets may be explored. High quality and verified offsets are recommended as they provide the most value of reducing embodied carbon and/or operational carbon of the Project.

Exhibit 5.5 continued Potential carbon reduction measures

5.3.2 Urban ecology

The health of urban ecosystems and the implementation of nature-based solutions will affect the Project's impact on climate change.

The Project sits on top of infilled land and urban brownfields. Since the Project is located in a highly urbanized environment, construction activities will not affect major existing carbon sinks (since none are present). The Project plan includes restoring aquatic habitat impacted by slip infill through a variety of fish habitat enhancement features, as described in Section 4.3.2. The design will also integrate green/blue infrastructure and low-impact development, such as bioswales, which can also include embodied carbon recommended mitigation measures. Vegetation strategies, which are detailed in Section 4.3.3, will compensate for tree removal. In fact, the design proposes to increase the number of street trees, planting beds, and softscape areas, compared to existing conditions. It also intends to select species appropriate for the urban context and its limits, such as trees that do not require deep soil volumes and drought-tolerant breeds that need low maintenance and little irrigation.

Trees not only support with stormwater management but also heat island effect and carbon sequestration potential. Various activities are involved in the urban tree planting, maintenance, and disposal, which can affect the positive carbon impact of trees. As explained in WSP's report [1], the sequestration potential of trees depends on several factors, such as the species, water availability, soil nutrients, temperature, age, and atmospheric gases. It is thus possible that the nature-based strategies will not offer carbon sink benefits. From WSP's analysis [1], the vegetation planting will have a small positive or negative influence on the overall Project's embodied carbon emissions. However, tree planting offers advantages aside from total carbon impact, like improving urban ecology, micro-climate conditions, air quality and biodiversity.

The Project should also maximize natural parks, include the planting of native species, the control of invasive plants, and the reduction of pesticide and fertilizer usage. By mimicking nature as much as possible, the impacts of the Project on climate change can be reduced. Where possible, the Project should maximize the permeability of built surfaces and avoid impermeable surfaces, which not only are more susceptible to climatic events but also require additional management systems.

Various innovative GI solutions have been proposed in WEST 8 + DTAH's report [2], such as heated paving, smart crosswalks and in-ground lighting. However further evaluation is necessary to understand their durability and usefulness in the long-term from a carbon analysis perspective.

Exhibit 5.6 summarizes some mitigation measures related to urban ecology that are integrated into the current design or that are recommended for consideration in detailed design.

Mitigation measures	Recommended actions (bold actions are currently integrated in the design)
Restore aquatic/terrestrial habitat	• **Build block walls and slips** • Integrate habitats for living ecosystems (ex: urban beehives) to increase biodiversity
Restore vegetation	• **Increase vegetation through tree compensation** • **Select appropriate plant species for urban context** • **Plant native species** • Reduce use of fertilizers and pesticides • Integrate green roofs and walls on built infrastructure
Integrate green/blue infrastructure	• Use bioswales
Mimic nature's assets	• Use more pervious materials • Avoid impermeable surfaces when possible • Use bio-based materials • Integrate more natural stormwater management • Maximize park space • Integrate biomimicry and biophilic design

Exhibit 5.6 Urban-ecology mitigation measures

5.4 Considering potential effects of climate change on the Project

Traditionally infrastructure is designed using data informed from historical weather records, however this may not adequately capture the future operating environment due to changes in the climate. Climate change is now being integrated into infrastructure planning and design as a way of building more resilient and robust systems. Incorporating sustainability and resiliency early on in the decision-making process provides a level of adaptability to changes in future weather and climate uncertainty.

5.4.1 Climate parameters and trends

Future GHG emissions, and the corresponding future climate, is uncertain. To address this uncertainty, climate models have been developed that assume various emissions scenarios, known as Representative Concentration Pathways (RCPs). The Intergovernmental Panel on Climate Change considers RCP 8.5 as a high emissions scenario which represents the current trajectory of increased GHG emissions and population growth through the end of the century with nominal policies to reduce emissions. Whilst a worst possible scenario, it is commonly used when identifying potential climate change induced risks. Projections for the Toronto region based on RCP 8.5 are presented in Exhibit 5.7.[29, 30, 31] The Toronto region will likely experience a warmer and wetter climate, along with more variable weather patterns including higher intensity storms.

5.4.2 Impact on different components and mitigations

5.4.2.1 Precipitation

Increases in the intensity of extreme precipitation events can result in larger volumes of water being discharged to stormwater systems at one time. The stormwater management design in Areas A and B for the Project will strive to adhere to guidelines such as Toronto and Region Conservation Authority (TRCA) Low Impact Development Stormwater Management Planning and Design Guidelines, City of Toronto Green Streets Technical Guidelines, and MECP's Stormwater Management Planning and Design Manual. During the detailed design phase, it is recommended that further analysis with respect to climate change related impact on the intensity-duration-frequency curves be considered to account for and provide resiliency against extreme precipitations.

Theme	General Projections	Trend	Confidence
Precipitation	10 to 20 percent increase in annual average precipitation by the end of 2100 Increase in the number of extreme precipitation days and the intensity of extreme precipitation	↗	High
Snowfall	Snowfall Decrease in snowfall and snow covering Earlier snowmelt	↘	High
High temperatures	Increase in daily maximum air temperature A 6-fold increase in the number of days above 30 °C is expected by end of century	↗	High
Low temperatures	Less severe cold temperatures in winter Increase in daily minimum temperature Increase in frost free period	↗	High
Drought	Increased likelihood and intensity of future drought	↗	Medium
Wind	Increase in frequency of extreme wind events	↗	Low
Lake water level	Downward trend in mean water levels combined with an increase in variability due to extreme weather events	→	Low

Exhibit 5.7 Toronto region climate projections for second half of 21st century

The east end of Area B is situated in an existing flood plain zone as defined by TRCA. As climate change increases the potential for more powerful and unpredictable precipitation, the threat of flooding in the Toronto region's rivers increases. Extensive civil engineering works including flood management are proposed for this area as part of the Don Mouth Naturalization and PLFP project.

It is expected that projected changes to temperature and precipitation will influence future groundwater levels; however, the magnitude and even direction of change is not clear. The design of below ground structures should consider the potential impact of changes to the groundwater levels due to climate change. Given the proximity to the lakeshore, a simple conservative assumption would be to assume peak groundwater levels correspond to ground surface level.

Due to the proximity to the lake and the role of Queens Quay East as a low point and overland flow route, the elevation of the groundwater table is the major limiting design parameter for the design of infrastructure (green or grey) in the street. This challenge is being addressed in several ways.

Works adjacent to the water are being designed to the TRCA's 2020 regulatory 100-year high water level of 76.20 m. This includes raising existing dockwall elevations and designing new dockwalls to this elevation.

Much of the Queens Quay East corridor is constrained by existing development, infrastructure and overland flow routes, but where possible, surface grades are being raised. This is especially applicable to the Queens Quay East extension past Parliament Street, where the right-of-way is currently undeveloped.

5.4.2.2 Snowfall

Snowfall and snow cover duration are projected to decrease in the future due to warmer and shorter winters. However, daily extreme precipitation events are projected to increase in intensity, some of which may precipitate in the form of snow. The operational and maintenance plan for snow clearing of the rail track is expected to be reactive to observed changes in snowfall patterns.

Snow loading on structures is not predicted to be adversely impacted by climate change.

5.4.2.3 High temperatures

Hotter temperatures are projected in the future and will increase the severity and duration of heatwaves. The potential impacts of extreme temperatures include:

- Greater thermal expansion of trackwork, pavements and structures
- Reduced thermal comfort for occupants of the underground Queens Quay-Ferry Docks LRT Station and Union LRT Station
- Reduced thermal comfort for riders waiting at above ground stations and users of the multi-use path
- Reduced thermal comfort for maintenance workers

The design detailed in Section 2.3 currently includes significant hard and soft landscaping in the form of station canopies, trees, and native planting. Collectively these landscaping features will improve outdoor thermal comfort by providing shading and reducing the urban heat island effect.

The design of expansion joints during the detailed design phase should consider the projected increase in temperature range due to climate change.

The thermal comfort within the underground stations should be considered during the detailed design phase. The performance of the stations' passive cooling should be studied using future design day conditions to ensure they can maintain acceptable temperatures.

5.4.2.4 Low temperatures

Milder and shorter winters are projected in the future due to increasing temperatures. As a result, the frost depth is also projected to decrease. These changes are not likely to negatively impact the Project.

5.4.2.5 Drought

Vegetation strategies, which are detailed in Section 4.3.3, propose the use of drought resistant species which will be more resilient against increasingly frequent and severe droughts whilst also reducing the irrigation demands of the Project.

5.4.2.6 Wind

There is limited research on the projected changes to the mechanisms in Canada that drive extreme wind speeds. In general, the frequency and intensity of extreme windstorms may increase in the future, although the magnitude of the change is very uncertain. The Project is not anticipated to be vulnerable to future increases in the frequency of high winds.

5.4.2.7 Lake water levels

Lake water level is influenced by many mechanisms such as evaporation, ice cover, precipitation, water inflow, snowmelt, and human-controlled discharge rates. In the future, average lake levels may decline due to evaporation rates exceeding increases in precipitation, but this projection is uncertain. The elevation of the Project including the east portal entrance is higher than projected extreme lake water levels and for this reason lake water rise is not considered to be a high risk for the Project.

5.5 Future commitments

To consider the effect of the Project on climate change and the potential impact of climate change on the Project, the following commitments are recommended for the detailed design stage. The recommended commitments are based on the documents available at the time of authoring.

- Early stakeholder engagement should be coordinated to develop a sustainability plan to include a GHG assessment and a climate change risk assessment and distribute responsibilities and tasks. The GHG assessment and climate change risk assessment should be conducted no later than 60 percent design.
- Whole life carbon assessments should be carried out for the Project as a whole as the design progresses.
- The Project plan should consider mitigation measures, such as the ones recommended in this report, and set specific targets to reduce its carbon footprint across the service life of the assets.
- The Project should be designed to the more onerous of current and climate change adapted temperature and precipitation conditions to account for the range of possible future climate. The future scenario and time horizon adopted should be appropriate for the design life of the system under consideration.
- The Project plan should include technical specifications for the scope of works to ensure the design and construction of a resilient and low emitting infrastructure.
- The Technical Guide for River and Stream Systems: Flooding Hazard Limit (2002) should be reviewed and applied during detailed design. The methodologies and standards detailed in it will be used to assess potential risks, guide design and determine applicable mitigation measures to reduce the risk of flooding, if applicable.

6.0 Consultation and engagement process

© West 8 + DTAH

Image: Rendering of Yonge Slip

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

6.0 Consultation and engagement process

This chapter documents the engagement and consultation approach undertaken by Waterfront Toronto, the City of Toronto, the TTC, and their consultants to gather feedback and collect questions on the Project.

This TPAP follows the consultation requirements and objectives outlined by MECP which are to:

- Provide information on which transit project was selected, including:
    - o the assessment and evaluation of the impacts of the transit project and other methods considered;
    - o the criteria for the assessment and evaluation of those impacts; and
    - o studies completed with respect to those impacts.
- Provide information about the proposed measures for mitigating any potential negative impacts of the transit project.
- Provide information about the way the proponents intend to monitor and verify the effectiveness of the proposed mitigation measures.
- Discuss with Indigenous communities any constitutionally protected Aboriginal or treaty right that is identified as potentially being negatively impacted by the transit project.
- Discuss with Indigenous communities any measures identified by the Indigenous community for mitigating potential negative impacts on constitutionally protected Aboriginal or treaty rights.

The consultation plan identifies a commitment to the following principles to be applied throughout pre-consultation and during the TPAP:

- Provide engagement that is relatable. During consultation, it will be made clear what is and is not up for discussion. Residents and stakeholders will understand how to provide feedback on the matters that are most important to them. The information will be approachable, engaging, and relevant.
- Provide engagement materials that are topical and audience specific. All materials should be specifically tailored for those it is intended to reach.
- Document community and stakeholder input and report on what is heard and how it will be used to inform the study. It is essential to ensure that the feedback loop is closed.

More information on the Consultation Strategy can be found in Appendix K.

6.1 Pre-engagement activities

Prior to beginning consultation and engagement, the Proponents identified persons who may be interested in the TPAP and established a corresponding website.

6.1.1 Transit Project website

The City of Toronto established a Waterfront East LRT Extension website. The website provides Project updates, reports, and details about opportunities for involvement. TPAP notices will be posted to this website.

6.1.2 Identification of interested persons

Persons who may be interested in the Project were identified prior to beginning consultation to ensure that interested persons were sufficiently engaged.

6.1.2.1 Regulatory agencies and other stakeholders

The proponents identified regulatory agencies to be consulted as part of the TPAP using Schedule 2 of O. Reg. 231/08. The agencies consulted include:

- **Federal**: DFO; Transport Canada (TC); Environment and Climate Change Canada (ECCC); Ports Toronto; Impact Assessment Agency of Canada (IAAC)
- **Provincial**: MECP; Ministry of Natural Resources and Forestry (MNRF); MCM; Ministry of Tourism, Culture, and Sport (MTCS); Ministry of Municipal Affairs and Housing (MMAH); Metrolinx; Ministry of Colleges and Universities (MCU); Ministry of Mines; Ministry of the Solicitor General (MSG); Ministry of Transportation (MTO); Ministry of Economic Development, Job Creation and Trade (MEDJCT); Ministry of Energy
- **Municipal**: TRCA; TPH; Toronto Catholic District School Board (TCDSB); Toronto District School Board (TDSB); Toronto Fire Services; CreateTO
- **Other**: Toronto Hydro; Hydro One; Ontario Power Generation; George Brown College; Université de l'Ontario français; Ontario College of Art and Design; University of Toronto; Redpath Sugar; Westin Harbour Castle Hotel; Private utility operators
- **Union Station**: Ontario Motor Coach Association; VIA Rail, Canadian National Railway (CN Rail), Canadian Pacific Railway (CP Rail)

6.1.2.2 Indigenous communities

Waterfront Toronto contacted the Environmental Assessment Branch of MECP to help identify Indigenous communities that may be interested in the Project. On November 8, 2022, the Ministry issued a letter to the Proponents identifying these communities.

The Crown has a duty to consult communities when it knows about established or credibly asserted Aboriginal or treaty rights and contemplates decisions or actions that could adversely affect them. Through the letter issued, the Ministry identified that it is delegating the procedural aspects of consultation to the Project Proponents.

The Crown's preliminary assessment of Aboriginal community rights, potential Project impacts, and the identified communities found that the following communities should be included in the consultation process:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River (through both the Elected Council and Haudenosaunee Confederacy Chiefs Council)
- Huron-Wendat Nation (if there are potential archaeological impacts)

The Ministry's letter also identified the responsibilities of the Proponents for procedural aspects of consultation:

- Providing First Nation and/or Métis communities with information about the proposed Project/activity including anticipated impacts, and information on timelines;
- Following up with First Nation and/or Métis communities to ensure they received Project/activity information and that they are aware of the opportunity to express comments and concerns about the Project;
- Gathering information about how the Project could adversely impact the relevant Aboriginal and/or Treaty rights (e.g., hunting, fishing) or sites of cultural significance (e.g., burial grounds, archaeological sites);
- Considering the comments and concerns provided by First Nation and/or Métis communities and providing responses;
- Where appropriate, discussing potential mitigation strategies with First Nation and/or Métis communities;
- Bearing the reasonable costs associated with these consultation opportunities; and
- Maintaining a Consultation Record and providing copies to MECP.

6.1.2.3 Property owners within 30 metres of Project

All property owners within 30 m of the Project footprint will be contacted as part of the TPAP.

6.2 Pre-TPAP consultation

The following sections provide a summary of consultation on the Project that was undertaken prior to the Notice of Commencement. Note that some engagement that has taken place to date has covered the entire WELRT from Union LRT Station to the Villiers Loop, and as such, some of the summaries of pre-planning engagement touch on areas outside of the Project footprint.

6.2.1 Public engagement

Beginning in February 2021, Waterfront Toronto, the TTC, the City of Toronto, and their consultants held three rounds of engagement with members of the public to provide information on the Project. Due to COVID-19, these were conducted as Virtual Community Consultations and were accompanied by an online survey that could be accessed following the Virtual Community Consultation.

Information about the Virtual Community Consultation and online survey were provided using the following communication tools during each round of pre-consultation:

- A Project web page hosted by the City of Toronto.
- Print mail-outs to over 41,000 residential and commercial addresses within the area of Spadina Avenue to the west, King Street to the north, the Don River to the east, and Lake Ontario to the south.
- Direct communication through a Project mailing list and monthly newsletters from Waterfront Toronto and Councillor Joe Cressy.
- Social media promotion by the City of Toronto, the TTC, Waterfront Toronto, and their consultants.

Throughout this engagement, the Project team was able to receive comments and questions by email to the Project-specific email address (waterfrontlrt@toronto.ca). A summary of the feedback received through these emails is included in Appendix K.

The following subsections detail at a high-level the approach and feedback received from the public during the three rounds of engagement conducted between February 2021 and April 2023.

6.2.1.1 Round 1 – Winter 2021

Round 1 of public engagement focused on introducing the Project's preliminary design and engineering scope, providing a summary of why a TPAP is being undertaken to update the previous EAs for the area, and outline proposed design elements.

Design elements and topic areas that the team sought feedback and questions on during this round of consultation included:

- The designs of Union LRT Station and Queens Quay-Ferry Docks LRT stations;
- The Portal Selection Study;
- Queens Quay East Street Design from Yonge Street to Parliament Street;
- The Network Phasing Study; and
- The TPAP.

A virtual public meeting was hosted using Webex Events including opportunities for participants to learn about updates to the preliminary design and engineering, ask questions to the Project team, and provide comments. Following the meeting, an online survey was hosted on Checkmarket (the City of Toronto's survey platform) from February 17, 2021 to March 4, 2021. In total, 364 people attended the Virtual Community Consultation on February 17, 2021. Another 278 people viewed the recording of the Virtual Community Consultation posted afterward. 3,026 people viewed a series of six pre-recorded videos. In total, 488 individuals replied to the online survey.

Key feedback from this round of consultation included:

- **Design of Queens Quay-Ferry Docks LRT Station and Union LRT Station**: Participants were generally supportive of the conceptual designs of Queens Quay-Ferry Docks Station and Union LRT Station. Participants frequently referenced the importance and need for the proposed improvements to signage and wayfinding, accessibility improvements, planning for peak demand, station beautification, and future-proofing the design to anticipate future demand.
- **Portal selection study**: Many participants were supportive of the portal option located west of Yonge Street (Option/Alternative 2). They noted the opportunities this location would enable, including the creation of an iconic public open space at the foot of Yonge Street, and reduction of existing conflicts between pedestrians, cyclists, and vehicles along the MGT. Participants who preferred the portal option east of Yonge Street (Option/Alternative 1) often expressed concerns about infilling required for a portion of the slip in Option/Alternative 2, citing aesthetics (such as obstructing views of Lake Ontario) and environmental reasons (such as the impact on aquatic life in the Inner Harbour), and concerns about water taxi use of this slip.
- **Queens Quay East street design**: Participants identified the importance of clearly differentiating the proposed cycling track on the MGT to mitigate potential conflict areas for people riding bikes and other visitors to the waterfront. Overall, participants stressed the importance of the waterfront as an iconic part of the city that should feel welcoming and connected to the city's past and present. Participants were supportive of the variety of seating areas, lighting, hardy vegetation, and wayfinding improvements.
- **Network phasing study**: Participants were mostly supportive of phasing the development of the Project to allow through-service of the streetcar along Queens Quay while the Queens Quay-Ferry Docks Station and Union LRT Station undergo expansion. During this time, a bus connection between Queens Quay and Union LRT Station would be in place. Participants generally preferred the option to establish streetcar service along Queens Quay, supported by an interim bus service that connects riders between Queens Quay and Union LRT Station while improvements to the Bay Street streetcar tunnel take place. Participants frequently justified their selection indicating that getting streetcar service on Queens Quay East as soon as possible should be a top priority to respond to growth east of Yonge Street. Participants consistently identified the inconvenience of needing to transfer to reach Union LRT Station as their top concern in both options.
- **TPAP**: Participants posed a variety of questions about the TPAP, with most interest focused on how this process will consider the Ontario Line; aquatic impacts posed by the potential partial Yonge Slip fill; construction, noise, and air quality impacts; and flooding and climate change risk assessments.

A complete summary of the feedback received in Round 1 is included in Appendix K.

6.2.1.2 Round 2 – Spring 2021

Round 2 of public engagement focused on summarizing changes to the preliminary design and engineering elements from Round 1 in response to further technical analysis undertaken and public feedback received on these elements. Additionally, this round of consultation introduced new design elements for feedback. Design elements that the team sought feedback and questions on in this round included:

- The updated designs of Union LRT Station and Queens Quay-Ferry Docks LRT stations;
- The proposed reconstruction of Bay Street between Queens Quay and Front Street;
- An update on the Portal Selection Study;
- An update on the Queens Quay East Street Design from Yonge Street to Parliament Street;
- New information on the extension of Queens Quay East from Parliament Street to Cherry Street;
- New information on a future connection from Queens Quay East, north underneath the rail corridor to connect with the Cherry Street loop;
- A preliminary preferred first phase of delivery for the LRT, travelling from Union LRT Station along Queens Quay, south at Cherry Street through the Port Lands to a new loop at Polson Street; and
- The TPAP.

The meeting was hosted using Zoom Webinar, including opportunities for participants to learn about updates to the preliminary design and engineering, ask questions to the Project team, and provide comments. Following the meeting, an online survey was hosted on Survey Monkey from June 21, 2021 to July 11, 2021. In total, 254 people attended the Virtual Community Consultation on June 21, 2021, 180 people viewed the recording of the Virtual Community Consultation, and 235 individuals replied to the online survey.

Key feedback from this round of consultation included:

- **Design of Union LRT Station and Queens Quay-Ferry Docks LRT Station**: Participants were generally supportive of the designs presented for Union LRT Station and Queens Quay-Ferry Docks LRT Stations. Participants were generally interested in further refinements to the design that explore improving connections to neighbouring properties and destinations, improving station accessibility, and ensuring the stations achieve a high level of design that aids with wayfinding while remaining aesthetically pleasing.
- **Reconstruction of Bay Street**: With respect to the reconstruction of Bay Street, participants identified the importance of wider sidewalks and enhanced public realm, trees and plantings, and dedicated and protected bicycle infrastructure as the top three priorities for future improvements to Bay Street between Queens Quay and Front Street.
- **Portal canopy design**: Participants were generally supportive of the proposed portal canopy concept and identified that it has the potential to serve both the functional purpose of defining the use of the portal for streetcars as well as serve as an iconic part of the public realm. Participants offered feedback suggesting the use of low-maintenance materials, opportunities to add colour through paint or lighting, and the opportunity to have the design reflect its context on the waterfront.
- **Yonge Slip**: Participants were generally supportive of the revised design for the Yonge Slip, seeing it as an improvement to the existing condition and an opportunity to create an iconic starting point to Yonge Street. Participants emphasized the importance of programming that animates the slip once it is complete, access to water, opportunities to sit and gather, and design features that reference the local landscape. Concerns were identified related to the environmental impact of the partial slip fill and pedestrian safety in the driveway area.
- **Queens Quay East Street design and extension**: Participants were generally supportive of the proposed cross-section for Queens Quay East between Bay Street and Cherry Street. Participants appreciated seeing attention to improving mitigation measures for users of the MGT and the promenade to reduce conflicts, and improvements to the planting strategy. Participants identified concerns about pinch points along the trail, and accessibility.
- **Heritage railway tower**: Participants were generally supportive of maintaining the heritage railway tower in its current location and adaptively repurposing it to fulfill a function in the public interest including but not limited to washrooms, information, local history, or food and drink.
- **The network phasing study**: Participants were generally supportive of the decision to proceed to Polson Street in Phase 1, though some expressed concern that by delaying the connection to Distillery underneath the tracks this would set-back overall connectivity of the network.

A complete summary of the feedback received in Round 2 is included in Appendix K.

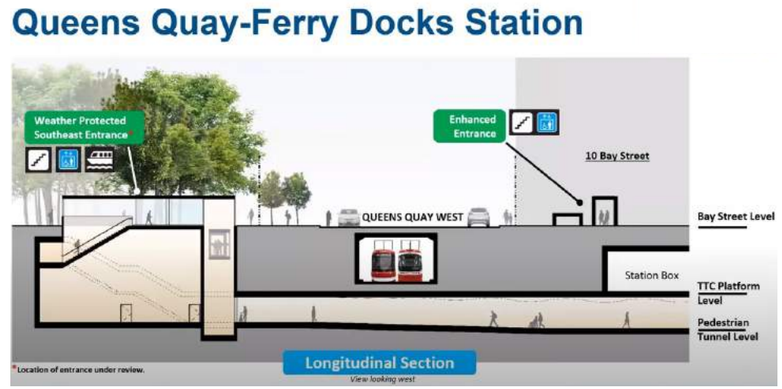


Exhibit 6.1 Screenshot of virtual public engagement meeting, 2021

6.2.1.3 Round 3 – Spring 2023

Round 3 of public engagement focused on summarizing changes to the preliminary design and engineering elements from Round 2 in response to further technical analysis undertaken and public feedback received on these elements. Additionally, this round of consultation introduced new design elements for feedback. Design elements that the team sought feedback and questions on in this round included:

- The updated designs of Union LRT Station and Queens Quay-Ferry Docks LRT stations;
- An update on the tunnel portal design;
- An update on the Queens Quay East Street Design from Yonge Street to Silo Street;
- An update on the Queens Quay East Street Design from Silo Street to Cherry Street;
- An update on the Intersection Pilot Project;
- An update on the Cherry Street Underpass alignment and transitway;
- A preliminary preferred first phase of delivery for the LRT, travelling from Union LRT Station along Queens Quay, south at Cherry Street through the Port Lands to a new loop at Polson Street;
- A new turnaround loop location on Villiers Island; and
- The TPAP.

The meeting was hosted using Zoom Webinar, including opportunities for participants to learn about updates to the preliminary design and engineering, ask questions to the Project team, and provide comments. Following the meeting, an online survey was hosted on Survey Monkey from April 5, 2023 to April 19, 2023 and an additional virtual Q&A session was held on April 11, 2023. In total, 384 people attended the Virtual Community Consultation on April 5, 2023, 180 people viewed the recording of the Virtual Community Consultation, 27 people attended the additional Q&A session, and 150 individuals replied to the online survey.

Key feedback from this round of consultation included:

- **Design of Union LRT Station**: Participants were generally supportive of the updated Union LRT Station streetcar loop design. Participants were generally interested in further refinements to the design that explore improving passenger circulation, connections, and access to points of interests and station accessibility.
- **Design of Queens Quay- Ferry Docks Station**: Participants were generally supportive of the designs for Queens Quay-Ferry Docks station. Participants were generally interested in further refinements to the design that explore improving connections to neighbouring properties and destinations, improving station accessibility, and improving passenger flow and circulation.
- **Updated portal design**: Participants were generally supportive of the updated portal designs and indicated interest in the canopy design that was deferred since the previous meeting in Summer 2021. Participants identified interest in consideration for interim east-west operations during construction of other segments of the Project.
- **Queens Quay East Street design**: Most participants were supportive of the proposed cross-section for Queens Quay East between Bay Street and Cherry Street. Participants appreciated seeing attention to improving mitigation measures for users of the MGT and the promenade to reduce conflicts, and improvements to the planting strategy. Participants identified concerns about pinch points along the trail, and accessibility.
- **Villiers Island Loop Alignment**: Most participants were supportive of the decision to proceed with a turnaround loop on Villiers Island in Phase 1. Participants expressed the importance of building transit in this location first before residential and commercials buildings are developed in the area.

A complete summary of the feedback received in Round 3 is included in Appendix K.

6.2.2 Stakeholder and rightsholder engagement

In addition to public consultation, targeted engagement focused on engaging stakeholders impacted by the Project through the following channels:

- Landowner and User Advisory Committee (LUAC);
- Technical Advisory Committee (TAC); and
- Stakeholder Advisory Committee (SAC).

Additionally, individual meetings were held with other key stakeholders.

6.2.2.1 Landowner and User Advisory Committee

Waterfront Toronto, the City of Toronto, and the TTC formed a LUAC to consult with landowners adjacent to Queens Quay along the proposed route of the Project. The LUAC is composed of condominium/tenant boards, and landowners of existing and future developments along Queens Quay East.

This LUAC is a non-political advisory committee whose function is to provide a forum for feedback, guidance and advice to the Project Team (Waterfront Toronto, the City of Toronto, TTC, and Project consultants) at key points during the consultation process. Specifically, the role of the LUAC is to:

- Act as a sounding board for the Project team to share and discuss ideas and findings;
- Provide guidance, critiques and suggestions on proposed study approaches and concepts;
- Provide a forum for two-way communications between members' organizations and the Project team; and
- Provide feedback on other relevant matters that the Project team refers to the LUAC for comment.

The LUAC has met with the Project team on four occasions, prior to Virtual Community Consultations held between February 2021 and April 2023.

Key feedback received from the LUAC in each round is as follows:

6.2.2.1.1 Round 1 – Winter 2021

One member expressed concern about the amount of lake filling that would be required for the Yonge Slip Plaza and new driveway to access the Westin Harbour Castle Hotel.

Six questions of clarification were asked by LUAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.1.2 Round 2 – Spring 2021

One member noted the importance of overlaying the needs of Maple Leaf Sports Entertainment's events during construction. This was supported by another member who identified the need to coordinate construction mitigation and preserve access to businesses in areas impacted by construction. One member vocalized their support for the Polson Loop, indicating the location would open further development opportunities in the Port Lands.

Seven questions of clarification were asked by LUAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.1.3 Round 3 – Summer 2022

One member expressed their concern about deferring the expansion of Queens Quay Ferry Terminal and whether protections for future expansion opportunities were being considered.

Eleven questions of clarification were asked by LUAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.1.4 Round 4 – Spring 2023

One member noted the importance of enabling the east-west route to operate in early phases of construction, noting that other components have longer construction timelines. LUAC Members were supportive of the turnaround loop on Villiers Island.

Five questions of clarification were asked by LUAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.2 Technical Advisory Committee

A focused TAC of the Project's co-proponents – Waterfront Toronto, TTC, and the City of Toronto – has held regular meetings since early 2020. During these meetings, the co-proponents discussed design and planning issues, analysis requirements, and costing. The design development has been a collaborative process with regular feedback and review from the three organizations.

6.2.2.3 Stakeholder Advisory Committee

Waterfront Toronto, the City of Toronto, and the TTC formed a SAC to consult with stakeholder groups across the central-eastern waterfront. The SAC is composed of resident, ratepayer, and neighbourhood associations; Business Improvement Areas (BIAs); community organizations; and transit advocates.

This SAC is a non-political advisory committee whose function is to provide a forum for feedback, guidance and advice to the Project team (Waterfront Toronto, the City of Toronto, TTC, and Project consultants) at key points during the consultation process. Specifically, the role of the SAC is to:

- Act as a sounding board for the Project team to share and discuss ideas and findings;
- Provide guidance, critiques and suggestions on proposed study approaches and concepts;
- Provide a forum for two-way communications between members' organizations and the Project team; and
- Provide feedback on other relevant matters that the Project team refers to the SAC for comment.

The SAC has met with the Project team on four occasions, prior to Virtual Community Consultations held between February 2021 and April 2023. Key feedback from the SAC in each round to-date is included as follows:

6.2.2.3.1 Round 1 – Winter 2021

SAC members provided feedback on various design elements presented by the Project team. Regarding the LRT stations at Union LRT Station and Queens Quay-Ferry Docks, participants emphasized the importance of convenient and accessible access points to enter/exit the station (including the potential for new access points on adjacent properties as they redevelop), and understandable signage and wayfinding. Concerning the portal, participants identified that the portal west of Yonge Street (Option/Alternative 2) presents the opportunity to improve safety. Participants encouraged the team to continue to explore the trade-offs created through the partial slip fill, and ways to preserve views of the lake. SAC members identified that the design of Queens Quay East should bring improvements to wayfinding, clearly delineate the MGT from the promenade, and should seek to achieve a variety of plantings. Participants expressed concerns about pinch points along the road and conflicts created between users of the right-of-way. Regarding phasing, SAC members noted preferences for expediting the delivery of transit to Queens Quay East. The detailed meeting summary is included in Appendix K.

6.2.2.3.2 Round 2 – Spring 2021

SAC members commended the Project team on improvements to the design of the portal entrances, the intersections along Queens Quay East, and the proposed Phase 1 terminus at Polson Street. Additional participant feedback emphasized the importance of ensuring that with the decision to go to Polson Street, that the connection to Cherry Street remains a priority and continues to be moved forward in planning so that it is shovel ready when funding is available.

Twenty questions of clarification were asked by SAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.3.3 Round 3 – Summer 2022

One member expressed their concern for potential capacity issues from scaling down the platform expansion at Union LRT Station. One member noted that the deferred expansion of Queens Quay Ferry Terminal may impact individuals with accessibility needs.

Eighteen questions of clarification were asked by SAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.3.4 Round 4 - Spring 2023

Members expressed their concern for construction and traffic impacts along Parliament Street and Lake Shore Boulevard East. One member suggested that two elevators be considered for Queens Quay-Ferry Dock Station to better support individuals with accessibility needs.

Thirteen questions of clarification were asked by SAC members and responded to by members of the Project team. The questions and their associated answers are included in the meeting summary in Appendix K.

6.2.2.4 Other stakeholders

Members of the Project team held additional meetings with specific stakeholders and landowners, which were identified for targeted engagement based on identified impacts to their interests, or requests received from stakeholders. The outcomes of key meetings and other communications are summarized in Exhibit 6.2. As documented above, other stakeholders along the corridor had the opportunity to engage with the Project through the LUAC and SAC.

Elected representatives: Briefings with impacted City Councillors take place regularly when there are relevant updates to the Project. Additionally, Councillors who represent areas in the Project scope area are invited to attend public consultations. The Project team has provided regular reports to City Council. City Council approval will be sought before the TPAP Notice of Commencement is issued.

Stakeholder	Date	Summary
141 Bay Street - Hines	General	The Area A Project team held four meetings with Hines, the developers of 141 Bay Street, to discuss potential conflicts between the proposed 141 Bay Street development and the Project.
	September 25, 2020	Area A Design Coordination Meeting was held. During the first two meetings, the conflicts discussed included column locations, passageway obstructions, knock-out panels, and beams. Additional non-urgent items raised for future consideration included egress paths, partition wall modifications, elevations, and construction constraints.
	October 8, 2020	Area A Design Coordination Meeting was held (details provided in Summary for September 25, 2020 meeting above)
	April 23, 2021	Area A Design Coordination Meeting was held. During this meeting, discussions focused on bridge footing design, 81 Bay emergency proposed egress connection, East Teamway proposed egress connection, 141 Bay Street standpipe and egress connection, and P2 level slab loading.
	May 28, 2021	Area A Design Coordination Meeting was held. The topic of this meeting was the Union Bridge Foundation Design.
11 Bay Street	April 22, 2021	The Area A Project team met with the developers of 11 Bay Street to discuss changes to the 11 Bay Street plans and the design interface between the development, which will include an entrance to Queens Quay-Ferry Docks LRT Station, and the Project.
10 & 20 Bay Street	April 28, 2021	The Area A Project team met with Oxford Properties Group to discuss 10 & 20 Bay Street. Topics discussed during the meeting included the feasibility of integrating entry and exit connections from the streetcar with the 10 & 20 Bay Street building, the location of exhaust shafts, climate control, the southwest entrance to Queens Quay-Ferry Docks LRT Station, and the connection to 11 Bay Street.
Residences of World Trade Centre Condos	General	The Residences of the World Trade Centre Condos was identified for targeted engagement in order to discuss the impacts to their properties as a result of locating the east portal between Bay Street and Yonge Street.
	March 27, 2023	The Area B Project team met with the Residences of the World Trade Centre to discuss the design status update focused on Yonge Slip (which was previously identified as an area of interest) and the TPAP.
	April 12, 2023	The Area B Project team provided requested follow-up information on vehicular circulation within the Yonge Slip.
Westin Harbour Castle Hotel	General	The Westin Harbour Castle Hotel was identified for targeted engagement in order to discuss the impacts to their property as a result of locating the east portal between Bay Street and Yonge Street. In addition to this targeted engagement, Barney River is also part of the LUAC and SAC.
	February 7, 2020	Meetings with the Westin Harbour Castle Hotel were held in February and September of 2020 to present the proposed portal location between Bay Street and Yonge Street along the hotel's frontage and to discuss landowner concerns. The proposed location of the portal requires the closure of existing driveways along Queens Quay West and a new access via a signalized intersection at Yonge Street. At both meetings, the Project team provided a summary of technical analyses including traffic analysis, vehicular swept path studies, and demonstration of functional arrangement of the bus, taxis, and service loading activities within the proposed infill. The feedback from Barney River Investments (Barney River), the landowner representatives, included concerns regarding the hotel's operational impacts as it relates to guest and service loading, for which the Project team provided supporting technical analysis to demonstrate the vehicular movements with the proposed driveway relocation, motorcourt alterations, and Yonge Slip plaza design. A key point of discussion was the operation and ownership assumptions around the proposed Yonge Slip plaza, and who and how vehicular access will be managed. The City of Toronto and Waterfront Toronto committed to further discussions around this and Barney River committed to continue working with the City and Waterfront Toronto through next phases of design.
	September 16, 2020	Area B Design Update Meeting (details provided in meeting summary for February 7, 2020).
	April 14, 2023	TPAP Process Update and Area B Design meeting. During the meeting, the Area B Project team presented a detailed Yonge Slip design update and identified a requirement to perform a CHER for the property as part of the TPAP.
	July 6, 2023	Cultural Heritage Evaluation Report site visit. Representatives from Waterfront Toronto, the Westin Harbour Castle Hotel, Barney River, Bousfields Inc. (consultant to Barney River), and Archaeological Services Inc. met on July 6, 2023 to conduct the site visit required for the CHER.

Exhibit 6.2 Summary of pre-TPAP consultation with other stakeholders

Stakeholder	Date	Summary
Redpath Sugar Plant	General	Redpath Sugar Plant was identified for targeted engagement in order to discuss opportunities for the design in front of their property, where space is most limited along the corridor. Redpath submitted a letter outlining their concerns and requests in relation to the detailed design of Queens Quay East for the December 2020 City Council Meeting. Meetings with Redpath Sugar were held in February and June 2021 to discuss Redpath's concerns and present the proposed Queens Quay East design at the concept 10% and 30% design stages. While the intent of the proposed design anticipates a full build out of the 38 m right-of-way across the Redpath frontage upon future redevelopment of the site, it is expected that Redpath will remain in operations with no plans for relocation or redevelopment in the near future. As such an interim condition across the Redpath frontage is integrated into the design as described in Chapter 2. Redpath's key concerns include: • Maintaining the approximately 5 m setback across their building frontage from the existing property line to preserve their existing operations and maintenance access, specifically the drive aisle along the warehouse shed in the east block to accommodate vehicular access to Jarvis Slip; • Provision of an eastbound right turn lane at the main driveway; • Signals controls at driveways; • Accommodating turning radii; • Vessel operations at Jarvis Slip; and • Construction impacts to Redpath operations. During the consultations, Redpath provided additional information regarding routing and frequency of truck movements, vehicle specifications and internal site access patterns. In response, a number of studies and design options were prepared and presented for discussion, ranging from zero impact to the existing property to incremental encroachments to property frontage in order to provide a sufficiently-sized MGT and pedestrian sidewalk. The current design incorporates a shift in the TTC alignment and a reduced public realm across the Redpath frontage. During consultations, Redpath indicated acceptance of possible reconfiguration of the maritime security pedestrian gate if required to suit the proposed Queens Quay East reconstruction, and indicated that construction at the Jarvis Slip including possible regrading and repaving is acceptable as long as the fenced Maritime Security area is maintained or reinstated as per current conditions. Waterfront Toronto and the City of Toronto have committed to ongoing engagement with Redpath through detailed design phases, and Redpath also participates in the LUAC and SAC engagement activities.
	February 10, 2021	WELRT Extension & Redpath Discussion (details in general summary above)
	June 3, 2021	Design Update Meeting (details in general summary above)
	April 4, 2023	The Area B Project team held an additional meeting with Redpath Sugar Plant. The meeting included a walkthrough of the current 30% design layout, including the removal of the westbound left turning movement into Redpath's centre driveway. Redpath noted that they may choose to send the updated design to their transportation consultant for review, and that they are very supportive of the Project as the design currently stands.
	April 5, 2023	Waterfront Toronto provided follow-up information discussed, including the 30% landscape drawings for Queens Quay East across the Redpath property, including configuration of the turning lanes and identified signalization of the intersections for the two main driveways. Redpath has not raised any concerns following this discussion.
Waterfront BIA	September 9, 2021	Design Update Meeting was held.
	March 22, 2023	TPAP Process Update and Area B Design meeting was held, including a refresher on the Project scope, an update on the design, and an overview of the TPAP. The business case and implementation concepts were also discussed. The Waterfront BIA expressed support for the Project.

Exhibit 6.2 continued Summary of pre-TPAP consultation with other stakeholders

Stakeholder	Date	Summary
George Brown College	April 19, 2023	TPAP Process Update and Area B Design meeting was held. The Area B Project team provided an update on the Project scope, the design, the Project status, and next steps. George Brown College expressed that they are very supportive of the Project, and that it will be supportive of George Brown College's current and future operations on the waterfront.
	October 17, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	November 1, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 3, 2023	George Brown College confirmed receipt of the draft EPR and Project materials, and indicated that they are fully supportive of the Project proceeding, with a preference for the soonest possible completion date.
Université de l'Ontario français	November 24, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	November 29, 2023	Université de l'Ontario français confirmed receipt of the draft EPR and Project materials.
Ontario College of Art and Design	November 24, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
University of Toronto	November 28, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
Ontario Motor Coach Association	November 24, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
VIA Rail	November 28, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	December 19, 2023	VIA Rail confirmed receipt of the draft EPR and Project materials.
CN Rail	November 24, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
CP Rail	November 24, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email

Exhibit 6.2 continued Summary of pre-TPAP consultation with other stakeholders

6.2.3 Utility companies

Meetings with utility companies—including Toronto Hydro, Hydro One, Enbridge Gas, and Bell—have provided an opportunity to discuss and coordinate necessary utility relocations as a result of Project implementation. Exhibit 6.3 provides a summary of coordination activities completed to date for the Project.

Utility Company	Date	Summary
Toronto Hydro Electric System Ltd.	February 18, 2021	Introductory Meeting was held for Area A.
	September 13, 2021	30% Design Review Meeting was held for Area A.
	December 12, 2021	Introductory Meeting was held for Area B.
	October 20, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 24, 2023	Toronto Hydro confirmed receipt of the draft EPR and Project materials, and identified that they typically provide feedback further in the design process and have been in contact with TTC regarding the Project.
	December 1, 2023	Waterfront Toronto and TTC committed to continue previous coordination with Toronto Hydro as the Project design advances.
Hydro One	April 14, 2021	Design Coordination Meeting was held for Area A.
	November 19, 2021	Introductory Meeting was held for Area B.
	October 20, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
Enbridge Gas	March 31, 2021	15% CDRS Design Review Meeting was held for Area A.
	September 14, 2021	15% CDRS Design Review Meeting was held for Area A.
	November 25, 2021	Introductory Meeting was held for Area B.
Bell	May 22, 2021	15% CDRS Design Review Meeting was held for Area A.
	September 9, 2021	30% CDRS Design Review Meeting was held for Area A.
	November 25, 2021	Introductory Meeting was held for Area B.
Ontario Power Generation	October 20, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR

Exhibit 6.3 Summary of pre-TPAP consultation with utility companies

6.2.4 Regulatory agencies

Consultation has been undertaken with several regulatory agencies. Project information and meetings have provided an opportunity for various agencies to comment on the Project design and raise concerns. The outcomes of key meetings and other communications are summarized in Table Exhibit 6.4, and notes regarding some stakeholders are provided below.

6.2.4.1 Toronto Transit Commission

As TTC is a Proponent and a part of the Project team, they have been thoroughly engaged in all aspects of the Project, including, but not limited to, the alignment, the portals, the overhead catenary system, TPSS coordination, streetcar maintenance, and service planning.

6.2.4.2 City of Toronto

As the City of Toronto is a Proponent and a part of the Project team, they have been thoroughly engaged in all aspects of the Project, including, but not limited to, road design, active-travel connections, coordination with surrounding precinct-planning initiatives, GI, and lighting.

6.2.4.3 Aquatic Habitat Toronto & Toronto and Region Conservation Authority

As part of the Area B 30% design process, Waterfront Toronto and the Project team initiated preliminary agency consultation on the proposed slip infill through participation at two Aquatic Habitat Toronto (AHT) meetings and subsequent follow-up communications with the TRCA. AHT represents a consensus-based partnership between agencies with a vested interest in the improvement of aquatic habitat on the Toronto Waterfront. The AHT monthly meeting is a platform where projects involving works within the Toronto Harbour are presented to representatives from all levels of government, including DFO, MNRF, TRCA, and Ports Toronto.

At the November 5, 2020 AHT meeting, the Project team provided an introductory presentation on the Project and potential impacts at Yonge Slip based on the 10% concept design. Discussion that followed the presentation included commitment for further coordination with TRCA to obtain additional fish sampling, water information and other data to aid habitat impact assessment, and coordination between the design team, TRCA and DFO to discuss the HEAT requirements and process at a later date once site investigations are completed.

A second AHT presentation took place on October 7, 2021 to provide an update on site investigation data, and updated designs at Yonge Slip. It was generally agreed that a preliminary HEAT model can be initiated to assess habitat impacts and confirm amount of compensation to inform design and whether additional off-site compensation will be required. The Project team committed to coordinating with TRCA to provide necessary information for HEAT model and TRCA will engage DFO to run HEAT scenarios. Strategies for dealing with potentially contaminated sediments within the slips were also discussed, and it was suggested by TRCA that due to historic nature and depth of contaminates, risk mitigation measures like capping in place may be considered in lieu of dredging.

A third meeting with AHT was held in January 2023. Topics included an update on Project status and scope, an update on the TPAP and next steps, and comments and feedback. During the meeting, the need to go through Fisheries Act Authorization and submit a request for review (RfR) once design has progressed was identified.

Additionally, the TRCA reviewed an initial draft of the EPR and provided useful feedback around the presentation of information, which has since been incorporated into the document. The TRCA also noted that a portion of the Project footprint is currently located within the Central Waterfront Screening Area (e.g., the Yonge Slip). For permitting and detailed design stages of this Project that cross into this area, the Proponents will not be subject to TRCA permitting and the Proponents will need to engage Ports Toronto along with possibly other provincial, federal and municipal agencies at the time of design/permitting. However, the TRCA noted that they offer the TRCA Voluntary Project Review (VPR) process to be followed as appropriate. Through the VPR, TRCA would undertake a review of the proposed Project. TRCA staff will provide further input as the EA progresses and when more information is provided to TRCA staff. TRCA also noted that restoration staff are available to assist with the implementation of associated habitat re-creation in and around the Project areas. Staff can provide further input into this aspect of the Project as the Project progresses.

Coordination with TRCA and further engagement with AHT is expected through detail design phases.

Agency	Date	Summary
MECP	General	MECP EAB has been engaged with the proponents throughout the TPAP process, and has reviewed and provided comment on the draft EPR. Comments focused primarily on air quality, noise and vibration, water source protection, and general feedback on the EPR and TPAP process.
MCM	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	September 27, 2023	MCM confirmed receipt of the draft EPR and Project materials
	July 31, 2023	MCM provided comments on the Area B Cultural Heritage Report.
	November 3, 2023	MCM provided comments on the draft EPR. These comments included review of the Cultural Heritage Evaluation Report for 1 Harbour Square, as well as comments related to the EPR. Comments relate to MCM's identified interest in the Project, specifically archaeological resources (including land and marine), BHRs, and CHLs.
MCU	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 16, 2023	MCU confirmed receipt of the draft EPR and Project materials
	November 16, 2023	Meeting was held to provide an introduction to the Project. MCU identified that they would not be providing comments on the draft EPR, but would like to be circulated on additional materials throughout the TPAP process. MCU reviewed Colleges and Universities in close proximity to the Project with the proponents to ensure that they were adequately consulted, and provided contact information for some institutions.
Ministry of Mines	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	Ministry of Mines identified that they would not be providing comments on the draft EPR
MMAH	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 18, 2023	MMAH confirmed receipt of the draft EPR and Project materials
	October 18, 2023	MMAH identified that they would not be providing comments on the draft EPR, but requested to be included in future circulations.
MNRF	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 16, 2023	MNRF confirmed receipt of the draft EPR and Project materials
	October 19, 2023	MNRF provided comments on the draft EPR, including an overview of MNRF mandated interests and the ministry's commenting role.
MSG	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR. As no response was received, it is assumed that the MSG will not be providing comments on the draft EPR.

Exhibit 6.4 Summary of pre-TPAP consultation with regulatory agencies

Agency	Date	Summary
MTCS	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 16, 2023	MTCS identified that the Tourism Policy Unit would not be providing comments on the draft EPR, as the Project is local in nature and their focus is on review of regional projects with potential broader tourism policy implications.
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments from the MTCS Sport, Recreation and Recognition Division on the draft EPR
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments from the MTCS Sport, Recreation and Recognition Division on the draft EPR
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments from the MTCS Sport, Recreation and Recognition Division on the draft EPR. As no response was received, it is assumed that the Sport, Recreation and Recognition Division will not be providing comments on the draft EPR.
MTO	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments from the MTO on the draft EPR. As no response was received, it is assumed that the MTO will not be providing comments on the draft EPR.
MEDJCT	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR. MEDJCT confirmed receipt of the draft EPR and Project materials.
	October 27, 2023	MEDJCT identified that they would not be providing comments on the draft EPR
Ministry of Energy	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 13, 2023	Ministry of Energy identified that they would not be providing comments on the draft EPR.
Metrolinx	General	The Area A team held Project introductory, focused group, and design-interface coordination meetings with Metrolinx Third Party Review, Bridge & Structures, Technical Management Office, and the Project teams of two key Project interfaces (Union LRT Station Enhancement Project and OnCORR) at Union LRT Station. In addition, the Area A design documents have undergone two rounds of design review process with Metrolinx. These meetings and design review comment process were used as basis to develop the 30% design. General agreement on approaches to design and future detailed design coordination was reached, including commitment from TTC in following up with the design review comments from Metrolinx and complying with Metrolinx's System Assurance submission process in the next Project phase.
	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	September 27, 2023	Metrolinx confirmed receipt of the draft EPR and Project materials
	November 6, 2023	Metrolinx provided comments on the draft EPR, identifying that Metrolinx did not have significant comments or concerns at this time. Specific comments were provided on components of the draft EPR, draft AAs, and Area A Cultural Heritage Report and HIAs.

Exhibit 6.4 continued Summary of pre-TPAP consultation with regulatory agencies

Agency	Date	Summary
IAAC	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments from IAAC on the draft EPR. As no response was received, it is assumed that the IAAC will not be providing comments on the draft EPR.
ECCC	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments from the ECCC on the draft EPR. As no response was received, it is assumed that ECCC will not be providing comments on the draft EPR.
DFO	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	September 27, 2023	DFO confirmed receipt of the draft EPR and Project materials and identified that they would not be providing comments on the draft EPR, and directed the proponents to proceed with RfR process if deemed necessary.
TC	September 27, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 24, 2023	TC confirmed receipt of the draft EPR and Project materials, and requested that the proponents self-asses whether the Project will interact with a federal property and/or waterway as identified in the Directory of Federal Real Property, or will require approval and/or authorization under any Acts administered by TC
Ports Toronto	October 2, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 23, 2023	An introductory meeting was held including Ports Toronto and the Project proponents. Waterfront Toronto provided an overview of the Project scope and TPAP, including detailed information regarding the Yonge Slip Lakefill and anticipated expected Project impacts on Ports Toronto. Ports Toronto expressed support for the Project overall, and identified areas for further coordination as the Project advances, including property agreements for lands owned by Ports Toronto, and coordination of future marine transportation uses in the Yonge Slip.
	November 22, 2023	Waterfront Toronto provided meeting minutes, including introductory slides and 30% landscape design drawings for Yonge Slip.
	January 11, 2024	Ports Toronto provided comments on the TPAP. Comments identified that Ports Toronto does not have any major concerns with what is proposed to be constructed at the Yonge Slip and are supportive of the Project overall. Areas were identified for further coordination as the Project progresses, including discussion of property agreements required and coordination of future marine transportation uses in the Yonge Slip.
TRCA	May 19, 2023	TRCA provided comments on an early draft EPR. Comments relate primarily to areas of Planning, interfacing projects, and water resources.
	October 16, 2023	City of Toronto provided responses to previous TRCA comments, along with an updated draft EPR for review via email.
	October 17, 2023	TRCA confirmed receipt of the materials, and requested a summary of changes made to the appendices for the new version of the EPR.
	October 31, 2023	Waterfront Toronto provided a summary of changes to the EPR appendices between the March and October versions.
	December 6, 2023	TRCA provided comments on the draft EPR, including follow-ups from previous comments with further questions related to interfacing projects, shoreline hazard mapping, and further TRCA review later in the Project's development.

Exhibit 6.4 continued Summary of pre-TPAP consultation with regulatory agencies

Agency	Date	Summary
TPH	October 3, 2023	City of Toronto provided an introduction to the Project and draft EPR for review via email. TPH confirmed receipt of the draft EPR and Project materials.
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 24, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 28, 2023	TPH provided comments on the draft EPR, related to areas of air quality, noise and vibration.
TCDSB	October 3, 2023	City of Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR. TCDSB confirmed receipt of the draft EPR and Project materials.
	November 6, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	November 6, 2023	TCDSB provided a summary of their review of the draft EPR, identifying that TCDSB has concluded that there would be no impact to existing TCDSB schools related to this Project.
TDSB	October 3, 2023	City of Toronto provided an introduction to the Project and draft EPR for review via email
	October 4, 2023	TDSB confirmed receipt of the draft EPR and Project materials
	November 7, 2023	TDSB provided comments on the draft EPR. These comments request estimated Project timing, and identify four future TDSB schools being planned in the vicinity of the proposed LRT. TDSB requested that the location of these schools be considered as the Project moves forward. Specific comments were provided regarding the proximity to the Sugar Wharf school and access to the Lower Yonge park for an outdoor play area.
	November 24, 2023	Waterfront Toronto provided follow-up information on the estimated timing for construction of the Project, noting that timing would ultimately be subject to the advancement of capital funding for the Project.
Toronto Fire Services	October 3, 2023	City of Toronto provided an introduction to the Project and draft EPR for review via email
	October 13, 2023	Waterfront Toronto followed up via email requesting any comments on the TPAP or draft EPR
	October 16, 2023	Toronto Fire Services provided comments on the draft EPR. Comments relate to the movement of fire trucks, operation of fire hydrants, identification of emergency access routes, and maintenance of fire routes.
CreateTO	October 17, 2023	Waterfront Toronto provided an introduction to the Project and draft EPR for review via email
	October 18, 2023	CreateTO confirmed receipt of the draft EPR and Project materials
	November 24, 2023	CreateTO identified that they did not have concerns with the Project and would not be providing comments on the draft EPR.

Exhibit 6.4 continued Summary of pre-TPAP consultation with regulatory agencies

6.2.5 Indigenous communities

On November 9, 2022, MECP EAB provided a letter to the proponents and identified Indigenous Communities, including notice that the ministry is delegating the procedural aspects of consultation to the Project Proponents. This letter identified that the following communities should be included in the consultation process:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River (through both the Elected Council and Haudenosaunee Confederacy Chiefs Council)
- Huron-Wendat Nation (if there are potential archaeological impacts)

Consultation with identified Indigenous Communities has been ongoing, consistent with the direction from MECP EAB. A summary of meetings held, comments received, and responses provided will be included in the draft EPR to be posted at the conclusion of the 120-day TPAP period.

6.3 Notice of Commencement

To be completed after start of TPAP

- Copy of Notice to be included in EPR
- List of Notice recipients to be included in EPR
- Newspapers in which the Notice was published to be included in EPR

6.4 EPR review

To be completed after start of TPAP

- Include statements of no concern from interested persons
- Include response to concerns/comments or actions taken to respond to concerns raised (including updates to analysis/design, future commitments)

6.5 Notice of Completion

To be completed after end of 120-day period

- Copy of Notice to be included in EPR
- List of Notice recipients to be included in EPR
- List of newspapers in which the Notice was published to be included in EPR
- List of locations where the EPR was made available for public review to be included in EPR

7.0 Future commitments

Image: Rendering of Queens Quay East

Please note that this is a conceptual rendering provided for illustrative purposes. Details are subject to refinement during design development.

7.0 Future commitments

The TTC, Waterfront Toronto, and the City of Toronto have worked closely with key stakeholders, review agencies, and Indigenous communities to address and resolve issues or concerns. Coordination and consultation will continue throughout the detailed design of the Project.

The following section provides a preliminary set of commitments to be undertaken during the detailed design and construction of the Project. These include

- Future commitments such as those relating to actions, considerations, coordination, and additional studies;
- Permits, approvals, and other legislative requirements that must be obtained and addressed; and
- A summary of committed and recommended mitigation measures and monitoring activities to be undertaken.

The potential impacts, mitigation measures and the associated impacts in these areas have been identified, evaluated and assessed in the earlier sections of this EPR. As part of the normal evolution of a Project, the detailed design phase may lead to refinement of the proposed preliminary design. It is anticipated that changes to the design will not affect the original intent and commitments; however, these commitments should be reviewed further during the detailed design phase of the Project to ensure completeness.

7.1 Future commitments

Prior to the construction and operation of the Project, Waterfront Toronto, the City of Toronto, and TTC commit to completing the actions detailed in Exhibit 7.1.

Theme	Segment	Future commitment
Natural environment	Area B	• Coordinate with DFO to determine requirements for a Fisheries Act Authorization or other approval through the submission of a RfR. This includes completion of the HEAT model to assess aquatic habitat impacts that require offsetting as part of the Project. • Engage in TRCA's VPR process. • Prepare an aquatic compensation plan following the outcome of the HEAT model analysis including the design and implementation of habitat enhancement features into the Project scope for on-site compensation. Coordinate with TRCA for off-site compensation if additional compensation is required. • Update Area B Arborist Report to verify conditions in the Project footprint and laydown areas. • Detail tree establishment and maintenance in the Operations & Maintenance Manual, to be provided as part of the Area B design work at a later design stage.
Cultural environment	Area A	• At detailed design prepare a HIA for the Bay Street Subway, a Provincial Heritage Property of Local Significance.
Emissions	Area A & Area B	• Further study the noise and vibration impacts of the TPSS. • Complete further studies as required as additional information (e.g., construction methods, use of laydown areas) becomes available. • Conduct Air Dispersion Modelling of Construction Impacts from fixed sources when additional information regarding construction methods is available.
Population and employment	Area A	• Confirm specific property requirements during detailed design. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate, site-specific mitigation measures. • Monitor and consider future TDSB schools being planned in the vicinity of the Project.
	Area B	• Confirm specific property requirements during detailed design. Where access to property is required, ongoing consultation with affected landowners will help identify appropriate, site-specific mitigation measures. • Monitor and consider future TDSB schools being planned in the vicinity of the Project. Specifically consider plans for students from the Sugar Wharf School at 55 Lake Shore Boulevard East (anticipated to open in 2028/2029) to use the City's Lower Yonge park for outdoor play, and consider construction mitigation measures accordingly. • Waterfront Toronto and TTC will coordinate future TPSS access agreements for associated parking and loading areas with Quayside developer.
Utilities and municipal infrastructure	Area A	• Coordinate with adjacent projects, including the Inner Harbour West Tunnel project.
	Area B	• Coordinate with Hydro One regarding the decommissioning/removal of their existing 115-kilovolt line. • Coordinate with adjacent projects, including the Lower Yonge Precinct public realm design and the Inner Harbour West Tunnel.
Consultation	Area A & Area B	• Consult further with Indigenous communities through detailed design. • Consult further with adjacent property owners, tenants and local community through established LUAC and SAC during detailed design. • Consult further with the public through detailed design and create stakeholder committees as warranted. • Continue to address City and stakeholder comments through detailed design. • Consult further with authorities having jurisdiction to obtain the necessary permits and approvals and satisfy legislative requirements.

Exhibit 7.1 Future commitments

Theme	Segment	Future commitment
Transportation	Area A & Area B	• Maintain emergency services and transit through the construction limits at all times with the exception of certain periods where either Bay Street or Queens Quay West are closed during transition between phases. When a closure is needed, impacted groups/agencies will need to be notified to ensure the appropriate contingency plans are in place. • Continue coordination among Proponents through detailed design to address design refinements such as bus routing, turn movements, stop locations, and optimizations to transit signal priority. • During detailed design, further assess the requirements for and ability to accommodate a temporary end-of-line facility near Union Station to support the replacement bus operations from both Queens Quay East and Queens Quay West during the construction of the underground Area A. • Ensure that as the design progresses, fire trucks continue to be adequately accommodated. • Mitigate traffic concerns with provision of a shared through-left turn lane at Lower Sherbourne Street and Queens Quay East through provision of an advanced green signal phase for eastbound vehicular movements. Perform updated traffic modelling during the detailed design stage to determine expected intersection performance, and make refinements to intersection geometry (without changes to the overall cross section) if required to maintain service acceptable to Transportation Services. • Mitigate concerns with limited eastbound left turn lane queuing space at Parliament Street and Queens Quay East by expanding the queue storage, with corresponding reduction in the size of the westbound left queue storage at Small Street and Queens Quay East.
Climate change and sustainability	Area A & Area B	• Coordinate early stakeholder engagement to develop a sustainability plan to include a GHG assessment and a climate change risk assessment and distribute responsibilities and tasks. The GHG assessment and climate change risk assessment should be conducted no later than 60 percent design. • Consider carrying out whole life carbon assessments for the Project as a whole as the design progresses. • Consider Project mitigation measures, such as those recommended in this report, and set specific targets to reduce the carbon footprint across the service life of the assets. • Consider recommendations to design the Project to the more onerous of current and climate change adapted temperature and precipitation conditions to account for the range of possible future climate. The future scenario and time horizon adopted should be appropriate for the design life of the system under consideration. • Review and apply the Technical Guide for River and Stream Systems: Flooding Hazard Limit (2002) during detailed design. The methodologies and standards detailed in it will be used to assess potential risks, guide design and determine applicable mitigation measures to reduce the risk of flooding, if applicable. • Include technical specifications for the scope of works to ensure the design and construction of a resilient and low emitting infrastructure. • Determine, during detailed design process, whether adherence to TGS will apply.
Implementation	Area A & Area B	• Include requirement for detailed traffic and transit management and construction sequencing plans as part of construction contract requirement. • Coordinate with the City of Toronto for major construction activities adjacent to Gardiner Expressway, including possible Schedule S approval and required analysis or monitoring instrumentation. • Coordinate sequencing of work between segments, Quayside development, and concurrent utility joint builds. • Ensure fire hydrants are always active/operational. If a fire hydrant must be relocated, ensure the new location meets the requirements of applicable codes and standards. • Ensure fire routes are maintained free and clear of obstructions, equipment, and/or vehicles at all times to allow Toronto Fire Services to rapidly respond to emergencies and prevent delays.
Operations & management	Area A	• TTC, Waterfront Toronto and City to establish asset ownership, operation and maintenance assumptions and responsibilities for proposed infrastructure.
	Area B	• Waterfront Toronto and City to establish asset ownership, operation and maintenance assumptions and responsibilities for proposed Yonge Slip infill area. • Waterfront Toronto and City coordinate operation and maintenance of proposed GI components.

Exhibit 7.1 continued Future commitments

7.2 Permits, approvals, and other legislative requirements

The Project will be implemented in accordance with applicable municipal, provincial, and federal laws. Waterfront Toronto, the City of Toronto, and the TTC will obtain the necessary permits and approvals for the construction and operation of the Project. Project implementation is subject to funding approvals. This section provides a summary of the anticipated permitting and approval requirements associated with the design and construction of the Project. Permit requirements will be refined as detailed design and construction progress.

7.2.1 Authorities having jurisdiction

"Authorities having jurisdiction" is the term adopted to describe those governmental bodies and review agencies at the federal, provincial, and municipal jurisdiction levels who have a role in reviewing permits and issuing approvals. The jurisdictional authority is based on legislation, regulations, policies, and procedures tied to a legal framework. Exhibit 7.2 lists the authorities having jurisdiction that have permitting and approval requirements potentially relevant to the Project.

Exhibit 7.3 describes the permits and approvals expected to be required for the Project.

Authority having jurisdiction	Acronym	Agency type
Environment and Climate Change Canada	EC	Federal
Parks Canada	-	Federal
Transport Canada	TC	Federal
Ports Toronto	PT	Federal
Department of Fisheries and Oceans Canada	DFO	Federal
Ministry of the Environment, Conservation and Parks	MECP	Provincial
Ministry of Natural Resources and Forestry	MNRF	Provincial
Ministry of Citizenship and Multiculturalism	MCM	Provincial
Hydro One	-	Provincial
Ministry of the Solicitor General	MSG	Provincial
Ministry of Labour	-	Provincial
City of Toronto	-	Municipal
Waterfront Toronto	-	Municipal
Toronto Hydro	-	Municipal
Toronto Transit Commission	TTC	Municipal
Toronto and Region Conservation Authority	TRCA	Municipal

Exhibit 7.2 Authorities having jurisdiction

Permit / approval / legislative requirement	Regulatory authority	Legislation & regulation	Area A	Area B	Description of Project activities that may require permits or approvals
Federal					
Collateral Agreement	Parks Canada		✓	-	• Collateral Agreement between Parks Canada, the City of Toronto, and Metrolinx (formerly GO Transit). The Heritage Approval Process contained in the Collateral Agreement between the City of Toronto and Parks Canada shall be applied for the following sites: Union Station, 65-71 Front Street, City of Toronto, Ontario - Designated as a National Historic Site of Canada under the Historic Sites and Monuments Act by Parks Canada on 1975-11-28 (R.S.C., 1985, c. H-4)
Fisheries Act Authorization	DFO	Fisheries Act	-	TBD	• RfR to DFO should be submitted a minimum of one year in advance of the anticipated in-water construction start date. • Engagement with Ports Toronto and TRCA may also be required in relation to obtaining the appropriate permits or approvals for in-water works.
Transport Canada requirements	TC	Canadian Navigable Waters Act, Impact Assessment Act, Railway Safety Act, Transportation of Dangerous Goods Act	TBD	TBD	• Canadian Navigable Waters Act and Impact Assessment Act related approvals may be required as a result of infilling at Yonge Slip depending on ownership of affected waterways. • Railway Safety Act related approvals may be required as a result of works near Union Station. • Transportation of Dangerous Goods related approvals may be required as a result of construction activities.
Provincial					
Notice to Proceed	MECP	Environmental Assessment Act O. Reg. 231/08 (Transit Projects & Metrolinx Undertakings)	✓	✓	• May be issued by the Minister at the end of the 35-day review period. If no notice is issued by the Minister, the Project may proceed. • The Project meets the definition of a transit project under O. Reg. 231/08 and is subject to the Transit Project Approval Process.
Environmental Activity Sector Registry (EASR)	MECP	O. Reg. 63/16: Registrations Under Part II.2 of the Act – Water Taking	TBD	TBD	• Required if temporary water takings are estimated to be greater than 50,000 L/day, but less than 400,000 L/day; the need for dewatering during construction activities will be confirmed during detailed design.
Permit to Take Water (PTTW)	MECP	Ontario Water Resources Act (O. Reg. 128/03) Section 34	TBD	TBD	• Required if temporary water takings are estimated to be greater than 400,000 L/day; the need for dewatering during construction activities will be confirmed during detailed design.
Environmental Compliance Approval (ECA) – Industrial Sewage	MECP	Environmental Protection Act Ontario Water Resources Act Section 53	✓	✓	• A new ECA (or an amendment to an existing ECA) would be required for affected sewer pipes and pumping stations.
Requirements for addressing contaminants	MECP	Environmental Protection Act O. Reg. 347	TBD	TBD	• Contaminated soils or groundwater encountered during construction must be appropriately characterized prior to disposal.

Exhibit 7.3 Permitting, approval, and legislative requirements

Permit / approval / legislative requirement	Regulatory authority	Legislation & regulation	Area A	Area B	Description of Project activities that may require permits or approvals
Waste removal	MECP	Environmental Protection Act O. Reg. 347	TBD	TBD	• Required to transport and process wastes, hazardous and non-hazardous materials.
On-Site and Excess Soil Management	MECP	Environmental Protection Act O. Reg. 406/19	✓	✓	• Required for the characterization, handling, management and re-use of excess material.
AA MCM Review Letters	MCM	Ontario Heritage Act	✓	✓	• Prior to ground disturbing activities, proponent shall receive letter issued by MCM indicating that the AA report(s) have been entered into the Ontario Public Register of Archaeological Reports.
Notice of Project	Ministry of Labour	Occupational Health and Safety Act Regulation for Construction Projects - O. Reg. 213/91 Section 6(1)	✓	✓	• Provide a Notice of Project to the Ministry of Labour prior to starting projects that meet the standards set out in the Regulation.
Notification	-	Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33	TBD	TBD	• Requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Government and Consumer Services. Should human remains be encountered during construction activities, all work on site must cease and notification will be required.
Licence to Collect Fish for Scientific Purposes	MNRF	Fish and Wildlife Conservation Act	-	TBD	• Should the relocation of fish outside the work area be required, necessary permits including the Licence to Collect Fish as applicable should be obtained to ensure compliance with the Fish and Wildlife Conservation Act.
Wildlife Collector's Authorization	MNRF	Fish and Wildlife Conservation Act	TBD	TBD	• Should the relocation of wildlife outside the work area be required, necessary permits including the Wildlife Collector's Authorization as applicable should be obtained to ensure compliance with the Fish and Wildlife Conservation Act.
Work permit	MNRF	Public Lands Act	-	TBD	• It is likely that a work permit under the Public Lands Act will be required for Area B given the infilling of the Yonge Slip.
Authorization	MNRF	Lakes and Rivers Improvement Act	-	TBD	• An authorization under the Lakes and Rivers Improvement Act is required to construct, alter, improve or repair dam infrastructure in Ontario, including temporary dams and other works (e.g., water crossings, channelizations, enclosures, cables and pipelines) subject to Lakes and Rivers Improvement Act approval. It may be required for the construction of temporary dams in Area B. Many of the authorizations under the Lakes and Rivers Improvement Act are administered by the local Conservation Authority (TRCA).

Exhibit 7.3 continued Permitting, approval, and legislative requirements

Permit / approval / legislative requirement	Regulatory authority	Legislation & regulation	Area A	Area B	Description of Project activities that may require permits or approvals
Municipal					
Municipal					• A range of municipal permits and approvals may be required for the Project, particularly as pertaining to municipally owned lands and infrastructure. • Water, sanitary, and storm servicing will be reviewed during detailed design. The municipality will be consulted during detailed design to address impacts to municipal water, sanitary, and storm sewer systems. • Communication and engagement with the municipality shall continue as design and construction planning progress to address municipal interests.
Permit to Injure or Remove Private Property Trees	City of Toronto	Municipal Code Chapter 813, Article III	TBD	TBD	• Removal of trees on private property.
Permit to Injure or Remove City-Owned Trees	City of Toronto	Municipal Code Chapter 813, Article II	TBD	TBD	• A permit is required for the injury or removal of trees regulated by the City of Toronto's Tree Protection By-law and Parks By-law.
Designated Structures Permit	City of Toronto	-	✓	-	• May be required for temporary and permanent retaining walls, pedestrian bridge and tunnels
Site Services Permit	City of Toronto	-	✓	✓	• May be required for new drains, catch basins and other site servicing work proposed for new buildings or new services to existing buildings located on private property
Shoring and Excavation Permit	City of Toronto	-	✓	✓	• May be required for shoring and excavation work.
Construction Permit	City of Toronto	-	✓	✓	• Construction work within the municipal right-of-way.
Cut Permit	City of Toronto	-	✓	✓	• Installation of services within the City of Toronto streets
Licence Agreement(s)	City of Toronto	-	✓	✓	• Access to City of Toronto owned lands for temporary use.
Discharge Permits & Agreements for Private Water	City of Toronto	Toronto Municipal Code Chapter 681, Sewers	✓	✓	• Required when private water is discharged into the City of Toronto's sewer system, including groundwater, surface water, construction dewatering, rainwater (mixed with construction material), and stormwater (mixed with construction material); could include one or a combination of municipal discharge permits, conservation authority (TRCA) approval, and/or MECP Environmental Compliance Approval.
Changes to TTC Routes and Stops	City of Toronto/TTC	-	✓	✓	• Detailed staging plans involving changes to the roads on which TTC operates must be approved by TTC prior to implementation. • Proposed changes to stops, temporary or permanent, must also be approved by TTC in advance of implementation. • TTC requires 4 months advance notice for changes to routes.

Exhibit 7.3 continued Permitting, approval, and legislative requirements

Permit / approval / legislative requirement	Regulatory authority	Legislation & regulation	Area A	Area B	Description of Project activities that may require permits or approvals
Zoning Approval	City of Toronto		-	TBD	• New land created by lake filling may be subject to the former City of Toronto Official Plan and the Central Waterfront Secondary Plan which included policies on lake filling. A zoning by-law identifying proposed land use may be required to be enacted by the City Council.
Site Plan Approval	City of Toronto		-	✓	• Proposed TPSS will require Site Plan Approval • To be coordinated with Quayside development application
Building Permit	City of Toronto		✓	✓	• Proposed TPSS will require building permit • To be coordinated with Quayside development application (for Area B).
Construction Permit	Ports Toronto		-	✓	• Proposed in water works within Yonge Slip will require Construction Authorization from Ports Toronto
Approval	TRCA	O. Reg. 166/06. Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses	✓	TBD	• The proposed east portal will contribute storm drainage to the Yonge Street 1950 mm by 2550 mm trunk sewer, which is a regulated storm sewer outlet, and will require approval from TRCA. • The proposed west portal extension may contribute additional storm drainage to the Yonge Street 1950 mm by 2550 mm trunk sewer and may require approval from TRCA.
Heritage permit	City of Toronto		✓	-	• May be required for proposed work located within a HCD
Drinking Water Works Permit	City of Toronto		TBD	TBD	• Required for construction of drinking water works such as watermains
Third Party Utilities					
Utility Crossing Agreements	Various Existing Utility Owners	-	✓	✓	• Project construction activities associated with relocating or realigning existing third-party utilities.

Exhibit 7.3 continued Permitting, approval, and legislative requirements

7.3 Summary of impacts, mitigation measures, and monitoring activities

Upon completion of the TPAP, the Proponents will finalize detailed design of the proposed Project, while seeking necessary permits and approvals. Consultation will continue through detailed design and construction where required for obtaining permits, informing interested parties of construction updates, and coordinating with municipalities and Indigenous communities (if required).

The key objectives of the mitigation and monitoring activities are as follows:

1. Confirm accuracy of predictions in EPR;
2. Facilitate compliance with regulatory standards, approval requirements, etc.;
3. Track the status and resolution of EPR commitments and requirements;
4. Augment EPR information if needed;
5. Evaluate the effectiveness of mitigation measures; and
6. Identify where effects/conditions do not meet regulatory requirements so that contingency measures can be taken.

In advance of commencing construction activities, mitigation measures will be implemented as outlined in chapter 4, and monitoring activities will continue throughout construction activities, and upon completion of construction, where required. Monitoring commitments are summarized in Exhibit 7.4. Final, detailed monitoring plans should be developed as part of detailed design activities.

Furthermore, an EMP shall be developed to outline environmental protection measures for natural environment and socio-economic features located on or in the vicinity of the Project footprint. The EMP shall include both general and site-specific environmental protection measures based on project-specific requirements (including Waterfront Toronto's EPPs), past project experience, current industry best management practices, and consistency with federal and provincial construction mitigation practices. The EMP shall:

- Outline environmental protection measures related to activities associated with the Project;
- Provide instructions for carrying out construction activities to minimize negative environmental impacts; and
- Serve as reference information for the environmental inspection staff to support decision making and provide links to more detailed information.

The EMP should be based on the fieldwork conducted in support of the EPR to provide project-related environmental mitigation measures and follow-up commitments to be addressed during the detailed engineering design, construction and operations phases.

The EMP shall be developed with the goal of ensuring that construction is completed in compliance with environmental approvals, commitments and obligations. A core component of the EMP should be the implementation of an environmental monitoring program, with qualified personnel providing the following services in implementing the EMP:

- Conduct a routine monitoring and inspection program to confirm that environmental protection measures are conducted as planned;
- Identify and provide direction to address unexpected environmental occurrences and non-conformances (i.e., failure of environmental protection measures, damage to protection measures resulting from unexpected storms);
- Provide expert guidance to Project staff during construction to ensure that the environment is protected according to environmental approvals, commitments and obligations;
- Confirm that commitments or requirements developed in accordance with regulatory authorities are carried out as planned, and recommend additional protection measures, if required;
- Regularly document environmental protection measures, deficiencies and methods to address environmental deficiencies carried out by Project staff through periodic reporting;
- Where required, act as a liaison between the Proponents and regulatory agencies when issues arise during construction
- Conduct additional field programs as required (i.e., fish rescue programs); and
- Identify appropriate timing windows (e.g., in-water works, breeding bird season) and clear sites for construction where required.

The EMP shall outline how environmental monitoring staff will address deficiencies and non-conformances with the Contract Administrator and Contractor so that these issues can be resolved in a timely manner to avoid negative effects to the environment.

The EMP shall also outline procedures for monitoring staff to provide direction to the Contractor for environmental protection measures that require site-specific considerations. They shall also identify areas that may require additional environmental protection measures not identified on the construction drawings.

Exhibit 7.4 includes a list of required and recomended mitigation and monitoring activities currently anticipated for the areas within the Project footprint. For detail regarding required the distinction between required and recommended activities, refer to Chapter 4. Refinement of the mitigation and monitoring plan will progress through detailed design and construction.

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
Natural Environment			

Physical environment	**Construction**
	Area A:
	• Activities such as excavation, filling, and dewatering may disturb surface and subsurface soil and groundwater (e.g., ground movement, settlement, structure impact, generation of excess soil, mobilization of pre-existing contaminants).
	
	Area B:
	• Activities such as excavation, filling, and dewatering may disturb surface and subsurface soil and groundwater (e.g., ground movement, settlement, structure impact, generation of excess soil, mobilization of pre-existing contaminants).
	• Infilling in the Yonge Slip which will impact the slip infrastructure and sediments in the work area.
	
	Operations
	Area A:
	• None anticipated.
	
	Area B:
	• Potential impact to performance of utilities from pre-existing contaminants in soil and groundwater.
		Construction
		Area A:
		• Ensure appropriate temporary shoring.
		• Apply dewatering and groundwater control for excavations and construction works; minimize dewatering.
		• Ensure groundwater meets City of Toronto sewer by-laws and permits obtained.
		• Manage soils according to O. Reg. 347 and 406/19; proper stockpiling.
		• Ensure appropriate waste management.
		• Maintain proper administrative controls such as:
		  ○ Work area security and access restriction
		  ○ Designated parking areas
		  ○ Ensure dust control measures during soil handling.
		• Employ engineering controls in the work zone to reduce the potential for worker contact with contaminated soil or the migration of potentially contaminated soil or sediment due to dust generation, soil tracking, or erosion. The following engineering controls shall apply:
		  ○ Health and Safety Plan;
		  ○ Work Practices for Heavy Equipment;
		  ○ Equipment and Vehicle Decontamination;
		  ○ Transportation of Contaminated Soil;
		  ○ Dust Control;
		  ○ Contamination from Accidental Spills and Releases;
		  ○ Dewatering Excavations and Contaminated Ground
		• Water;
		  ○ Runoff Control; and,
		  ○ Erosion and Sediment Control.
		• Conduct gas sampling and measurements as required.
			Construction
			Area A:
			• Monitor performance of the shoring systems and the impacts on the adjacent infrastructure.
			• Install piezometers and groundwater wells to monitor groundwater conditions during construction where dewatering is required.
			• Conduct visual assessment of the existing facilities and infrastructure prior to construction, as well as on a regular basis during and after construction.
			• Conduct monitoring to ensure other mitigation measures are followed relating to material excavated from the Project to confirm its suitability for re-use and to document where the material was relocated.
			• Monitor soils and other materials inferred to be contaminated to ensure appropriate stockpiling and cover to mitigate against the generation of dust and surface run-off, if necessary.
			• Ensure monitoring of other mitigation measures as part of overall EPPs and subject to regular site monitoring by the Contractor.
			
			Area B:
			• Ensure the EMP includes monitoring requirements for each type of impact and the mitigation measures to be taken, as well as a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor and requirements for regular reporting.
			• Ensure monitoring requirements are included in the Soil and Excavated Material Management Plan and are compliant with regulatory requirements.
			• Ensure monitoring of dewatering activities including discharge compliance and settlement.
			• Consider additional monitoring and construction impact mitigation for extension construction work adjacent to the Gardiner bent if warranted.
			• Monitoring of other mitigation measures will be required as part of overall EPPs and subject to regular site monitoring by the Contractor.
			
			Operations
			• Continue monitoring ground and groundwater conditions into operational phase.

Exhibit 7.4 Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities

		• Develop and implement dewatering plan in accordance with required approvals and related controls.
		• Prepare and implement Erosion and Sediment Control Plan.
		• Develop a Soils Management Plan.
		• Develop and implement Spill Prevention and Response Plan.
		• Develop and implement a Contingency and Emergency Response Plan.
		
		<u>Area B:</u>
		• Prepare a Soil and Excavated Material Management Plan and Dewatering approach; consider previous geotechnical and environmental studies in development.
		• Considerations for soil will include:
		  ○ Incorporation of approach to the sampling, analysis, and management of excavated material including waste characterization (in accordance with O. Reg 347) prior to disposal or compliance with the requirements of O. Reg. 406/19 if excess soil is to be re-used. Segregate non-soil materials for re-use or disposal in accordance with these regulations.
		  ○ Create a Soil and Excavated Materials Monitoring Plan including a plan to address contaminants during construction; consider more detailed investigation of the coal tar impacted area contaminants; conduct soil remediation and risk management measures if required. Soil should be stockpiled and covered to mitigate dust and surface run-off.
		  ○ Ensure soil and excess material management is overseen by a Qualified Person (per O. Reg 153/04).
		  ○ Ensure appropriate quality of imported fill.
		  ○ Complete pre-construction assessment of structures in the dewatering zone and conduct	

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		dewatering to minimize impacts to surrounding soil areas. ○ Ensure appropriate support of excavation areas and protection of surrounding utilities and structures. ○ Conduct excavations in a safe manner with appropriate measures. • Considerations for groundwater will include: ○ Minimize dewatering, and/or control flow into excavation areas. ○ Determine existing conditions, water taking quantities, quality and extent of affected areas. ○ Ensure appropriate discharge options, obtain required approvals/permits (e.g., PTTW, EASR), and ensure compliance with requirements including pre-treatment if required. • Other general mitigation measures will include: ○ Create a plan to prevent and respond to spills. ○ Create a contingency plan should dewatering methods fail; this may include emergency removal of water using a vacuum truck and may be included in the spill response plan. ○ Maintain equipment and vehicles in good working order to minimize fluid releases. ○ Ensure appropriate handling and storage of petroleum products and other chemicals. ○ Minimize and control erosion, sedimentation and dust. • For infilling in Yonge Slip, ensure appropriate investigation and planning related to compressibility and ground improvement and manage excess sediments and imported fill appropriate to ensure quality and adherence with required approvals. • Mitigation measures proposed to protect soil and groundwater quality and the aquatic environment will also contribute to the protection of drinking water given that Lake Ontario is the source of potable water for the City of Toronto.	

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		Operations Area A • None anticipated. Area B • Consider upgraded utility materials that are more resistant to degradation from impacted soil and groundwater in certain areas of Queens Quay East (coal tar impacted area)	

Aquatic environment	**Construction**
	Area A:
	• No impacts.
	Area B:
	• Infilling at Yonge Slip which may impact physical conditions in the slip and habitat for aquatic species.
	• New dockwalls to enclose the infill area.
	
	Operations
	Area A:
	• No impacts.
	Area B:
	• Inclusion of various habitat enhancements will significantly improve the overall function and quality of habitat within the Yonge Slip.
		Construction
		Area A:
		• Not applicable.
		Area B:
		• Develop fish habitat offsetting plan (if required) to address loss of fish habitat:
		  ○ Consider various fish habitat enhancement features (such as live dockwall) that can be implemented as part of the off-setting plan to replace the lost fish habitat.
		  ○ Use HEAT to determine sufficiency of enhancement and any off-site compensation required.
		• Add rock berm along the face of new dockwalls for additional structural support and aquatic habitat enhancement.
		• Adhere to in-water timing windows or pursue process to waive requirement.
		• Follow typical standard construction mitigation measures when working in and/or near water to address potential impacts to fish and fish habitat:
		• Where possible, undertake works, undertakings and activities on land.
		• Ensure proper erosion and sediment control measures are installed prior to the start of work and are routinely inspected with maintenance and improvements undertaken in a timely fashion as required.
			Construction
			Area A:
			• Not applicable.
			Area B:
			• Ensure the EMP includes monitoring requirements for each type of impact and the mitigation measures to be taken, as well as a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor and requirements for regular reporting
			• Implement a turbidity monitoring plan if required when working outside of the in-water timing window or when isolation of the in-water work area cannot be achieved.
			
			Operations
			• Not applicable.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		• Isolate the in-water work area using an acceptable isolation measure (i.e., turbidity curtain) and exclude fish from the in-water work area. • Undertake fish removal from the isolated work area. • Inspect materials placed below the high-water mark to ensure they are free of excessive fine sediment and debris, and contaminants prior to installation. • Where stockpiles of rock or soil are required for long periods of time, maintain stockpile surfaces to stabilize and prevent wash-outs, and surround them by a row of siltation fencing. • Ensure machinery and equipment used arrives on-site in a clean condition, free of fluid leaks, invasive species and noxious weeds. • Wash, refuel, and service machinery, except marine-based equipment (e.g., barges), a minimum of 30 m from waterbodies. • Wash, refuel and service barges in a manner with suitable spill protection measures present to prevent fuel or deleterious materials from entry into the waterbody. These activities will be avoided during windy or wavy conditions or when the risk of a spill is increased. • Operate machinery in a manner to minimize the risk of deleterious materials from entering waterbodies. • Store fuel a minimum of 30 m from the waterbody or an appropriately designated fueling area and in a manner that will minimize the risk of fuel being spilled or released and entering the waterbody. • Require the Contractor to have a spill kit on site and have an emergency response plan in the event of a chemical release, including fuels and oils. • Heed weather advisories and scheduling work to avoid wet, windy and rainy periods. **Operations** <u>Area A:</u> • Not applicable.	

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		Area B: • No mitigation measures proposed.	
Terrestrial environment	**Construction** Area A: • No impacts. Area B: • Tree removal and injury. **Operations** Area A: • No impacts. Area B: • An increase in number of trees at an approximate ratio of four new trees to every displaced tree. • An increase in planted surfaces.	**Construction** Area A: • Not applicable Area B: • Implement tree preservation, protection, or injury measures as required, including tree-sensitive demolition and root-sensitive excavation and root pruning. • Strive to adhere to City's guidelines for planting. **Operations** • No mitigation measures proposed.	**Construction** Area A: • Not applicable. Area B: • Ensure the EMP includes monitoring requirements for adherence to preservation, protection, and injury measures during construction. Include a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor and requirements for regular reporting. • In addition, certain tree-related activities must be supervised by a Certified Arborist. **Operations** • Not applicable.
Significant/protected natural features	• No impacts.	• Not applicable.	• Not applicable.
Cultural environment			
Archaeological resources	**Construction** Area A: • Potential impacts limited to the 30 Bay Street/60 Harbour Street property during excavation. Area B: • Potential impacts to localized area close to Parliament Street and Lake Shore Boulevard during excavation. **Operations** • No impacts.	**Construction** Area A: • The 30 Bay Street/60 Harbour Street property, immediately adjacent to the Study Area was previously assessed and the eastern section of Harbour Square Wharf (CW7) was recommended for archaeological construction monitoring. Because the exact location of any potential Harbour Square Wharf remains is not clear the extension of this recommendation into the current study area is prudent. The following recommendation was made in association with the Harbour Square Wharf (CW7) (ASI 2017): • "During preliminary site work, the site should be visited on a regular basis to inspect the progress of	**Construction** Area A: • Prepare a monitoring plan as part of the EMP. Monitor during construction on a regular basis. When bulk excavation approaches an elevation of approximately 75.0 m ASL, the presence of a monitoring archaeologist on site will be of sufficient frequency and duration to ensure that any remains of the circa 1899 Harbour Square wharf shore east crib walls, and associated piling, are documented, through photography and the preparation of measured drawings. Ensure the plan includes a procedure in the event that archaeological resources are discovered unexpectedly. Area B: • During preliminary site work the site should be visited on a regular basis by a monitoring archaeologist to inspect the progress of the initial removals/testing, etc. When bulk excavation approaches an

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		the perimeter shoring and any initial removals/testing, etc. When bulk excavation approaches an elevation of approximately 75.0 m ASL, the presence of a monitoring archaeologist on site will be of sufficient frequency and duration to ensure that any remains of the circa 1899 Harbour Square wharf shore east crib walls, and associated piling, are documented, through photography and the preparation of measured drawings. In the absence of an archaeological monitor on site, any potentially significant archaeological resource encountered during excavations anywhere on the subject property should be preserved intact to allow the archaeologist to record its salient attributed or carry out whatever other form of mitigation is appropriate. West of this crib wall, the subject property consists of lake fills incorporating household waste collected by the City and harbour dredgings. Lake fill, by its very nature, is not generally regarded as an archaeological resource. However, small-scale artifact recovery may be undertaken at the discretion of the monitoring archaeologist, with the understanding that unique items of material culture that have clear interpretive value should be collected. Recovery of a representative sample of domestic refuse artifacts from generic lake fill deposits may be undertaken if the monitoring archaeologist has entered into an agreement concerning their curation and interpretation with either the development proponent or a public agency. It is not, however, a prerequisite of any monitoring program." <u>Area B:</u> • Construction excavations in the Study Area near Parliament Street which will impact lands at or below approximately 76 mASL, should be subject to a program of archaeological monitoring in order to	elevation of approximately 76 mASL, the presence of a monitoring archaeologist on site should be of sufficient frequency and duration to ensure that any remains of the breakwater and dry dock or any contemporary superstructures that may be present are documented, through photography and the preparation of measured drawings. Ensure the plan includes a procedure in the event that archaeological resources are discovered unexpectedly. **Operations** • Not applicable.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		document any remains of the 1870 Don Breakwater that may be present. ○ During preliminary site work the site should be visited on a regular basis by a monitoring archaeologist to inspect the progress of the initial removals/testing, etc. When bulk excavation approaches an elevation of approximately 76 mASL, the presence of a monitoring archaeologist on site should be of sufficient frequency and duration to ensure that any remains of the breakwater and dry dock or any contemporary superstructures that may be present are documented, through photography and the preparation of measured drawings. • In the absence of an archaeological monitor on site, any potentially significant archaeological resource that may be encountered during excavations in the vicinity of the breakwater should be preserved intact to allow the archaeologist to record its salient attributes or carry out whatever other form of mitigation is appropriate. **Operations** • Not applicable.	
Built heritage resources and cultural heritage landscapes	**Construction** <u>Area A:</u> • Potential impacts to several heritage resources, including Union Station Complex, Dominion Public Building, Postal Delivery Building, Union Station HCD, Brookfield Place, Royal Bank Plaza, Gowans Kent Building, Toronto Harbour Commission Building, and Westin Harbour Castle Hotel. Impacts are generally limited to potential property takings or alterations for access and	**Construction** <u>Area A:</u> • Preferred option: Avoid heritage attributes of the Union Station HCD, Union Station, the Dominion Public Building, the Postal Delivery Building, Brookfield Place, Royal Bank Plaza, the Toronto Harbour Commission Building, and the Westin Harbour Castle Complex. • Alternative option: ○ Prepare HIAs for the Union Station HCD, Union Station, the Postal Delivery Building, and the Dominion Public Building.	**Construction** <u>Area A:</u> • Include plan for vibration monitoring in EMP which includes monitoring requirements to ensure heritage buildings are not negatively affected. Conduct vibration monitoring as prescribed and document in monitoring reporting. <u>Area B:</u> • Include plan for vibration monitoring in EMP which includes monitoring requirements to ensure heritage buildings are not negatively affected. Conduct vibration monitoring as prescribed and document in monitoring reporting.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
	indirect impacts from construction activities (e.g. vibration). <u>Area B:</u> • Potential impacts to several heritage resources, including the Westin Harbour Castle Hotel, Toronto Star Building, Redpath Sugar Plant, Gardiner Expressway over Parliament Street, and Victory Soya Mills Silos. Impacts are generally limited to indirect impacts due to construction activities (e.g. vibration, adjacent lay down area) and direct impacts to the Westin resulting from alterations to reconfigure access. **Operations** • No impacts.	○ Implement protection measures for Union Station, the Dominion Public Building, the Postal Delivery Building, the Toronto Harbour Commission Building, and the Westin Harbour Castle Complex. ○ Conduct vibration monitoring for the Union Station Heritage Conservation District, Union Station, the Dominion Public Building, the Postal Delivery Building, Brookfield Place, Royal Bank Plaza, and the Westin Harbour Castle Hotel. • Adhere to additional recommendations in HIAs.| <u>Area B:</u> • Conduct a Cultural Heritage Evaluation Report for the Westin Harbour Castle Hotel. • Conduct vibration monitoring for the Westin Harbour Castle Hotel, the Toronto Star Building, the Redpath Sugar Refinery, the Gardiner Expressway over Parliament Street, and the Victory Soya Mills. • Minimize the size of the laydown area near the Victory Soya Mills property and site it as far away from the Silos as possible. **Operations** • Not applicable.	**Operations** • Not applicable.
Emissions			
Air quality	**Construction** • Generation of dust emissions for short durations. • Airborne contaminants from construction equipment emissions. **Operations** • The reduction in automobile dependency as a result of the Project will deliver benefits in terms of reduced congestion, which will lower emissions.	**Construction** • Mitigate dust emissions through the development of a dust mitigation plan to document good management practices and standard dust control measures and to minimize off-site impacts at the nearest sensitive receptors. These may include utilizing water-sprays, sweeping, cleaning, wheel-washing, covering materials, and control of traffic routes and speeds. The dust mitigation plan must ensure activities like stockpiling and material handling are properly managed including verifying meteorological forecasts to determine which	**Construction** • Prepare ambient air monitoring plan as part of the EMP. • Undertake regular on-site and off-site inspection, where receptors are nearby, to monitor dust and record inspection results. • For the ambient monitoring plan, it is recommended to: ○ Monitor baseline conditions to capture representative concentrations under varying meteorological conditions. ○ Where possible, to site monitors both upwind and downwind of construction activities. ○ Include a section that describes what action will be taken if contaminated soil is discovered during construction activities.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		construction activities are to be performed, particularly during high wind events. With respect specifically to activities like stockpiling and material handling, the controls will be consistent with the Waterfront Toronto EMP for Project-Related Activities (August 2022). • Plan the site layout planned so that machinery and dust causing activities are located as far away from receptors as possible. • Erect a 2 m minimum site hoarding around construction compounds. • Implement the environmental control measures, as outlined in Section 7.1.5 of the *Waterfront Toronto Environmental Management Plan for Project-Related Activities* where applicable. • Ensure an adequate water supply to the site for effective dust suppression through wet methods. • Put dust control measures in place prior to the initiation of construction activities to prevent the uncontrolled generation of dust. • Consult Toronto Public Health as needed during the preparation of dust control plans to ensure methods sufficiently mitigate the potential for health effects from the generation of dust during the construction phase. • Assess exposure for air quality contaminants of concern for off-site sensitive ground level and elevated receptors. • Apply appropriate models for air dispersion modelling of contaminant emissions from the Project; appropriate model should be selected after the Project team receives and reviews the Project data. • Consider climate change and regional air quality impacts when assessing the Project's potential impacts. This may include comparing greenhouse emissions from the proposed undertaking with the provincial GHG totals reported by Environment Canada.	• It is known that there are some existing contaminants in soil in the site area. The controls around air quality and dust management will be consistent with the Waterfront Toronto EPP referenced above and are appropriate where soil contamination is present. • Document monitoring and include in EMP reporting. **Operations** • Not applicable.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		• Conform with O. Reg. 419 in comparing the air concentrations predicted by air dispersion modelling, to applicable air quality criteria. • Prepare an air quality management plan prior to construction phase of the Project. • Prepare a best management practice plan to identify dust and odour impacts associated with construction phase of the Project, and mitigation measures. **Operations** • No mitigations measures proposed.	

Noise and vibration	**Construction**
	• Temporary increases in ambient noise levels at nearby receptor locations in association with construction activities.
	
	Operations
	<u>Area A:</u>
	• Streetcar operation inside the streetcar tunnel and at the portals is anticipated to meet the criteria set out in the TTC Design Manual.
	<u>Area B:</u>
	• The Project is anticipated to achieve the proposed design goal of not surpassing the ambient L_{eq} values for residences situated at least 15 m from the track centreline and 6 m from the road centreline in all scenarios during daytime, as well as during nighttime for both the 25km/h and 40km/h scenarios.
	• When the streetcar is traveling at 60 km/h or on special track during nighttime, it is anticipated to generate a maximum noise
		Construction
		• Adhere to the construction noise and vibration limits referenced in the City of Toronto's By-law 514-2008 and if there will be a need to complete work outside of the hours allowed in the by-law, Waterfront Toronto and TTC shall seek the required exemptions and permits directly from the City of Toronto in advance of works performed outside of the allowable times.
		• Ensure construction equipment meets the sound level criteria from NPC-300 and NPC-115, is well maintained, and operates with effective muffling devices as needed.
		• Communicate the construction schedule with regular updates to the public and approval agencies.
		• Develop NVCM, which may include construction best practices, such as:
		  ○ Schedule and plan activities that generate higher levels of noise and/or vibration during day-time hours where feasible.
		  ○ Utilize temporary sound barriers or hoarding as necessary to limit off-site noise emissions from specific work areas for small scale localized but high noise generating work.
			Construction
			• Confirm noise and vibration monitoring requirements at detailed design in accordance with City of Toronto Municipal Code Chapter 591 Noise, City of Toronto Municipal Code Chapter 363 Building Construction and Demolition, and Vibration Control By-Law, 514-2008.
			• Ensure the EMP includes monitoring requirements to ensure the implementation and effectiveness of mitigation measures and adherence to noise and vibration levels. Include a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor and requirements for regular reporting, as appropriate.
			• Ensure Noise Complaint Response Protocol is in place and complaints monitored and addressed. This protocol will include contact information, records management and issues resolution.
			• Note: refer to mitigation measures for Built Heritage Resources and Cultural Heritage Landscapes for detail regarding vibration monitoring associated with heritage buildings.
			
			Operations
			<u>Area A:</u>
			• Not applicable.
			<u>Area B:</u>
			• Not applicable.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
	level of 59 dBA ($L_{eq,8h}$), which is 4 decibels higher than the design goal of ambient. • The streetcar is expected to meet the vibration criteria.	○ Ensure construction equipment with significant noise and vibration emissions is operated as far as possible from sensitive receptors. ○ Minimize drop heights of demolition waste materials into bins or trucks and whenever possible to reduce noise levels and line the bottoms of bins or trucks with rubber mats. ○ Use saws to break up existing asphalt and concrete instead of hydraulic hammers or jack hammers, wherever possible and practical. ○ Maintain equipment in good working order and exclude from site visually non-compliant emitters. ○ Conduct engine preventative maintenance per Original Equipment Manufacturer recommendations. ○ Identify designated truck routes which avoid proximity to potential receptors and identify appropriately low speed limits via signage. ○ Minimize drop heights during loading and unloading of trucks. ○ Use industry standard equipment and vehicle idle reduction initiatives, as possible. Provide direction for equipment which must be left running to have the maximum practical separation distance from potential receptors. ○ Use only equipment with manufacturer available noise control technology options installed and in good working order. ○ Make every effort to reduce or eliminate tailgate banging. ○ Optimize access to sites to reduce whenever possible noise from equipment backup indicator alarms. If backup of equipment is necessary, use of broad-band backup alarms on site is preferred. ○ Establish a Noise Complaint Protocol.	

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		Operations Area A: • No mitigation measures proposed. Area B: • As the protocol limit for requiring noise mitigation is 5 dB above the maximum of ambient ($L_{eq,8h}$) or 50 dBA ($L_{eq,8h}$), whichever is greater, mitigation is only required for levels above 60 dBA ($L_{eq,8h}$), hence the Project is not expected to trigger the protocol.	
Population and employment			
Population and Employment	**Construction** • Short-term nuisance effects and safety concerns related to noise, dust, vibration and traffic during construction activities. • Creation of employment opportunities through construction. **Operations** • Support for projected population and employment growth.	**Construction** • Develop a TTMP that includes pedestrian, cyclist, and traffic control plans as part of the overall EMP. • Establish a Project Communication Protocol and integrated Complaints Protocol. • Establish a City of Toronto Construction Hub to improve road safety and coordinate public right-of-way. • Ensure access to existing businesses is maintained. **Operations** • No mitigation measures proposed.	**Construction** • Comply with on-site compliance management process to ensure the implementation of, and adherence to, the TTMP as part of the overall EMP. Establish and include regular monitoring for the effectiveness of the compliance measures. • Ensure Communication and Complaint Response Protocols are in place and complaints are monitored and addressed. **Operations** • Not applicable.
Land use and property			
Land use	**Construction** • No impact. **Operations** • The implementation of the proposed work will help realign the study Area with the Official Plan's transit-first development approach.	**Construction** • Not applicable. **Operations** • Not applicable.	**Construction** • Not applicable. **Operations** • Not applicable.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
Property	**Construction** • Two potential laydown areas identified for use during construction, which may impact current property uses. **Operations** <u>Area A:</u> • Approximately 15 properties impacted by property requirements. <u>Area B:</u> • Approximately nine properties impacted by property requirements.	**Construction** • Consult with impacted stakeholders. • Ensure necessary approvals/agreements are in place. **Operations** • Consult with impacted stakeholders. • Ensure necessary approvals/agreements are in place.	**Construction** • None proposed. **Operations** • None proposed.
Utilities and municipal infrastructure			
Utilities and municipal infrastructure	**Construction** • Temporary impacts to existing utilities during construction; relocations and disruptions (to be identified/confirmed during more detailed design phases). **Operations** <u>Area A:</u> • Removal and reinstatement of Toronto Hydro ducts and chambers directly above Union Station will result in temporary disruption to the power supply to Union Station and Queens Quay-Ferry Docks LRT Station. <u>Area B:</u> • Incorporation of GI, which includes natural and human-made elements such as trees and LID stormwater infrastructure to improve various hydrological processes such as water balance, water quality, and water quantity.	**Construction** <u>Area A:</u> • Continue coordinating meetings with third party utilities and other stakeholders through the Public Utilities Coordinating Committee process. Monitor progress of third-party utility relocations. • Develop (or obtain from City of Toronto) a stormwater model for impacted areas in order to verify (for detailed design) the stormwater flows from areas upstream of the Project. • Prepare required documents for Site Plan Approval. • Verify location, depths and sizes of existing utilities to allow for further refinement of existing utility locations. • Further develop Temporary Servicing and Support Details in conjunction with the City of Toronto and relevant third-party utilities. • Assess risk and establish true ‘zone of influence’ of the Support of Excavation (SOE) system and construction dewatering with input from Structural and Geotechnical disciplines as the detailed design of the SOE system and construction dewatering develops.	**Construction** • Monitor displacement and vibration and ensure the stability and integrity of each utility in accordance with each respective utility owner. • Ensure the EMP includes monitoring requirements to ensure the implementation and effectiveness of mitigation measures with respect to utilities. Include a proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor and requirements for regular reporting, as appropriate. **Operations** • None proposed.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		• Re-assess extents of utilities to be relocated and/or supported and develop mitigation measures as/when required. • Develop Monitoring Plans in conjunction with geotechnical and the various relevant utilities to establish parameters for construction regarding vibration and settlement. • Consider City of Toronto's sewer replacement on Yonge Street from Queens Quay to King Street (scheduled to commence in 2024). Although this work is not deemed in conflict with the Project, it should be considered and checked as part of detailed design. • Continue coordinating meetings with Waterfront Toronto to coordinate tree planting zones and restoration design of Bay Street. • Coordinate with structural on detailed design of the SOE system so that existing utilities that cross the SOE system (secant pile walls etc.) and are to remain can be maintained. • Further analyze Sanitary Capacity to run a design rainfall event through the InfoWorks model to gain an understanding of baseline and proposed capacity constraints during wet weather conditions. • Coordinate with landscaping during detailed design to ensure adequate clearances are met and avoid potential conflicts with trees and tree soil trenches. • Schedule removal and reinstatement of Toronto Hydro ducts and chambers above Union Station to coincide with new electrical works at Union Station which will result in disruption to power supply to Queens Quay station, in order to minimize impacts to power supply to Queens Quay <u>Area B:</u> • Continue outreach with third-party utilities to inform affected parties of potential future relocations and to understand and coordinate planned infrastructure improvements.	

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		• Coordinate on timing and sequencing of utility work with utility owners. • Integrate each utilities' relocation plans into the overall construction planning to mitigate impacts and disruption. • Implement temporary protections and support throughout the corridor during construction for utilities and servicing that are to remain. • Coordinate work with the decommissioning of the existing Hydro One 115-kilovolt lines, which may still be in use depending on the timing of the transit construction. • Further develop and implement combined sewer outfall recommendations to ensure it remains functional throughout construction if needed. **Operations** <u>Area A:</u> • Protect new/temporary power feed to Queens Quay-Ferry Docks LRT Station during construction in order to secure power supply to Queens Quay-Ferry Docks LRT Station. <u>Area B:</u> • Consider upgraded utility materials that are more resistant to degradation from impacted soil and groundwater in certain areas of Queens Quay East (coal tar impacted area).	
Transportation infrastructure			
Transit network	**Construction** • Interim adjustments to transit operations will be needed.	**Construction** • Develop a TTMP during detailed design which will identify detours/lane closures/restrictions and	**Construction** • Monitor transit operations during each construction stage. • Ensure the EMP includes monitoring requirements for adherence to TTMP and other mitigation measures to be taken, as well as a

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
	• TTC identified need for an end-of-line facility in the vicinity of Union Station to support bus operations. **Operations** <u>Higher order transit</u> • The addition of the LRT guideway will address the study area's current lack of higher order transit. <u>Expanded infrastructure capacity</u> • Expansion of the Union LRT Station Loop and Queens Quay-Ferry Docks LRT Station increases platform capacity, improves the customer experience, and provides operational flexibility, benefiting users across the entire Waterfront Transit Network. <u>Transit-first development approach</u> • The LRT guideway responds to the Official Plan's transit-first development approach by implementing transit prior to the completion of residential and commercial development to encourage the use of sustainable transportation modes and reduce car reliance and congestion. <u>Speed, travel time, and service reliability</u> • The implementation of single-stage crossings rather than two-stage crossings in select locations results in a minor reduction of streetcar speed, travel time, and reliability.	identify measures to maintain adequate bus service. • Develop alternative stops and detour routes to provide continued service during construction. • Consider whether temporary bus service on Queens Quay West requires adjustments to physical infrastructure including signal heads and positive guidance elements as well as signal timing changes. • Ensure the Queens Quay East cross section provides space to operate a frequent, high quality bus service including transit priority measures where possible. • Consider the implementation of transit-priority measures including bus lanes on Yonge Street as well as other elements such as transit signal priority to ensure reliable travel times for customers. **Operations** <u>Speed, travel time, and service reliability</u> • Rationalize and optimize stop locations and frequency, without changes to service coverage area of the lands between the rail corridor and water's edge, and ensuring controlled pedestrian crossings to and from transit stops. • Apply modifications and design refinement to reduce the volume of pedestrian encroachment onto the LRT tracks, including those which are being studied and monitored through pilot projects on Queens Quay West. • Optimize traffic signal timing to prioritize transit, and explore further opportunities, such as block signaling, beyond City-standard practice for improved transit signal priority. • The TTC has identified that the target average transit vehicle travel speed should be 15 kph. Furthermore, the transit service reliability should be improved such that the coefficient of variation of	proposed schedule of on-site inspection and monitoring by a qualified Environmental Monitor and requirements for regular reporting. **Operations** • Monitor transit operations post-construction to identify and mitigate excessive delays or detrimental queues.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		headways is 0.30 or better (i.e. vehicles slightly off headway).	
Pedestrian network	**Construction** • Sidewalks may be narrowed and/or temporarily closed during construction. • Crosswalks may be temporarily closed during construction. **Operations** • The addition of signalized intersections along the corridor will create new crossing locations for pedestrians, increasing connectivity between the waterfront and points north. • The proposed pedestrian promenades are significantly larger than the existing pedestrian facilities in the study area. • The design includes new public spaces – such as the Yonge Slip – where pedestrians may gather.	**Construction** • Provide adequate communication regarding changes to pedestrian facilities. • Provide alternate AODA-compliant routes for pedestrians where existing facilities are impacted by closures. • Develop TTMP, including mitigation measures for pedestrians. **Operations** • No mitigation measures proposed	**Construction** • Ensure the EMP includes monitoring requirements for adherence to on-site compliance management process, including TTMP, as well as a proposed schedule of on-site inspection and monitoring and reporting. **Operations** • Conduct in-service review of pedestrian conditions during operations.
Bike network	**Construction** • Bike lanes on Bay Street may be temporarily closed during construction. • The MGT will be maintained during construction. **Operations** • The MGT will be enhanced. • Connections to bike facilities on north-south streets will be added.	**Construction** • Provide adequate communication regarding changes to bike facilities. • Provide adequately signed detour routes when bike facilities cannot be maintained. • Develop TTMP, including mitigation measures for cyclists. **Operations** • No mitigation measures proposed.	**Construction** • Ensure the EMP includes monitoring requirements for adherence to on-site compliance management process, including TTMP, as well as a proposed schedule of on-site inspection and monitoring and reporting. **Operations** • Conduct in-service review of bike conditions during operations.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
Road network	**Construction** • Construction will impact traffic along the entire extent of the corridor. The majority of impacted intersections during construction will have only one operating lane in each direction. **Operations** <u>Lane reduction on Queens Quay</u> • The number of travel lanes along Queens Quay will be reduced from four lanes to two lanes. <u>East portal</u> • The new east portal will block vehicular access to the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal and require a reconfiguration of the existing Queens Quay West corridor between Bay Street and Yonge Street, including the elimination of the existing eastbound left turn used to access the Residences of the World Trade Centre. <u>Large vehicle accommodation</u> • The design has considered tractor trailer accommodation only at certain intersections. • Redpath Sugar Plant entrance can only be approached from the west by trucks.	**Construction** • Optimize signals' cycle lengths and timing plans to improve intersection delay. • Use appropriate means (such as portable variable message signs) to divert traffic away from the construction areas. • Interconnect temporary traffic signals at main intersections along Bay Street and Queens Quay to help manage potential queue spillbacks between adjacent intersections. • Develop TTMP, including traffic control plans in line with Ontario Traffic Manual Book 7 Temporary Conditions. **Operations** <u>Lane reduction on Queens Quay</u> • Add new multimodal transportation facilities (including higher-order transit, the MGT, and the pedestrian promenade) which increase the overall capacity of Queens Quay East. • Extend Harbour Street (to be delivered as part of another project), which will provide alternative routing options that may be used instead of Queens Quay East. • Remove the existing ramp from northbound Bay Street to eastbound Gardiner Expressway (to be removed as part of another project) to reduce trips northbound on Bay Street and westbound on Queens Quay as people will need to re-route to Lake Shore Boulevard to gain access to the Gardiner Expressway at Lower Jarvis Street. • Add new turning lanes throughout the corridor to prevent queues from forming as a result of turning vehicles blocking through traffic. • Ensure appropriate signal timing to minimize delays to traffic, transit, and pedestrians.	**Construction** • Monitor traffic operations and signalization during each construction stage to mitigate excessive delays experienced at key intersections as required. The City of Toronto RESCU system may provide good coverage of the construction area and provide an efficient means of monitoring. Discussion with the City on the potential for this would be beneficial. Ensure the EMP includes monitoring requirements for adherence these requirements, as well as a proposed schedule of on-site inspection and monitoring, and reporting. **Operations** • Monitor traffic operations post-construction, including counts and site observations, to identify and mitigate excessive delays or detrimental queues. • Post construction lane configurations and signal phases were identified based on the assumed area road improvements and area developments. Compare these assumptions to conditions at the time construction is completed, to determine the need for updates to these recommendations.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		<u>East portal</u> • Ensure the Yonge Slip infill provides new access points for both the Westin Harbour Castle Hotel and the Jack Layton Ferry Terminal. The slip will be accessible via a new south leg at the signalized Yonge Street intersection. • Mitigate the removal of the turn lane into the Residences of the World Trade Centre by: moving the coach buses, taxis and deliveries that are currently accommodated off Queens Quay West into a new drop-off area located on the slip infill; the addition of multimodal transportation facilities which increase Queens Quay's overall capacity; and the anticipated reduction in traffic volumes on Queens Quay due to the addition of alternative routing options. <u>Large vehicle accommodation</u> • Implement the specific truck route developed for Redpath Sugar Plant and Loblaws. Queens Quay East has been designed to accommodate a southbound left turn from Yonge Street to accommodate inbound trucks. • Ensure Redpath Sugar Plant has two dedicated right turn lanes into their property (west driveway and centre driveway) to accommodate trucks.	
Climate change and sustainability			
Carbon emissions	**Construction** • The Project will generate embodied carbon emissions. **Operations** • The Project will generate operational / whole-life carbon emissions	**Construction** The following mitigation measures may be considered to enhance the Project: • Reuse existing materials and structures where possible. • Maximize building and infrastructure asset use. • Use recycled materials locally sourced to reduce use of virgin materials. • Specify low carbon concrete and other materials.	The monitoring measures below outline both criteria for establishing mitigation measures as well as actions for monitoring the effectiveness of mitigation. **Design** During design, the following may be considered: • Complete a GHG mitigation assessment including an assessment of the embodied carbon of the new infrastructure and use this to establish targets.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
		• Optimize structural systems and material use for permanent and temporary structures. • Improve construction means and methods to reduce construction waste, as well as electricity and fuel-consumption use from heavy machinery. • Select low carbon products and procure from responsible and sustainable sources. **Operations** The following mitigation measures may be considered to enhance the Project: • Improve energy performance. • Aim for efficient electricity consumption. • Improve energy use monitoring. • Increase traction power efficiency. • Select carbon offsets.	• Include recommended actions in Chapter 5 as specifications for material procurement and design requirements. • Complete energy models to determine estimated energy consumption of building and traction power loads to inform the operational carbon of the Project. • Specify metering equipment to measure actual energy consumption. • Utilize Environmental Product Declarations for the GHG mitigation assessment and determine reductions to the Project's overall embodied carbon based on material selection as an indicator of effectiveness of design specifications. **Construction** • Specify provisions for construction emissions in the EMP and monitor emissions. • Utilize Environmental Product Declarations for the GHG mitigation assessment and determine reductions to the Project's overall embodied carbon based on material selection as an indicator of effectiveness of design specifications. **Operations** • Track energy consumption during commissioning and monitoring of the system. • Consider exploring offsets to meet decarbonization goals.
Urban ecology	**Construction and Operations** • The health of urban ecosystems and the implementation of nature-based solutions will affect the Project's impact on climate change.	**Construction and Operations** The following mitigation measures may be considered to enhance the Project: • Restore aquatic/terrestrial habitat. • Restore vegetation. • Integrate green/blue infrastructure. • Mimic nature's assets through use of permeable materials, etc.	**Construction and Operations** • If restoration activities are undertaken, consideration may be given to monitoring the completion of these measures in accordance with specifications as well as the condition of the restoration activities post-construction.
Climate effects on the Project	This section summarizes impacts of the changing climate on the Project. • Precipitation: ○ Larger volumes of water being discharged to stormwater systems at one time	This section summarizes recommended mitigation measures to address impacts of the changing climate on the Project. • Increased precipitation:	**Construction and Operations** • If mitigation measures are implemented, consideration may be given to monitoring the completion of these measures in accordance with specifications.

Exhibit 7.4 continued Mitigation and monitoring activities

Environmental component	Potential Impact	Mitigation Measures	Monitoring Activities
	○ Increased potential for flooding ○ Unknown impacts on groundwater levels • Snowfall: ○ Daily extreme precipitation events may increase in intensity, some of which may precipitate in the form of snow. • High temperatures: ○ Greater thermal expansion of trackwork, pavements and structures. ○ Reduced thermal comfort for occupants of the underground Queens Quay-Ferry Docks LRT Station and Union LRT Station. ○ Reduced thermal comfort for riders waiting at above ground stations and users of the multi-use path. ○ Reduced thermal comfort for maintenance workers. • Droughts: ○ Droughts may negatively impact vegetation.	○ Design stormwater management systems to adhere to relevant guidelines. ○ Further analyze the climate change related impact on the intensity-duration-frequency (IDF) curves during detailed design. ○ Complete flood management works being done through the Don Mouth Naturalization and Port Lands Flood Protection project. ○ Consider the potential impact of changes to the groundwater levels in the design of below ground structures. ○ Design works adjacent to the water to consider the TRCA's 2020 regulatory 100-year high water level (which includes raising existing dockwall elevations and designing new dockwalls to this elevation). ○ Raise surface grades where possible. • Snowfall: ○ The operational and maintenance plan for snow clearing of the rail track should be reactive to any observed changes in snowfall patterns. • High temperatures: ○ Include hard and soft landscaping in the form of station canopies, trees, and native planting. ○ Design expansion joints to consider the projected increase in temperature. ○ Consider thermal comfort in underground stations. Study the performance of the stations' passive cooling during detailed design to ensure they can maintain acceptable temperatures. • Droughts: ○ Use drought-resistant plant species.	

Exhibit 7.4 continued Mitigation and monitoring activities

References

Endnotes

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