

GARDINER EXPRESSWAY AND LAKE SHORE BOULEVARD EAST RECONFIGURATION ENVIRONMENTAL ASSESSMENT

Infrastructure Baseline Conditions Report - 2014



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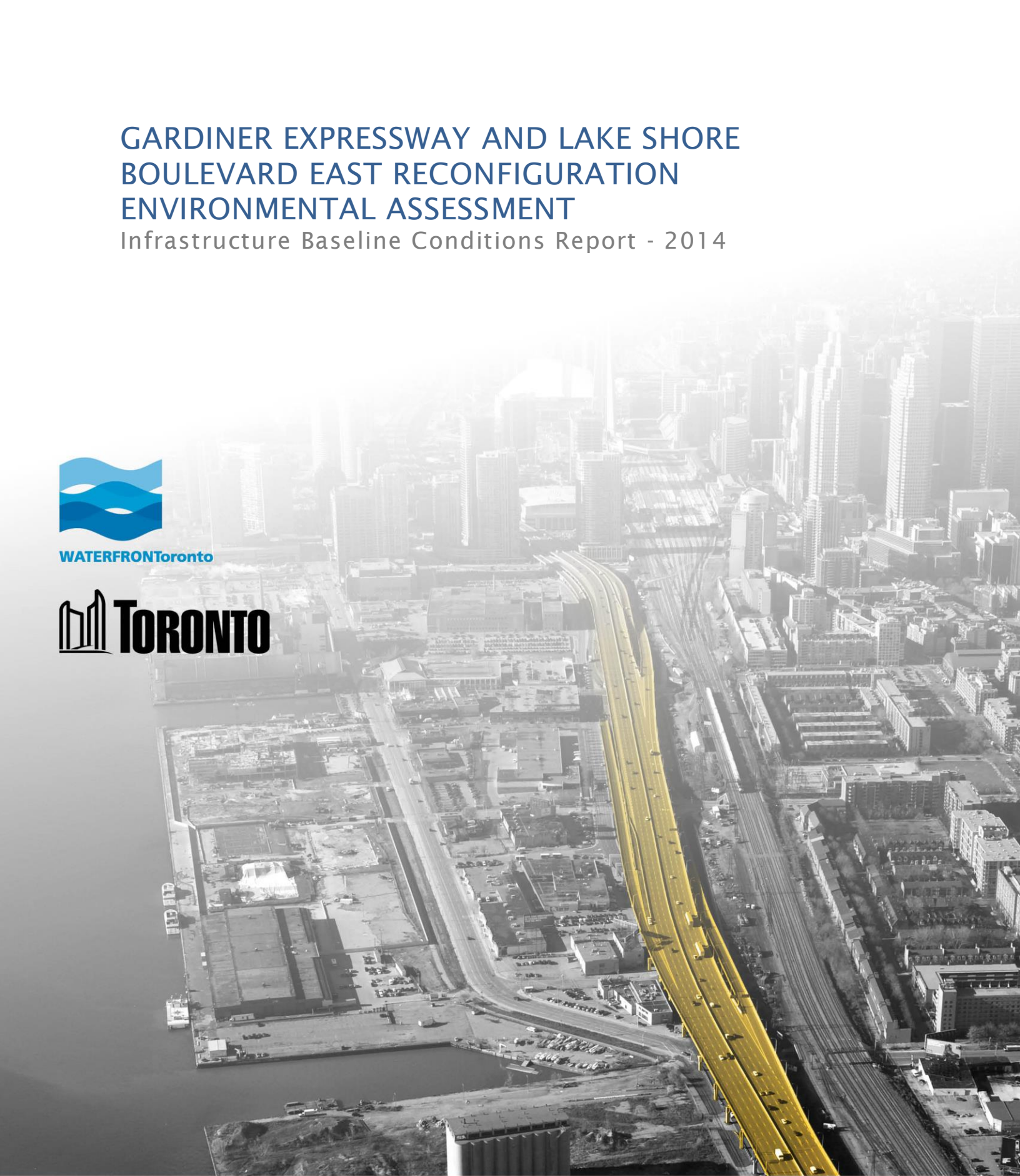


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1.0 INTRODUCTION

This report has been prepared to document the infrastructure baseline conditions in the Gardiner Expressway and Lake Shore Boulevard East Environmental Assessment (referred to as the Gardiner East EA) study area. Waterfront Toronto and the City of Toronto (City) are jointly undertaking this Individual Environmental Assessment to determine the future of the eastern portion of the elevated Gardiner Expressway and Lake Shore Boulevard from approximately Lower Jarvis Street to approximately Leslie Street. The EA is being completed pursuant to the Ontario *Environmental Assessment Act* (EAA).

The Gardiner East EA project extends through an area of the waterfront that is undergoing extensive transformation. As part of Toronto's waterfront revitalization initiative, many of the historical industrial uses in the area are changing into complete mixed-use communities not only with new population and employment growth, but with new servicing, infrastructure, public spaces and amenities. The planning process for many of the communities in the study area is still underway and as such, two conditions for assessment needed to be addressed: the existing baseline conditions that consider what is on the ground and functioning in the study area today (based on 2013 reporting); and a future condition that depicts what the study area will be like once the undertaking is fully operational (a 2031 condition).

1.1 Study Area

In 2009 the study area for the EA was defined in the Terms of Reference (ToR) as the section of the Gardiner Expressway and Lake Shore Boulevard East that extends 2.4 km from approximately Lower Jarvis Street to Logan Avenue. Since 2009 this study area has been revised to a slightly greater area in order to capture transition areas to the east and west and the Richmond/Adelaide interchange with the Don Valley Parkway (DVP). The study area now extends from approximately Lower Jarvis Street to approximately Leslie Street. This study area is referred to as the Environmental and Urban Design Study Area. It includes the lands in the vicinity of the section of the Gardiner Expressway and Lake Shore Boulevard East that are being considered for reconfiguration. These are the areas that could potentially experience disruption effects and be transformed through redevelopment opportunities. **Figure 1** illustrates the study area.

From the perspective of the Infrastructure lens, the area of potential direct physical impact (where there may be changes in physical infrastructure) to the Gardiner and Lake Shore Boulevard East is:

- South of the rail corridor, between Yonge Street and Logan Avenue;
- The Don Valley Parkway corridor, as far north as the Richmond Street interchange;
- The Richmond / Adelaide corridor, if modifications are required in order to accommodate diverted traffic demand under some alternatives.

The core precincts and neighbourhoods that have the greatest potential to be affected by the undertaking due to proximity to the Gardiner Expressway and Lake Shore Boulevard East corridor include the St. Lawrence Neighbourhood, Distillery District, West Don Lands, Lower Yonge, East Bayfront, Keating Channel, Lower Don Lands and Villiers Island, Port Lands, and South Riverdale/Studio

District. The former Unilever Soap complex in the South of Eastern Area is also proposed as a significant new neighbourhood.

Figure 1: Study Area



2.0 STUDY METHODOLOGY

Infrastructure data was collected from numerous available sources (Waterfront Toronto, City of Toronto, utility companies etc.), previously completed studies including environmental assessments, available historical records, and field reviews. This baseline conditions report is based on the information available at the time of reporting. This information has been presented graphically where possible. The main reports reviewed are described in Section 8.0 References. There are many other EAs, plans and studies that have been completed or are in the process of being completed in the study area. These include initiatives by several different agencies and private landowners. To the extent possible, these studies were considered in the completion of the EA study and used in describing the future baseline conditions likely to exist in the area in 2031. The infrastructure and transportation baseline conditions consider the physical infrastructure as well as the modes and users of the infrastructure which include pedestrians, cyclists, automobiles and truck traffic (i.e. goods movement).

To review and assess the infrastructure information, the existing and future conditions in the Study Area were considered in terms of the following categories:

- Road infrastructure, including expressways, collectors, arterials, and local streets
- Rail infrastructure, including rail lines and yards
- Public transit infrastructure
- Pedestrian and cycling infrastructure
- River and harbour infrastructure
- Utilities

3.0 DESCRIPTION OF EXISTING BASELINE CONDITIONS

3.1 Introduction

The following section details existing infrastructure conditions in the study area. Particular focus is given to the portion of the study area south of the rail corridor between Lower Yonge Street and Logan Avenue as facilities in this area will likely be most directly affected by the alternatives.

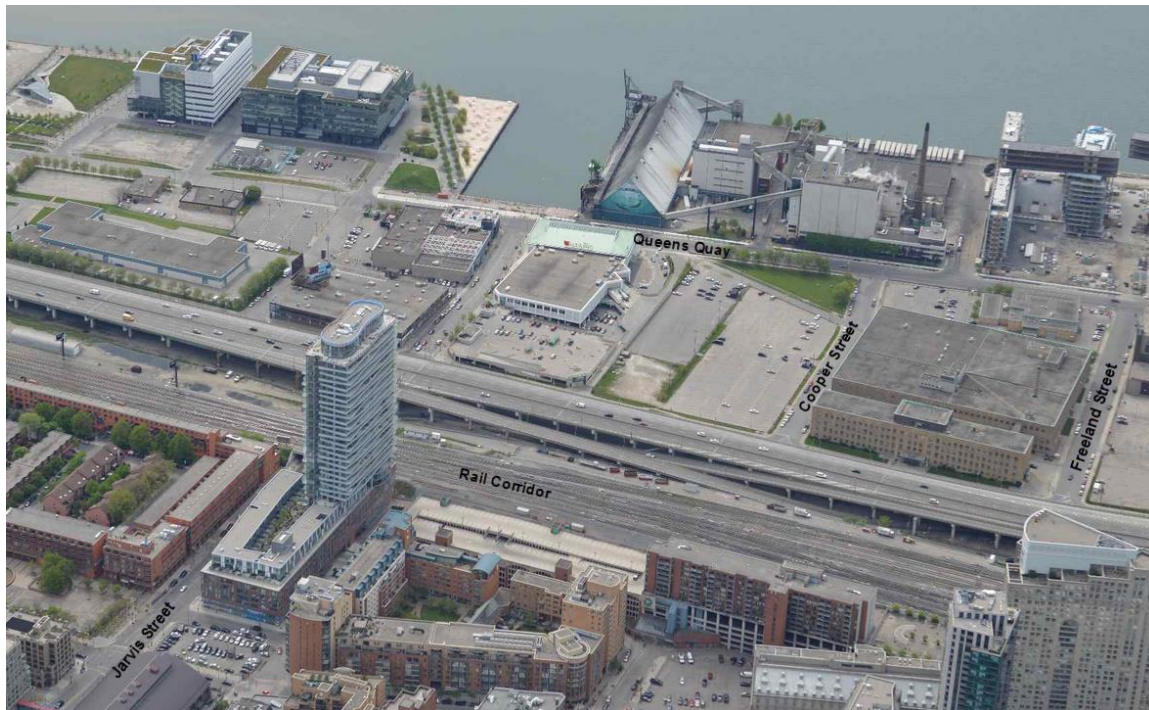


Eastern Terminus of the Gardiner Expressway and DVP Ramps looking southwest

The existing infrastructure description in this section is organized according to the following categories:

- Roads
- Rail
- Public transit
- Off-road pedestrian and cycling
- River and harbour
- Utilities
- Parks and open spaces
- Property and site access
- Structures

Planned future infrastructure in the study area is described in Section 4.



West End of the Study Area

Detailed operational information on roadways, transit, bicycle routes, pathways and pedestrian facilities can be found in the **Transportation Systems Planning Baseline Conditions Report** (TSP Report). The TSP Report is also an appendix to the Gardiner Expressway and Lake Shore Boulevard East Reconfiguration EA and Urban Design Study. This report and the TSP Report, together, provide a complete transportation planning and engineering understanding of the study area.

3.2 Road Infrastructure

Information on the existing road infrastructure in the study area is organized into the following categories:

- Gardiner Expressway Corridor
- Don Valley Parkway
- Lake Shore Boulevard Corridor
- Roads and Street

Figure 2, Existing Road Hierarchy, illustrates the existing road hierarchy in the study area.

3.2.1 Gardiner Expressway Corridor

The Gardiner Expressway – Lake Shore Boulevard pair is an integrated system of roadways and ramps providing service to both through and local traffic. As shown on **Figure 2**, the elevated Gardiner Expressway runs generally directly above the ground-level Lake Shore Boulevard. The Gardiner Expressway has a posted speed limit of 90 km/h.

The 3.0 km elevated section of the Gardiner Expressway in the Study Area contains four westbound lanes at its east end; two from the Don Valley Parkway and two from Lake Shore Boulevard East. A westbound exit ramp (one lane) exists to allow access to Sherbourne Street and to Lake Shore Boulevard. The westbound Gardiner continues west of Parliament Street as a three lane roadway then develops a two-lane exit ramp that provides access down to Yonge Street.

In the eastbound direction, an off-ramp to Bay Street provides existing opportunities for northbound traffic only. An eastbound Gardiner exit ramp is also in place west of Yonge Street, which provides access to Jarvis Street (southbound only) and to Lake Shore Boulevard. The eastbound Gardiner in the west part of the study area is basically a 3-lane through road with additional lanes associated with ramps at Yonge Street and Jarvis Street. From just east of Parliament Street easterly the road is 4 lanes wide and approaching the Don Valley Parkway the road splits into two, 2-lane ramps: one two-lane ramp northbound to the DVP and one two-lane ramp eastbound to Lake Shore Boulevard East. The Don Valley Parkway ramps extend for approximately 0.5 km to the north. The ramps connecting to the Don Valley Parkway have a maximum grade of 6.0% (for the northbound off-ramp). The ramps connecting to Lake Shore Boulevard have maximum grades of 5.6%, both on and off the Gardiner. Of note is that the Gardiner Expressway has minimal inside and outside shoulders in either direction, including on the entrance and exit ramps.

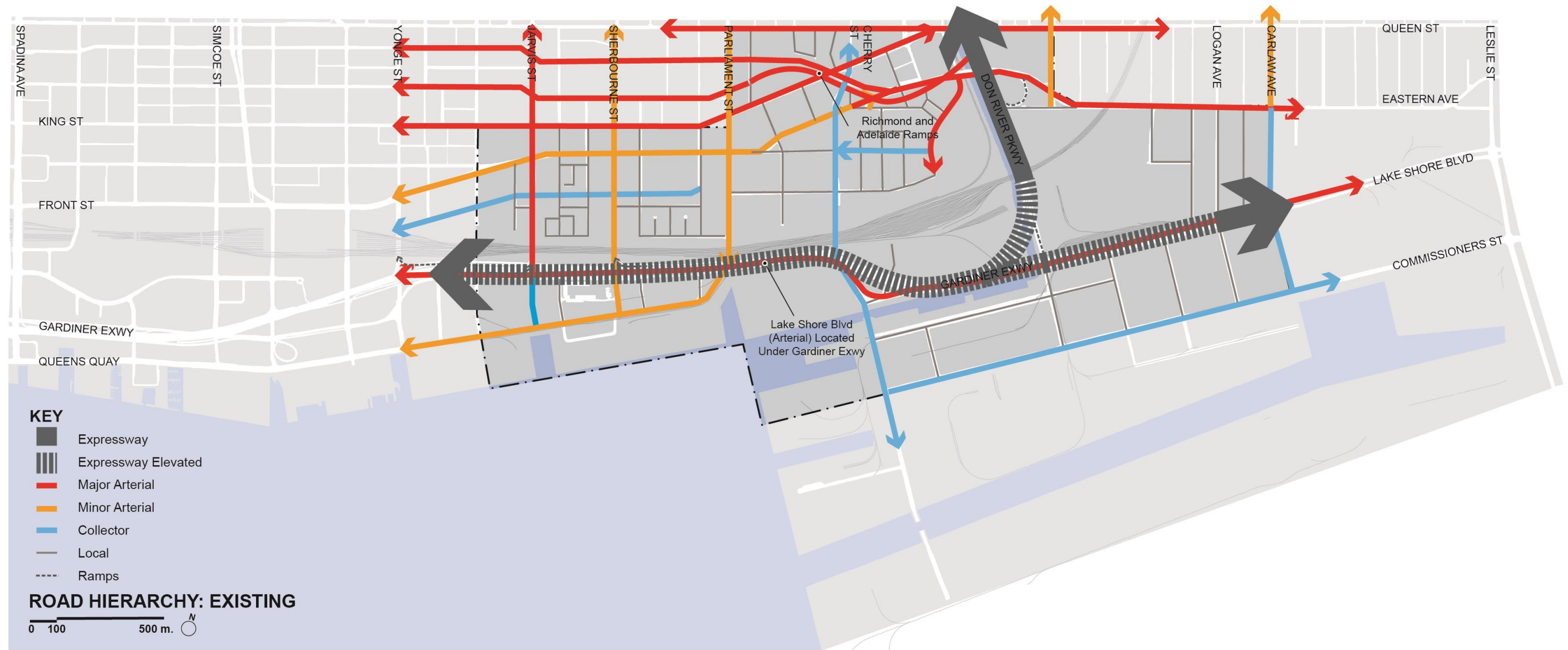


Gardiner Expressway structure east of the Don River with Lake Shore Boulevard below – looking west

The elevated Gardiner Expressway from Yonge Street to its terminus between Bouchette Street and Booth Avenue, east of the Don Valley Parkway, is made up of a series of concrete bridge deck slabs on girders held up by wide pier caps supported by rows of piers. The piers are either 2-legged or 3-legged in this section. This arrangement generally consists of reinforced concrete cap beams which support steel and concrete girders with rectangular vertical columns. The cap beam and supporting columns are

generally referred to as a “bent”. The bridge deck and piers are over 50 years old and are now past the end of their normal service life. Comprehensive deck and pier rehabilitation is undertaken on an annual basis to keep the Expressway safe for use.

Figure 2: Road Hierarchy



Construction History

a) York Street to Don River

Originally constructed in 1964, this segment was proposed to be at ground level with a “cloverleaf” style interchange with the Don Valley Parkway. This layout was revised due to land-use constraints and constructed as an elevated section that passes over Lake Shore Boulevard and at its eastern end forks into a flyover of the Don River mouth and a separate connector to the east.

b) Don River to Leslie Street

Opened in 1966, this segment terminated just east of Leslie Street. Eastbound traffic exited the Expressway to an interchange at Leslie Street and the former Keating Street, which was later renamed Lake Shore Boulevard. The design of this segment was planned for a potential future connection with the previously planned, but never constructed “Scarborough Expressway,” now Highway 2. The elevated section of the Gardiner Expressway between the Don River and Leslie Street was removed in 2001. Demolition was first proposed in 1990 by the Crombie Commission and the Lake Shore-Gardiner Task Force. The segment was in need of extensive repairs and in 1996 an environmental assessment determined that it would cost \$48 million to refurbish the Gardiner from the Don Valley Parkway to Leslie Street, but only \$34 million to tear it down. The final cost of the demolition was \$39 million.

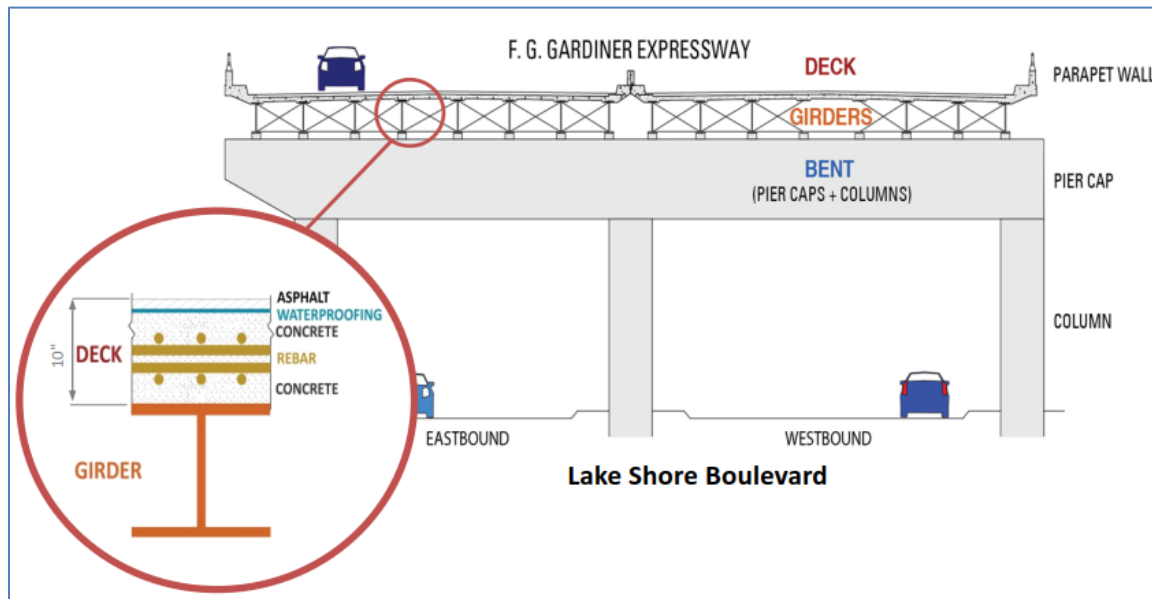


Lake Shore Boulevard Commemorative Art Treatment with Bike Path – just west of Leslie Street looking west

Eastbound Gardiner Expressway traffic now exits the Expressway directly to Lake Shore Boulevard at Booth Avenue via a newly constructed off-ramp. East of the off-ramp, Lake Shore Boulevard East has been reconstructed with landscaping and a paved bicycle path on the north side of the street that extends for approximately two kilometres from the “Martin Goodman Trail” at Cherry Street to Coxwell Avenue. A local artist created a commemorative piece for the demolished elevated expressway that consists of several re-purposed supportive concrete bents (refer to photo).

Present Deck Condition and Maintenance Issues

The elevated Gardiner Expressway in the study area is made up of a series of concrete bridge deck slabs on girders held up by wide pier caps supported by rows of piers. The piers are either 2-legged or 3-legged in this section. This arrangement generally consists of reinforced concrete cap beams which support steel and concrete girders with rectangular vertical columns. The cap beam and supporting columns are generally referred to as a “bent”. The segment of Gardiner Expressway in the Study Area is approximately 1.9 km in length. The spans are generally between 18 m to 21 m (60 to 70 ft.) in length, except for the spans over the main north-south roads at Yonge Street, Jarvis Street, Sherbourne Street, Cherry Street and Parliament Street, which are approximately 30 m (100 ft.). The bents are mainly supported by reinforced concrete piers (some with steel cap beams) with rectangular columns and single cap beams. The figure below provides a schematic of the basic structural elements.



Structural Elements of the Gardiner Expressway

The original structure constructed in and around 1963 in this section of the Expressway is composed of 180 mm thick concrete deck slab on steel I-girders. The spans were originally all simply supported with various deck widths ranging from a minimum of 33 m to a maximum of 44 m. Within the study area the Gardiner structure runs above Lake Shore Boulevard (in most sections) with on and off ramps at Lake Shore Boulevard and Booth Avenue, Sherbourne Street, Jarvis Street and Yonge Street. The Gardiner

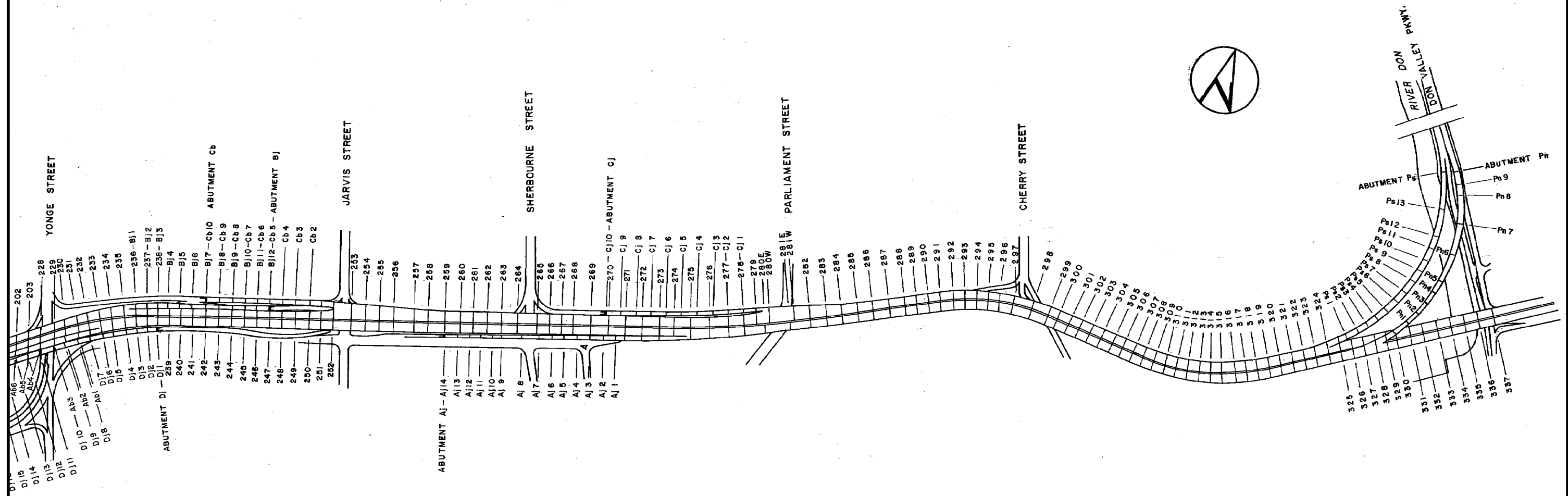
Expressway also connects along an elevated roadway (similar to ramps) directly to the Don Valley Parkway (north and southbound).

Figure 3 illustrates the engineering bents of the elevated Gardiner Expressway structure. A bent is a structural element or pier arrangement supporting a bridge deck segment, made up of two or more columns. **Figure 4** illustrates Gardiner ramp locations within the study area. Due to the presence of these ramps, there are a few lane number and bridge width changes along this portion of the expressway. Starting from the east end of the project limit at Bents 320 & 324 and going westbound, the westbound deck gradually increases from 3 lanes to 5 lanes, 2 of which subsequently exit onto Sherbourne Street via Ramp Aj; then the deck returns to 3 lanes wide, but widens out again when approaching the next off-ramp at Jarvis Street, Ramp Cb. Starting from the west limit of the project at Yonge Street and going eastbound, the deck was originally 3 lanes wide, but was gradually narrowed down to 2 lanes by the installation of precast concrete barrier walls starting from the Bay Street on-ramp, until the junction of the main deck with the Jarvis Street On-Ramp (Cj), after which the deck becomes 3 lanes wide.

Comprehensive deck and pier rehabilitation is required on an annual basis to keep the expressway safe for use. After 30 years of original usage, the elevated structure had experienced serious deterioration and beginning in 1990, programmed repair contracts issued by the City of Toronto have been carried out. The maintenance work typically undertaken by the City included refurbishment of the structure, retrofitting substandard details, and necessary repairs. These general repairs included:

- Removal of existing asphalt and waterproofing;
- Removal of the median concrete barrier wall, including headlight glare screens, and construction of a tall concrete barrier wall;
- Removal existing parapet walls, railings, and curbs at exterior cantilever slab. Construction of cantilever slab, and Jersey-type barrier walls with single railing to current standards;
- Construction of new pole bases incorporating the City's new street lighting design;
- General deck repairs including thorough slab repairs;
- Concrete overlay as required;
- Raising existing expansion joint armourage steel angle to accommodate concrete overlay elevation. Extending expansion joints to new barrier wall at edges. Replacing expansion joint seals with new continuous strip seals across full width of the deck;
- Bearing replacements;
- Inspecting and investigating the flexi-link slab condition and performance, repairing as required;
- Inspecting all drainage facilities for appropriate remedial designs;
- Modifying and reconstructing existing sign structure bases.

All above repairs were completed in years 1990-2000 from the west abutment at the CNE site (west of Strachan Avenue) to the off ramps to Don Valley Parkway.



BENTS OF THE GARDINER EXPRESSWAY

Figure 3.0

Figure 4: Gardiner Expressway Ramp Locations





Light Pole and Parapet Arrangement



Typical Hopper Attached to Steel Girder



Gardiner Deck at Jarvis Street



Gardiner Deck at Don Valley Parkway

3.2.2 Don Valley Parkway

The Don Valley Parkway (DVP) is a six-lane expressway, posted at 90 km/h, that connects the two major east-west highways in Toronto, the Gardiner Expressway and Highway 401. The DVP serves downtown Toronto access to/from the eastern part of the city via the Richmond / Adelaide ramps, functions as a central area bypass route (in combination with the Gardiner Expressway), feeds traffic to/from downtown from the south via the Gardiner, and connects with the waterfront via the Don Roadway. The southbound exit from the DVP to Richmond Street utilizes a single lane exit ramp to Eastern Avenue and continues only to the west on Eastern or Richmond Street. About half of the south bound volume in the AM period exits at this ramp. A very short weaving section exists along Eastern Avenue for traffic from the Don Valley Parkway wishing to continue on Eastern Avenue. They must merge to the left immediately to avoid accessing Richmond Street westbound instead.

Don Valley Parkway bound traffic approaching this interchange from the west on Adelaide must pass over the DVP bridge to a single lane loop entry ramp to go northbound. At this interchange there is no local access for northbound traffic on the DVP. In addition, there is no DVP access from the east off Eastern Avenue, either to the north or south.

To the south, the DVP terminates and transitions to the Gardiner via two-lane on-off ramps and to the Don Roadway with single lane entry and exit ramps. The DVP/Gardiner ramps have a design speed of approximately 70 km/h with ramp grades of 3.85% (N-W Ramp) and 6.0% (W-N Ramp). The posted speed on these ramps is 60 km/h. The transition to the Don Roadway is via sub-standard single lane entry-exit roadways. The southbound DVP exit lane to Don Roadway is narrow with minimal shoulders and abrupt horizontal and vertical alignment changes which restrict visibility. The alignments of both Don Roadway ramps where they are adjacent to the DVP ramps are constrained by the piers and retaining walls of the DVP ramps, creating the need for the sub-standard geometry.

North of the local study area, there are northbound on-ramps from Queen Street and Dundas Street. The Bloor Street / Bayview Avenue interchange also provides downtown access, predominantly to the north end of downtown.

3.2.3 Lake Shore Boulevard East Corridor

Lake Shore Boulevard East is a 6-lane divided roadway classified as a major arterial with a posted speed of generally 60 km/h with some sections posted at 50 km/h (eastbound from west of Yonge Street to Richardson Street; westbound from Sherbourne Street westerly). A portion of Lake Shore Boulevard in the Cherry Street area is positioned totally south of the Gardiner and the eastbound lanes between Lower Yonge Street to just east of Bonnycastle Street are positioned south of the Gardiner. Elsewhere Lake Shore Boulevard is situated directly under the Gardiner Expressway deck.

Lake Shore Boulevard operates as separate one-way roadways. Because of the Gardiner Expressway, Lake Shore Boulevard, and the Expressway ramps are typically parallel to each other in a confined right-of-way, Lake Shore Boulevard also serves as a connection between the on- and off-ramps and the north-south roadways entering downtown. East of the Don Valley Parkway, Lake Shore Boulevard continues as a six-lane major arterial, and ultimately ending at Woodbine Avenue.

The majority of the study area is characterized by an interconnected grid network of arterials with short block spacing. In some cases this grid system is broken by geographic, transportation, or land use constraints (predominantly the rail corridor, Gardiner Expressway and Lake Shore Boulevard, but also the Don River / Don Valley Parkway and the south of Eastern Avenue employment corridor to the east).

Within the study area, Lake Shore Boulevard intersects with several major arterial roadways with full traffic signalization provided at Lower Jarvis Street, Lower Sherbourne Street, Parliament Street, Cherry Street (north and south), the Don Roadway and Carlaw Avenue. Unsignalized T-intersections exist at Richardson Street, Bonnycastle Street, Small Street, Saulter Street, Bouchette Street, Booth Avenue and Logan Avenue (both sides).



View along Lake Shore Boulevard below the Gardiner Expressway

Lake Shore Boulevard has a limited number of private driveway connections to adjacent land uses, mostly to industrial properties. Just east of Cherry Street is the entrance to GO Transit’s Sorting Yard and layover site. Just west of Jarvis Street there is a service (truck) entrance to the Loblaws site for eastbound traffic. East of the Don River, Lake Shore Boulevard is essentially access-restricted except for one gas station on the south side at Carlaw Avenue. Several Lake Shore Boulevard “median slip-offs” exist throughout the study area for access across the opposing lanes.

3.2.4 Roads and Streets

Figure 2 in section 3.2.1 illustrates the street hierarchy in the study area. Queens Quay is the main road in the East Bayfront Precinct. It is an east-west road, is located between Lake Shore Boulevard and the lake. It is a four lane road with approximate pavement width of 19.0 m and a posted speed of 50 km/h. It terminates by hooking into Parliament Street at its eastern end.

Table 1, Characteristics of Key, Directly Affected Roads in the Study Area, summarizes the characteristics of the area roads in the immediate vicinity of the Gardiner-LSB corridor.

Table 1: Characteristics of Key, Directly Affected Roads in the Study Area

Road Name	Classification	Lanes	Sidewalks	Posted Speed	Comments
North-South Roads that Intersect the Gardiner/Lake Shore Corridor					
Yonge Street	Major Arterial	4 lanes	Both sides	50 km/h	On road bike lanes – both directions
Freeland Street	Collector Road	4 lanes (14 m)	Both sides	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)
Cooper Street	Local Road	4 lanes (14 m)	Both sides	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)
Lower Jarvis Street	Major Arterial north of LSB: Collector Road south of LSB	4 lanes (14 m)	Both sides	50 km/h	
Richardson Street	Local Road	4 lanes (14 m)	None	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)
Lower Sherbourne Street	Minor Arterial	4 lanes (14 m)	Both sides	40 km/h	
Bonnycastle Street	Local road	4 lanes (14 m)	West side only	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)
Small Street	Local Road	4 lanes (14 m)	None	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)

Road Name	Classification	Lanes	Sidewalks	Posted Speed	Comments
					side)
Parliament Street	Minor Arterial	4 lanes (14 m on north side; 16 m on south side with on road bike lanes)	Both sides	n/a (40 km/h)	
Cherry Street – north side	Collector	2 lanes (14 m)	Both sides	n/a (40 km/h)	
Cherry Street – south side	Collector	2 lanes (9 m)	Both sides	n/a (40 km/h)	
Don Valley Parkway	City Expressway	2 in each direction at south end	None	90 km/h	Just south of the rail bridge, DVP loses one southbound lane to Don Roadway. And picks up one northbound lane from Don Roadway
Don Roadway	City Expressway north of LSB; Collector Road south of LSB	2 lanes southbound; 1 lane northbound; 4 lanes south of LSB	None	50 km/h	Don Roadway north of LSB is essentially the local access to and from the DVP
Saulter Street	Local Road	4 lanes (16 m)	None	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)

Road Name	Classification	Lanes	Sidewalks	Posted Speed	Comments
Bouchette Street	Local Road	4 lanes (14 m)	None	n/a (40 km/h)	T intersection with Lake Shore Boulevard (south side)
Booth Avenue	Local Road	2 lanes (9.5 m)	East side only	n/a (40 km/h)	T intersection with Lake Shore Boulevard (north side)
Logan Avenue – north side	Local Road	2 lanes (9.5 m)	Both sides	n/a (40 km/h)	Median on Lake Shore prevents through traffic movements
Logan Avenue – south side	Local Road	2 lanes (16.0 m)	None	n/a (40 km/h)	Pavement markings for 2 lanes. Median on Lake Shore prevents through traffic movements
Gardiner Expressway and Lake Shore Boulevard East					
Gardiner Expressway	City Expressway	Varies from 2 to 4 in each direction	No	90 km/h	No right or left shoulders. Number of lanes includes speed change lanes associated with on-off ramps
Lake Shore Boulevard East	Major Arterial	Varies - essentially 3 basic lanes in each direction (see comments)	North side multi-use pathway at various locations from east study limit to Parliament. Narrow south side sidewalk from Jarvis easterly to Bonnycastle. No SW from Bonnycastle to Parliament. Multi-use pathway on south side from Parliament to Cherry Street. No south sidewalk through Keating area.	Varies between 50 and 60 km/h	There are 2 lanes each way between Booth Street and Saulter Street; 4 lanes west bound west from Sherbourne to just west of Jarvis. LSB east bound starting from Yonge Street is 2 lanes to Jarvis Street. East from Jarvis Street to Saulter Street EB LSB is 3 lanes.

In the broader study area there are 26 main north - south roads:

- Jarvis Street
- Lower Jarvis Street
- Lower Sherbourne Street
- Parliament Street
- Richardson Street
- Bonnycastle Street
- Small Street
- Yonge Street
- Lower Yonge Street
- Church Street
- Don Roadway
- Saulter Street
- Bouchette Street
- Booth Avenue
- Logan Avenue
- Trinity Street
- Cherry Street
- Water Street
- Munition Street
- Overend Street
- Cypress Street
- St. Lawrence Street
- Bayview Avenue
- George Street
- Berkeley Street

In the broader study area there are 14 main east-west roads:

- The Esplanade
- Queens Quay: Queens Quay is the main road in the East Bayfront Precinct. It is an east-west road located between Lake Shore Boulevard and the lake. It is a four lane road with approximate pavement width of 19.0 m and a posted speed of 50 km/h. It terminates by hooking into Parliament Street at its eastern end.
- Lake Shore Boulevard
- Eastern Avenue
- Richmond Street (one way westbound)
- Adelaide Street (one way eastbound)
- Sunlight Park Road (just south of Eastern Avenue east of the Don Valley Parkway)
- Commissioners Street
- King Street East

- Front Street East
- Mill Street

The study area contains numerous additional minor roads, some that are very short in length.

3.3 Rail Infrastructure

As illustrated in **Figure 5** a significant number of rail facilities exist in the area. These are described below.

3.3.1 TTR / Kingston Subdivision

The Toronto Terminal Railway (TTR) maintains a complex inventory of rail facilities along the north side of the Gardiner-LSB corridor). This includes CN Rail's Kingston Subdivision lines and multiple GO Transit lines for their Richmond Hill, Stouffville and Lake Shore East services (the basic number of existing lines is seven in this area).

3.3.2 Yards and Spur Lines

In the study area, there are three rail yards (GO Transit's Don Yard for sorting and layover of GO Trains and the Wilson and Keating Yards for handling local industrial rail traffic mostly for the Port Lands area) and rail spur lines servicing various local industrial and other uses.

The Don Yard is a major GO Transit facility, relatively near to Union Station. GO Transit stores its trains at this location during the off-peak afternoon hours. Light cleaning and maintenance of the parked trains is carried out at this location. This yard is also used by CN for local freight movement.

The Wilson Yard is a city-owned facility used by the Toronto Terminal Railway (TTR) as a sorting yard.

The Keating Yard provides rail access to the Port Lands area via a spur line that runs from the Don Yard through the middle of the Keating lands west of the Don River to connect to the east side of the river then south along the Don Roadway and west along Villiers Street, which is the first east-west street south of Keating Channel.

Figure 5: Rail Infrastructure



There is one spur line that runs north of Lake Shore Boulevard, then crosses under the Gardiner Expressway, across Cherry Street and Lake Shore Boulevard. The line continues west along the south side of the Gardiner Expressway and Lake Shore Boulevard. to Parliament Street. The line then splits with one section following the south side of Parliament Street and Queen’s Quay. This line once served Redpath Sugar and the LCBO warehouse but now terminates approximately 250m south of Parliament Street and serves no industries. The second section, which has had the turnout removed, originally crossed Parliament Street. The line is now paved over (rails still in the pavement), beside most industries, and is used as parking.



Railway spur line heading west along north side of Lake Shore Boulevard. The turnout track is the main lead to the Don Yard and the Union Station Rail Corridor (looking west just west of the Don River)



Abandoned railway spur line under the Gardiner Expressway and crossing LSB to the Metrolinx Don Yard (looking east).



Railway spur line crossing Cherry Street and Lake Shore Boulevard (looking west on the south side of the Gardiner)



Railway Spur line runs beside Lake Shore Boulevard east bound lane from Cherry Street to Parliament Street (looking east, just east of Parliament) – since decommissioned



Abandoned Spur line curves south beside Parliament Street. Turnout has been decommissioned and the Track crossing Parliament Street is still in place.



The Spur Line dead ends approximately 250m south of Lake Shore Boulevard at Parliament Street. There are isolated areas that have abandoned tracks in place, Redpath Sugar, LCBO warehouse



Spur line that crosses Parliament Street, Small Street, and Bonnycastle Street. However, the portion of track beside the adjacent Industries has been paved over for parking.



Isolated track leading to the LCBO Warehouse

The railway spur line running eastward from the Don Lead track crosses over the Don River, on a steel bridge (as seen in the image below), then crosses Don Roadway and into the Keating Yard. A switch and spur track cross over Lake Shore Boulevard and travels down the west side of Don Roadway. South of Lake Shore Boulevard, a turnout allows the lead track to cross Villiers Street and travel down the median to Cherry Street. Also on the north side of Lake Shore Boulevard east from the Keating yard is a rail spur that serves properties in the eastern port lands. This line crosses to the south at the Carlaw Avenue intersection. There is a small storage track and engine run-around track located in the median east of Cherry Street. The line splits with the north track crossing Cherry Street and goes onto the pier serving ESSROC Canada Ltd. The south track crosses Cherry Street and curves down the west side of Cherry Street, crossing Commissioners Ave and terminating immediately north of Polson Street.



Harbour track heads eastward crossing over the Don River and Don Roadway and entering Keating yard.



Steel Bridge over the Don River.



Spur Lead from Keating Yard down south side of Don Roadway



One leg of the lead track along the median on Villiers Street toward Cherry Street.



At Cherry street the right hand track serves ESROC and the left hand track parallels the west side of Cherry Street.



Lead track crossing Commissioners Street.



Lead track heads south towards La Farge plant



End of Track at Polson Street

The lead track going down the west side of Don Roadway South terminates immediately south of Commissioners Street.



Lead track ends South of Commissioners Street.

3.4 Public Transit Infrastructure

Transit service in the study areas (primary and secondary) is provided by the Toronto Transit Commission (TTC) and GO Transit. Longer-distance trips to and from the primary study area are predominantly served by GO rail and bus services (focused on Union Station) and by the TTC subway network. These facilities serve a critical role in providing high-capacity transit access to and from the downtown area. In this way, they are analogous to the primary role of the Gardiner Expressway, which provides a major access to the downtown area.

As shown in **Figure 6**, there is no existing transit-specific infrastructure south of the rail corridor and east of Yonge Street. The only TTC infrastructure in the study area is the streetcar line on King Street East, which merges with the Queen streetcar line just west of the Don River. There is a limited-service north-

south streetcar line on Parliament Street north of King Street. Plans to extend streetcar connections along Queens Quay East and Cherry Street are in progress and are discussed under future conditions.

Figure 6: Existing TTC Streetcar Infrastructure

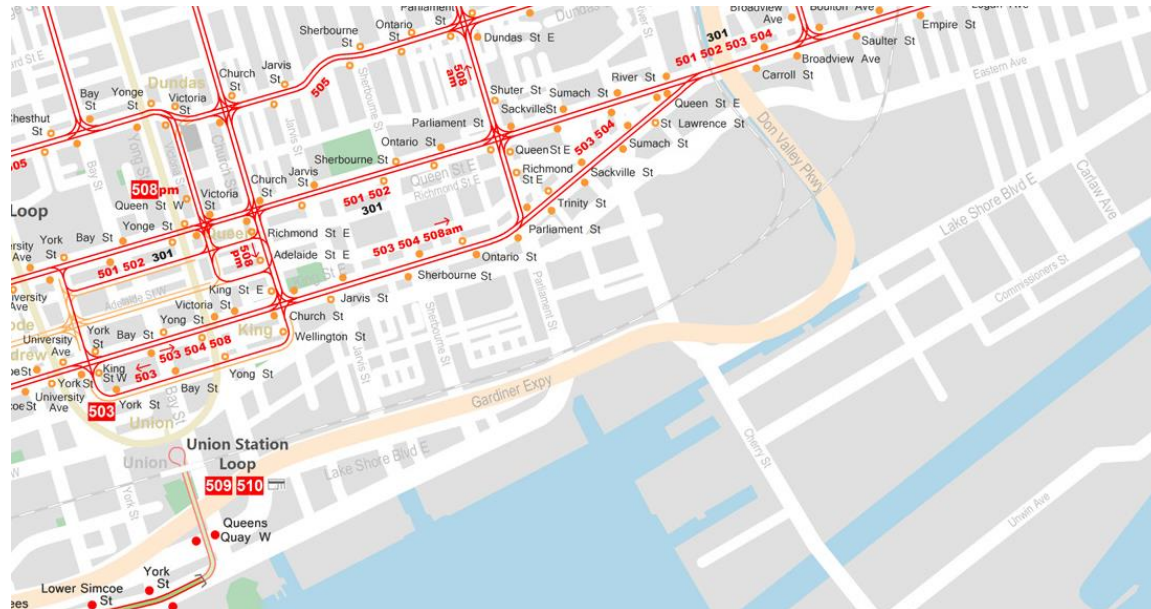
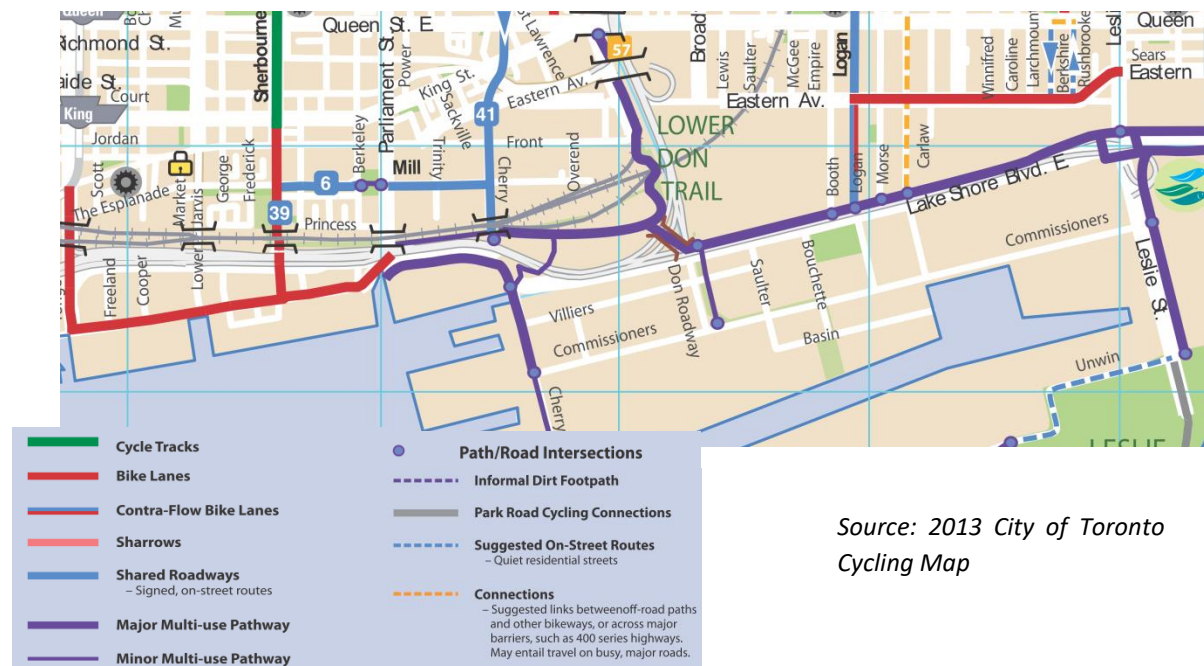


Image Source: http://transit.toronto.on.ca/Off-Road_archives/maps/ttc-streetcar-2010-03.jpg

3.5 Pedestrian and Cycling Infrastructure

Figure 7 illustrates the key cycling paths and routes in the study area.

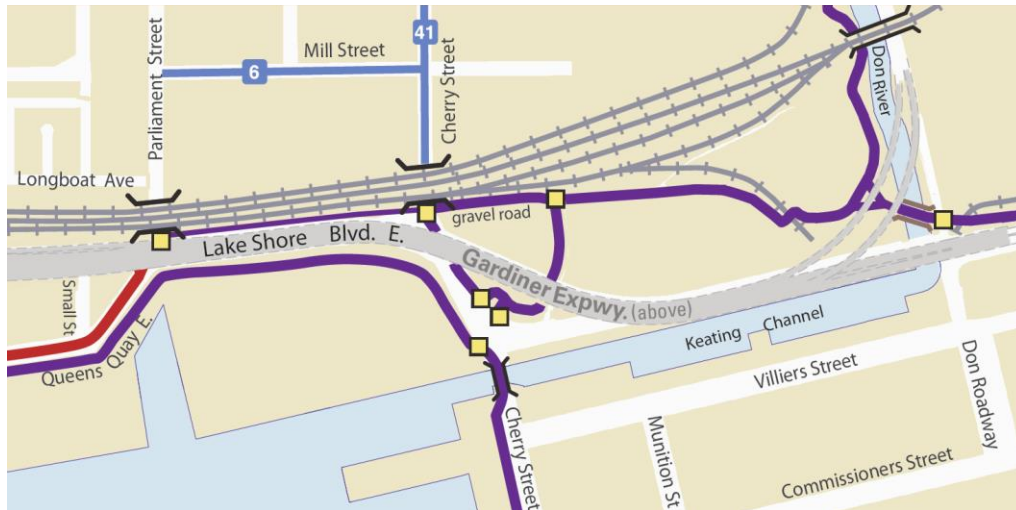
Figure 7: Cycling Infrastructure



Source: 2013 City of Toronto Cycling Map

Figure 8 provides more details on the complex path arrangement in the Keating Channel Precinct.

Figure 8: Lower Don / Waterfront Trail



Source: 2013 City of Toronto Cycling Map

The waterfront revitalization has included significant improvements to the pedestrian environment along Queens Quay Boulevard and connecting to the water's edge. However, pedestrian connections along and across Lake Shore Boulevard remain a reflection of the industrial past and signify the barrier that Lake Shore Boulevard currently poses for pedestrians.

South of the rail corridor, pedestrian facilities along and across Lake Shore Boulevard are generally poor. Sidewalks exist along the south side of Lake Shore Boulevard from Jarvis Street to Bonnycastle Street. From Bonnycastle to Parliament Street, no formal sidewalks exist although a route for pedestrians is possible. Then from Parliament Street, east, the off-road Martin Goodman trail exists on the south side. Many of the intersections require two stage crossings and lack wayfinding markings on the roadway. Furthermore, the overhead expressway columns create blind spots making it difficult for drivers to see pedestrians while waiting to cross the roadway at some of the intersections. The short local streets extending from Lake Shore Boulevard to Queens Quay (Richardson Street; Bonnycastle Street; Small Street) do not have sidewalks. Jarvis Street, Sherbourne Street and Parliament Street have sidewalks that meet the general standards for minimum sidewalk width, but have obstructions (street light / traffic signal poles; fire hydrants; bus shelters) that do not meet the minimum clear width guidelines.

Cycling is not permitted on the Gardiner Expressway or its ramps. The Martin Goodman Trail multi-use trail (which is identified as Toronto Bikeway Network Route 2 on City cycling maps) runs east-west along Queens Quay to west of the study area. Between Cherry Street and Parliament Street the Lake Shore Trail parallels Lake Shore Boulevard on its north side (a distance of approximately 0.60 km). The Martin Goodman Trail extends along the west side of Cherry Street, crossing over to the east side south of Commissioners Street where it continues to the outer harbour.

To the north of the Gardiner Expressway, between the rail corridor and Lake Shore Boulevard, there is a multi-use trail running from Cherry Street east to the Don River and splitting in two directions: one connecting north to a trail (Route 45) paralleling the Don River, the other continuing east of the Don River (Route 4) along the north side of Lake Shore Boulevard. Just east of the study area Eastern Avenue narrows to two lanes and has on-street bicycle lanes between Logan Avenue and Leslie Street. North-south cycling routes serving the study area include bike lanes/separated bikeway on Sherbourne Street and bicycle lanes on Cherry Street. Immediately east of Don Roadway, running north-south from Commissioners Street to Lake Shore Boulevard, an off-road trail is provided.

The following bicycle facilities currently provide connections beyond the study area:

- Martin Goodman Trail / Waterfront Trail (west of Yonge Street) – separated multi-use trail along Queens Quay;
- Yonge Street (bicycle lanes from Queens Quay to Front Street);
- Sherbourne Street (bicycle lanes from Queens Quay to Lake Shore Boulevard; cycle tracks north of Lake Shore Boulevard);
- Cherry Street: signed on-street bicycle north of the rail corridor; planned bicycle lanes to extend south of the rail corridor;
- Lower Don Trail – off-street multi-use trail along Don River;
- Logan Avenue – signed on-street bicycle route; contra-flow bicycle lane from north of Lake Shore Boulevard to Eastern Avenue;
- Martin Goodman Trail / Waterfront Trail – multi-use trail south of Queen Quay and through the Port Lands; and,
- Lake Shore Boulevard – multi-use trail on the north side connecting to the Waterfront Trail / Martin Goodman Trail at Leslie Street and the Lower Don Trail west of the Don Roadway.

The City is committed to expanding the cycling network and is in the process of planning additional downtown routes that are anticipated to improve cycling in the study area. As cycling plans evolve, the Gardiner East EA study team will consider opportunities to support cycling connections throughout the network through the reconfiguration alternatives. River and Harbour Infrastructure

Crossing the Don River are the following bridges / structures:

- High-level ramps between the Gardiner Expressway and the Don Valley Parkway
- Lake Shore Boulevard East
- Keating Rail Yard
- Pedestrian bridge
- Hydro One bridge
- CN Rail bridge
- Queen Street
- Eastern Avenue

There is a steel sheet pile sea wall running the length of the water's edge at the southern end of the East Bayfront Precinct. Dock walls exist along both sides of the Keating Channel.

3.6 Utilities

3.6.1 General Study Area

The study area contains numerous above and below ground utilities including hydro electric transmission lines and gas, water, storm sewer, and communications facilities. **Figure 9** illustrates the significant utilities in the study area. There are also a considerable number of abandoned lines in the Lake Shore Boulevard corridor. Key underground utilities buried under the Gardiner - Lake Shore Boulevard include the following:

- 500 mm Gas Main;
- Toronto Hydro Conduits;
- 300 mm Water Mains;
- Storm Sewers (various sizes);
- Sanitary Sewers (various sizes);
- 175 mm Cable Conduits; and
- Bell Conduits.

Hydro-Electric Transmission Lines

The Gardiner Expressway and Lake Shore Boulevard corridor contains both underground and aerial Hydro transmission facilities running from Sherbourne Street to Cherry Street. Beyond these points the hydro facilities diverge from the corridor. Figure 9 illustrates the path of the aerial hydro transmission facilities along with the general tower locations. These aerial facilities closely line the north side of the Gardiner Expressway-Lake Shore Boulevard corridor between Sherbourne and Cherry which will present challenges to reconfiguration alternatives.

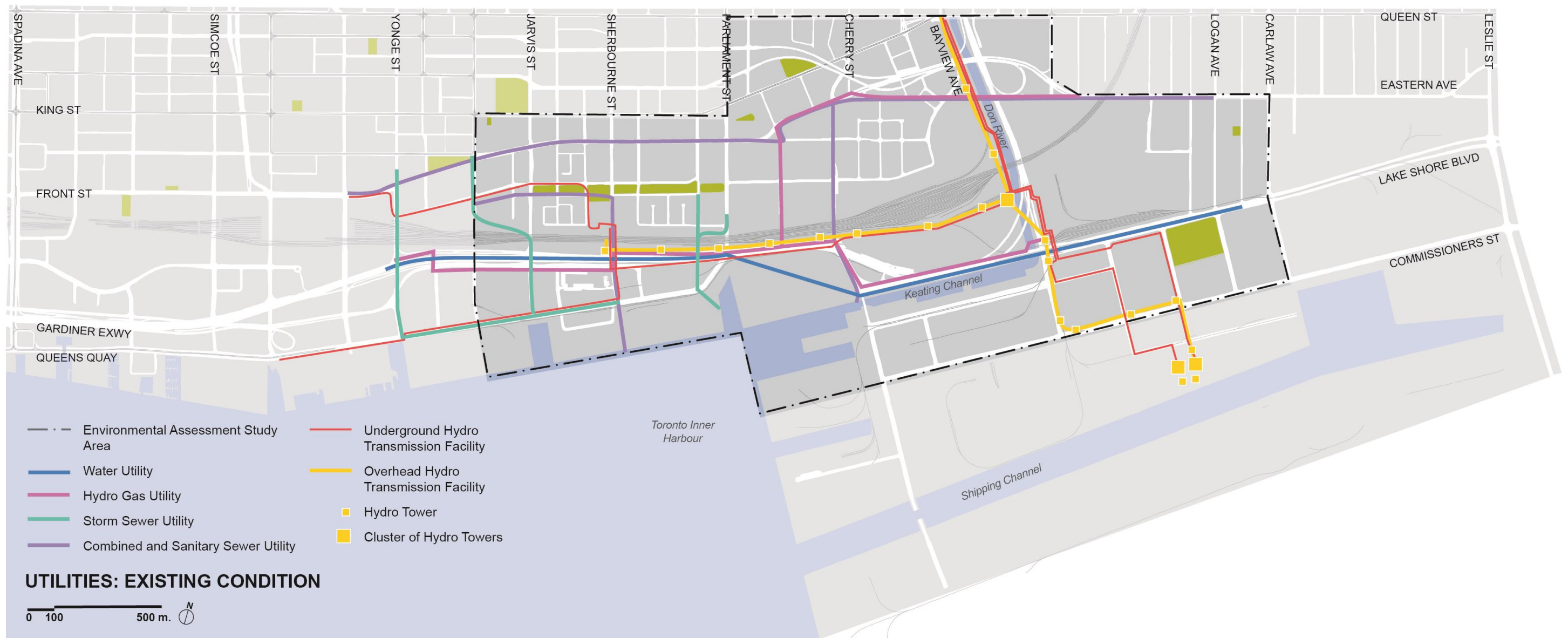
A major underground hydro conduit runs under Lower Sherbourne Street and Queens Quay west of Sherbourne Street. There is also a major Toronto Hydro conduit running east-west under The Esplanade.

In the Lower Don Lands / Keating Channel Precinct area, there are both underground and aerial hydro transmission facilities running from the southeast corner to the Don River just north of the Gardiner-Lake Shore corridor via a number of different pathways. These continue westward along the south side of the rail corridor and north side of the Gardiner-Lake Shore corridor at Parliament Street. In the West Don Lands, there are both underground and aerial Hydro One transmission facilities running from the Don River at the rail lands north along the Don River.

Gas

A large diameter gas main (a width of 500mm plus) is located in this corridor. Enbridge Gas also has a trunk gas main through the West Don Lands which crosses the Don River on a bridge located immediately north of the old Eastern Avenue bridge.

Figure 9: Utilities



Water

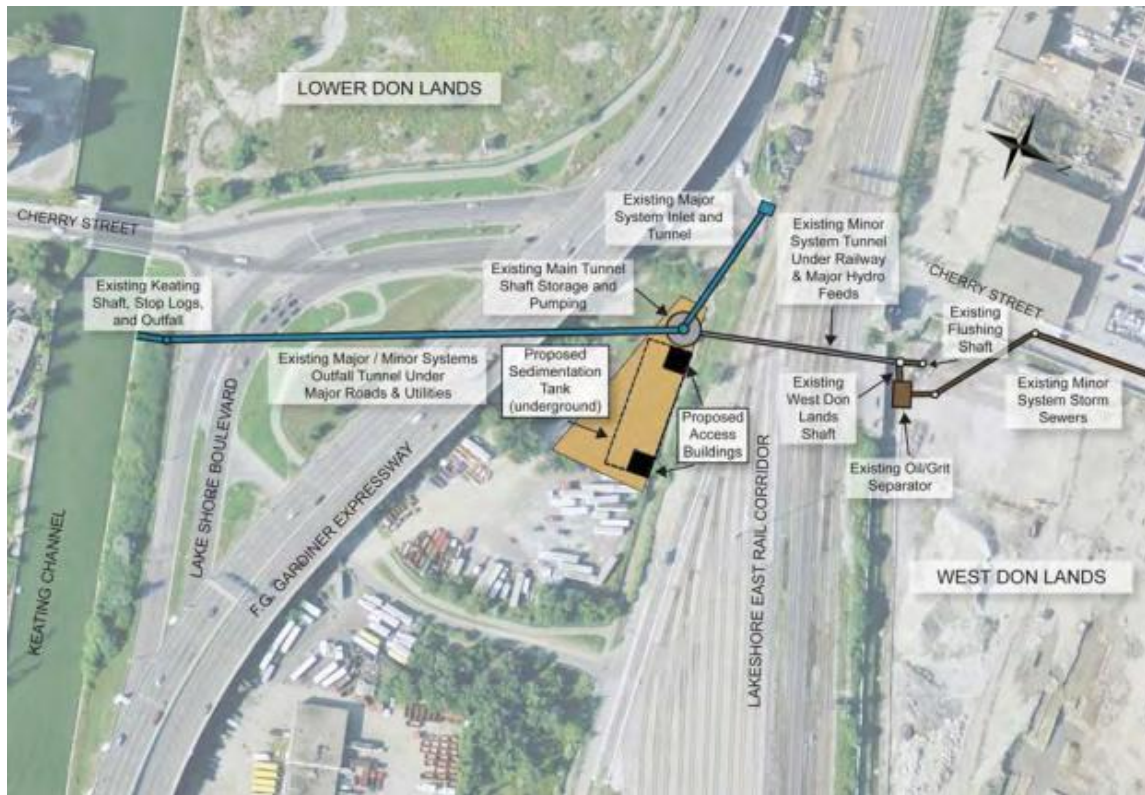
A 2.1 metre diameter filtered water tunnel is located under this corridor between the east and west limits of the study area. Between Parliament Street and Cherry Street, it diverges from the corridor taking a more direct diagonal between these intersections.

Storm Sewers

There is a major east-west large diameter trunk sanitary sewer (the Low Level Interceptor (LLI) running along Front Street and Eastern Avenue, that crosses the Don River and extends further east. As well, numerous combined sewers and storm sewers cross the corridor in a north-south direction to reach the harbour. There is also a large diameter storm sewer that extends beneath Church Street to the rail corridor. In the Lower Don Lands / Keating Channel Precinct a large combined-sewer overflow sewer runs beneath Cherry St to the ship channel. Waterfront Toronto's Storm Water Quality Facility is located immediately north of the Gardiner Expressway/Lake Shore Boulevard on the east side of Cherry Street. This facility was recently constructed and serves the West Don Lands Precinct (refer to **Figure 10**). The facility includes an underground sedimentation tank, deep shaft and pumping station with deep outfall tunnel. The outfall discharges into the Keating Channel. Future components associated with this facility include further treatment (clarifier, UV) and support building. Further discussion regarding stormwater management in the study area is provided in the Stormwater Management Baseline Conditions Report which is an appendix report for the Gardiner East EA.

In the Distillery - St. Lawrence area, large combined-sewer overflow sewers run from Church Street beneath Wilton and Cherry Streets as well as along Sherbourne Street to the Gardiner-Lake Shore corridor and down to the lake.

Figure 10: West Don Lands Storm Water Quality Facility



In the East Bayfront area, a large diameter storm sewer runs beneath Queens Quay, as well as one under Small Street, east to the Parliament Street slip, and one under Lower Jarvis Street outletting to the Jarvis Street slip. A large diameter combined-sewer overflow sewer runs under Lower Sherbourne Street. A sanitary trunk runs along Jarvis Street and west to the Scott St pumping station north of the rail lines.

3.6.2 Utilities Under the Gardiner Expressway

Significant utilities are buried under the Gardiner Expressway corridor within the Study Area both crossing the corridor and running along it. This includes a significant number of abandoned lines. **Table 2** provides a summary of the key service and trunk lines that exist in the corridor.

Table 2: Key Underground Utilities Beneath the Gardiner Expressway

Utility Type	Location					
	Yonge Street to Cooper Street	Cooper Street to Lower Jarvis Street	Lower Jarvis Street to Richardson Street	Lower Sherbourne Street to Parliament Street	West of Parliament Street to west of Cherry Street	West of Cherry Street To Cherry (south leg)
500 mm Gas Main	165 m	n/a	n/a	170 m	180 m	150 m
Toronto Hydro Conduit	155 m	n/a	275 m; 1 chamber	365 m; 2 chambers	420 m; 3 chambers	720 m; 3 chambers
300 mm Water Main	145 m; 3 chambers	n/a	35 m	45 m	350 m; 3 valve boxes	210 m; 1 valve chamber
Storm Sewer (various sizes)	410 m; 10 chambers	150 m; 3 chambers	185 m; 1 chamber	310 m; 5 chambers	565 m	210 m; 4 chambers
Sanitary Sewer (various sizes)	130 m; 4 chambers	n/a	50 m	n/a	410 m	265 m; 3 chambers
175 mm Cable Conduit	n/a	n/a	n/a	n/a	n/a	175 m
Bell Conduit	100 m	n/a	40 m	n/a	n/a	100 m
Comments	Includes major "concrete storm culvert running N-S under Yonge Street – 1950 mm x 2250 mm	Includes major "Concrete Lined Trunk Storm Sewer" – 3000 mm		Includes major "Concrete Culvert Storm Sewer Overflow" running north-south under Sherbourne Street		Includes major "Combined Sewer Overflow" under Cherry Street - 1350 mm x 1350 mm

3.7 Property and Site Access

The right-of-way footprint for the Gardiner-Lake Shore pair varies throughout the Study Area. At the west end at Yonge Street the property width is approximately 90 m. From there the property width varies as follows:

- at Freeland Street; 76.8 m
- at Lower Jarvis Street: 71.8 m
- at Bonnycastle (west side): 71.8 m
- at Bonnycastle (east side): 67.8 m
- between Bonnycastle and Small Street: 62.7 m
- just west of Small Street: 50.8 m
- just east of Parliament: 41.8 m
- just west of Cherry Street: 43.1 m
- just east of Cherry Street: 50.0 m
- adjacent to the Keating Channel: 46.3 m
- east of the Don River to Carlaw Avenue: varies from 41.6 to 36 m

Lake Shore Boulevard has a limited number of private driveway connections to adjacent land uses, mostly to industrial properties. Just east of Cherry Street is the entrance to GO Transit's Sorting Yard and layover site. Immediately east of Yonge Street is an entrance to a municipal parking lot for east bound traffic. Just east of Jarvis Street there is a service (truck) entrance to the Loblaws site for eastbound traffic. East of the Don River Lakes Shore Boulevard is essentially access-restricted except for one gas station on the south side at Carlaw Avenue. Several Lake Shore Boulevard median slip-offs exist throughout the Study Area for access across the opposing lanes.

3.8 Structures

Figure 11, Existing Structures Location, is a summary of the existing structure locations in the study area. The Gardiner structure itself is described and illustrated in Section 3.2.2.

3.8.1 West Don Lands Precinct

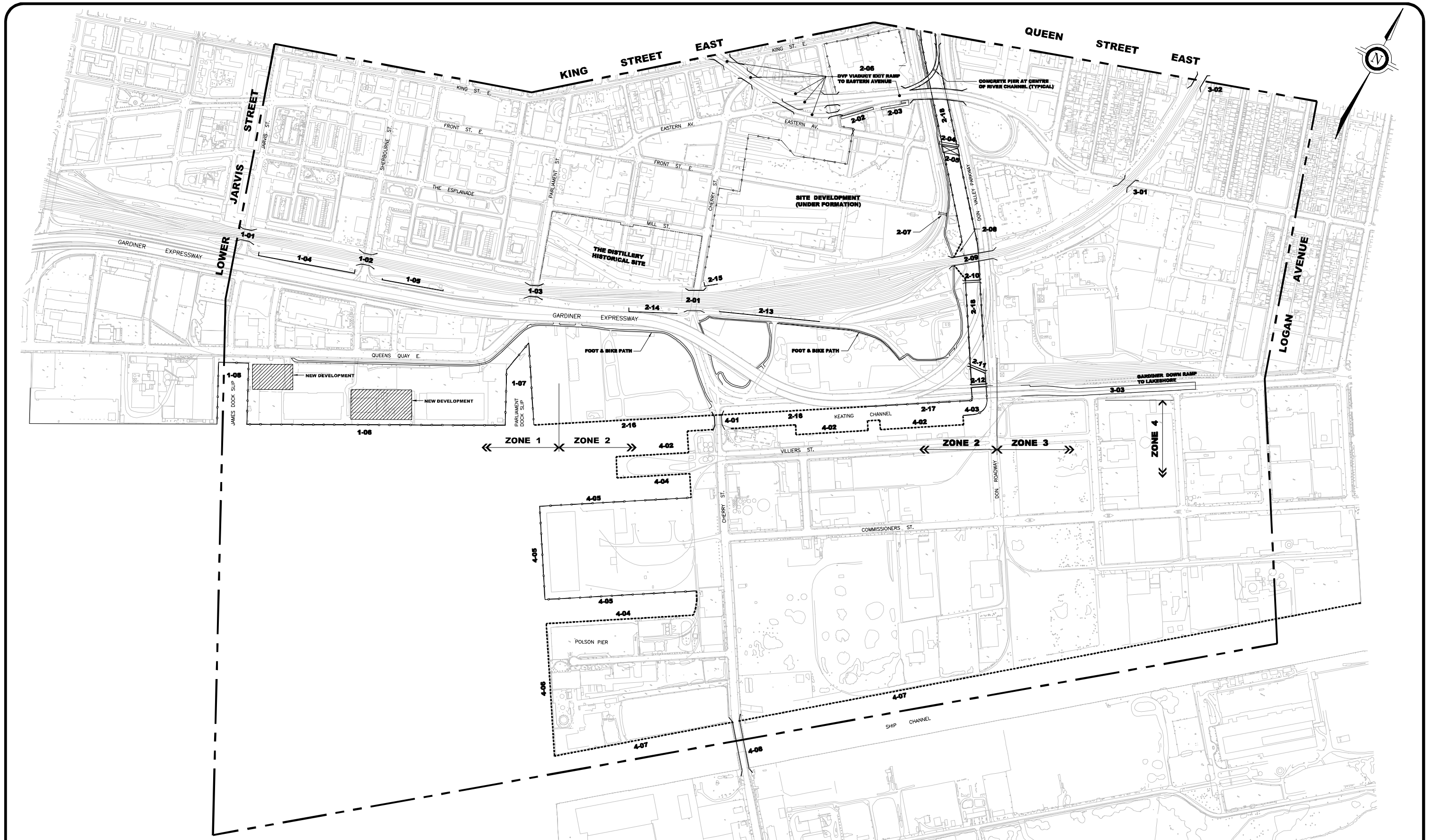
Major bridge structures are located at the northern portion of the area providing access between the Don Valley Parkway and downtown Toronto. Structure #2-06 is the DVP exit ramp to Richmond Street and Eastern Avenue. This structure is found to be in fair to good condition. Other bridges include structures number 2-08, 2-09, 2-10, 2-11 & 2-12, all in the vicinity of the mouth of the Don River where a channelized 90° turn in the river provides an outlet to Lake Ontario. In addition, a pedestrian tunnel, structure #2-07, was also prebuilt to provide residents/visitors east of the Don River, access to the multi-use trail located along the west side of the Don River. This is not currently accessible as it is located in the West Don Lands precinct, which is under construction.

3.8.2 Lower Don Lands and Keating Channel Precinct

A major bridge structure in the Lower Don Lands- Keating Channel Precinct is the Cherry Street Bascule Bridge crossing Keating Channel. This bridge received a total deck replacement in 2007 and forms a vital link to lands south of the channel. In addition to the Cherry Street Bridge are the port works structures #4-01, 4-02, 4-03, 4-04, 4-05, 4-06 and 4-07. These consist of different types of seawall structures to form the port area.

3.8.3 Distillery District and St. Lawrence Neighbourhood

No significant structures exist in this Precinct other than railway overpass structures # 1-03 and 2-01 at Parliament Street and Cherry Street. These bridges are not owned by the city. A new steel bin wall exists at the south edge of the railway corridor. Structures 2-14, 2-13 and 2-15 were constructed last year for the purpose of embankment widening.



EXISTING STRUCTURES LOCATION

LEGEND:			
	STUDY LIMIT		RETAINING WALL
	CONCRETE SEA WALL		INVENTORY NO.
	STEEL SHEET PILE SEA WALL		
	FENCE		
	BRIDGE		

Figure 11.0

ZONE 1

INV. #	STRUCTURE NAME	STRUCTURE TYPE	OVERPASS	UNDERPASS
1-01	JAVIS STREET BRIDGE	BALLAST ON CONCRETE INFILL STEEL BEAMS	RAIL ROAD	STREET ROAD
1-02	SHERBOURNE STREET BRIDGE	BALLAST ON CONCRETE INFILL STEEL BEAMS	RAIL ROAD	STREET ROAD
1-03	PARLIAMENT STREET BRIDGE	BALLAST ON CONCRETE INFILL STEEL BEAMS	RAIL ROAD	STREET ROAD
1-04	LAKESHORE BLVD. RETAINING WALL	STEEL BIN WALL	RAIL ROAD	STREET ROAD
1-05	LAKESHORE BLVD. RETAINING WALL	STEEL BIN WALL	RAIL ROAD	STREET ROAD
1-06	SHORE SEA WALL	STEEL SHEETPILE WALL	BUILDING AND PARKING LOT	LAKE SHORE
1-07	DOCK SEA WALL	STEEL SHEETPILE WALL	BUILDING AND PARKING LOT	LAKE SHORE
1-08	DOCK SEA WALL	STEEL SHEETPILE WALL	BUILDING AND PARKING LOT	LAKE SHORE

ZONE 2

INV. #	STRUCTURE NAME	STRUCTURE TYPE	OVERPASS	UNDERPASS
2-01	CHERRY STREET BRIDGE	BALLAST ON CONCRETE INFILL STEEL BEAMS	RAIL ROAD	STREET ROAD
2-02	PEDESTRIAN RAMP	CONCRETE DECK ON PIERS	PEDESTRIAN TO EASTERN EXIT RAMP	ST. LAWRENCE STREET
2-03	PEDESTRIAN RAMP	CONC. DECK ON PIERS (UNDER CONSTRUCTION)	PEDESTRIAN TO EASTERN EXIT RAMP	DON RIVER PARK CONDO.
2-04	PEDESTRIAN BRIDGE (ABANDONED)	CONCRETE ARCH	PEDESTRIAN CROSSING DON RIVER	DON RIVER
2-05	RAIL ROAD BRIDGE (ABANDONED)	STEEL TRUSS WITH CONC. DECK ON FLOOR BEAMS	RAIL ROAD (REMOVED)	DON RIVER
2-06	DVP EXIT RAMP TO EASTERN AVENUE	CONC. DECK ON STEEL GIRDERS AS ELEVATED VIADUCT	ROAD FOR VEHICULAR TRAFFIC	STREETS OF CHERRY, EASTERN AND ST. LAWRENCE
2-07	PEDESTRIAN TUNNEL (CLOSED)	CONCRETE CULVERT	RAIL ROAD	DON RIVER CONDO. TO FOOT AND BIKE PATH
2-08	RAIL ROAD BRIDGE OVER CHANNEL DIVERSION	CONCRETE DECK ON PRECAST CONC. GIRDERS	RAIL ROAD CROSSING DON RIVER SOUTH OF EASTERN AVENUE	DON RIVER
2-09	RAIL ROAD BRIDGE OVER DON RIVER CHANNEL	BALLAST ON STEEL GIRDERS	RAIL ROAD CROSSING DON RIVER SOUTH OF EASTERN AVENUE	DON RIVER AND DVP
2-10	RAIL ROAD BRIDGE OVER DON RIVER CHANNEL (ABANDONED)	THROUGH STEEL PLATE GIRDERS	ABANDONED RAIL ROAD SOUTH OF #2-09	DON RIVER
2-11	PEDESTRIAN BRIDGE FOR FOOT AND BIKE PATH	HSS STEEL ARCH TRUSS	PEDESTRIANS AND BIKE USE	DON RIVER
2-12	RAIL ROAD BRIDGE OVER DON RIVER CHANNEL (SPUR LINE)	THROUGH STEEL PLATE GIRDERS	RAIL ROAD AND WATERMAIN CROSSING	DON RIVER
2-13	GO TRANSIT RETAINING WALL	CONCRETE BLOCK WALL	GO TRANSIT RAIL ROAD	FOOT AND BIKE PATH
2-14	LAKESHORE BLVD. RETAINING WALL	STEEL BIN WALL	GO TRANSIT RAIL ROAD	STREET ROAD
2-15	LAKESHORE BLVD. RETAINING WALL	STEEL BIN WALL	GO TRANSIT RAIL ROAD	LAND DEVELOPMENT
2-16	NORTH KEAT CHANNEL SEA WALL	CONCRETE WALL	LAND	LAKE
2-17	NORTH CHANNEL SEA WALL	STEEL SHEETPILE WALL WITH CONCRETE CAP	LAND	KEAT CHANNEL
2-18	DON RIVER CHANNEL WALL	STEEL SHEETPILE WALL WITH CONCRETE CAP	LAND	DON RIVER CHANNEL

ZONE 3

INV. #	STRUCTURE NAME	STRUCTURE TYPE	OVERPASS	UNDERPASS
3-01	EASTERN AVENUE/CNR BRIDGE	BALLAST ON STEEL GIRDERS	RAIL ROAD	STREET ROAD
3-02	QUEEN STREET/CNR BRIDGE	BALLAST ON STEEL GIRDERS	RAIL ROAD	STREET ROAD
3-03	GARDINER EAST RAMP	CONCRETE DECK ON STEEL GIRDERS	GARDINER EXPRESSWAY	LAKESHORE BLVD. E.

ZONE 4

INV. #	STRUCTURE NAME	STRUCTURE TYPE	OVERPASS	UNDERPASS
4-01	CHERRY/KEATING CHANNEL BRIDGE	STEEL BASCULE BRIDGE	RAIL ROAD	KEATING CHANNEL
4-02	SOUTH KEAT CHANNEL SEA WALL	CONCRETE WALL	LAND	KEATING CHANNEL
4-03	SOUTH KEAT CHANNEL SEA WALL	STEEL SHEETPILE WALL WITH CONCRETE CAP	LAND	KEATING CHANNEL
4-04	DOCK SEA WALL	CONCRETE WALL	LAND	DOCK
4-05	SHORE AND DECK SEA WALLS	STEEL SHEETPILE WALL WITH CONCRETE CAP	LAND	SHORE AND DOCK
4-06	SHORE SEA WALLS AT POLSON PIER	CONCRETE WALL	LAND	EASTERN CHANNEL SHORE
4-07	SHIP CHANNEL SEA WALL	CONCRETE WALL	LAND	SHIP CHANNEL
4-08	CHERRY STREET/SHIP CHANNEL BRIDGE	HEAVY TRUSS BASCULE BRIDGE	STREET ROAD	SHIP CHANNEL

GARDINER ENVIRONMENTAL ASSESSMENT AND
URBAN DESIGN STUDY
EXISTING STRUCTURES - INVENTORY

FIG
NO.12

4.0 FUTURE 2031 BASELINE CONDITIONS

4.1 Introduction

The following description of future baseline conditions for 2031 assumes that the Gardiner Expressway – Lake Shore Boulevard corridor would still be in place largely as it is today with the exception of any changes proposed as per current approved and proposed precinct plans and development plans. The approved precinct plans that have been consulted for this include West Don Lands, East Bayfront, and Lower Don Lands and Keating Channel Precinct. The Don Mouth Naturalization, Lower Don River West Remedial Flood Protection Project, and the Port Lands Flood Protection Project, all being completed in cooperation with TRCA, are also included in this. In addition to precinct plans and incorporating the Central Waterfront Secondary Plan, the future conditions also incorporate the known developments (residential, commercial and/or industrial) planned in the study area as well as initiatives that are being proposed by transit agencies including the TTC and GO Transit (Metrolinx).

Also within the study area, the Port Lands and South of Eastern Transportation and Servicing Master Plan (Port Lands TSMP), a Master Plan under the Municipal Class Environmental Assessment (EA) process, is being developed in parallel with the Port Lands Planning Framework and South of Eastern Strategic Directions to identify the street and transit network and municipal servicing required to support future revitalization. This Master Plan applies to most of the Port Lands and to the area referred to as “South of Eastern” (located north of Lake Shore Boulevard East, south of Eastern Avenue, between the Don River and Coxwell Avenue). The Master Plan will provide a coordinated transportation and servicing strategy to connect the two areas with the surrounding city. At the time of writing this baseline conditions report, the Port Lands TSMP study was still underway and infrastructure changes in the area covered by this study have not been finalized. Although timing of any future works in this area is uncertain, long term changes will be significant. As the Port Lands TSMP is completed, the City and Waterfront Toronto will manage the Gardiner East project to ensure that these plans are coordinated.

The waterfront is an area of transition with new investment occurring rapidly. The future conditions are not static and the following sections reflect what information about development in the study area was available at the time of writing. The nature of this transitioning area is that even planned development may alter by 2031. Therefore, the future conditions described are the best reasonable representation of this area that is known at the time the baseline report was completed.

A detailed base plan has been developed to separately illustrate future (2031) baseline conditions in the Study Area and contains the following information:

- Roads
- Building footprints
- Property blocks and road rights-of-way
- Rail lines
- Channels/dock walls, watercourses
- Parks and Open Spaces
- Major utilities

Figure 13, 2031 Conditions Base Plan, illustrates the infrastructure elements that differ from the 2013 conditions illustrated in **Figure 1**. This overview of the 2031 future base conditions assumes the "do nothing" alternative for Gardiner – Lake Shore corridor. **Figure 14, Road Hierarchy 2031**, illustrates the future conditions road hierarchy in the Study Area. **Figure 15, 2031 Public Transit and Bicycle Network**, illustrates the future conditions for bicycle and transit facilities in the Study Area. The following summary of 2031 conditions in the Study Area is organized according to the following sub-areas within the overall Study Area:

- Gardiner Expressway, Lake Shore Boulevard and Rail Corridor
- Port Lands and South Riverdale
- West Don Lands Precinct
- Lower Don Lands and Keating Channel Precinct
- Don Mouth Naturalization and Flood Protection Project EA Study Area
- Distillery District and St. Lawrence Neighbourhood
- East Bayfront Precinct
- Lower Yonge

Figure 13: 2031 Conditions Base Plan



4.1.1 Gardiner Expressway, Lake Shore Boulevard and Rail Corridor

Roadways

In 2031 the Gardiner Expressway east of Jarvis Street would largely exist as it is today with the planned deck rehabilitation works being fully completed. West of Jarvis Street there are significant changes planned for the Gardiner ramp connections. Firstly, the Gardiner eastbound off-ramp to York/Bay will be removed and a new off-ramp landing just west of Simcoe Street will be constructed. Construction of these changes is expected to be finished in 2017. The eastbound on-ramp to the Gardiner from Bay Street has EA approval to be removed, but this project is unfunded. *The Lower Yonge Precinct Transportation and Servicing Master Plan EA* (which covers the area bounded by Yonge Street to Jarvis Street and Lake Shore Boulevard to Queens Quay Boulevard) includes removal of the Bay Street ramp. This is required in order to facilitate the shortening of the eastbound Jarvis off-ramp so that it could land on the west side of Yonge Street.

In regards to Lake Shore Boulevard, from Cherry Street to the Don River, the roadway is proposed to be realigned to a more northern location as per the *Keating Channel Precinct Plan* and the *Lower Don Lands and Keating Channel Precinct EA* (note that this plan proposes lane reductions from three to two lanes per direction on Lake Shore Boulevard. in the Keating Channel Precinct section). Other planned changes to the area's roadways include:

- The relocation of Cherry Street to the west from north of Polson Street to just south of the rail corridor;
- The extension of Queens Quay easterly, across to the relocated Cherry Street (east of Cherry Street, Queens Quay is proposed to be extended as a local, one-way road); and,
- A new local road network is proposed for the Lower Don Lands and Keating Channel Precinct area from just west of the Don Roadway to west of relocated Cherry Street.

In addition, the *Port Lands and South of Eastern Transportation and Servicing Master Plan Environmental Assessment* is assessing future roadway requirements in the area east of the Don River, south of Eastern Avenue. This Master plan is proposing, among other infrastructure improvements, the extension of Broadview Avenue from its current terminus at Eastern Avenue south with a new crossing of Lake Shore Boulevard east of Saulter Street.

Rail Facilities

The Toronto Harbour will continue to be an important facility for the shipment of bulk commodities. Access to rail and roadways will be required with the Keating Yard continuing to play a primary role. The spur line heading westward across Cherry Street to Parliament Street does not serve any industries along its entire length. As this portion of the Port Lands becomes more accessible for pedestrians and tourists, there will be very little demand for rail service in the area. Some sections of this spur line have been decommissioned.

Pathways and Pedestrian Facilities

Future cycle/pedestrian facilities in the study area include:

- A bicycle route on an extension of Trinity Street south through the rail corridor, across Lake Shore Boulevard, and on a pedestrian / cycling bridge across the west end of the Keating Channel;
- New bicycle lanes along Cherry Street extending south from the recently built bicycle lanes in the West Don Lands, across the Keating Channel; and
- A new pedestrian / cycling bridge across the east end of the Keating Channel.

Transit

There are no anticipated changes/additions to transit on the Gardiner Expressway or Lake Shore Boulevard facilities; changes will occur in the precincts surrounding the alignment and on roadways crossing Lake Shore Boulevard north-south.

Structures

The 3.0 km section of the elevated Gardiner Expressway in the study area was one of the first few sections rehabilitated in the 1980's. Present conditions are fair to poor and imminent repairs are again required. Under the 'Do Nothing' scenario, the future for the Gardiner would include comprehensive deck repair/replacement and pier rehabilitation to keep the expressway in a safe operable condition. It is expected that this investment would be in the order of \$80 million over the next 10 years between Yonge Street and the DVP. If a deck replacement solution is chosen by the City to extend the life of this structure to avoid frequent maintenance, the investment cost would be significantly higher. Other than maintenance and repair, there are no future changes anticipated to the elevated expressway structure.

The realignment of Lake Shore Boulevard (as per the *Keating Channel Precinct Plan*) is proposed to begin just west of the existing crossing of the Don River and therefore will not alter the existing bridge structure over the river. This bridge, however, is recommended for lengthening to the west to incorporate river works proposed as part of the Don Mouth Naturalization project. Three new spans are proposed west of the existing two-span bridge. This configuration was recommended based on the assumption that the Gardiner Expressway overhead structure would be remaining in-place. Alternatives that involve the removal of the Gardiner through this area may require re-visiting the type of Don River bridge to provide in the future.

Figure 14: 2031 Road Hierarchy



Figure 15: 2031 Public Transit and Bicycle Network



4.1.2 Port Lands and South Riverdale

Roadways

Conversion of the Don Valley Parkway – Richmond/Adelaide/Eastern Interchange to improve capacity has been discussed and identified in a number of previous studies to relieve traffic demands on the Gardiner Expressway - Lake Shore Boulevard roadways to the south. This would involve converting the one-lane on and off ramps of the interchange to 2-lane facilities. This would involve significant re-work of this interchange and require further physical and operational adjustments along Richmond, Adelaide and Eastern Avenue to the west. Concept plans of possible conversion layouts have not been developed to date. There are no anticipated major changes/alterations to roadways proposed in this area.

Pathways and Pedestrian Facilities

A new pathway and pedestrian facility is planned within the Port Lands along the full extent of Commissioners Street easterly to Leslie Street.

Transit

A new LRT is planned on the proposed Broadview Avenue Extension from south of Eastern to the Port Lands.

Structures

No major future structures have been noted for this area.

4.1.3 West Don Lands Precinct

Roadways

Major new road facilities are planned for the West Don Lands, many of which are under construction at the time of this report. These facilities will include the following:

- Southerly extension of Bayview Avenue through to Mill Street (recently constructed)
- The introduction of a significant number of new local streets as part of the West Don Lands development to create smaller blocks and access to new residential and commercial sites

Pathways and Pedestrian Facilities

Comprehensive plans exist to add to the area's pathways and pedestrian facilities and on-road and off road bicycle lanes. These include the following:

- New/enhanced bicycle lanes along Cherry Street including widening the existing tunnel under the rail line
- Improved on-road bicycle allowance on Parliament Street (including widening the rail structure)
- New railway underpass under the GO rail lines connecting to the new Don River Park
- Significant pathways to be incorporated into the West Don Lands development

Transit

A new LRT line is proposed to run along the east side of Cherry Street from King Street south to the Ship Channel. The potential exists for a new GO Station on the Lake Shore East line at Cherry Street.

Structures

Improvements to existing structures involve the revitalization of the pedestrian bridge over the Don River into South Riverdale, and railway underpass improvements for the Cherry Street underpass. Structure plans involve improving what currently exists; there are no new structures planned.

4.1.4 Lower Don Lands and Keating Channel Precinct

Roadways

The currently proposed adjustments to the area's roadways include the following main changes:

- The relocation of Cherry Street to the west from north of Polson Street to just south of the rail corridor
- The extension of Queens Quay easterly, across the relocated Cherry Street (east of Cherry Street, Queens Quay is proposed to be extended as a local, one-way road)
- Between the Don River and Cherry Street, Lake Shore Boulevard is proposed to be relocated to the north as the primary road through the Keating Channel Precinct development
- A new local road network is proposed for Lower Don Lands from just west of the Don Roadway to west of the relocated Cherry Street

Pathways and Pedestrian Facilities

Comprehensive plans exist to add to the area's pathways and pedestrian facilities and on-road and off-road bicycle lanes. These include the following:

- New/enhanced bicycle lanes along Cherry Street including widening the existing tunnel under the rail line and improving the Keating Channel crossing
- Constructing new structures at the new Don River realignment
- New trail facilities along the new area roads

Transit

The key new transit facilities include the following:

- East-west Light Rail Transit (LRT) route along Queens Quay easterly to Cherry Street
- North-south LRT route along Cherry Street from north of the rail corridor south to the ship channel
- Potential East-west LRT on Commissioners Street from Cherry Street easterly across the realigned Don River
- The potential exists for a new GO Station near the Don River (east or west of the river).

Structures

A new Cherry Street crossing of the Keating Channel is proposed, as well as a new pedestrian /cyclist bridge to the west of this as the southern extension of Trinity Street from the Distillery District. The Cherry Street crossing involves the realignment of Cherry Street. The Trinity Street extension involves a new underpass under the rail lines. The Parliament Street underpass of the rail corridor is recommended for widening to better accommodate cars and pedestrians/cyclists.

4.1.5 Don Mouth Naturalization and Flood Protection Project EA Study Area

The TRCA, in cooperation with Waterfront Toronto and the City, completed an Individual EA for the naturalization of the mouth of the Don River mouth and larger Port Lands flood protection referred to as the DMNP EA. The study addressed lands encompassing approximately 290 hectares of urban land east and south of the Don River that were subject to risk of flooding including lands within the Study Area for the Port Lands TSMP EA. The recommendations in the DMNP EA will transform the existing mouth of the Don River including the Keating Channel, into a healthier, more naturalized river outlet to Lake Ontario, while also removing the risk of flooding to 240 hectares of urban land to the east and south of the existing river. This includes providing flood protection for lands within the Gardiner EA study area. This project is a key component of Waterfront Toronto and the City's plans to renew and revitalize Toronto's waterfront, without it the Port Lands cannot be redeveloped because it is located within the Don River floodplain.

The conceptual design for the DMNP includes a new river valley system developed through a combination of cut and fill and an associated low-flow river channel that flows south and then west into the Inner Harbour, with an approximate location halfway between the Ship Channel and the Keating Channel. Waterfront Toronto, in coordination with TRCA and the City, is leading the next steps for implementation of this project in tandem with the Lower Don Lands and Villiers Island Precinct plans.

4.1.6 Distillery District and St. Lawrence Neighbourhood

Roadways

The roadway network and configuration in the Distillery District and St. Lawrence neighbourhood are relatively stable; any redevelopment such as improvements in the Distillery are being completed within the existing network. No major road proposals exist for this area.

Pathways and Pedestrian Facilities

Comprehensive plans exist to add to the area's pathways and pedestrian facilities and on-road and off-road bicycle lanes. These include the following:

- Alterations to Cherry Street are as described in the West Don Lands section
- Improved on road bicycle allowance on Parliament Street (including widening the rail structure)
- A new pedestrian/cycle route as an extension south of Trinity Street (between Parliament Street and Cherry Street) including a new tunnel under the rail line to the Keating Channel Precinct redevelopment and continuing south with a bridge over the Keating Channel (as noted in the previous section)

- A series of key pedestrian links running along Lower Jarvis Street and Sherbourne Street

Transit

A north-south LRT route is proposed along the east side of Cherry Street from north of the rail corridor south to the ship channel. The potential exists for a new GO Station on the Lake Shore East line at Cherry Street; the *Transportation Systems Planning Background Report* speaks more specifically to this.

Structures

A new structure under the rail corridor is proposed for the new pedestrian link in-line with Trinity Street to the north. There are no new roadway structures planned.

4.1.7 East Bayfront Precinct

Much of the East Bayfront Precinct is currently under construction. Some of the infrastructure improvements noted below have been completed during the time of this reporting.

Roadways

The proposed adjustments to the East Bayfront roadways include the following main changes:

- The extension of Queens Quay easterly, across to a relocated Cherry Street (east of Cherry Street, Queens Quay is proposed to be extended as a local, one-way road)
- A significant amount of new local road works are proposed to support the East Bayfront developments including the reconstruction of all existing roads in this area and the addition of new roads south of Queens Quay

Pathways and Pedestrian Facilities

Comprehensive plans exist to add to the area's pathways and pedestrian facilities and on-road and off road bicycle lanes. These include the following:

- A new, continuous promenade along the water's edge throughout the area west from Cherry Street, including pedestrian boardwalks
- A series of key pedestrian links running along Queens Quay East, Lower Jarvis Street and Sherbourne Street
- Queens Quay plans include improved bicycle facilities and pedestrian sidewalks

Transit

A new east-west Light Rail Transit (LRT) route is planned along Queens Quay easterly to Cherry Street and extending into the Port Lands.

Structures

No major future structures have been noted for this area; however, the Parliament Street underpass of the rail corridor is recommended for widening to better accommodate cars, pedestrians and cyclists.

4.1.8 Lower Yonge

Roadways

Improvements to Queens Quay as described above will also carry west along Queens Quay through the Lower Yonge portion of the study area. Other roadway changes are proposed as part of the recommendations from the *Lower Yonge Precinct Transportation Master Plan* (Lower Yonge TMP). These changes are described at the end of this section.

Pathways and Pedestrian Facilities

Comprehensive plans exist to add to the area's pathways and pedestrian facilities and on-road and off-road bicycle lanes. These include the following:

- A new, continuous promenade along the water's edge throughout the area between the Jarvis Street and Yonge Street slips
- As noted above, bicycle and pedestrian improvements will continue east along Queens Quay through the Lower Yonge area

Transit

The key new transit facility in this area will be the new east-west LRT route along Queens Quay easterly from the existing Queens Quay line to Cherry Street.

Structures

No new structures have been noted for the Lower Yonge area.

Lower Yonge Precinct Transportation Master Plan

The *Lower Yonge Precinct Transportation Master Plan* (Lower Yonge TMP) was initiated in 2013 to define the transportation network that would be needed to support redevelopment in the area bounded by Yonge Street in the west, Jarvis Street to the east, the Gardiner Expressway/Lake Shore Boulevard to the north and Queens Quay to the south. The preferred alternative for the Lower Yonge TMP includes a more fine-grained local street network for the Precinct which was created by extending existing Harbour Street from Yonge Street to Lower Jarvis Street, adding a new local street east of Cooper Street, connecting Lake Shore Boulevard East to Queens Quay East, and providing a more permeable street grid for pedestrians, vehicles and cyclists. It also includes the relocation of the Jarvis west-bound off ramp. A Phase 3-4 Class EA has been initiated to confirm the preferred design for these road changes.

5.0 CONCLUSION

The extent of proposed changes to the area's infrastructure is significant. This could lead to challenges in implementation as overlaps in the timing and location of the projects will likely have to be addressed. The following points provide a summary of major infrastructure constraints and opportunities in the Study Area:

- Gardiner Expressway structure condition is poor and in need of costly repair and rehabilitation.
- Significant utilities exist including hydro towers and storm and sanitary sewers.
- The requirement for major new transit facilities including LRT lines along Queens Quay, Commissioners Street and Cherry Street.
- The proposed reconfiguration of the Don River Mouth through the area south of the Keating Channel will create a new road grid and development blocks in the Lower Don Lands and support Port Lands redevelopment.
- Potential conflicts amongst projects will exist where proposed new infrastructure or infrastructure changes occupy the same general area and may be implemented during similar time frames (e.g. elements of the Keating Channel Precinct and Don River reconfiguration projects conflicting with infrastructure components related to the Gardiner Expressway).
- With the East Bayfront redevelopment closest to completion, there will be an introduction of major, new waterfront development and significant improvements and additions to the local road network.
- The proposals to increase the width of most of the north-south road structures crossing the rail lines to allow for the introduction of enhanced pedestrian facilities.
- The elimination of most of the existing rail spur lines not in use in the area south of the Keating Channel would improve infrastructure development.
- Planned changes to the local road network are not expected to have a significant impact to the alternatives considered for the Gardiner Expressway.
- The proposed introduction of a new pedestrian and cycling route as an extension south of Trinity Street (between Parliament Street and Cherry Street) including a new tunnel under the rail line and bridge over the Keating Channel, crosses Lake Shore Boulevard and could present an engineering challenge.

The proposed future developments, land use changes and other facilities in the Study Area will all be supported by the usual array of utilities. At this time there has not been the identification of any new major utilities that would pose a constraint to the development or evaluation of alternatives for this study. As the alternatives are developed, there may be opportunities to incorporate future major utility works into the proposals. These opportunities will be identified and assessed at that time in discussion with the utility companies, agencies and stakeholders.

6.0 REFERENCES

Toronto Waterfront Redevelopment Corporation and City of Toronto (2005). "West Don Lands Class Environmental Assessment Master Plan." Dated March 2005.

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