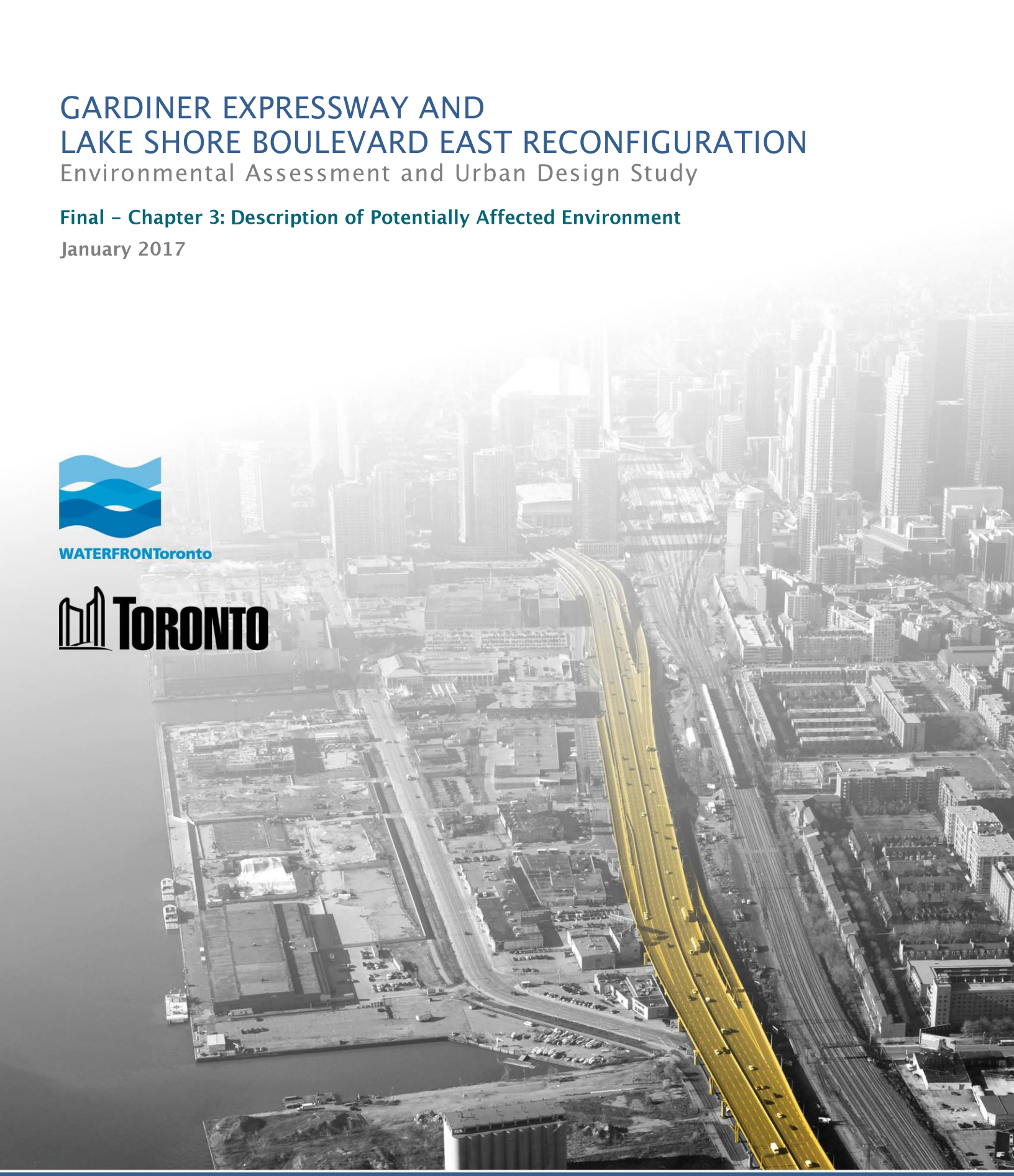
GARDINER EXPRESSWAY AND LAKE SHORE BOULEVARD EAST RECONFIGURATION

Environmental Assessment and Urban Design Study

Final – Chapter 3: Description of Potentially Affected Environment

January 2017



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3.0 Description of Potentially Affected Environment

This EA study followed a planning approach whereby environmental constraints and opportunities were considered within the context of the environment as broadly defined under the EA Act (i.e., the natural environment as well as the social, economic and cultural heritage and other "environments" relevant to the undertaking). The description of the potentially affected environment (otherwise known as the baseline conditions) was prepared based on this approach.

The methodology used to establish baseline conditions involved the establishment of study areas, baseline condition horizon years, and data collection. The study areas are described in **Section 2.3** and include 1) Urban Design and Environmental Effects Study Area, and 2) the Transportation Systems Study Area.

The baseline conditions document the natural, social, economic, urban design, infrastructure and transportation environments of the various precincts and neighbourhoods that exist in the study area. 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. **Figure 3-1** illustrates the general location of these precincts.

Table 3-1 provides a listing and overview description of the key studies that were undertaken as part of the EA. The results of these studies are further described in the remaining sections of this Chapter as well in other chapters of this EA. In describing baseline conditions, the study areas as previously described in **Section 2.3 Study Areas** were considered. Unless otherwise noted, the term "*study area*" in this EA report refers to the Urban Design and Environmental Effects Study Area. The Transportation System Study Area is referred to separately where appropriate.

Table 3-1: Summary of EA Studies Completed

Study	Description of Study
Cultural Heritage	Inventory, review and documentation of designated/documented cultural heritage features in the study area. See Appendix C – Cultural Heritage Baseline Conditions Report.
Archaeological	Inventory, review and documentation of registered and other known archaeological features and potential features in the study area. Also assessment of archaeological potential in study area. See Appendix D – Archaeological Baseline Conditions Report.
Natural Environment	Inventory, review and documentation of natural features and habitats (terrestrial and aquatic) in the study area. See Appendix E – Natural Environment Baseline Conditions Report.
Geo-Environmental	Inventory, review and documentation of soils and groundwater conditions in the study areal. See Appendix F – Geo-Environmental Conditions Report
Stormwater	Inventory, review and documentation of Stormwater management infrastructure in the study area. See Appendix G – Stormwater Management Baseline Conditions Report.
Air Quality	Documentation of baseline air quality conditions and modelling of future air emissions for the future "Do Nothing" alternatives and other alternatives solutions. See Appendix H – Air Quality and Greenhouse Gas Impact Assessment Report.
Noise	Modelling of future noise levels for the future "Do nothing" alternatives and for other alternatives solutions and the undertaking. See Appendix I – Noise Assessment Report.
Infrastructure	Inventory, review and documentation of existing infrastructure including roadways and municipal services. See Appendix J – Infrastructure Baseline Conditions Report.
Transportation	Description of existing traffic volumes and patterns and modelling of future traffic demand, volume and patterns for multiple alternatives assessed in the EA study. Modelling was completed for the larger Transportation System Study Area. Assessment of auto demand reduction scenarios through various forms of intervention. See Appendix K – Transportation Modelling Report.
Urban Design and Public Realm	Inventory, review and documentation of land uses, land use plans, urban design character, public realm and tourism and recreation features within the study area. See Appendix L – Urban Design, Public Realm and Socio-Economic Baseline Conditions Report.

Study	Description of Study
Economics	Inventory, review and documentation of economic conditions including business and commercial activity in the study area. See Appendix M – Economics Baseline Conditions Report.
Goods Movement	Assessment and documentation of the importance of the roadway network for the movement of commercial goods through the study area. See Appendix P – Goods Movement Study Report.
Economic Competitiveness	Assessment of the importance of the Gardiner Expressway to the economic competitiveness of the City/downtown area. See Appendix Q – Economic Competitiveness Study Report.
Land Valuation	Determination of land values within the study area and assessment of future land future under different roadway configuration alternatives. See Appendix U – Land Valuation Report.

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Figure 3-1: Study Area Precincts and Neighbourhoods

To assess and evaluate the alternatives, two baseline condition horizon years were established: 1) 2013 representing existing or near term conditions and 2) 2031 representing the long term future operating condition. The 2013 condition was considered when assessing construction related effects (construction is expected to occur from about 2020-2025). By 2031, it was assumed that the undertaking would be fully operational and the surrounding vacant lands would be fully built out as per current City and Waterfront Toronto plans. The 2031 condition was assumed when considering operational effects. Where applicable, the existing 2013 and future 2031 baseline condition is described. Future 2031 conditions are subject to change and thus the analysis reflects the information for the study area that was known as of the date of this EA.

The observations described in this chapter were arrived at through a comprehensive data collection process. This process included developing an inventory of existing conditions based on secondary source information such as existing approved plans, studies, historic mapping, databases (municipal, provincial, or federal), and other data provided by the City and Waterfront Toronto. Primary source data was also collected through fieldwork, modelling, and consultation with landowners, the general public, other stakeholders and government agencies.

To describe the potentially affected environment in the study areas, this chapter is structured on the four study lenses: Environment, Infrastructure and Transportation, Urban Design and Economics. The Environment section summarizes the baseline conditions reports for cultural heritage and archaeological resources, natural environment, soils, groundwater, stormwater and air quality and noise. The Infrastructure and Transportation section examine roadways, railways, structures, servicing and utilities. Also addressed in this section is a description of the existing and future transportation demand. The Urban Design section describes urban design, land use, public realm, as well as population and employment (social environment) conditions. The final section of the chapter focuses on Economic baseline conditions which includes a description of business activity in the study area.

This chapter provides an overview of future and existing baseline conditions. The baseline conditions appendices provide much greater detail about the study area and act as a source of further information for those interested.

The information in this chapter informed the development of alternative solutions and alternative designs, was considered in the alternatives evaluation process, and was considered in the assessment of projects effects and development of mitigation.

3.1 Environment

This section provides a description of the environment that could be potentially affected by the undertaking including cultural heritage and archaeological resources, the natural environment (terrestrial and aquatic), soil and groundwater, stormwater management, and air quality and noise.

3.1.1 Cultural Heritage and Archaeological Resources

The Toronto waterfront is an area in which massive landscape changes have occurred as the city has developed. The Don River has played a critical role in the city's history beginning with First Nations in the 1600s, and expanded with Euro-Canadian industrial settlement that began along Toronto's waterfront in 1793. With growth and development of the civilian town, the waterfront grew as a commercial and industrial area. Approximately 60% of the study area is entirely comprised of made lands, formed between the mid-nineteenth and mid-twentieth centuries. Lake Shore Boulevard was created through successive waves of lakefill. When it was first built, it provided road access to waterfront areas during the first half of the twentieth century. This history is fundamental to the existing conditions in the study area which reflect the industrial era of development in Toronto.

Due to this long, dynamic history, the study area contains a number of archaeological and cultural heritage features. In terms of cultural heritage resources, 103 properties have been previously identified and/or designated as retaining cultural heritage value, within or in the immediate vicinity of the general study area. These features are shown in **Figure 3-2**, with detailed descriptions of each figure by precinct found in **Appendix C – Cultural Heritage Baseline Conditions Report**.

To identify archaeological resources within the study area, a Stage 1 Archaeological Resource Assessment was undertaken. Through this process it was determined that eleven archaeological sites have been registered within the general study area. These sites are shown in **Figure 3-3**, and are described in detail in **Appendix D – Archaeological Baseline Conditions Report**. The archaeological report was submitted to the Ministry of Tourism, Culture and Sport and a letter of receipt was received by MTCS as included in **Appendix D**. Non-registered sites are also considered as part of the archaeological resource assessment but are not indicated on **Figure 3-3** which identifies registered sites only. While distance from water is one of the most commonly used variables for predictive modelling of archaeological site location, historical development of the area has been such that there is no potential for the survival of associated archaeological resources in primary contexts.

In addition, the archaeological assessment considered the use and significance of land for Aboriginal communities. It should be noted that there is no apparent current use of the lands by Aboriginal communities for traditional purposes; however, the Gardiner East EA project team is aware that the Mississaugas of the New Credit First Nations (MNCFN) is currently contemplating a new claim related to water resources in the area. As of February 2016 this new claim had not yet been submitted. The MNCFN do have an accepted Specific Claim which was approved and paid out in 2010 with the Federal Government. Consultation with the MNCFN by the Gardiner East EA project team is ongoing and considers the new claim under review.

Figure 3-2: Cultural Heritage Resources by Precinct and Neighbourhood

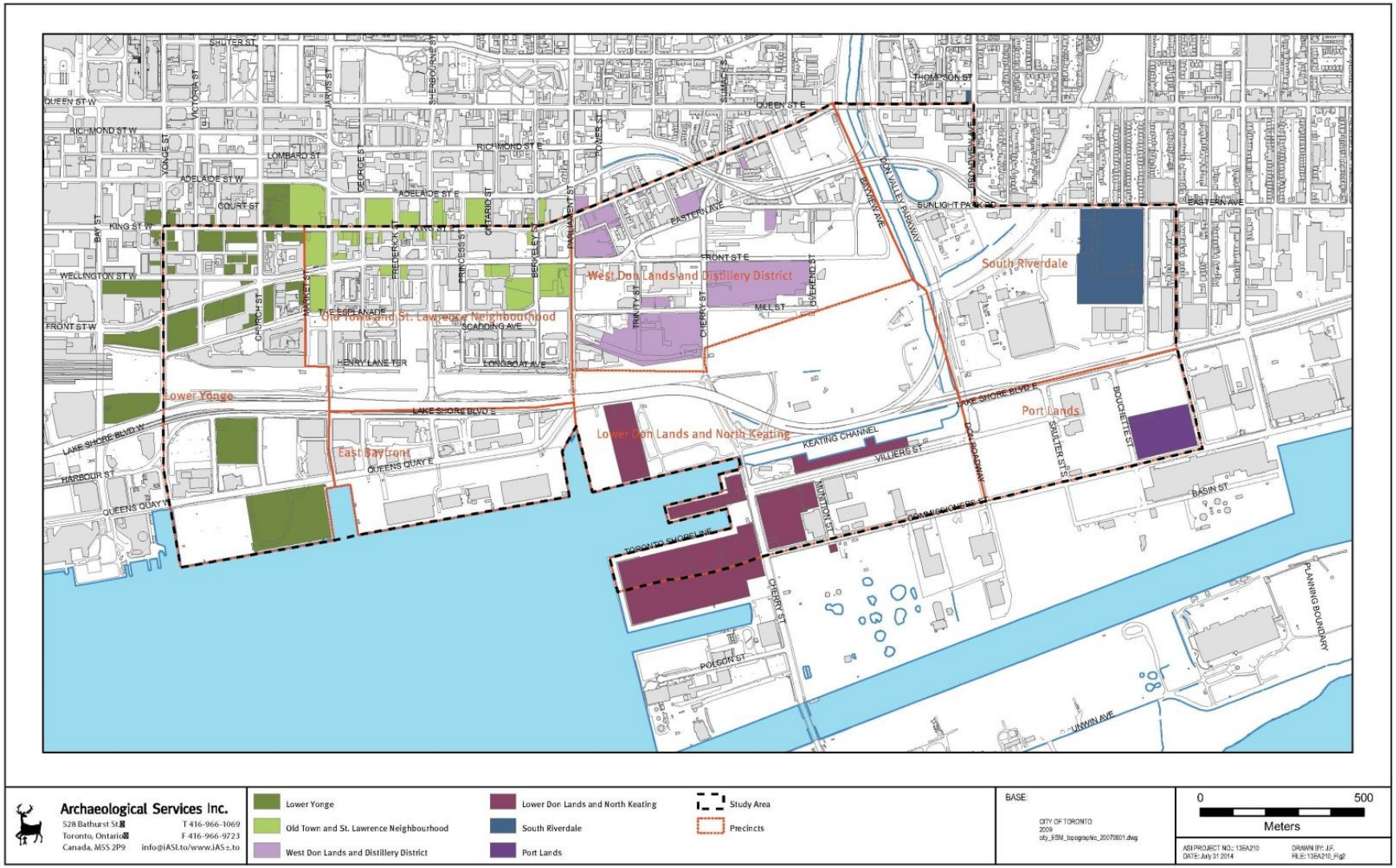
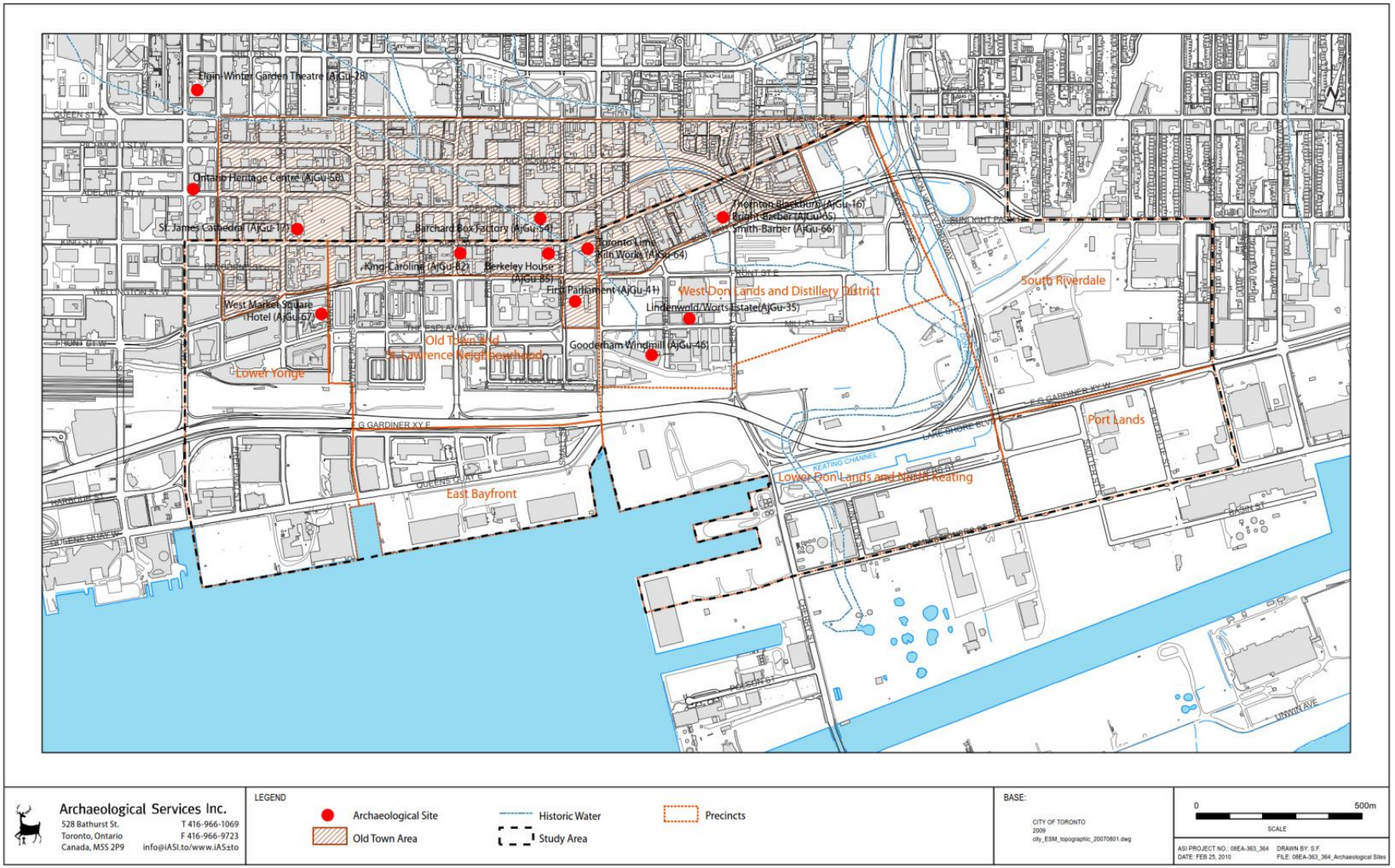


Figure 3-3: Registered Archaeological Sites



While the area is rich in history, the majority of the cultural heritage and archaeological resources do not overlap the Gardiner Expressway-Lake Shore Boulevard corridor that is under study in this EA. Of the resources identified, the three of note are Knapps' Roller Boat in East Bayfront, Polson's wharf (which served the Polson Iron Works) in East Bayfront, and the Victory Soya Mills Silos in the Keating Channel Precinct. Although these three resources are historical features in the study area, none of these resources are registered archaeological sites. Knapp's Roller Boat is a unique cylindrical ship that was launched in 1897. The ship was not a success and was substantially rebuilt on several occasions. Eventually the boat was abandoned to be buried by lakefill in the late 1920s. Research suggests that buried remains of Knapp's Roller Boat lie between Lake Shore Boulevard, the Gardiner Expressway, Richardson Street and Lower Sherbourne Street, north of the property currently known as 215 Lake Shore Boulevard East in East Bayfront. Recent redevelopment in East Bayfront has not identified these buried remains although the redevelopment to date has been south of Lake Shore Boulevard.

The City Corporation Yard Wharf (also known as Wharves 38 and 39) stood to the east of the Polson Iron Works with a principal purpose to carry street sweepings for dumping at the Toronto Islands. In 1906, the Polson's purchased this property to expand their shipbuilding facilities. The site was subsumed by lakefill between 1926 and 1928. The location of this resource was on the west side of Sherbourne Street and extends from Mill Street south through the Gardiner Expressway-Lake Shore Boulevard corridor into the northern edge of East Bayfront Precinct.

The Victory Soya Mills Silos are also a notable cultural heritage resource which sits on a historic commercial property located in the Lower Don Lands and Keating Channel Precinct (the property is identified in **Figure 3-2** on the north side of Keating Channel, east of Parliament Street). The property has a northerly border of the Gardiner Expressway-Lake Shore Boulevard corridor and southerly border of the Keating Channel/Lake Ontario. This site is a notable feature identifying the history of industrial activity along Toronto's waterfront.

3.1.2 Natural Environment

This section provides an overview of the natural, terrestrial and aquatic environment in the study area. Additional details regarding the existing and future natural environment conditions for the study area can be found in **Appendix E – Natural Environment Baseline Conditions Report**.

The study area is within the larger ecoregion of the St. Lawrence Lowlands and Mixed Forest Plains of southern Ontario. **Figure 3-4** consists of Map 9 of the City of Toronto Official Plan that identifies the City's Natural Heritage System (City of Toronto, 2010). The study area is connected to the Don River Valley which is one of the city's most extensive natural features. Within this regional context, the study area includes the mouth of the Don River at Lake Ontario.

Due to the heavy urbanization of the study area including industrial and port activities dating back to the 1800s, the natural environment has been severely degraded. There is little natural habitat and wildlife that is native to the study area. Naturalized environments in the study area primarily exist as regeneration on former industrial sites. Presently there are few terrestrial habitat opportunities in the area due to:

- the flat, open terrain of the area;
- lack of cover;
- lack of connecting corridors between habitat blocks; and,
- the impact of invasive species, chemical contamination and urban population.

The existing 2013 terrestrial natural environment baseline conditions are presented in **Figure 3-5**.

There are no Environmentally Significant Areas (ESA) or Areas of Natural and Scientific Interest (ANSI) in the study area.

Figure 3-4: City of Toronto Natural Heritage System

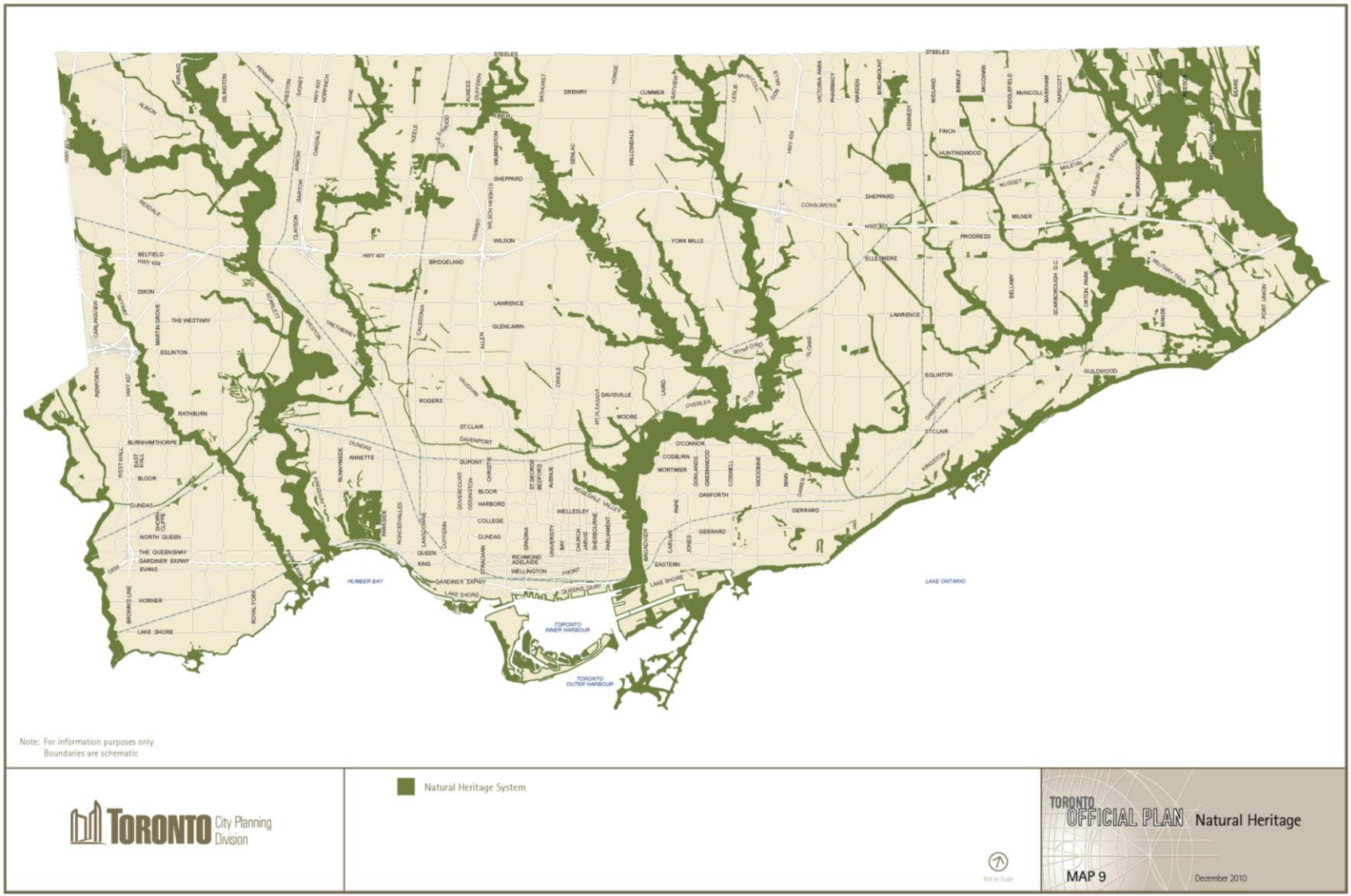


Figure 3-5: Natural Environment Existing Conditions (2013)

The TRCA previously completed a biological inventory of the Lower Don Valley (Keating Channel to Bloor St.) which included the Keating Channel Precinct which has the greatest amount of existing vegetation cover within the study area for this EA. Vegetation communities in this area are fully documented in the **TRCA Don Mouth Naturalization and Portlands Flood Protection Project EA Report** and in the **Keating Channel Precinct Environmental Study Report** for which additional biological survey work was completed.

Vegetation communities mapped in the Keating Channel Precinct included: Native Forb Old Field Meadow, Native Deciduous Cultural Savannah, Exotic Cultural Savannah and Exotic Forb Old Field Meadow. In the lower reaches of the Don River, TRCA mapped four plant species of regional concern and ten species of concern in an urban context (*Source: TRCA, 2011).* The plant species of regional concern are located well away from the Gardiner-Lakeshore Boulevard corridor. Field work completed as part of the Keating Channel Precinct EA confirmed that there are no Butternut Trees located in the Keating Channel Precinct. Past vegetation survey determined that most of the ecological communities suffer from severe disturbance or invasion by exotic species. Vacant land parcels in the study area are being reclaimed by an array of non-native species. Cottonwood is common in the area and many of the trees are invasive alien species such as Manitoba Maple (*Acer negundo*), Black Locust (*Robinia pseudosacacia*) and Norway maple (*Acer platanoides*).

Vegetation communities that do exist in the study area exist along colonized embankments (along the Don River and Lake Ontario waterfront), fill areas, rail corridors and newly regenerated industrial sites that include waterfront parks and open spaces. The existing diversity of plants and animals is low and there is limited hedgerow habitat that provides minor movement corridors for terrestrial species. Due to the lack of suitable wetland habitat in the study area, very few reptiles and amphibians are expected to exist within it.

Terrestrial wildlife in the study area is primarily linked to the proximity of Tommy Thompson Park and the Leslie Street Spit as a significant feature supporting a high diversity of biological communities, including a significant population of migratory birds during the spring and fall migrations. Based on a review of TRCA reports, within the study area around the Keating Channel and Don River mouth, there were only four animal species observed as having significance in an urban context. **Table 3-2** lists the species observed.

Table 3-2: Regionally Significant Animal Species in the Study Area

Species	Common Name	Number of Locations	TRCA Rank
Stelgidopteryx ruficollis	Northern Rough-winged Swallow	1	L4-Urban Significance
Actitis macufaria	Spotted Sandpiper	1	L4-Urban Significance
Tyrannus tyrannus	Eastern Kingbird	1	L4-Urban Significance
Dumetella carolinensis	Grey Catbird	3	L4-Urban Significance

Source: TRCA, 2011

Aquatic features in the study area include the Lower Don River and the Keating Channel. Aquatic habitat in these water bodies are of low quality. Fish habitat features within the Lower Don River are generally characterized as degraded, highly disturbed conditions that are uniform in nature and lack habitat diversity and complexity. There is a general lack of in-stream cover in terms of bank structure, aquatic vegetation or suitable substrates such as gravel, cobble and boulders. The river is best characterized as lacustrine in nature with hardened concrete channel banks and very little riparian cover. The productivity, water quality and overall health of an aquatic environment are generally depicted in the health of the benthic community. The most profound influence on the benthic community is suspended sediments and organic enrichment from storm sewer discharge and combined sewer outfalls (CSO). As such, the benthic community present within the Lower Don River exhibits a relatively low diversity. This condition has persisted since the late 1960s showing little change through to today.

Comprehensive fish sampling (electrofishing along three transects) conducted by TRCA from 1989 to 2012 revealed a total of 30 fish species inhabiting the Lower Don River and the Keating Channel between May and November. All of the fish captured were typically warmwater and coolwater species; however, Atlantic Salmon (*Salmo salar*), Chinook Salmon (*Oncorhynchus tshawytscha*), Rainbow Trout (*Oncorhynchus mykiss*) and Sea Lamprey (*Petromyzon marinus*), which are typically coldwater species, were also captured. The most common species captured during TRCA sampling of every year were White Sucker (*Catostomus commersoni*), Emerald Shiner (*Notropis atherinoides*) and Gizzard Shad (*Dorosoma cepedianum*). These three species accounted for 68 percent of the fish community in spring, summer and fall in 2012. Other high order piscivorous species such as Northern Pike (*Esox lucius*) and Walleye (*Sander vitreum*) were also captured during the survey period, albeit in low numbers, but indicate that trophic interactions between predator and prey within the degraded system may be occurring.

Through annual surveys, TRCA has found that the limiting aquatic habitat structure plays a key role in affecting the low numbers of fish and species diversity in the Lower Don River.

Dredging occurs frequently in the Keating Channel, which would have a negative impact on colonization of aquatic plants. The deep vertical concrete, wooden and steel sheet pile walls, the lack of riparian / instream vegetation or cover in the Keating Channel, and the regularity of dredging and the general uniform sandy substrates provide poor fish habitat conditions for most estuarine fish and wildlife species. Although there is little aquatic vegetation in the Keating Channel, there is adequate vegetation in the quays and slips of the Inner Harbour as well as the embayments of the Toronto Islands to provide habitat for the fish species found in both the Inner Harbour and Keating Channel.

Fish sampling conducted by TRCA from 1989 to 2012 revealed a total of 25 fish species inhabiting the Keating Channel between May and November. In any particular year, no more than 12 species were recovered with an average of only seven per year throughout the course of the sampling period. Many of the fish species captured were not considered typical warmwater species; rather they were generally cool and coldwater lake species such as alewife and emerald shiner. The species assemblage and richness captured in the Keating Channel was lower in diversity than the Lower Don River. The most common species captured during TRCA sampling were alewife and emerald shiner in the spring / summer and gizzard shad in the fall. Similar to the Lower Don River, other high order piscivorous species such as Northern pike and Chinook salmon were also captured in the Keating Channel indicating that some trophic interactions between predator and prey within the degraded system may be occurring.

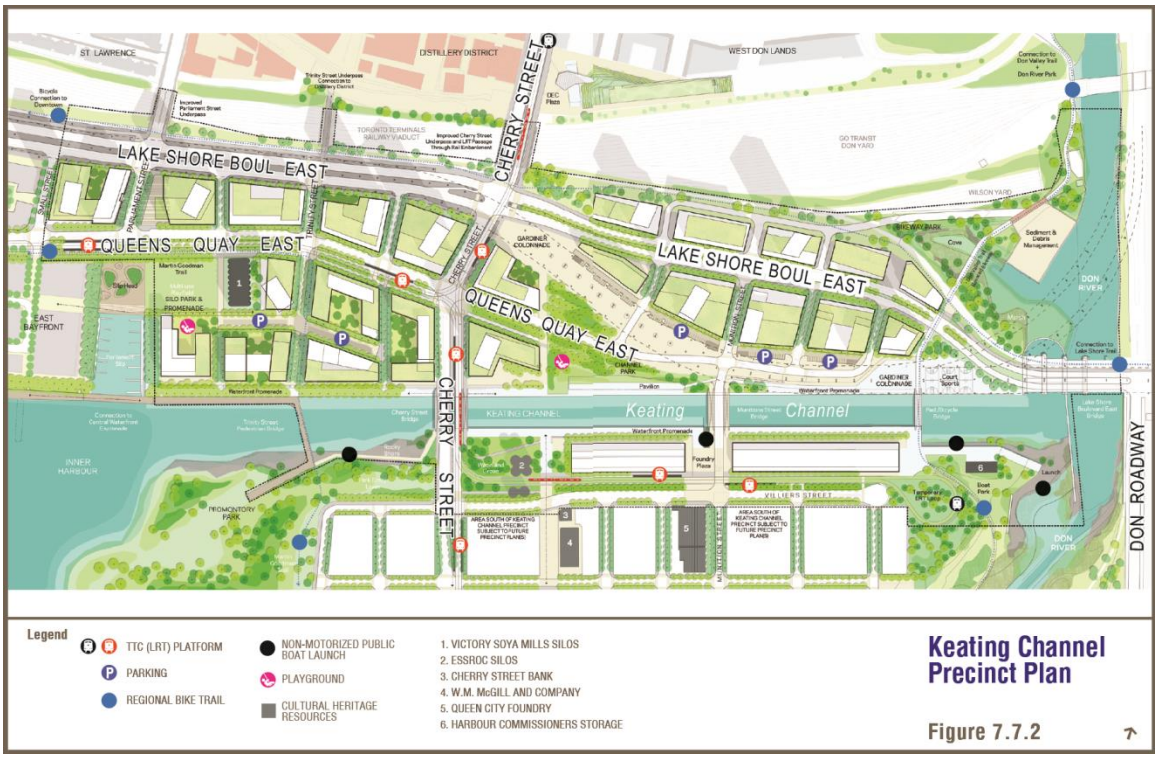
In recent years, there have been improvements to parks, public open space, waterfront and slips in the study area which contribute to improving terrestrial and aquatic habitat. These parks include Corktown Common in the West Don Lands which includes a flood protection landform along the western edge of the Don River, and the connected Sherbourne Common, Canada's Sugar Beach, and the Water's Edge Promenade within the East Bayfront precinct. These improvements have resulted in better connected natural features, improved tree cover, and improved aquatic habitat along the East Bayfront shoreline. These areas may develop into habitat for terrestrial and bird species especially considering the proximity to Tommy Thompson Park which is the largest existing natural habitat along the waterfront. The Lower Don River West Remedial Flood Protection Project was completed to provide flood protection for the West Don Lands and includes the flood protection landform on which Corktown Common sits. In addition, the DMNP EA has been approved and many of the aquatic habitat enhancement plans based on the EA will be in progress as the Gardiner East preferred design is completed. The timing of the DMNP habitat enhancement plans has not been confirmed, however, the planned improvements will greatly enrich the aquatic habitat in the Don River and Keating Channel from what exists currently.

It is anticipated that by 2031 terrestrial and aquatic habitat conditions will be much improved. Plans and studies reviewed to establish future conditions include the precinct plans for the West Don Lands, East Bayfront, and Lower Don Lands and North Keating, the Don Mouth Naturalization Study, the Port Lands Flood Protection Project, Port Lands Transportation and Servicing Master Plan and the Toronto Waterfront Aquatic Habitat Strategy. The Toronto Waterfront Aquatic Habitat Strategy is an ecosystem management plan to maximize the potential ecological integrity of the Toronto waterfront as various plans evolve. The strategy applies to all future development along Toronto's waterfront and states that emphasis for future development should be placed on opportunities associated with shoreline management projects such as erosion control and harbour maintenance. It also focuses on incorporating major improvement to aquatic habitat where land development is taking place.

In addition, the goal of this strategy is to restore the interaction between lake, river, and land by designing around the dynamic forces of nature, such as changing lake levels, river flows and climate, and thereby creating a healthy ecological setting to support sustainable habitat for wildlife and fisheries.

The future conditions reflect plans to capture opportunities for environmental regeneration. The most significant areas where natural environment improvements are expected include the Lower Don River and Keating Channel, particularly with the opportunities planned through the DMNP Project. The improvements anticipated through the implementation of the Keating Channel Precinct Plan and DMNP are shown in **Figure 3-6**.

Figure 3-6: Keating Channel Precinct Plan and DMNP Project



Beyond providing necessary flood management for much of the Port Lands, the DMNP Project is significant for the natural environment in that it will provide improved green linkages and natural terrestrial habitat areas immediately adjacent to the Don River and Keating Channel. Natural shorelands of watercourses provide important refuge for animals that require upland habitat for some part of their life history (e.g., egg laying areas for waterfowl). The naturalization and habitat restoration of the Don River will also encourage new aquatic habitat and support aquatic species in the area. The significant new green space to be added with the naturalization of the Don River will transform this area from an industrial centre into a natural green waterfront, supporting the continued improvement for terrestrial and aquatic life along Toronto's waterfront. **Figure 3-7** illustrates anticipated future environmental conditions in the study area. Further details regarding how the DMNP and Lower Don Lands Plan will transform this area of Toronto's waterfront are presented in **Section 3.3 Urban Design**.

The quality of the future natural environment is directly related to the habitat connectivity in the study area. As the future conditions are achieved through redevelopment of the central waterfront and the implementation of the DMNP, the natural environment will improve exponentially, supporting enriched habitat and species throughout the study area.

Figure 3-7: Natural Environment Future Conditions (2031)

3.1.3 Soil and Groundwater

This section contains a description of the soil and groundwater conditions in the study area including geologic and hydrogeological characteristics. Additional details regarding soil and groundwater conditions can be found in **Appendix F - Geo-Environmental Baseline Conditions Report**. The study area is located within the Iroquois Plain physiographic region. Native overburden deposits consist of clay till and sand from glacial Lake Iroquois. The underlying bedrock is pale grey to cream shale, fossiliferous limestone, dolostone and siltstone from the Upper Ordovician age Georgian Bay formation. The upper 2 metres (m) of the shale is generally heavily weathered.

Locally, the overburden soils consist of depths of fill up to 8 m to 10 m placed through historical lake filling during the late 19th and early 20th centuries. In 1912, the Toronto Harbour Commissioners initiated the conversion of approximately 1000 acres of marsh and shoreline into a waterfront industrial area, including channelling the Don River, constructing concrete dockwalls, and dredging millions of tons of sand to create the Port Lands. The shoreline was filled with dredged sediment from the Inner Harbour but the fill also reportedly included construction debris, excavated soil, sewage sludge, incinerator refuse, timber, concrete, and municipal garbage. Native soils consisting of former lake bottom sediments have been observed underlying the fill materials, and overlying bedrock.

A layer of fill material of varying thickness covers the entire study area. These fill materials are expected to be comprised of soft soils from dredging and excavation spoils from other areas of Toronto. Additionally, the fill materials are anticipated to contain rubble and previous shoreline structures. These fill materials are expected to present challenges to construction based on their limited geotechnical engineering suitability. The presence of rubble and subsurface structures could present difficulties for caisson or soldier pile installation and/or excavations. Not all excavated soils resulting from construction would be reusable from a geotechnical perspective and would need special handling, management, and potentially off-site disposal at licensed landfills. It has been noted that in some cases the fill layer is oil-impregnated likely from pipeline leakage in the area.

Lands within the study area have been historically used for fuel oil bulk storage (Gulf Oil Canada Limited), oil refinery (British-American Oil Company). The aerial photograph in **Figure 3-8** is from 1964 and shows the Keating Channel Precinct area industrial land uses during the construction of the east end of the Gardiner Expressway.

The contaminants detected in the soil include metals, polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs) (including chlorinated solvents), and general chemistry parameters. These contaminants have been detected at concentrations above the MOECC Guidelines for Background and Generic Site Condition Standards (2011). The contaminated soil depths north of the Keating Channel have been reported to extend to depths of 3 metres below ground surface east of Cherry Street.

Figure 3-8: 1964 Aerial Photograph of Keating Channel Precinct Area

The presence of contaminated soils and the need for specific remediation strategies have been noted as a requirement with any development strategy in the Keating Channel Precinct area. A detailed 2009 Subsurface Investigation was carried out for the area south of the Keating Channel for the Toronto Region Conservation Authority as part of the Don Mouth Naturalization and Port Lands Flood Protection Project. This assessment reports contaminants of concern within the soil and groundwater in the area including light and heavier fraction petroleum hydrocarbons (PHCs), chlorinated and non-chlorinated organic compounds, heavy metals, polychlorinated biphenyls (PCBs), and general chemistry parameters.

Soils in the Gardiner – Lake Shore Boulevard corridor are further compromised given the potential for migration of impacted groundwater into the study area from upgradient sources. In general, groundwater is expected to migrate regionally from upgradient inland areas downgradient towards water bodies within and adjacent to the study area, that being the Don River, the Keating Channel, and Lake Ontario.

Groundwater levels within the Keating Channel Precinct area were noted as shallow, approximately 0.7 to 3.9 m below ground surface, and generally observed within the fill materials. Groundwater readily infiltrated into test pit excavations. In addition, shallow water table conditions as well as proximity of some sections of the study area to water bodies will create conditions where significant water inflow to any excavations will be likely to occur. Shallow water table conditions will require groundwater control measures to be implemented. Dewatering for many construction activities is required.

Previous investigations indicate that bedrock is encountered at a depth of approximately 10 m and 12 m in the portion of the study area west of Cherry Street and at greater depths in the area between Cherry Street and the Don River. A deep bedrock valley has been identified some 300 m west of the Don Valley Parkway with a sudden drop of up to 25 m noted in the bedrock surface elevations along the Gardiner Expressway corridor. Having a width of about 200 m, this valley crosses the Gardiner and continues southward.

The soil and groundwater conditions are of importance when considering the costs and complexity of infrastructure construction in the study area.

3.1.4 Stormwater Management

Existing and future stormwater baseline conditions were established by reviewing available historical records, precinct plans and conceptual stormwater plans for developing neighbourhoods. Federal, provincial and municipal SWM policy and guidelines were also reviewed to establish applicable stormwater management (SWM) criteria. A number of EAs have been carried out within the study area. These documents were the primary references reviewed in establishing existing and future stormwater conditions. These include, but are not limited to the following key studies:

- Don Mouth Naturalization and Port Lands Flood Protection Project EA (DMNP EA, 2013);
- Lower Don Lands Class EA (LDL EAMP, 2010);
- East Bayfront Class EA Master Plan (EBF Class EAMP, 2006);

- West Don Lands Class EA Master Plan (WDL Class EAMP, 2005);
- Port Lands and South of Eastern Transportation and Servicing Master Plan EA.

Recent Addendums to the above EAs were also reviewed as part of this report. This information has been incorporated into this report and represented graphically where possible. In addition to the above studies, many other reports, policies and documents were reviewed from a SWM perspective to understand the baseline conditions and identify constraints/opportunities for the undertaking. These included the *Don River and Central Waterfront Project EA*, the *Lower Don River West Remedial Flood Protection Project Class EA*, the *Toronto Wet Weather Flow Management Policy*, the *Port Land Acceleration Initiative* (PLAI), *Toronto Design Criteria for Sewers and Watermains*, *Ministry of the Environment Stormwater Management Planning and Design Manual*, and TRCA requirements to name a few.

The following provides an overview description of stormwater management conditions in the study area. Further details are available in **Appendix G-Stormwater Management Baseline Conditions Report**.

SWM policies have evolved significantly since the development of the Gardiner Expressway and Lake Shore Boulevard. Most storm sewers in older neighbourhoods, such as those in the study area, were designed for minor system conveyance only (e.g., 2-year storm event) and do not include inlet control devices or ways to prevent sewer surcharge. As well, most neighbourhoods do not have engineered overland flow routes (for major system conveyance) to control pooling surface water depths. Where new development has occurred or is planned, the future conditions will reflect current and future policies and standards.

The study area is located entirely within the Don River watershed. The entire watershed area of the Don River is 360 km^2 which stretches southward 38km from the river headwaters in the Oak Ridges Moraine to the river outlet into the Keating Channel. Flooding along the Don River has been recorded since the mid-1870s; however significant urbanization of the watershed has severely altered the hydrogeological functioning of the natural watershed. Most of the flooding over the past few decades has resulted in nuisance type flooding, however the watershed would be subject to extensive flooding under a tropical storm similar to Hurricane Hazel (the regulatory flood event).

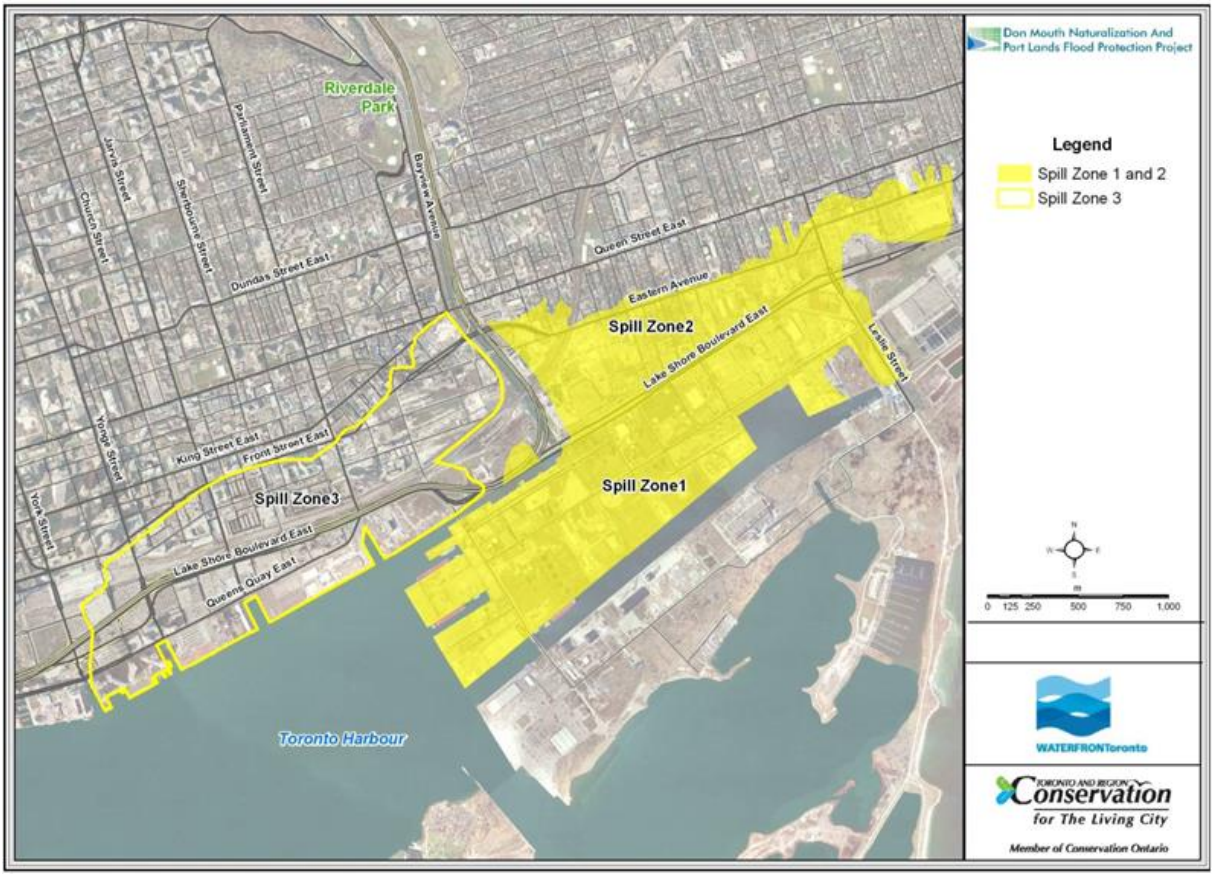
Under existing conditions the regulatory floodplain covers an area of 290 ha from the Don River to Woodbine Avenue in the east (refer to **Figure 3-9**). The floodplain can be divided into two areas: Spill Zone 1 (south of the Keating Channel and Lake Shore Boulevard), and Spill Zone 2 (east of the Don River). Prior to the construction of the Lower Don River West Flood Protection Landform (referred to as the West Don Lands FPL) there was a third Spill Zone which extended west of the Don River. The reduction in the floodplain area was achieved through the construction of the flood protection landform which allowed the development of the West Don Lands to proceed.

Spill Zone 1 and 2 still exist but will be eliminated with the implementation of the DMNP as the naturalization of the Don River Mouth, with a newly designed spillway, will accommodate stormwater from peak storm events. The implementation of the DMNP would therefore open up the land in Spill Zones 1 and 2 for redevelopment.

Stormwater drainage from the Gardiner Expressway does not outlet directly to the Don River. Deck drainage along the elevated Gardiner Expressway is collected in depressed basins (hoppers) on the roadway shoulders and discharged through pipes that convey drainage to the ground beneath the Expressway. Where this is not possible, drainage is discharged into the City's sewers along Lake Shore Boulevard. Along Lake Shore Boulevard, storm sewers are separated from sanitary sewers; however, many storm sewers discharge into combined sewer overflows (CSO trunks). Between Yonge Street and Logan Avenue, there are five storm/CSO trunks that cross Lake Shore Boulevard (at Lower Yonge, Lower Jarvis, Lower Sherbourne, Small and Cherry Streets); the latter three serve as outlets for storm sewers servicing Lake Shore Boulevard from Lower Jarvis Street to just east of Cherry Street. Some storm systems originate beyond the study area (e.g., west of Lower Yonge Street) and flow into the study area while others are confined to the boundaries.

East of Cherry Street there are several direct storm outfalls: five outfalls from Lake Shore Boulevard sewers to the Keating Channel, two outfalls from Don Valley Parkway ramp sewers to the Lower Don River and one further storm sewer outlets from the Gardiner Expressway to the Don River. Existing storm sewers discharge to outfalls or CSOs without any SWM quantity or quality controls. Under heavy rainfall, the Cherry Street underpass at the railway corridor experiences flooding due to the large catchment area draining to this point. The CSO on Cherry Street south of the underpass is also surcharged under current development under the City of Toronto 2-year design flow rate. Periods of high Lake Ontario water level conditions further exacerbate the situation as backwater extends into the CSO outlet in these conditions.

Figure 3-9: Regulatory Flood Spill Zones for the Lower Don



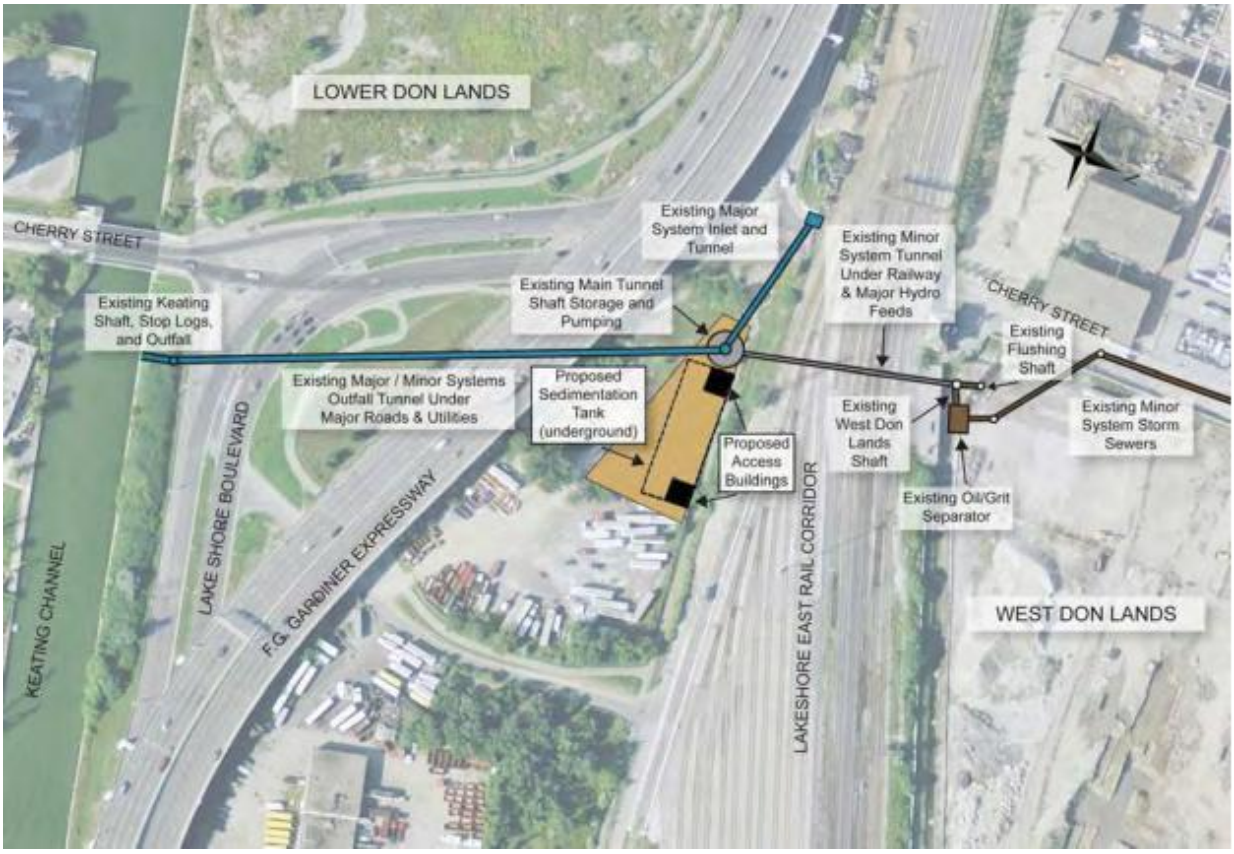
As part of the drainage plans for new development in the West Don Lands (WDL), the WDL EA recommended that stormwater be treated by an end-of-pipe facility located on the north side of the railway corridor, east of Cherry Street. This treatment facility consists of an oil-grit separator (OGS), filtration and ultra-violet disinfection. In late 2012 a new stormwater outfall associated with this facility was constructed to convey and treat stormwater for the WDL, primarily consisting of:

- Outfall tunnel to Keating Channel;
- Stormwater storage shaft and pumping at 480 Lake Shore Boulevard;
- Major system inlet (for overland flow) from the low point at Cherry Street; and,
- Minor system inlet (for local storms) from the WDL.

A 2013 addendum for the WDL EA revised the proposed end-of-pipe facility. As noted previously, some features of the proposed storm sewer quality concept had already been constructed in order to alleviate flooding at the Cherry Street underpass. The 2013

modifications expanded the treatment capacity of the stormwater quality facility at 480 Lake Shore Boulevard to include areas in East Bayfront (to the west) and Keating Channel Precinct. **Figure 3-10** shows the revised stormwater quality management concept for the WDL which has been partially constructed.

Figure 3-10: West Don Lands Class EA Addendum for Stormwater Quality, New Facilities



The current storm sewers within the Keating Channel Precinct have not been assessed for their capacity to address the future development, however, it is expected that due to the proposed changes to the land use for the area, and the need to address both SWM quality and quantity issues, the existing storm sewer system will not be adequate to meet the future needs. Therefore, it is expected that all the existing storm sewers within the Keating Channel Precinct will be replaced.

The DMNP EA was carried out to address the risk of flooding to 290 ha of urban land (Spill Zone 1 and Spill Zone 2) and to naturalize the mouth of the Don River (Don Mouth). The conceptual design for the DMNP consists of:

- Flood protection features;
- Sediment, debris and ice management;
- Naturalization;
- Opportunities for recreation features associated with the new river valley system and parkland outside the floodplain; and,
- Integration with the Lower Don Lands Planning and servicing.

Figure 3-7, presented earlier under Natural Environment, illustrates the future condition of the study area including the DMNP and Lower Don Lands plans.

The 2010 *Lower Don Lands Class EA Master Plan* (LDL EAMP) was carried out in close coordination with the DMNP EA and integrates the results of the Port Lands Acceleration Initiative (PLAI). The study area for the DMNP EA is similar to that of the LDL EAMP. As such, the LDL EAMP also addresses the municipal infrastructure servicing requirements necessary to be relocated as a result of the DMNP EA and/or to support the land uses proposed as part of the revitalization of the LDL area.

The 2010 LDL EAMP recommended an integrated treatment train approach to SWM planning within the LDL area, comprising of source controls, conveyance controls and end of pipe controls. The preferred stormwater quality treatment alternative for the Keating Channel Precinct was a common stormwater quality facility (SWQF) optimized to meet water quality targets and sized based on available space. This alternative consisted of oil-grit separators, ultra-violet treatment; storage areas and seepage/riverine wetlands.

Regarding stormwater quantity control, the proposed re-development of the LDL area will require the removal of much of the existing storm drainage infrastructure as the site is re-graded to elevate the existing ground for flood protection; to create the new river channel; and to create the flood protection spillway. The existing stormwater drainage system will need to be replaced with a modern SWM system as outlined in the LDL EAMP Addendum 2014.

The SWM plans for the Port Lands and South of Eastern are being confirmed through the *Port Lands and South of Eastern Transportation and Servicing Master Plan EA* (TSMP EA) that is currently underway. The TSMP EA considers the recommendations of the completed Don River and Central Waterfront Project EA and is being coordinated with other EAs currently underway within and adjacent to the study area. Typical stormwater related issues exist within the Port Lands and South of Eastern TSMP EA study area. In the Port Lands, there is little infrastructure south of the Ship Channel and as a result, all stormwater runoff is ponded in low lying areas or conveyed via overland flow routes via the Ship Channel or directly to Lake Ontario. North of the

Ship Channel, drainage is directed from the north to the south. There is some infrastructure that has been designed and placed to meet the immediate needs of each development. Within the Port Lands little to no SWM measures exists to meet the requirements of the Toronto Wet Weather Flow Management Guidelines.

The South of Eastern area has been identified in the City's Basement Flooding Protection Program as part of Study Area 32 experiencing chronic basement flooding. The Class EA Study for Area 32 identified a number of sewer upgrade projects to mitigate current basement flooding risks. While the South of Eastern portion of the study area has no combined sewers, the planned sewer upgrades within Area 32 (along Eastern Avenue and to the north of Eastern Avenue) may cause a potential hydraulic impact.

Overall, water quality for the Lakefront is similar to the discharges from the Don River; there are concerns due to the existing combined sewers that have the potential to spill directly into the lake untreated. The Don River and Central Waterfront Project EA, includes plans to capture and treat polluted stormwater and raw sewage from combined sewer overflows before they enter the lakefront. As a result, the investigations call for the upgrades to the City's critical sanitary trunk sewer infrastructure to improve operations and service future growth. It is the City's objective to reduce Combined Sewer Overflows (CSO) and mitigate the amount of pollution entering local water bodies, such as the Don River and Toronto Inner Harbour. Plans for SWM improvements to address the City's objectives for the Central Waterfront through the Port Lands and South of Eastern TSMP EA are still being confirmed. The future conditions of the Gardiner East design will recognize these improvements as they are designed and implemented.

3.1.5 Air Quality & Noise

3.1.5.1 Air Quality

The following summarizes air quality conditions in the study area. Further description of air quality conditions is available in **Appendix H – Air Quality and Greenhouse Gas Impact Assessment Report**. The existing conditions of the air and noise environment of the study area are typical of a highly urbanized environment. Air pollutants in the City of Toronto originate from a variety of sources including industry, transportation, fuel combustion, and miscellaneous activities (primarily dry cleaning, painting, solvent use, and fuel marketing). In addition, soil and groundwater conditions also impact air quality. Due to Toronto's dense population, large number of vehicles, industry, light winds, and summer temperatures, the city also provides good conditions for the formation of ground-level ozone and thus air-quality issues arise periodically.

The compounds of concern (COCs) considered in the background characterization are listed below and were identified in consultation with the MOECC. The Ministry of Transportation's *Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects* (the Guide) also identifies that the most important air quality indicator compounds to be considered for transportation projects are those listed below:

- Criteria Air Contaminants (CACs), including: carbon monoxide (CO), nitrogen oxides (NOX (focus on NO and NO2)), total suspended particulate (TSP), particulate matter with aerodynamic diameter <10µm (PM10), and particulate matter with aerodynamic diameter <2.5µm (PM2.5).
- Volatile Organic Compounds (VOCs), including: benzene, 1,3-Butadiene, formaldehyde, acetaldehyde, and acrolein.

For the greenhouse gas emissions assessment, the principal transportation related GHG is carbon dioxide (CO2). Other important GHGs include methane (CH4) and nitrous oxide (N2O). The relative impacts of various GHGs are often expressed in terms of their global warming potential (GWP) relative to CO2. GWP represents a basis for combining the emissions of individual greenhouse gases by normalizing individual mass emission rates, based on the ability of each greenhouse gas to trap heat in the atmosphere relative to CO2 over a specified time horizon.

As per the Guide, the 70th percentile of the most recently measured and complete concentration data from the nearest MOECC or Environment Canada air quality monitoring station are representative as the background concentration levels to be used in the comprehensive air quality analysis.

The scope of work for the air quality assessment as outlined in thre Terms of Reference involved ambient monitoring. Monitoring was performed by Dillon to characterize the ambient contaminant concentrations in the study area. However, due to limitations of the monitoring equipment which was deployed, in discussion with the MOECC it was determined that NAPS and MOECC monitored data would be used to represent ambient concentrations.

Background concentrations for TSP, PM2.5, NO2 and CO, were reviewed based on the data collected from the MOE ambient air quality monitoring stations located in the downtown area. The Volatile Organic Compounds (VOCs) and BaP background concentrations were reviewed based on the ambient air quality data collected from Environment Canada's (EC) National Air Pollution Surveillance (NAPS) stations. Data were collected for the most recent available consecutive 3 years (2012 and prior). Analysis of three consecutive years of ambient air quality data was done based on this approach being aligned with the methodologies for assessing achievement of the Canadian Ambient Air Quality Standards (CAAQS).

The Gardiner Expressway is a contributor to air quality conditions within Toronto, particularly along the Waterfront, however it is one of the many contributors. Air quality near to the Gardiner Expressway would be expected to have higher concentrations of indicator compounds than areas further setback from the Expressway. However this phenomenon is expected to be fairly localized.

A review of air quality measurements from across Toronto show strong similarities in data from geographically diverse stations. While there is no publicly available long term monitoring close to or adjacent to the Gardiner, the MOECC station at Resources Road (near Highway 401) can be turned to as an indicator of impact of a major traffic corridor on air quality. The Resource Road station monitors similar ranges of indicator compounds as stations located elsewhere in the City and away from a major transportation route.

Representative background air quality levels for contaminants of concern for the Gardiner corridor are presented in **Table 3-3** (using the Resources Rd. Monitoring Station). Note that ambient air quality monitoring data for PM10 was not available. PM10 was estimated assuming that PM2.5 accounts for ~60% of PM10, which is based on a research conducted by the MOECC in Ontario ("A Compendium of Current Knowledge on Fine Particulate Matter in Ontario", dated March 1999). As shown in **Table 3-3**, all of the 90th percentile background concentrations were below their respective criteria except Benzene and BaP. For Benzene, the 90th percentile annual concentration was 153% of its criterion. The 90th percentile concentrations for BaP were 186% and 800% of its corresponding 24-hour and annual criteria.

Table 3-3: Representative Background Air Quality Concentrations

Pollutant	Averaging Period	Data Period	70th Percentile (µg/m³)	90th Percentile (µg/m³)	Criteria (µg/m³)	
$PM_{2.5}$	24-hour	2010-2012	7	12	28	Canadian Ambient Air Quality Standard; Ontario AAQC
PM_{10}	24-hour	2010-2012	12	21	50	Ontario AAQC
NO_2	24-hour	2010-2012	32	43	200	Ontario AAQC
	1-hour	2010-2012	32	51	400	Ontario AAQC
CO	8-hour	2008-2010	259	356	15700	Ontario AAQC
	1-hour	2008-2010	252	366	36200	Ontario AAQC
Benzene	Annual	2009-2012	0.69	0.69	0.45	Ontario AAQC
	24-hour	2009-2012	0.80	1.08	2.3	Ontario AAQC
Acrolein	24-hour	2008-2010	0.04	0.07	0.4	Ontario AAQC
	1-hour	2008-2010	0.10	0.18	4.5	Ontario AAQC
1,3 Butadiene	Annual	2009-2012	0.07	0.07	2	Ontario AAQC
	24-hour	2009-2012	0.08	0.12	10	Ontario AAQC
Formaldehyde	24-hour	2008-2010	1.46	2.51	65	Ontario AAQC
Acetaldehyde	24-hour	2008-2010	3.48	5.12	500	Ontario AAQC
	½ hour	2008-2010	10.31	15.16	500	Ontario AAQC
BaP	Annual	2008-2010	0.000088	0.000089	0.00001	Ontario AAQC
	24-hour	2008-2010	0.000093	0.000153	0.00005	Ontario AAQC

3.1.5.2 Noise

The existing acoustic environment in the study area is influenced by noise generated by road, rail, and marine traffic, loading and unloading of vehicles, heating, ventilation and air conditioning (HVAC) units and rooftop noise, industrial and construction sources, and intermittent aircraft noise. The study area can be classified as a Class 1 Area as defined by the MOECC, that is "an area with an acoustical environment typical of a major population centre, where the background noise is dominated by the urban hum."

Characterizing baseline or existing conditions is a necessary step in understanding the overall noise impacts from the undertaking. The assumed future baseline year was 2031. Baseline

conditions were established on a noise sensitive receptor (or 'node') basis within the study area. The study area was divided into segments based on change in traffic related parameters, including: traffic volumes, posted speed limit and percentage of medium and heavy trucks. Based on the review of the traffic related parameters, each segment consisted of a stretch of road between two consecutive intersections. It was conservatively assumed that a node exists in all the segments within the study area. For at grade road segments, the receptor heights were determined based on the review of the potential receptor locations. This included receptor heights of 1.5m and 4.5m above grade, for receptors at ground level and second storey, respectively. The height of 4.5m represents receptors at the plain of second storey window. For elevated roadways (e.g., Gardiner Expressway), a receptor height resulting in maximum noise impact was selected for the modelling.

Future potential receptors were also included in the analysis. The locations, heights and setback distances of those receptors were estimated from the proposed development plans, including the ones for Keating Channel Precinct, West Don Lands and East Bayfront. For some of the nodes, more than one segment of road contributed to the overall noise levels. This was mainly the case for receptors in close vicinity of the Gardiner Expressway, where up to four (4) segments were included: Gardiner eastbound lanes, Gardiner westbound lanes, Lake Shore Boulevard eastbound lanes and Lake Shore Boulevard westbound lanes.

Predicted (2031) sound levels with the Gardiner Expressway in place were developed for hourly sound level equivalent values (1-hour Leq, dBA) at over 160 receptor locations and are available in **Appendix I – Noise Assessment Report**. Forecasted noise levels for receptors in the Gardiner Expressway-Lake Shore Boulevard corridor ranged from 68 to 78 dBA which were generally higher than sound levels forecasted for other receptor locations in the larger study area. This additional noise level is associated with traffic in the Gardiner-Lake Shore Boulevard corridor.

3.2 Infrastructure & Transportation

The study area for the potentially affected infrastructure extends along the immediate Gardiner Expressway – Lake Shore Boulevard corridor from approximately Lower Jarvis Street to Logan. Avenue where the Gardiner Expressway touches down approximately 150 m west of Logan Avenue, just west of Booth Street. The corridor broadens between Cherry Street and the Don River where it extends from the Keating Channel northerly to the Metrolinx Lake Shore East rail corridor. The Don Valley Parkway is also potentially affected by the project as far north as the Richmond/ Adelaide/Eastern interchange and was therefore included in the description of baseline conditions.

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).

In considering existing and future traffic demand and volume, a larger Transportation Study Area was considered that included lands that extend from Dundas Street to Lake Ontario and from Spadina Avenue to Woodbine Avenue.

Infrastructure and transportation 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. Traffic data was based on the City's regional EMME model, available traffic count data, Transportation Tomorrow Survey (TTS) data, and bluetooth survey data.

The existing and future conditions in the study area considered the following:

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

It is noted the SWM infrastructure is previously described in **Section 3.1.4** under the Environment lens.

Also described in this report section are the existing and forecasted travel volumes for the Gardiner Expressway and Lake Shore Boulevard.

Further details on infrastructure conditions are available in **Appendix J–Infrastructure Baseline Conditions Report.**

3.2.1 Roadway Infrastructure

Figure 3-11 illustrates major transportation facilities in the City of Toronto (major roadways and rapid transit facilities), and shows the location of the Gardiner Expressway and Don Valley Parkway in a city wide transportation context.

3.2.1.1 Gardiner Expressway

The Gardiner Expressway extends east from the Queen Elizabeth Way / Highway 427 interchange through the downtown area, ending at the Don Valley Parkway. Construction began on the at-grade segments of the Gardiner Expressway west of the City in 1955. In 1958, construction began on the elevated segments from Dufferin Street through the central downtown area, reaching York Street by 1962, the Don Valley Parkway by 1964, and finally Leslie Street by 1966. In the study area the elevated Gardiner Expressway runs generally above or to the north of some sections of the ground-level Lake Shore Boulevard from Jarvis Street easterly.

It has a posted speed limit of 90 km/h. The Expressway is elevated for a 6 km section between Dufferin Street and the Don Valley Parkway, with numerous on- and off-ramps parallel and adjacent to the mainline structure between Spadina Avenue and Parliament Street (the on- and off-ramps within the study area are illustrated schematically in **Figure 3-12**). The Expressway has a six-lane basic cross-section for the majority of its length. There are some exceptions where six lanes are not present. Eastbound between the York/Bay/Yonge off-ramp and the Rees on-ramp there are only two eastbound lanes Westbound between the Yonge/Bay/York off-ramp and the Jarvis on-ramp there are only two westbound lanes. The section between the Don Valley Parkway and the Jarvis/Sherbourne ramps consists of four lanes per direction (total of eight lanes).

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 bridge deck and piers are over 40 years old and past the end of their normal service life. Comprehensive deck and pier rehabilitation is required on an annual basis to keep the expressway safe for use.

Figure 3-11: Major Roadways and Rapid Transit Facilities, City of Toronto

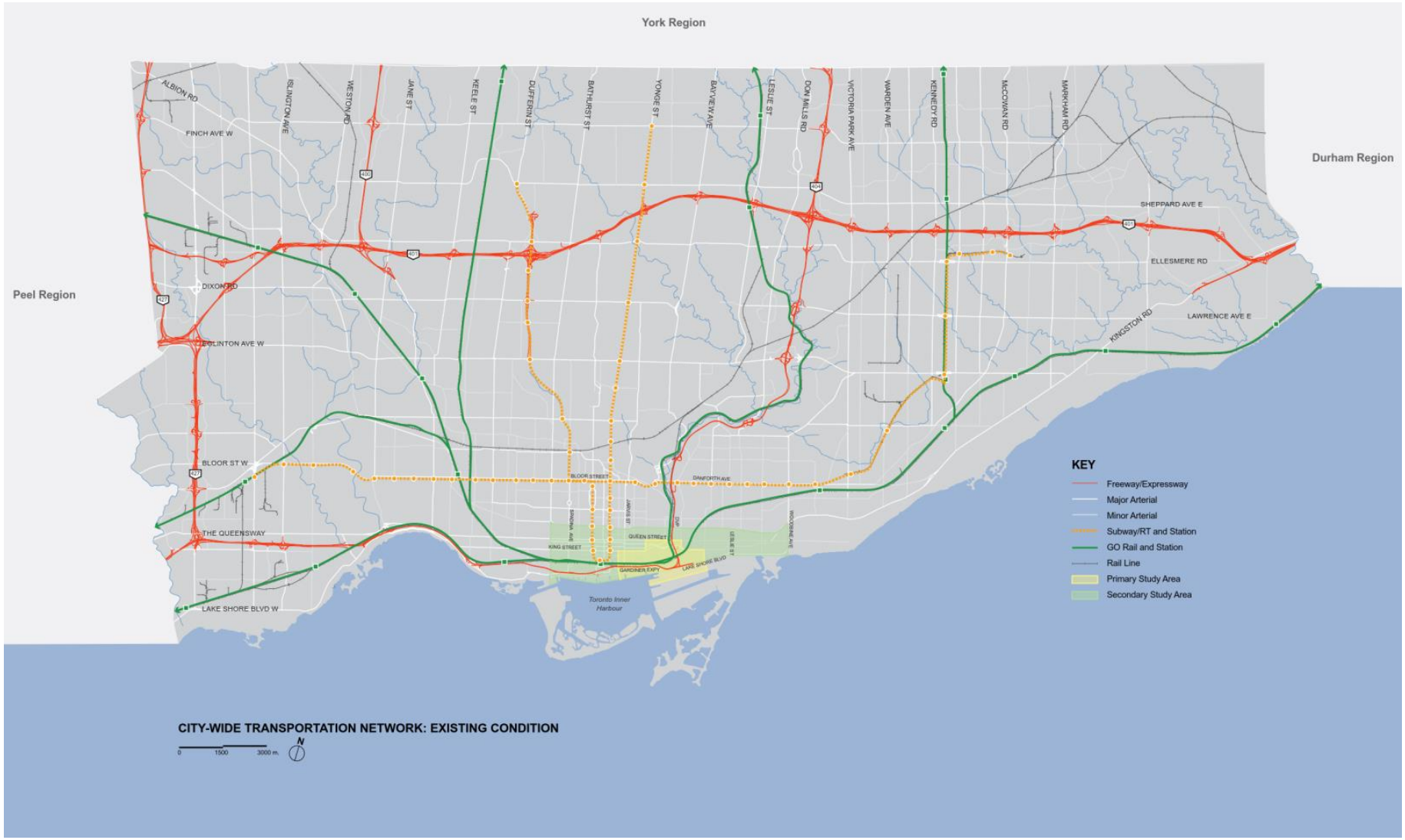
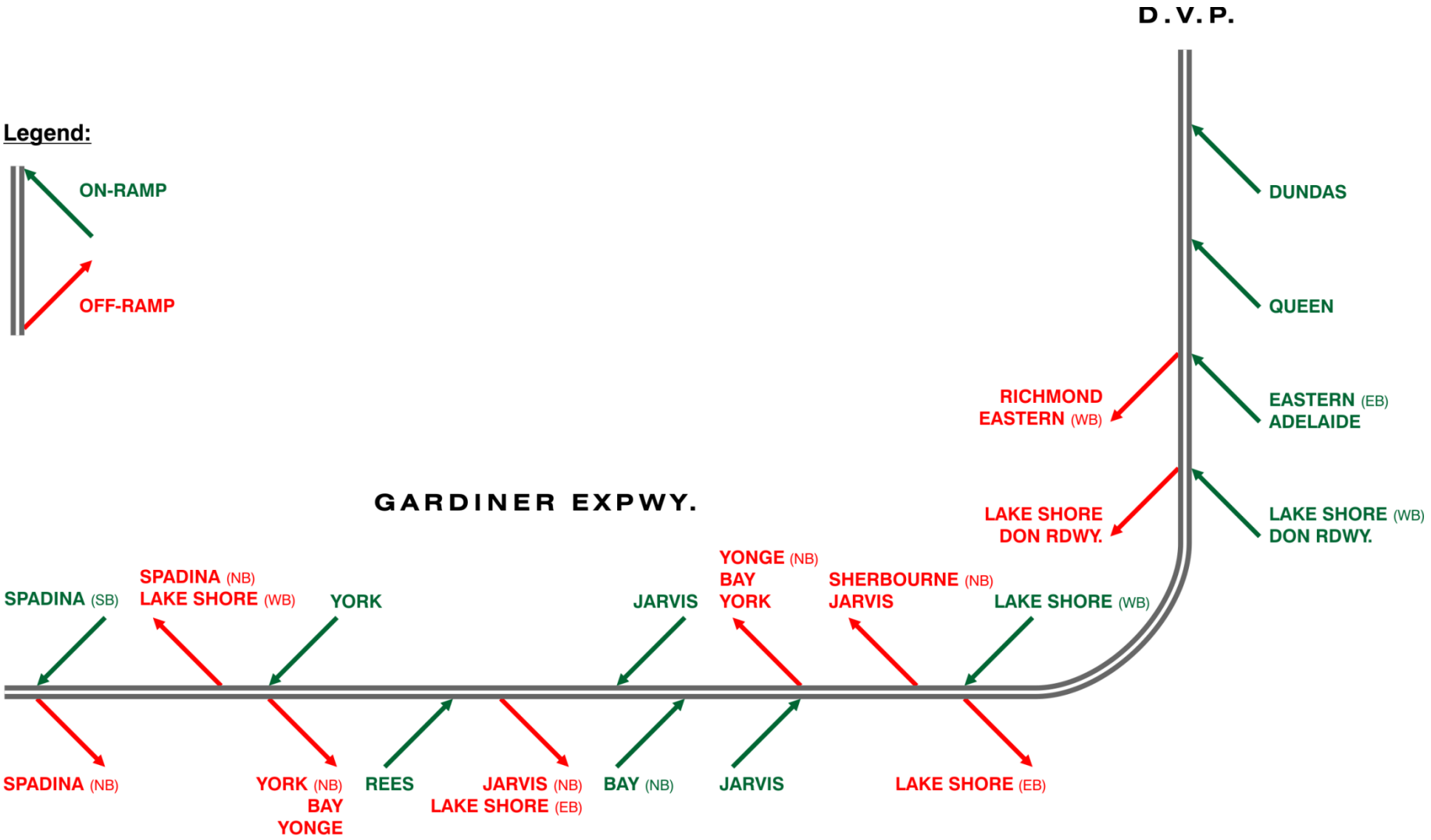


Figure 3-12: Gardiner Expressway On- and Off-Ramps



Starting from 1990, after 30 years of usage, the elevated structure has experienced serious deterioration. Programmed repair contracts issued by the City of Toronto have been carried out ever since. Those general repairs included:

- Local deck repairs;
- Total deck replacement;
- Expansion joint replacement and link slab to eliminate expansion joints;
- Deck stitching of joints to eliminate longitudinal expansion joint;
- Bearing replacements;
- Bent repairs and the steel girder coating;
- New deck drainage system; and,
- Signage works.

3.2.1.2 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.

To the south, the DVP terminates and transitions to the Gardiner via two-lane on-off ramps to the Don Roadway. While the two expressways are separate facilities they are commonly perceived as serving a continuous through function. The DVP/Gardiner ramps have a design speed of approximately 70 km/h. The posted speed on these ramps is 60 km/h. The DVP connecting ramps have grades of 3.85% for the N-W ramp (i.e. from the north to the west) and 6.0% on the W-N ramp. These ramps have curvature radii of 290 m (N-W ramp) and 250 m (W-N ramp). The LSB connecting ramps have grades that vary from 3.7 % to 5.6% for the eastbound off-ramp and 1.5% to 5.6% for the westbound off-ramp. The connecting ramps all have minimal inside and outside shoulders.

The transition to the Don Roadway is via sub-standard (notably in the southbound direction) single lane entry-exit roadways. The horizontal and vertical alignments of each direction of the

Don Roadway where it is adjacent to the DVP ramps are constrained by the piers and retaining walls of the DVP ramps, thus creating the substandard 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.

3.2.1.3 Lake Shore Boulevard & Other Arterials

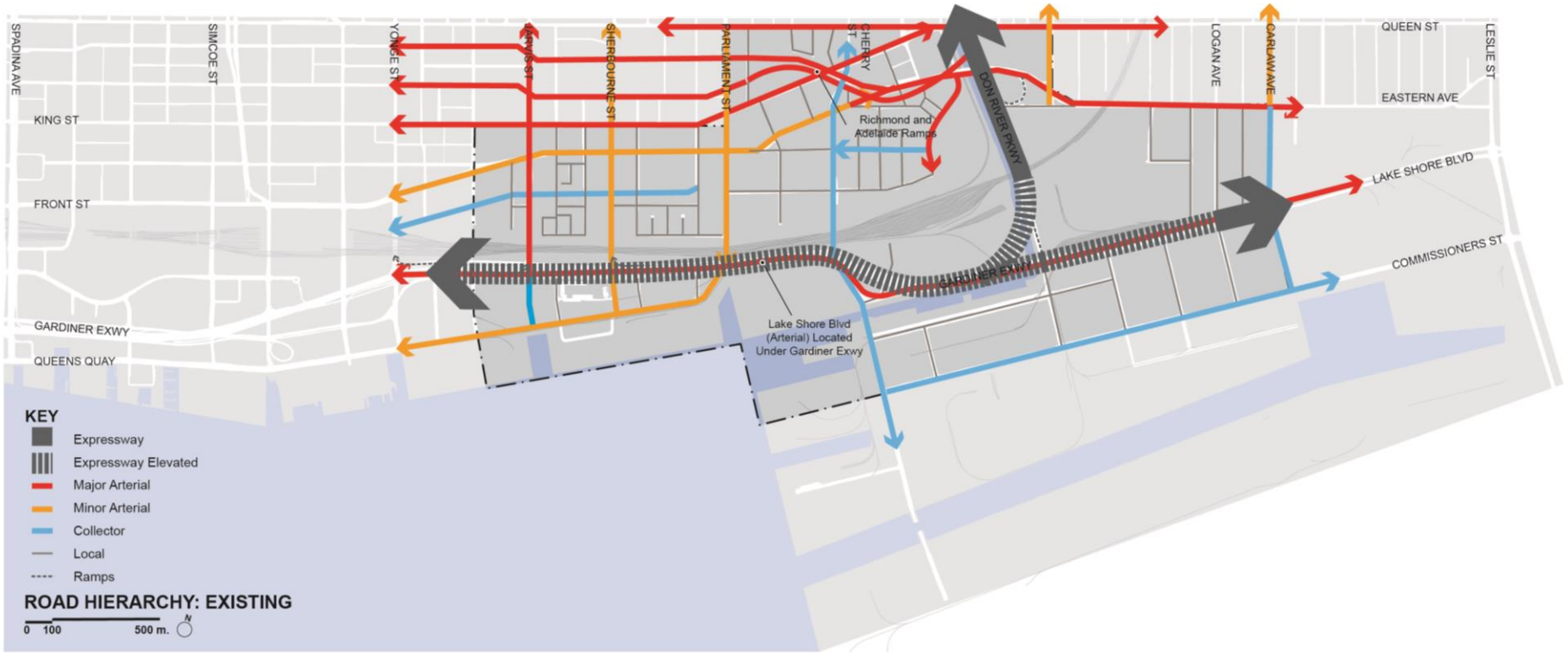
Lake Shore Boulevard in the study area is a 6-lane divided roadway classified as a major arterial with a posted speed of generally 60 km/h with some sections posted at 50 km/h (eastbound from west of Yonge Street to Richardson Street; westbound from Sherbourne Street westerly). A portion of Lake Shore Boulevard in the Cherry Street area is positioned completely 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 to the east 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). See **Figure 3-13**.

Figure 3-13: Study Area Road Hierarchy



There are also ten movements currently prohibited at six intersections along Lake Shore Boulevard, as shown in **Table 3-4**. Under future baseline conditions, there will be eight movements prohibited at eight intersections. 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 east 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.

Table 3-4: Prohibited Turning Movements at Lake Shore Boulevard Intersections

Intersecting Street	Prohibited Turning Movements	
	Existing Conditions	Future Baseline Conditions
Yonge Street	1. SB left turn	1. SB left turn
Jarvis Street	2. EB right turn from EB Gardiner off-ramp 3. EB left turn from Lake Shore 4. WB left turn from Lake Shore	2. EB right turn from EB Gardiner off-ramp 3. EB left turn from Lake Shore 4. WB left turn from Lake Shore
Sherbourne Street Construction completed 2015	5. WB right turn from Lake Shore (WB Gardiner off-ramp feeds into Lake Shore immediately east of intersection)	5. WB right turn from Lake Shore (WB Gardiner off-ramp feeds into Lake Shore immediately east of intersection)
Parliament Street	6. EB right turn	none
Trinity Street	[n/a]	6. WB left turn
Cherry Street West intersection East intersection	7. EB left turn 8. WB left turn	none
Munition Street	[n/a]	none
Don Roadway	9. WB left turn 10. EB left turn	7. WB left turn 8. EB left turn

3.2.1.4 Future 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 York/Bay eastbound off-ramp will be removed and a new off-ramp landing just west of Simcoe Street will be constructed. The detailed design for this work is completed and construction is expected to be finished in 2017. The Bay Street eastbound on-ramp to the Gardiner has EA approval to be removed, but this project is unfunded. *The Lower Yonge Precinct Transportation and Serving Master Plan EA* (which covers the area of Yonge Street to Jarvis Street and Lake Shore Boulevard to Queens Quay Boulevard) includes a task item to prepare a 10% design for the Bay Street ramp removal. This is required in order to determine the feasibility of, and make a recommendation on the shortening of the eastbound Jarvis off-ramp so that it would land on the west side of Yonge Street. Phases 3 and 4 of the *Lower Yonge Precinct Transportation and Servicing Master Plan EA* are currently underway and completion is anticipated in early 2017. 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 North Keating 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 a 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 Lower Don Lands and North Keating area from just west of the Don Roadway to west of the 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.

3.2.2 Pedestrian and Cycling Facilities

3.2.2.1 Pedestrians

The condition and experience of pedestrian facilities varies dramatically between the pedestrian environment north of the rail corridor and the pedestrian environment south of the rail corridor, particularly along and across Lake Shore Boulevard. 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.

The majority of the downtown area north of the rail corridor was developed prior to the auto era, and while there have been significant changes in development in the subsequent decades, the street network maintains many of the qualities that are conducive to pedestrian activity. These include the configuration of the network (generally a fine-grained block pattern with short block spacing), right-of-way cross-sections including building setbacks, and urban design in general (e.g., promoting active uses adjacent to the sidewalk). Other traffic engineering principles have been implemented that can be considered pedestrian-friendly, including short traffic signal cycle lengths, vehicle turn restrictions at intersections with significant pedestrian demand, controlled crossing locations at frequent intervals (traffic signals and pedestrian crossovers), and pedestrian countdown signals.

South of the rail corridor, pedestrian facilities along and across Lake Shore Boulevard are generally poor. Sidewalks exist along the south side of the roadway 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.

Figure 3-14 illustrates pedestrian features within the Lake Shore Boulevard / Queens Quay corridor between Yonge Street and Carlaw Avenue, including features accommodating pedestrian travel and other constraints that limit, restrict or discourage pedestrian travel.

Figure 3-14: Existing Pedestrian Facilities and Barriers, Lake Shore Boulevard and Queens Quay Corridors

As shown in **Table 3-5**, there are four intersections along Lake Shore Boulevard within the study area where north-south pedestrian crossings are prohibited on one or both sides of the intersection, and two intersections where north-south crossings extend through multiple medians due to parallel ramp movements. Under future background conditions, as part of the North Keating Channel Precinct Plan, the Cherry Street and Don Roadway intersections are expected to be reconfigured to accommodate pedestrian crossings on both sides, and additional controlled crossings are proposed at Trinity Street and Munition Street. Also, as part of the East Bayfront Precinct Plan and in conjunction with the extension of Queens Quay east of Parliament Street, the Lake Shore Boulevard / Parliament intersection will be reconfigured.

Table 3-5: Lake Shore Boulevard Pedestrian Crossings

Cross-Street	Pedestrian Crossing			
	Existing Conditions		Future Baseline Conditions	
	West Leg	East Leg	West Leg	East Leg
Yonge Street North intersection South intersection	 Permitted Permitted	 Permitted Permitted	 Permitted Permitted	 Permitted Permitted
Jarvis Street	Permitted; ramp crossing	Permitted	Permitted; ramp crossing	Permitted
Sherbourne Street	Permitted	Permitted;	Permitted	Permitted;
Parliament Street	Permitted	Not permitted	Permitted	Not permitted
Trinity Street	n/a	n/a	Permitted	Permitted
Cherry Street West intersection East intersection	 Not permitted Not permitted	 Not permitted Permitted	Permitted	Permitted
Munition Street	n/a	n/a	Permitted	Permitted
Don Roadway	Not permitted	Permitted	Permitted	Permitted
Carlaw Avenue	Permitted	Permitted	Permitted	Permitted

Table 3-6 lists the lengths of the crossings of Lake Shore Boulevard within the study area. Two lengths are listed: a curb-to-curb crossing distance, and that portion of the crossing distance that is "exposed to traffic" (i.e., after discounting the width of any medians long enough to be used as refuge islands during two-stage crossings). Future baseline changes between Parliament Street and the Don Roadway (including new crossings at Trinity Street and Munition Street) are based on conceptual designs prepared for the *Keating Channel Precinct Plan*.

Table 3-6: Lake Shore Boulevard. North-South Crossing Distance

Crossing Location	Curb to curb crossing length *(m)*				Crossing Length Exposed To Traffic *(m)*			
	Existing		Future Baseline		Existing		Future Baseline	
	West Side	East Side	West Side	East Side	West Side	East Side	West Side	East Side
Jarvis Street	42.4	49.4	42.4	49.4	33.5	36.6	33.5	36.6
Sherbourne Street	48.0	49.5	48.0	49.5	33.5	35.9	33.5	35.9
Parliament Street	38.1	—	38.1	—	31.5	—	31.5	—
Trinity Street	—	—	30.3	30.3	—	—	24.3	24.3
Cherry Street	—	35.9	34.4	30.8	—	27.0	26.3	25.9
Munition Street	—	—	26.2	26.2	—	—	26.2	26.2
Don Roadway	—	26.4	—	26.4	—	17.9	—	17.9
Carlaw Avenue	29.7	31.1	29.7	31.1	26.4	24.3	26.4	24.3

Table 3-7 lists the number of lanes that pedestrians will need to cross at each intersection, including "mainline" lanes on Lake Shore Boulevard itself as well as right turn channelizations and any additional lanes related to on- or off-ramps. Future baseline conditions reflect the current concept plans developed for the Keating Channel Precinct.

Table 3-7: Number of Lanes Crossed by North-South Pedestrians

Intersecting Street	Number of Lanes On Lake Shore Boulevard Crossed By North-South Pedestrians*			
	Existing Conditions		Future Background Conditions	
	West Leg	East Leg	West Leg	East Leg
Jarvis Street	9	8	9	8
Sherbourne Street	8	8	8	8
Parliament Street	6	6	6	6
Trinity Street	N/A	N/A	6	6
Cherry Street	N/A	7	7	7
Munition Street	N/A	n/a	7	7
Don Roadway	N/A	6	4	6

**Includes right turn channelizations and parallel on- and off-ramp lanes.*

There are five locations within the Study Area, listed in **Table 3-8**, where pedestrians cross uncontrolled channelized right turn movements along Lake Shore Boulevard. Three of these are at the west and east Cherry Street intersections; under future background conditions, these intersections are proposed to be replaced with a single consolidated intersection with no right turn channelizations.

Table 3-8: Pedestrian Crossings of Uncontrolled Right Turn Channelizations

Lake Shore Boulevard at:	Uncontrolled Right Turn Channelizations:	
	Existing Conditions:	Future Baseline Conditions:
Yonge Street	none	none
Jarvis Street	none	none
Sherbourne Street	** none	** none
Parliament Street	none	none
Trinity Street	[n/a]	none
Cherry Street West intersection East intersection	 WB right turn EB right turn; NB right turn*	 none
Munition Street	[n/a]	none
Don Roadway	NB right turn*	none
Carlaw Avenue	None	None
**uncontrolled 90-degree right turn*		

3.2.2.2 Cycling Facilities

Existing dedicated cycling facilities are illustrated in **Figure 3-15**. In addition to those dedicated facilities, cycling is also permitted and can be accommodated (with varying degrees of comfort) on all streets in the study area, with the exception of the Gardiner Expressway and Don Valley Parkway, on which cyclists and pedestrians are prohibited.

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 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.

Future cycle/pedestrian facilities in the study area included:

- 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.

Figure 3-15: Existing Cycling Facilities

Figure 3-16: Existing Rail Facilities

3.2.3 Transit

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 study area are predominantly served by GO rail and bus services (focused on Union Station) and by the TTC subway network. While these facilities generally do not directly serve the study area, they 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 is to provide a major access to the downtown area.

Numerous rapid transit and regional transit projects have been identified by the TTC, GO Transit and Metrolinx as part of their respective long-term service plans. While many of these projects would not specifically travel through the study area, they will influence travel patterns at a regional level and may encourage an increase in transit ridership for trips bound to and from the downtown area. Specific to the study area, planned changes include:

- A new Light Rail Transit (LRT) line to run along the east side of Cherry Street from King Street south to the Ship Channel;
- The potential new GO Stations on the Lake Shore line in the area of the Don River;
- A new east-west Light Rail Transit (LRT) route along Queens Quay easterly to Cherry Street and extending into the Port Lands; and,
- A new LRT on the proposed Broadview Avenue Extension from south of Eastern to the Port Lands.

Other transit projects planned in the City that could influence travel demand in the corridor and have been accounted for in the regional demand forecasts:

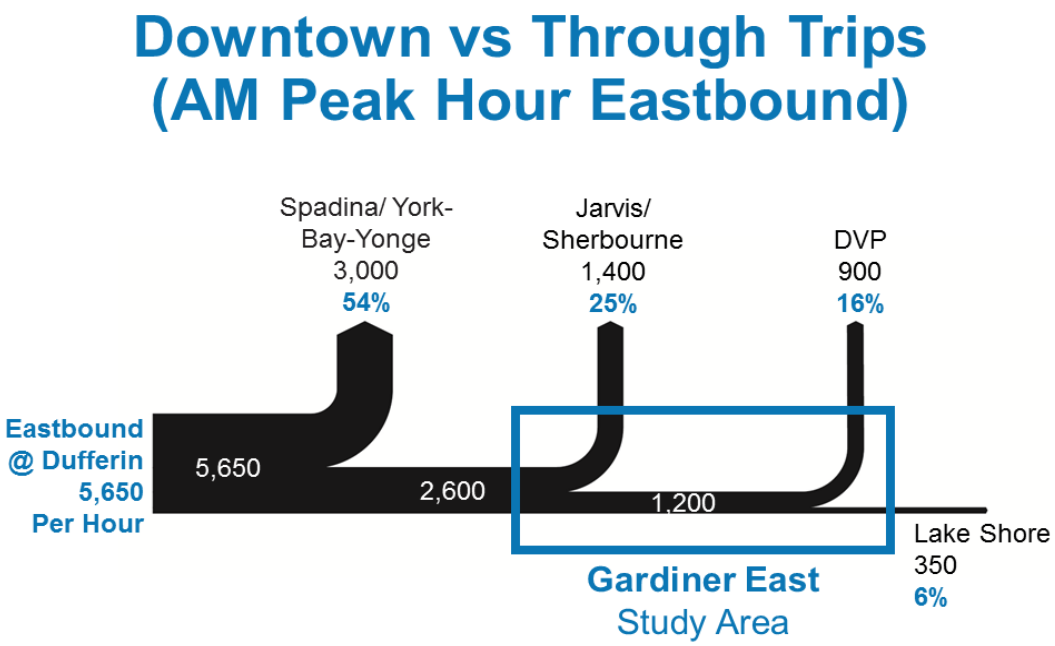
- Eglinton LRT (Mount Dennis to Kennedy Avenue);
- Yonge-University-Spadina Subway Extension to Vaughan Corporate Centre;
- Downtown Relief Line;
- GO Transit Regional Express Rail; and,
- Union Station Capacity Improvements.

3.2.4 Existing Travel Demand

The existing pattern of transportation demand for automobile infrastructure to, from, and within the study area places significant pressure on the surrounding infrastructure. The existing travel demands were quantified via the application of Bluetooth data capture methods that provided a consistent sampling of the amount and (local) origin/destination of vehicles travelling along the Gardiner Expressway, Don Valley Parkway, and Lake Shore Boulevard.

Figure 3-17 and **Figure 3-18** present the eastbound and westbound traffic volumes in the study area under the existing condition. **Figure 3-19** presents the breakdown of travel by mode approaching the study area. It can be seen that essentially 70% of all trips into the downtown are via transit, with only 28% via auto modes, and the remaining 4% via walking and cycling.

Figure 3-17: Existing Eastbound Traffic Volumes



Source: AM Peak Hour Survey Results (2010 Origin/ Destination Survey)

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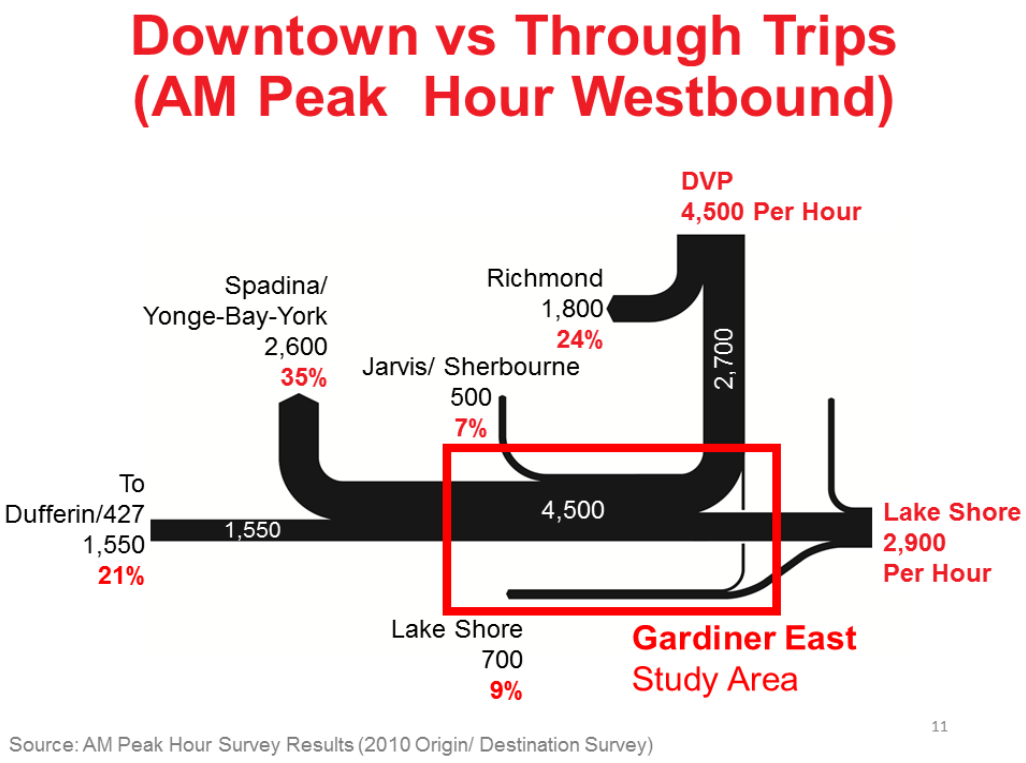
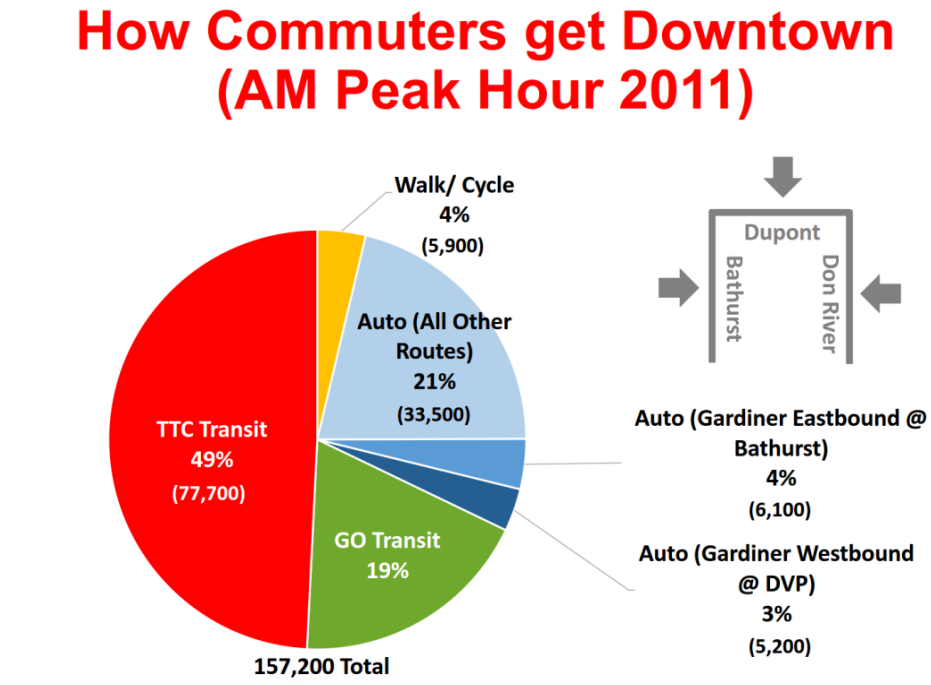
Figure 3-18: Existing Westbound Traffic Volumes



Source: AM Peak Hour Survey Results (2010 Origin/ Destination Survey)

Figure 3-19: Travel by Mode Approaching Study Area



Source: AM Peak Hour Inbound to Downtown: Transportation City Cordon Count (2011)
Downtown: Defined as Bathurst to Don River and Waterfront to the rail corridor north of Bloor

The following summarize a number of key observations made from the review of the available data on the use of transportation infrastructure in the study area.

1) The primary function of the Gardiner Expressway and Lake Shore Boulevard is to serve as an access route to and from downtown Toronto.

Origin-destination surveys undertaken in November 2009 found that, of all traffic approaching the central area from the west, northeast and east on the Gardiner Expressway, Don Valley Parkway and Lake Shore Boulevard during the AM peak period, 75% or more has a downtown destination. Less than 25% of traffic travels all the way past the downtown off-ramps.

2) Travel to downtown has been continuously increasing.

Growth in travel to downtown destinations increased by approximately 38% from 1986 to 2011, corresponding to a period of continued employment and residential growth. Most of the increase in inbound trips originated in the city itself (internal trips nearly doubling between 1986 and 2011) and in the growing suburban municipalities surrounding Toronto (more than doubling over that same period).

3) Peak hour, peak direction auto volumes have not increased substantially in 30 years.

While the total number of AM peak period trips to downtown destinations increased between 1986 and 2011, the number made by auto remained at approximately the same level. This reflects long-standing capacity limitations within the road network in and approaching downtown; with the main downtown approach routes operating at capacity through much of the peak period, there is limited potential to accommodate increased traffic to downtown. As a result, the proportion of downtown-destined trips made by auto has declined from a peak of 39% in 1996 to 27% in 2011 as travellers have found alternate methods of completing the trip via improved transit, cycling, and walking facilities.

4) Peak hour, peak direction travel growth has been accommodated primarily by other travel modes.

The majority of growth in travel to downtown has been on GO Transit (growth in travel from the suburban municipalities surrounding Toronto), on foot and by bike (growth in short-distance travel resulting from increased downtown residential development).

5) The number of people choosing to live and work downtown is increasing.

The past 10 to 15 years have seen a substantial increase in residential population in the downtown area. The population within the study area increased by 40% between 2001 and 2011; areas immediately outside the study area have also experienced substantial residential growth over this time.

The majority of residents living and working downtown travel to work on foot (47%), with a further 29% who commute via TTC. This has resulted in increased pressure on the downtown pedestrian and transit infrastructure, but has also helped to reduce the pressure of increased downtown employment on regional infrastructure into the downtown (the road and expressway network; the TTC; GO Transit).

6) The peak hour traffic volumes in the off-peak direction (i.e., outbound in the morning) continues to increase.

While the majority of downtown residents also work in the downtown, there is also a sizeable minority of downtown residents that travel to destinations in the rest of Toronto (32%), and in the municipalities outside Toronto (9%). These trips are not as well served by the transit network, and more than half of them are made by automobile. This has led to increased traffic and growing congestion in what has traditionally been the off-peak direction on the Gardiner Expressway and Don Valley Parkway. It also places increased pressure on the arterial network to serve travel in two directions, rather than simply optimizing traffic signals to accommodate the peak commuting direction.

7) The east section of the Gardiner Expressway is an important link from a vehicle traffic perspective, although it is less important from an overall travel demand perspective.

The east section of the Gardiner Expressway carries approximately 12% to 15% of all vehicles crossing the downtown cordon in the peak direction. When accounting for trips on all travel modes, it only serves 5% or less of all traffic entering downtown. This percentage would decrease further if also considering short-distance commuting trips by residents living and working downtown.

3.2.5 Future Travel Demand

Future travel demand/volume was determined through forecasts generated by the City of Toronto's regional transportation model. **Table 3-9** summarizes the number of automobile trips, transit (TTC and GO) trips, and "other" trips (predominantly walking and cycling) destined to, from, and within the study area for the 2001 and 2031 horizon years during the three-hour AM peak period. (For the purpose of this assessment, the Transportation Study Area was considered that includes the larger downtown area previously described and used in the traffic microsimulation undertaken in the EA). For the 2031 horizon year, traffic demand forecasts assumed full build out of lands in the waterfront, including the Port Lands. The Transportation Model work that was undertaken to determine future traffic volumes is described in **Appendix K – Transportation Modeling Report**.

Overall, travel through and within the study area is expected to increase by 59% during the AM peak period in 2031. Automobile travel is expected to grow at a lower rate (31%) than transit travel (76%) and walking / cycling trips (87%).

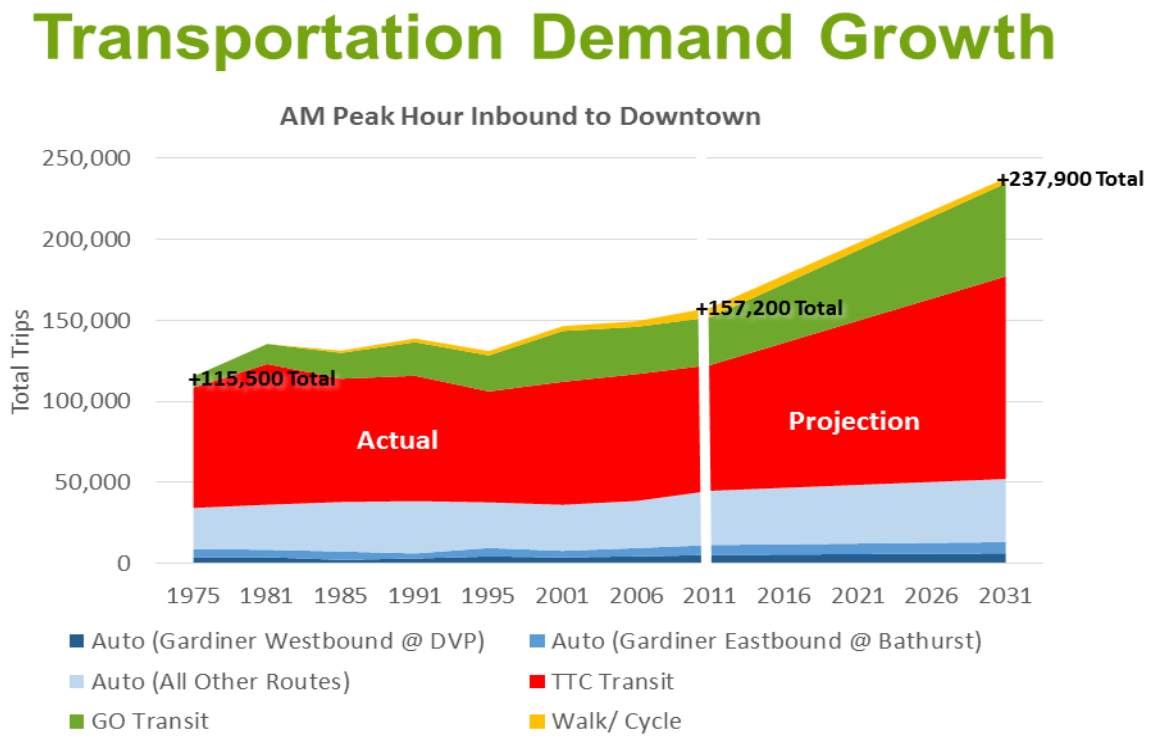
Table 3-9: Modeled Growth in Travel To / From Study Area, AM Peak Period

Primary Travel Mode	Modeled Values		30-Year Growth		Modeled Modal Split	
	2001	2031	Volume	%	2001	2031
From external to study area:						
Auto	66,100	72,200	6,100	9%	38%	29%
Transit	103,900	172,100	68,200	66%	59%	68%
Other	5,800	7,500	1,700	29%	3%	3%
Total	**175,800**	**251,800**	**76,000**	**43%**	**100%**	**100%**
Internal within study area:						
Auto	2,600	4,800	2,200	85%	33%	26%
Transit	2,600	6,200	3,600	138%	33%	34%
Other	2,800	7,400	4,600	164%	35%	40%
Total	**8,000**	**18,400**	**10,400**	**130%**	**100%**	**100%**
All trips destined to study area:						
Auto	68,700	77,100	8,400	12%	37%	29%
Transit	106,500	178,300	71,800	67%	58%	66%
Other	8,500	14,900	6,400	75%	5%	6%
Total	**183,700**	**270,300**	**86,600**	**47%**	**100%**	**100%**
From study area to external:						
Auto	14,800	32,600	17,800	120%	57%	52%
Transit	8,600	24,500	15,900	185%	33%	39%
Other	2,600	5,800	3,200	123%	10%	9%
Total	**26,000**	**62,900**	**36,900**	**142%**	**100%**	**100%**
All travel to, from and within study area:						
Auto	83,500	109,700	26,200	31%	40%	33%
Transit	115,100	202,800	87,700	76%	55%	61%
Other	11,100	20,800	9,700	87%	5%	6%
Total	**209,700**	**333,300**	**123,600**	**59%**	**100%**	**100%**

Source: City of Toronto, Regional Travel Demand Model Output

Figure 3-20 illustrates the changes in overall demand and by mode over time based on Transportation Tomorrow Survey data from 1975 to 2001, plus model forecasts to 2031.

Figure 3-20: Travel Demand Growth By Mode, 1975-2031



Source: AM Peak Hour Inbound to Downtown: 1) Transportation City Cordon Count (1975-2011); 2) Transportation Model EMME2 Forecast (2011-2031); 3) 2006 Transportation Tomorrow Survey (TTS) for Walk/Cycle Mode and Other Data; 13
Downtown: Defined as Bathurst to Don River and Waterfront to the rail corridor north of Bloor

Table 3-10 lists the modeled travel time to Union Station (Bay Street at Front Street) from selected external origins under existing and future baseline conditions assuming the Gardiner is in place as it is today. Travel time estimates were prepared for AM peak hour conditions, corresponding to the period assessed in the City's EMME model and used combined outputs from the City's EMME model and the Paramics model developed for this EA study. Is noted that the 2031 base case travel times are up to 6 minutes higher than current travel times due to growth in background traffic volumes.

Table 3-10: AM Peak Hour Travel Time to Downtown – Existing and Future

Origin	Destination	Travel Time *(minutes)*	
		Existing	2031
Existing Conditions:			
Victoria Park / Finch	Union Station	44	52
Don Mills / Eglinton	Union Station	24	30
Victoria Park / Kingston	Union Station	20	23
Kipling / Lake Shore	Union Station	27	27

Regarding future projected transit travel time, auto travel times were used as a proxy. While streetcar travel times would be longer, in part due to dwell time at stops and the inability to bypass left turn queues, it is assumed that alternatives that result in increase in auto travel times would result in a corresponding (or greater) impact on streetcar travel times.

Table 3-11 lists the average travel time for automobiles along Dundas Street, Queen Street and King Street through the extent of the study area, under 2031 baseline ("do nothing") conditions.

Table 3-11: Automobile Travel Times Along Key Streetcar Corridors, Future (2031) Baseline Conditions

Street	Extent	AM peak		PM peak	
		WB (min)	EB (min)	WB (min)	EB (min)
Queen Street	Spadina Avenue – Woodbine Avenue	15:44	15:13	16:24	16:40
Dundas Street	Spadina Avenue – Kingston Road	12:59	13:55	14:24	17:45
King Street	Spadina Avenue – Queen Street	8:57	7:46	9:47	10:08

3.2.6 Utilities

The study area contains numerous above and below ground utilities including hydro electric transmission lines and gas, water, storm sewer, and communications facilities. 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.

The City of Toronto has recently constructed the West Don Lands Stormwater Quality Facility which includes an underground sedimentation tank, deep shaft and pumping station with deep outfall tunnel located north of the Gardiner immediately east of Cherry Street. The outfall discharges into the Keating Channel. Future components associated with this facility include further treatment (clarifier, UV) and support building.

3.2.7 River and Harbour Infrastructure

TRCA, in cooperation with Waterfront Toronto and the City, completed an Individual EA for the mouth of the Don River and larger Port Lands 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 is subject to risk of flooding. Recommendations from the DMNP EA will transform the existing mouth of the Don River including the Keating Channel, into a more naturalized river outlet to Lake Ontario. The DMNP EA was approved by the MOECC in January 2015. The conceptual design for the DMNP includes a new river valley system that flows south and then west into the Inner Harbour, with an approximate location halfway between the Ship Channel and the Keating Channel.

Based on the results of the DMNP EA, a new Don River width will be required at Lake Shore Boulevard involving a multi-span bridge (3 new spans in addition to the existing 2 spans) and associated, integral weir configuration. North of Lake Shore Boulevard the future Don River will be considerably wider than it is today with the introduction of river sedimentation control and debris management facilities, including an operations and maintenance yard.

3.3 Urban Design

The Urban Design study lens is used to describe the planning framework, urban design and public realm, and socioeconomic conditions of the potentially affected environment. This description of baseline conditions considered a slightly larger study area, extending all the way to Yonge Street in the west and Leslie Street in the east, to provide context for planning and urban design. For more information regarding the content in this section, a detailed Urban Design, Public Realm and Socio-Economic Baseline Conditions Report is provided in **Appendix L**.

3.3.1 Planning Context

At a high level, the planning context for the study area is set by the Province through the *Planning Act*, the *Provincial Policy Statement*, and the *Growth Plan for the Greater Golden Horseshoe*. Based on land use policies from both the *City of Toronto Official Plan* (2006) and the *Former City of Toronto Official Plan*, the existing urban structure of the Study Area is shown in **Figure 3-21**. The study area includes lands designated for neighbourhood uses, as well as for Employment Areas, Regeneration Areas, natural areas, and parks.

With changes to commercial activity in the city, the majority of historic industrial development along the waterfront no longer serves its original purpose and many sites in the study area are underutilized brownfields. Toronto is focusing on revitalizing its waterfront to include a mix of commercial and residential development, cultural and institutional amenities, and signature public spaces. There are some industrial uses that will continue in the study area related to the port, including Redpath Sugar and LaFarge. The compatible operation of productive industrial uses associated with the port will continue to be supported as important employment uses.

The study area is also subject to the *Central Waterfront Secondary Plan* (CWSP) (2003) which guides land use and urban design within the study area. The CWSP was prepared under the former City of Toronto Official Plan and is a guiding policy document for waterfront revitalization. The full extents of the CWSP are shown in **Figure 3-22**.

Figure 3-21: Official Plan Urban Structure Designations

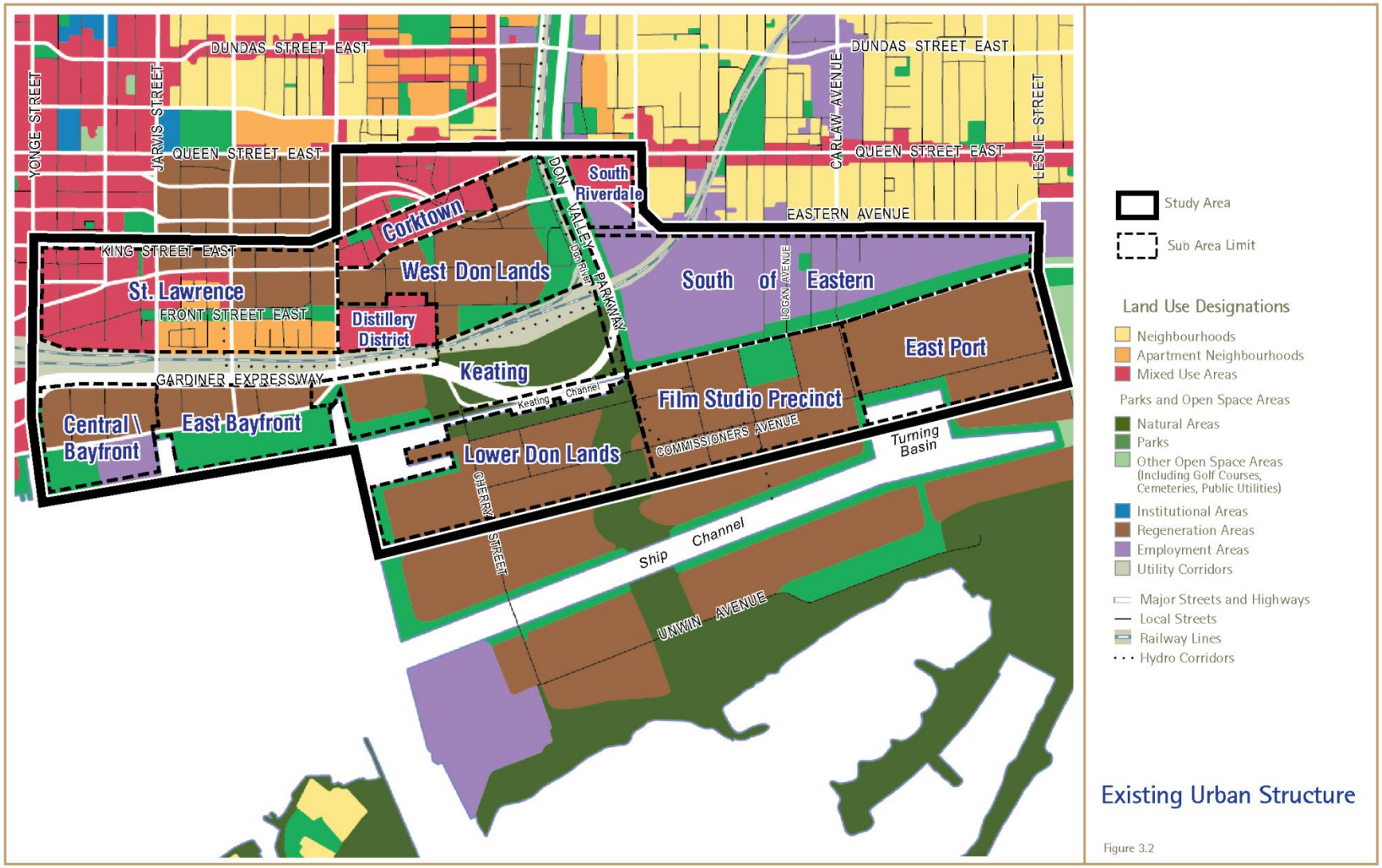
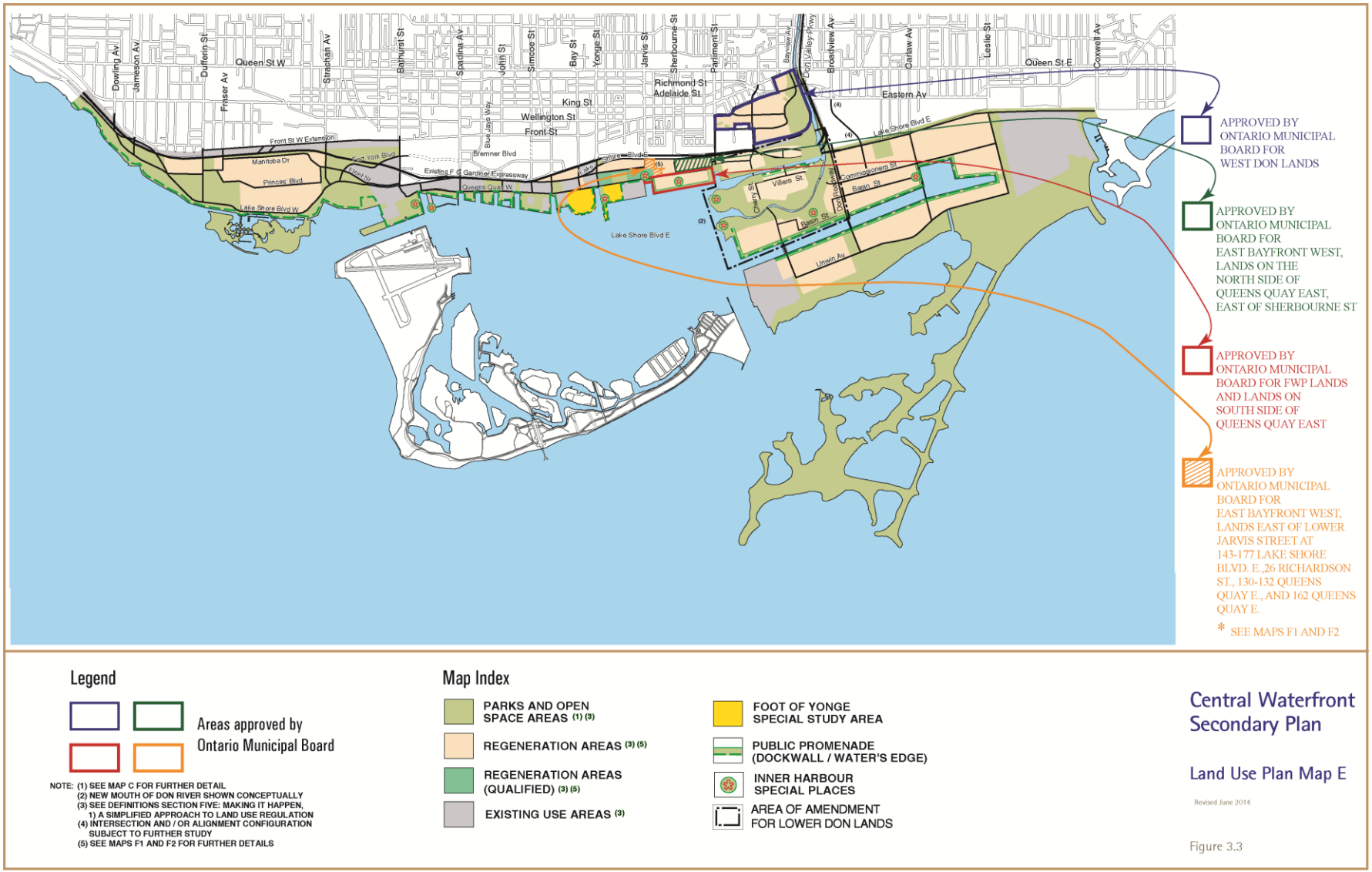


Figure 3-22: Central Waterfront Secondary Plan – Land Use



The CWSP is a strategy for waterfront renewal is built on four core principles:

A. Removing Barriers/Making Connections
B. Building a Network of Spectacular Waterfront Parks and Open Spaces
C. Promoting a Clean and Green Environment
D. Creating Dynamic and Diverse New Communities

The CWSP designates the central waterfront lands as Regeneration Areas. A broad mix of commercial, residential, industrial, parks and open space, and institutional uses are permitted in Regeneration Areas. The CWSP requires high quality design on development sites adjacent to the water's edge promenade, that views of the water be protected, and that buildings be of low to moderate scale. The CWSP anticipates over 40,000 new dwelling units, approximately 68,000 people, and over 900,000 square metres of commercial uses to be developed in the area.

As part of the planning framework the study area is also subject to Urban Design Guidelines developed by the City. The study area is subject to District or Area-based Guidelines as well as City-wide and Building Specific Guidelines. There are City-wide guidelines for: infill townhouses; mid-rise buildings; tall buildings; streetscape; 'greening' of surface parking lots; drive-through facilities; bicycle parking facilities; universal accessibility; green roofs; and bird-friendly development. The tall building and mid-rise design guidelines, in particular, apply to the study area. All of the mentioned City guidelines have informed the EA and some will be become more prevalent as the undertaking progresses beyond the EA and into detailed design and implementation.

To guide the EA study, a review of the City of Toronto Official Plan (OP) was completed and the results provided seven themes that were considered in the development, design and evaluation of alternatives in order to achieve alignment with the OP:

1. Impacts of the alternatives locally and in a regional context;
2. How the alternatives function as part of an integrated system of land use patterns and transportation networks that together support growth in Toronto;
3. Impacts of alternatives on the natural environment and the potential contributions of the alternatives to sustainability;
4. The potential of alternatives to unlock and implement opportunities to expand and improve the public realm;
5. Impacts on employment and economic competitiveness for the city as a whole and for the study area;
6. The contribution that alternatives can make to the success of the downtown; and
7. Alignment of alternatives with Toronto's waterfront revitalization.

3.3.2 Urban Design and Public Realm

Urban design and public realm conditions in the study area have been identified based on existing community conditions, and precinct and area planning studies that exist, or are in progress, for specific sub-areas. Within the study area there are three endorsed Precinct Plans and two emerging Precinct Plans that informed the EA study. These include:

- Precinct Plans that are approved and are in the process of detailed design, implementation and, in some cases, are constructed, include:
  - West Don Lands Precinct Plan;
  - East Bayfront Precinct Plan; and,
  - Keating Channel Precinct Plan (the implementation of this Precinct Plan is on hold pending the results of this EA).

- Precinct Plans that are in progress include:
  - Lower Yonge Precinct Plan; and,
  - Villiers Island Precinct Plan (which is the first detailed precinct plan to be undertaken to further the Lower Don Lands plans).

Precinct plans articulate the planned public realm and form of development for an area. In addition to the precinct plans noted, the City and Waterfront Toronto are also completing land use and public realm studies for the redevelopment of the Port Lands and South of Eastern sub-areas located east of the Don Roadway.

Figure 3-23 indicates the areas included in these precinct plans and planning studies.

Figure 3-23: Precinct Plan and Planning Study Areas

The long and storied past of the study area introduced in **Section 3.1.1** (Cultural Heritage and Archaeological Resources) also contributed to an extensive history and evolution of the existing public realm. The existing large-grained street and block pattern, shown in **Figure 3-24**, within the study area reveals the industrial past.

The existing urban design and public realm conditions vary between those communities north of the rail corridor and those to the south. North of the rail corridor are some of the city's historic neighbourhoods that have a fine grain road network, public amenity space, and good pedestrian connections. These include the communities of St. Lawrence, the Distillery District and Corktown. North of the rail corridor also includes the West Don Lands Precinct which has been redeveloped as per the Precinct Plan into a complete community that is walkable and abundant with public space, including Corktown Common park.

South of the rail corridor the existing public realm and urban design conditions reflect more of the industrial history of the waterfront. These areas are primarily auto-oriented with large block patterns, limited public space and minimal pedestrian connections. However, this is evolving and in some cases, such as for the East Bayfront and along the water's edge, the existing condition is transforming into a more pedestrian oriented environment. A significant portion of the public realm improvements identified in the East Bayfront Precinct Plan have been implemented. Improvements include new public amenity space, more fine grain street network, improved view corridors to the waterfront, a publicly accessible water's edge promenade, and streetscaping which are all incorporated into the existing condition.

Connectivity is a key element of urban design and public realm design. As described above, existing connections are limited by the existing block patterns and infrastructure in the study area. Again, south of the rail corridor there are more limited connections than to the north. Existing east-west connectivity is shown in **Figure 3-25**, and north-south connectivity is shown in **Figure 3-26**.

Figure 3-24: Existing Block Structure for Study Area

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Figure 3-25: East-West Connectivity

Figure 3-26: North-South Connectivity

Although the overall existing conditions are not favourable for urban design and public realm, the future conditions are a different case entirely. The waterfront communities in the study area are undergoing transformation based on the precinct plans and ongoing planning studies identified earlier. As such, the existing large block structures are going to be redesigned, new connections are going to emerge and additional public space is going to take shape. This is particularly true for the Lower Yonge Precinct, Keating Channel Precinct, Lower Don Lands and Villiers Island Precinct, Port Lands and South of Eastern areas. At this time the exact block plans and fine grained road network for these areas is still being confirmed and refined. However, an understanding of general improvements and how the urban design and public realm in the study area will evolve can be provided to inform the future (2031) conditions.

The demonstrated future (2031) block structure for the study area is shown in **Figure 3-27.** The future conditions in the study area will reflect new smaller blocks to support mixed-use redevelopment and walkable communities. There will also be significant improvements to public space for parks, plazas, pedestrian promenades and market space. Improvements planned throughout the study area will also transform connections for all modes of transportation and provide more connected communities. For Villiers Island, the Port Lands and South of Eastern area, and the Lower Yonge Precinct, additional improvements and changes to the block structure and public realm are anticipated far beyond what is illustrated in **Figure 3-27**. However, these plans are all in progress. Due to the confluence of planning projects underway in the study area that are occurring simultaneously, it is acknowledged that the Gardiner East design will need to consider the directions of these other studies and make efforts to complement the urban design and public realm directions throughout the study area as plans are confirmed. Further information regarding future precinct development, block patterns and land use is provided in the following **Section 3.3.3 Land Use and Social Environment.**

Figure 3-27: Future Block Structure for Study Area (2031)

The urban design and public realm analysis illustrates that existing planning efforts have identified initiatives to improve the public realm in the study area. The Gardiner East EA may advance planning for improvements to public realm elements in the study area, including:

- Improvements to north-south connections at Lower Jarvis, Lower Sherbourne, Parliament, Cherry and Trinity Streets to improve pedestrian conditions and create stronger connections from the city to the waterfront;
- Improvements in the Keating Channel Precinct where there is the greatest potential for changes to Gardiner Expressway infrastructure to transform the precinct;
- Identification of opportunities to extend Broadview Avenue south from Eastern Avenue to Lake Shore Boulevard East;
- Defining opportunities for improved crossings across the Don River and the Keating Channel;
- Providing pedestrian and cycling connections east-west and north-south throughout the study area; and,
- The overall creation of context to further articulate implementation of CWSP policies.

The reconfiguration of the Gardiner Expressway and Lake Shore Boulevard East will play an important role in connecting and enhancing the communities in the study area and providing new opportunities for public realm and urban design improvements.

3.3.3 Land Use and Social Environment

This section focuses on the existing (what is currently on the ground) and future (what is approved for future development) land uses in the study area, particularly those adjacent to the Gardiner Expressway and Lake Shore Boulevard corridor. In addition to land use, a discussion of the social environment including community infrastructure and facilities and tourism and recreation features are provided. Further details regarding this information can be found in **Appendix L, Urban Design, Public Realm, Land Use and Socio-Economic Baseline Conditions Report**.

Existing (2013) Land Use and Social Environment Conditions

The 2013 baseline conditions reflect a 2011 Census population of approximately 12,000 people in the study area. Considering how close the study area is to the downtown core, this reflects how sparsely developed/populated the corridor is. The majority of this population is located north of the Union Rail Corridor and north of Lake Shore Boulevard. Much of the lands immediately adjacent to the Gardiner Expressway corridor are either vacant, underutilized, or in transition.

Figures 3-28, 3-29, 3-30, 3-31, 3-32 illustrate existing and planned land uses and infrastructure facilities immediately along the Gardiner – Lake Shore Boulevard corridor (area outlined in white) as of 2013. The exact extents of the planned facilities (such as the Don Mouth Sediment Management Facility) may vary from what is indicated on these figures as the plans for these features evolve with detailed design and implementation.

Further description of existing and future land use within the study area surrounding the Gardiner – Lake Shore Boulevard corridor is provided below.

Figure 3-28: Existing Land Uses Along Corridor

Figure 3-29: Existing Land Uses Along Corridor

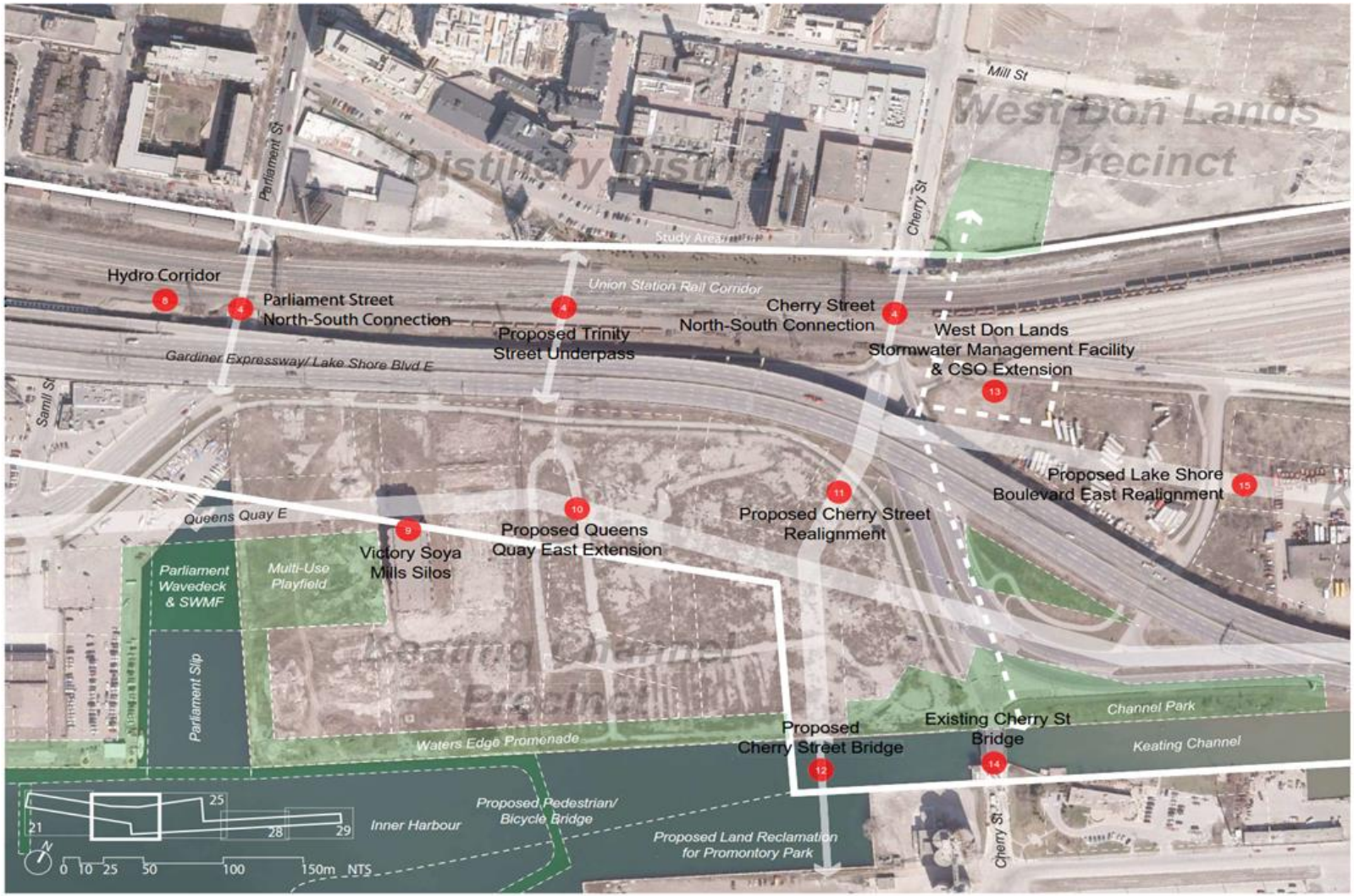


Figure 3-30: Existing Land Uses Along Corridor

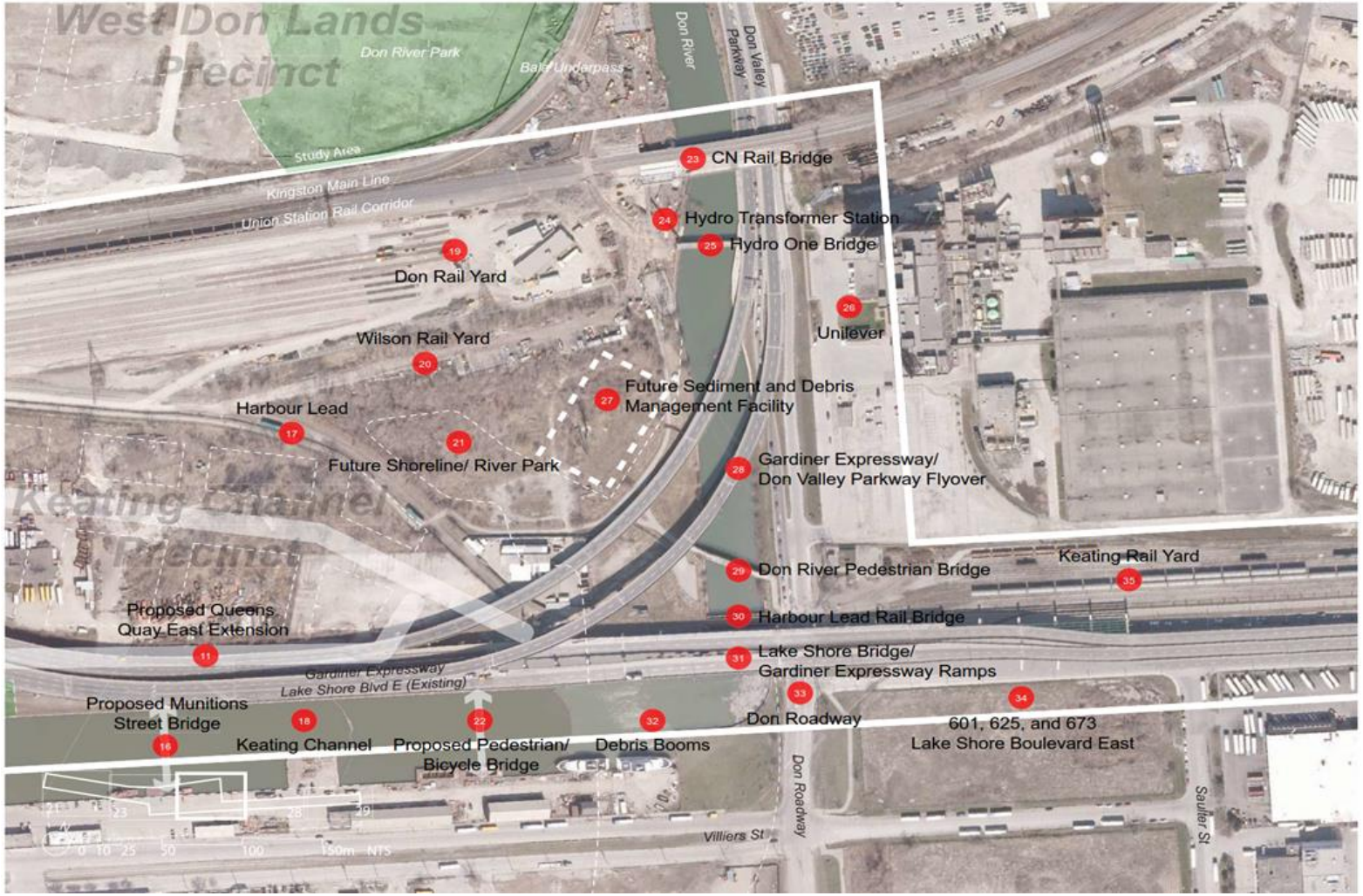


Figure 3-31: Existing Land Uses Along Corridor

Figure 3-32: Existing Land Uses Along Corridor

For the portion of the study area west of the Don Roadway / DVP, the north side of the Gardiner Expressway is adjacent to the Union Station Rail corridor which limits existing uses on the north side of the Expressway and Lake Shore Boulevard. North of the rail corridor there are a mixed of well-established uses that have evolved with the growth of the downtown. These include residential, commercial/retail, recreational and office space. Previous industrial uses in the Distillery District and West Don Lands have been converted to mixed use communities with residential, recreational, commercial/retail and office uses. These communities north of the rail corridor also include established social infrastructure, including schools, social housing, daycares, and community recreation and gathering spaces.

On the south side of the Gardiner Expressway and Lake Shore Boulevard the existing land uses primarily consist of underutilized low density employment, industrial and commercial uses. There are also a number of large surface parking lots that are considered underutilized. Of the communities within the study area south of Lake Shore Boulevard, East Bayfront is the most rapidly changing precinct. The East Bayfront Precinct transition has been ongoing during the time of this EA. As such, some of the growth and change in East Bayfront is described as an existing condition and some is described in the future (2031) conditions. New office and institutional uses that exist now include the George Brown College campus and Corus Quay buildings. There are also newly built residential buildings that have been occupied as the EA evolved. All of the development that has been completed in East Bayfront supports recent population and employment growth in the study area.

The Lower Yonge Precinct currently consists of employment and industrial and commercial uses. This area is currently faced with pressure for new development and is being planned to transform with significant population and employment growth. This is further described in future conditions below.

The Keating Channel Precinct is currently underutilized and contains no active land uses that support population or employment. The historic Victoria Soy Mills are located here but they are not in use. The existing uses in the Lower Don Lands and the Port Lands are industrial, commercial and office uses, many of which are in transition. Many of the existing uses relate to the port and rely on connections to transportation and goods movement infrastructure. Most of the properties are large scale with uses that include surface parking and/or outdoor storage areas. Due to the current conditions in the Lower Don Lands, Keating Channel Precinct and the Port Lands, these areas do not include significant recreation, tourism or social infrastructure. Further south of the study area, along the edge of Lake Ontario there are more established recreational and natural areas.

East of the DVP and north of Lake Shore Boulevard is the South of Eastern area. Existing uses in this area reflect the large scale industrial and commercial uses, many of which are also in transition. The South of Eastern area has a long history as the former film studios neighbourhood in the city. As the major film studio uses relocate, some into the Port Lands, this area is being planned for redevelopment. In addition, the former Unilever manufacturing site, which is located on the north-east corner of Lake Shore Boulevard and Don Roadway, is currently in the planning process for redevelopment into a major employment area by First Gulf. The South of Eastern area also contains some small pockets of residential uses as well as some big box retail. Together, the existing uses in the South of Eastern area are varied and inconsistent. The planning studies underway to transform this area will provide a more cohesive community character and are further discussed in future conditions below.

Tourism and Recreation Features

A baseline inventory study of tourism and recreation features within the study area was undertaken through a review of secondary source information such as maps/air photos, review of City tourism promotional materials, the conduct of field surveys, and input from City of Toronto and Waterfront Toronto staff. As noted above, in the description of land use features, there are no permanent tourism features within the immediate vicinity of the Gardiner/Lake Shore Boulevard corridor. The only permanent recreation feature located within the corridor is the Martin Goodman Trail that extends along the corridor east of Cherry St. West of Cherry St. the Martin Goodman Trail parallels Queens Quay and is this more removed from the Gardiner corridor. The Martin Goodman trail is a hard surface trail suitable for various forms of active transportation including for example walking and cycling. The previous **Figure 3-15** illustrates cycling facilities in the study area.

City Park facilities located in the study area include McCleary Park that is located south of Lake Shore Boulevard, east of the Don River and West Don Lands Park that is located on the west side of the Don River and north of the rail corridor. These parks are used for passive and active recreation activities. McCleary Park includes ball diamonds. Further to the south of the Gardiner corridor and along the waterfront in the East Bayfront precinct are a number of newly established tourism and recreation features including Canada's Sugar Beach (at the foot of Lower Jarvis St.), Sherbourne Common, and the Water's Edge Promenade. These noted parks are shown on Figure 3-28 to 3-31 that illustrate major land uses in the study area.

The vacant lot located to the south-west of the Cherry Street/Lake Shore Boulevard intersection is used occasionally for entertainment shows that are often contained in large tents.

North of the rail corridor, tourism features of note include the Distillery District and St. Lawrence Market, both of which draw City residents and visitors. While in the study area, these features are well removed from the Gardiner/Lake Shore Boulevard corridor.

As noted in **Section 3.4 Economics**, the waterfront is developing in a manner that will also support growth as a tourist attraction. Surveys of tourists to Toronto indicate that the waterfront is a popular attraction. It is expected to become even more of a destination through the development of dynamic public spaces, cultural destinations, and recreation facilities.

Future Land Use and Social Environment Conditions

For the future (2031) land use and social environment conditions in the study area, data and analysis was taken from approved and proposed precinct plans, and development plans in the area. The study area land use and social conditions will change significantly by 2031. This is primarily due to waterfront redevelopment with the completion of West Don Lands and East Bayfront and the commencement and complete redevelopment of Lower Yonge Precinct, Keating Channel Precinct, Lower Don Lands, Port Lands and South of Eastern area. By 2031, the West Don Lands, East Bayfront and Keating Channel precincts are expected to be redeveloped and revitalized to accommodate nearly 50,000 new residents. Some of these residents are now in place in the West Don Lands and East Bayfront. The residential uses proposed include medium and high density development ranging from townhouses to mid-rise and some high-rise condominium units. The redevelopment of these areas will also include new employment uses which are further discussed in **Section 3.4 Economics.**

To support the future mixed-use communities along the waterfront, there will be additional commercial/retail, recreational and community uses developed. The social infrastructure patterns in the study area will alter to reflect the changes in the precincts as they evolve. As the population grows to 2031 and beyond, there will be additional social infrastructure facilities developed, including schools, libraries, daycares, community recreation and gathering spaces.

Critical to the success of the future communities in the study area is the improvement of public realm including recreational spaces and natural environment enhancements. As the study area lacks a consistent public realm and contains a degraded natural environment today, the future conditions will implement great improvements to these uses and spaces. Planned public realm and recreational improvements expected to be in place by 2031 include:

- Naturalization of the mouth of the Don River, which will provide new green space and flood protection for the Lower Don Lands, Port Lands and South of Eastern area;

- The development of the waterfront promenade and park space at the Yonge, Jarvis and Parliament Street Slips;
- The development of a continuous waterfront promenade;
- A community facility at Sherbourne Common;
- The reconfiguration of Queens Quay;
- Cycling route along Cherry Street;
- Further improvements to the Martin Goodman trail through the area and eastward along Commissioners Street for multi-use bicycle and pedestrian activity; and,
- Spaces and corridors that will connect the Lower Don Lands (including Villiers Island), Port Lands, and the Keating Channel Precinct with the broader city.

The following paragraphs provide specific information on each precinct in the study area related to the anticipated 2031 condition as it was known at the time of this EA.

Figure 3-33 illustrates the long term plan for East Bayfront. The long term development of the East Bayfront Precinct includes 6,300 new residential units, including 1,200 affordable residences, 5.5 hectares of parks and public spaces and 1 kilometre of continuous water's edge promenade. As mentioned, much of this has already been built and will entirely be in place before 2031.

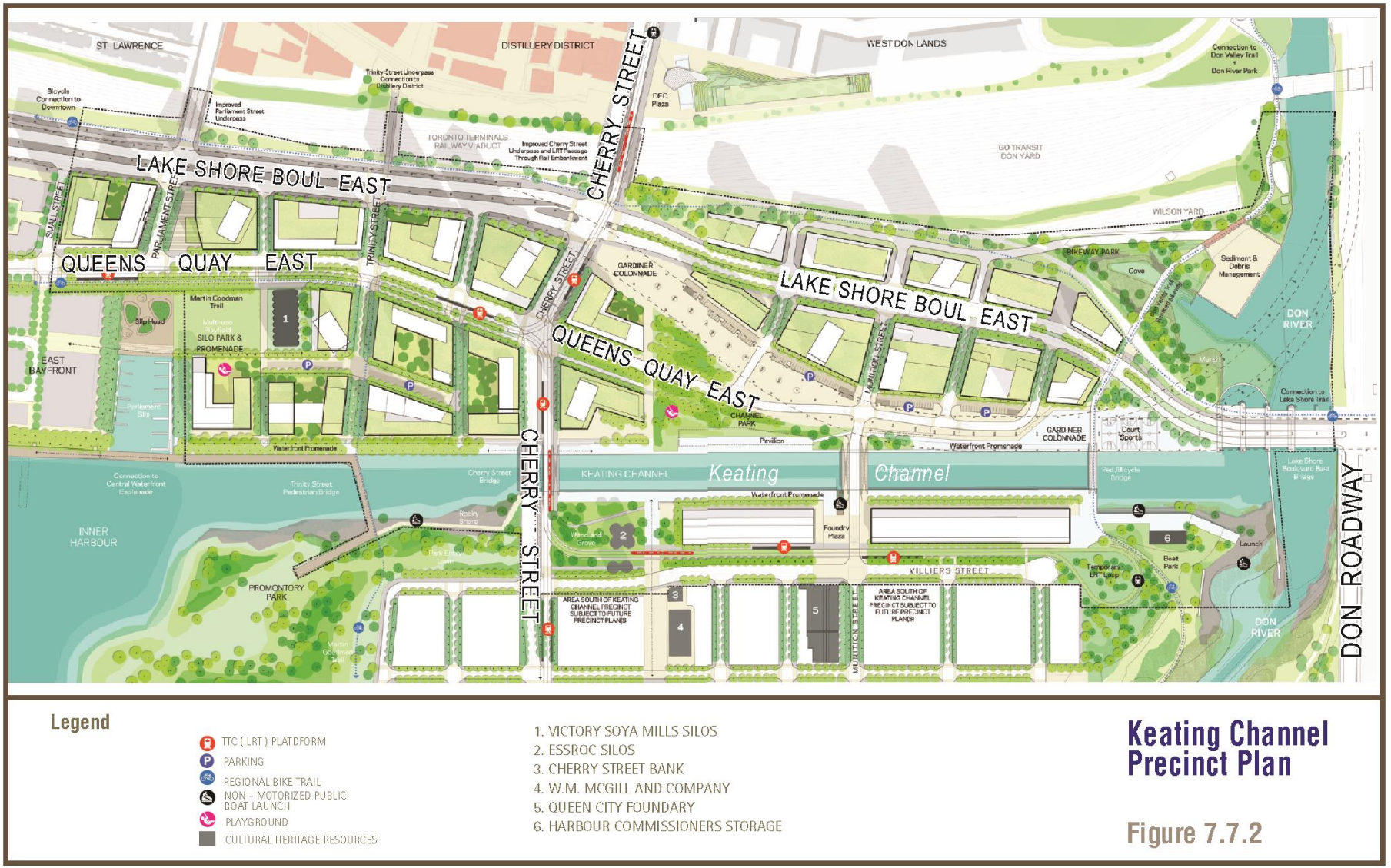
Figure 3-33: East Bayfront Precinct Plan

The Keating Channel Precinct is expected to undergo significant redevelopment in combination with the Lower Don Lands. The Keating Channel Precinct Plan is based on the assumption that the elevated Gardiner Expressway structure that traverses the precinct will remain in place, but also allows for the plan to be modified with potential reconfigurations to the Gardiner Expressway and Lake Shore Boulevard East. The Plan anticipates the retention of Victory Soya Mills silos and the ESSROC silos, and their integration into future developments. **Figure 3-34** illustrates the Keating Channel Precinct Plan done in 2010 which is to be updated to reflect the preferred undertaking identified through this EA process.

There are approximately 4,000 new residential units anticipated in Keating and the creation of approximately 2 kilometres of new waterfront open space. This will include enhanced connections to the waterfront with integrated streets and blocks, with barriers removed wherever possible. The plans include the realignment of Lake Shore Boulevard East further north through the precinct so as to free up new public realm space along the north edge of the Keating Channel.

Such improvements will activate the areas both north and south of the Keating Channel with a mix of recreational, commercial and residential uses, which may require further social infrastructure once the area is built out. The future 2031 conditions include at-grade retail along Queens Quay East, Lake Shore Boulevard East and Cherry Street to bring life and vibrancy to the local streets.

Figure 3-34: Keating Channel Precinct Plan



On the south side of the Keating Channel is the Lower Don Lands Precinct. This area has been approved for significant redevelopment based on the DMNP EA and the Lower Don Lands EA (plans illustrated in **Figure 3-35**). These EAs provide the foundations for the revitalization of the Lower Don Lands. The DMNP EA will provide the flood protection needed to make development of the Lower Don Lands, Port Lands and South of Eastern areas possible. Further information regarding the DMNP EA is provided in **Section 3.1.4 Stormwater Management**.

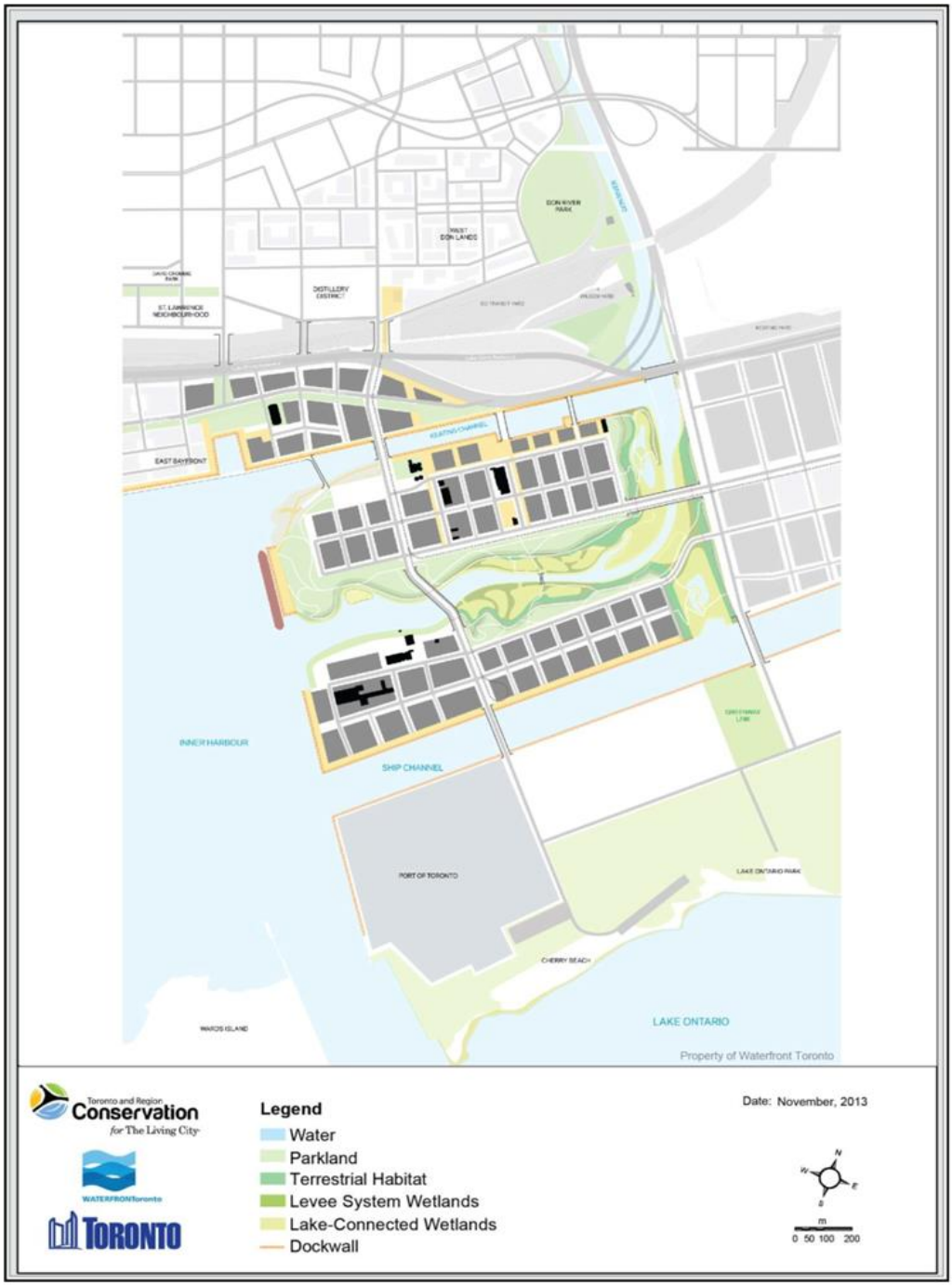
The Lower Don Lands future development plan includes an area that covers125 hectares (308 acres). The future conditions will include over 12,000 new residential units and approximately 3,000,000 sq. ft. of commercial and retail space. With the realignment of the mouth of the Don River, there will also 30 hectares of naturalized area as well as over 12 hectares of parkland above top of bank outside of the new river valley system. This parkland is intended to accommodate passive and active recreational uses such as sports fields, event spaces, lawns, playgrounds, public gardens and other park program components as may be appropriate. Details regarding the development of the Lower Don Lands will evolve through precinct plans of specific areas within the Lower Don Lands. The first area to have a precinct plan completed for it is Villiers Island (also known as Cousins Quay). This is the area located on the south side of the Keating Channel, west of the Don Roadway. The Villiers Island Precinct Plan commenced during the time of this EA and is ongoing. The Precinct Plan will identify:

- Streets and block structure;
- Height and massing of buildings;
- Provision of parking;
- Strategies to balance residential and employment-based development;
- Affordable housing targets;
- Location of local and regional parks and community facilities;
- Sustainable development measures;
- Provisions to retain heritage building;
- Public art and urban design guidelines; and,
- Active, vehicular and transit routes.

The Gardiner East EA takes into consideration the dramatic changes being proposed for Villiers Island and the remainder of the Lower Don Lands. Recognizing that these plans are still

evolving, consideration of changes to the Gardiner – Lake Shore Boulevard corridor will coordinate with land use and development changes proposed in the surrounding precincts.

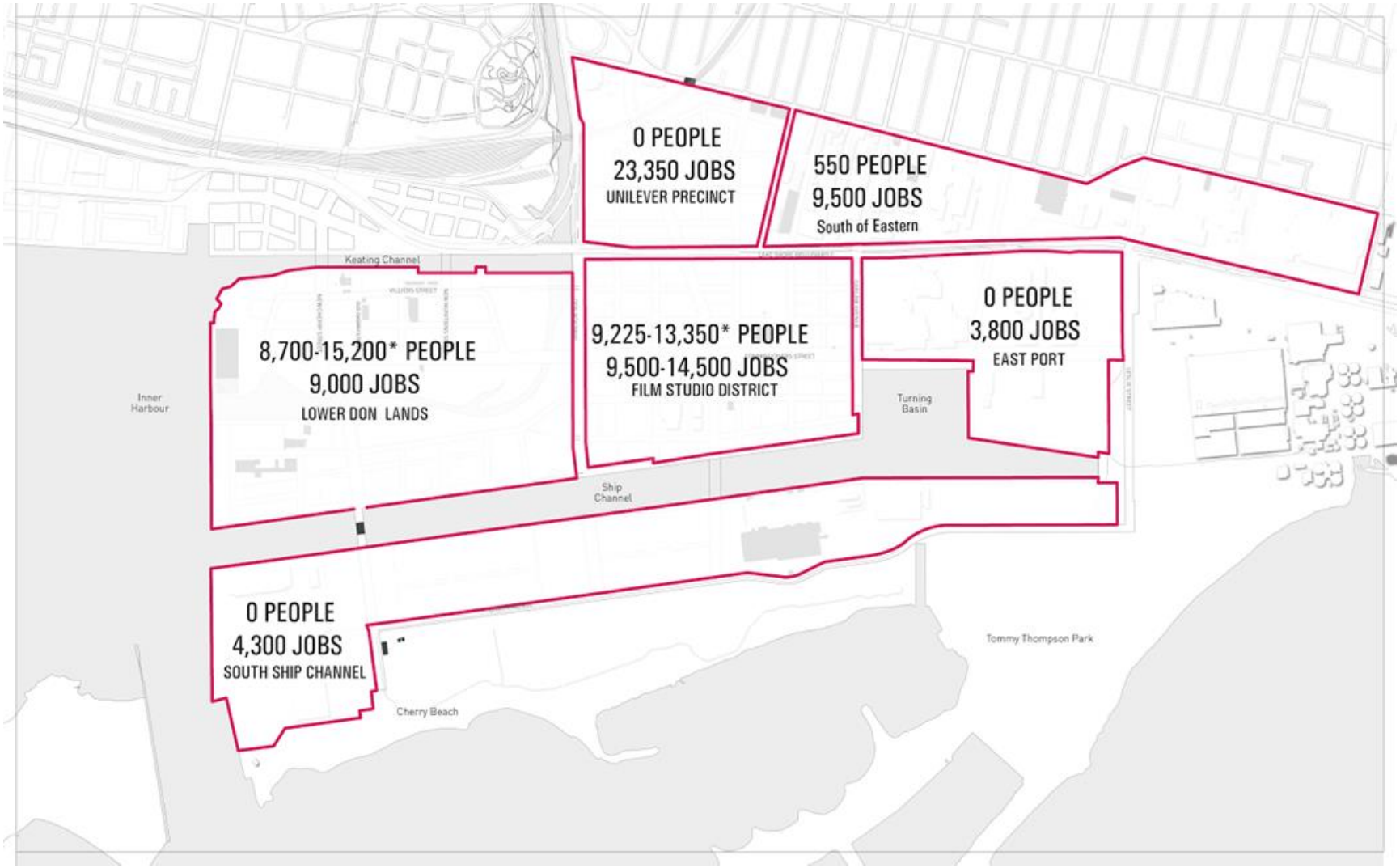
Figure 3-35: Preferred Concept for Don Mouth Naturalization and Lower Don Lands Plan



In addition to the Lower Don Lands, areas that also will be changing dramatically include the Port Lands and South of Eastern. The Port Lands are an important urban design, public realm, and socio-economic consideration for the study area and are currently under study in the Port Lands and South of Eastern TSMP and the Port Lands Planning Framework. The City's OP and the CWSP designate the majority of the Port Lands as Regeneration Areas. The CWSP envisions that the Port Lands will transform into a series of new urban districts and neighbourhoods amid the "hustle and bustle" of ongoing port activities. Revitalization of the Port Lands requires significant investment for soil remediation, new streets, transit and servicing.

With the flood protection planning in place as planned through the DMNP EA, the Port Lands and South of Eastern TSMP and the Port Lands Planning Framework build on the plans for the DMNP and Lower Don Lands. The future conditions of this area include a dramatic increase in population and employment. **Figure 3-36** illustrates the long term planned population and employment for these areas. With the increased population and employment, revitalization of these areas will include improvements for new and reconstructed public streets that will be designed to serve pedestrians, cyclists, transit and vehicles. Future plans will also provide space for public utilities and services, trees and landscaping, building access, and identify new public gathering places. Social community amenities will include new community facilities and school(s). Further information regarding the ongoing planning and design effort for the Port Lands and South of Eastern area can be found at http://www.portlandsconsultation.ca/.

Figure 3-36: Future Population and Employment in the Port Lands and South of Eastern



Finally, an area in which dramatic differences will be experienced in future land use and population includes the Lower Yonge Precinct. At the time of this EA study a Precinct Plan was commenced. Details of the final recommendations for future land use of social environment conditions are still in development. It is known that significant residential development is being considered that will transform this area from primarily employment uses to increased residential. Potential changes to the Gardiner – Lake Shore Boulevard corridor will consider the future conditions in the Lower Yonge Precinct as those conditions are confirmed and as the Gardiner East Project evolves from the EA through to more detailed design. Alternatives considered in the EA have been sensitive to the need to be adaptable given future study area conditions that are still in the planning stages.

Relevant to all precincts and future conditions understanding, a discussion of the future (2031) conditions and improvements to the connections for all modes of transportation throughout the study area is provided in **Section 3.2 Infrastructure and Transportation baseline conditions**.

With all of this waterfront revitalization, from Lower Yonge through the Port Lands and South of Eastern area, the future conditions will experience a great increase in local, regional, national and international tourism activity. As the waterfront is built out with quality urban design, public realm, and recreational areas, visitors will increase. Cultural events, festivals, markets and meetings may occur in the public open spaces and event spaces, supporting additional tourism activity. A discussion of the economic impacts of the waterfront redevelopment and tourism that may result is provided in **Section 3.4 Economic Conditions**.

The future baseline conditions in the study area in terms of urban design, public realm, land use and the social environment are vastly different than the existing baseline conditions due to the nature of the study area and the planning efforts underway to transform the central waterfront. Plans for Lower Yonge, East Bayfront, Keating Channel, Don River mouth, Lower Don Lands (including Villiers Island) and the Port Lands and South of Eastern reflect a major transition for the area which has the potential to be complemented through reconfiguration of the Gardiner Expressway and Lake Shore Boulevard East.

3.4 Economics

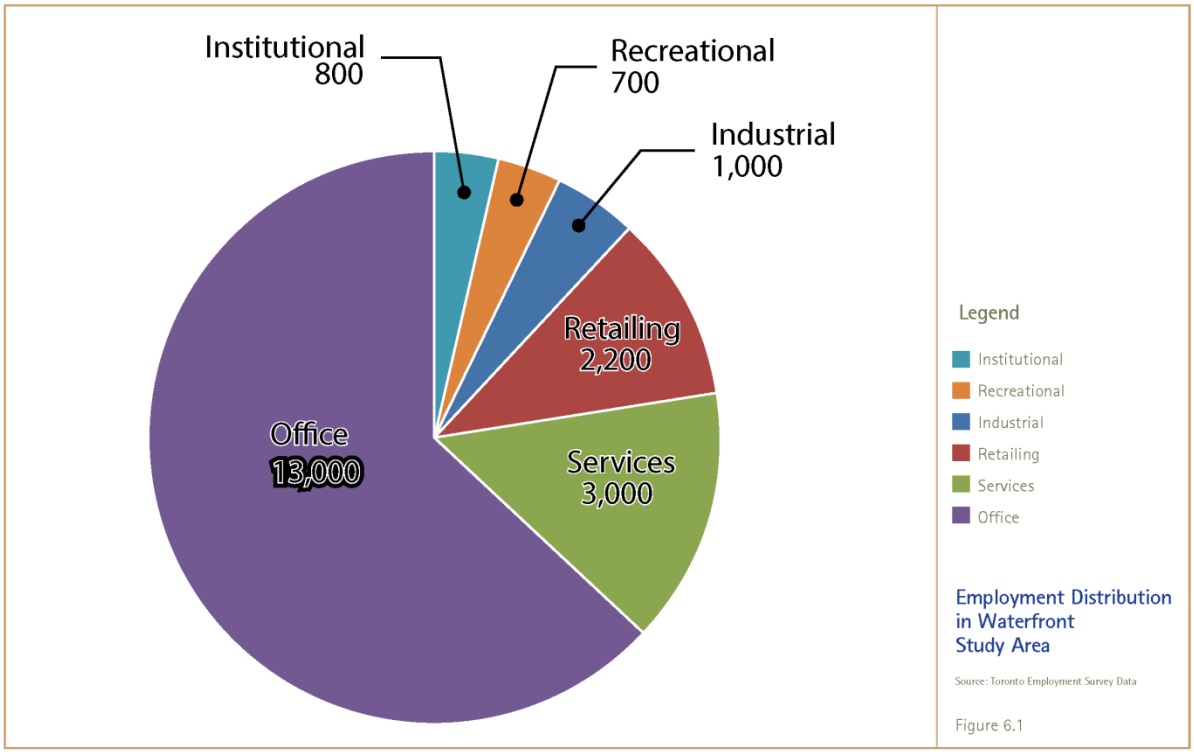
This section provides a description of the economic activity in the City of Toronto, central waterfront, and in the neighbourhoods directly adjacent to the Gardiner Expressway and Lake Shore Boulevard East being considered for reconfiguration. Economic conditions are presented in further detail in the **Economics Baseline Conditions Report**, **Appendix M.**

The City of Toronto has a diverse, creative economy and is a globally competitive centre of commerce and innovation. Toronto serves as the economic and cultural capital of Canada. It has an annual gross city product of $151 billion, and is the fourth largest city in North America by population. In addition to being one of the larger financial centres in North America, the City benefits from strong employment in "creative" industries, including media, communication, and cultural industries. These economic sectors have created a vibrant city that attracts individuals from all over the world. Like all cities with this character of economic activity, Toronto is dependent on a complex set of drivers for its future growth, many of which could be impacted by future reconfiguration of the Gardiner Expressway and Lake Shore Boulevard East as a transportation artery and of the lands surrounding it as a development precinct. These drivers include the presence and accessibility of cultural and educational institutions, a high quality of life, attractive and centrally located housing and job centres, the efficiency of the regional transportation infrastructure, and Toronto's branding as a destination city.

Toronto's Waterfront area is home to a small, but growing population of businesses. The existing economic conditions in the study area include 20,600 jobs in 2012, which is about the same number as in 1993. Moving forward from 2013 on, this is changing every year with the redevelopment of the central waterfront.

Some of the most significant existing employment sites in the study area include properties operated by PortsToronto (formerly known as the Toronto Port Authority). PortsToronto was established for the purpose of operating the port and has legislated responsibility for all port activities related to shipping, navigation, transportation of passengers and goods, and the handling and storage of cargo. The port handles over 2 million tons of goods annually. In 1999, an economic impact study indicated that the port employed (both as direct employees and contractors) the equivalent of 1,500 full time jobs in cargo, tourism and recreation. In addition to the port, there are other employment sectors on the waterfront, many of which are complementary to the port activities. **Figure 3-37** illustrates the distribution of waterfront employment by sector.

Figure 3-37: Existing Employment Distribution in Waterfront Study Area



Along the Gardiner Expressway and Lake Shore Boulevard East corridor, there are a number of existing business operations that use the corridor as an important transportation artery. **Figures 3-28-3-32 – Existing Land Uses Along Corridor** in **Section 3.3.3** indicates the businesses along the corridor. These include:

- Between Jarvis Street and Parliament Street (East Bayfront area):
  - The Liquor Control Board of Ontario (LCBO), a provincial government enterprise, located south of Lake Shore Boulevard just west of Jarvis Street, and includes the LCBO head office, warehouse and a retail store;
  - Loblaws grocery store and parking garage is located on the northwest corner of Jarvis Street and Queens Quay;
  - FedEx Shipping Centre located between Jarvis and Sherbourne on the south side of Lake Shore Boulevard;
  - The remainder of East Bayfront adjacent to Lake Shore Boulevard is currently under redevelopment as part of the East Bayfront Precinct revitalization.

- Between Parliament Street and Don Roadway (Keating Channel Precinct area):
    - Lands are primarily vacant with one existing business, the PMR Auto Service Centre, located east of Cherry Street and north of Lake Shore Boulevard.
- Between the Don Roadway and Leslie Street (Port Lands and South of Eastern area):
    - Former Unilever manufacturing facility now owned by First Gulf, located on the northeast corner of Don Roadway and Lake Shore Boulevard. The manufacturing facility has been closed for many years and First Gulf currently has a development application in progress for redevelopment of the site as an employment area;
    - Cinespace Studios is located just east of the Unilever site at Booth Avenue and Lake Shore Boulevard. This is one of the remaining film studio employment uses in the South of Eastern area;
    - Greyhound Courier Express is located on the south side of Lake Shore Boulevard, between Saulter Street and Bouchette Street. It includes large surface parking for Greyhound buses;
    - Urbacon Construction Company and a Purolator distribution centre are located on the north side of Lake Shore Boulevard between Logan Avenue and Carlaw Avenue;
    - Mayfair Lake Shore Racquet Club (fitness and health facility), and an Esso gas station and Tim Hortons store are located on the south side of Lake Shore Boulevard between Logan Avenue and Carlaw Avenue;
    - Showline Studios is located south of Lake Shore Boulevard east of Carlaw Avenue;
    - Canroof Corporation is located on the east side of Showline Studios;
    - A TTC facility including Wheel-Trans is located east of Canroof;
    - Canadian Tire and associated big box development is located on the southwest corner of Leslie Street and Lake Shore Boulevard;
    - On the north side of Lake Shore Boulevard between Carlaw Avenue and Leslie Street there are a number of light manufacturing and warehouse facilities that do not front on to Lake Shore Boulevard.

The majority of existing businesses are low density and take up large sites for both building requirements and parking needs associated with the businesses. These sites reflect the history of primarily industrial uses along the waterfront.

Redeveloping the waterfront from predominantly industrial to other uses supports the continued evolution of the city's economy to a diversified range of uses, while preserving industrial jobs as appropriate. The future economic conditions (2031) in the waterfront precincts within the study area, including West Don Lands, East Bayfront, Lower Don Lands and Keating, consist of 2.3 million square feet of planned commercial space to be developed on public and private lands through catalytic public infrastructure investment over the next 30+ years. Full-time employment in the study area is estimated at over 28,000 jobs. It is estimated that the total value of waterfront development is at $11.3 billion or a net present value of $6.1 billion. These projections could be impacted through the reconfiguration of the Gardiner Expressway and Lake Shore Boulevard East as they relate to:

- the total amount of developable land parcels in the study area;
- the value per square foot of new development; and,
- the absorption rate, and timing of revenue flows to the public sector, of planned development.

The value of all existing and future proposed land and development in the EA study area and near it (including the Financial District) could be impacted by changes to the accessibility of these lands to the rest of the region.

With the anticipated growth in employment and commercial activities, the waterfront is developing in a manner that will also support growth as a tourist attraction. Surveys of tourists to Toronto indicate that the waterfront is a popular attraction. It is expected to become even more of a destination through the development of dynamic public spaces, cultural destinations, and recreation facilities, as well as construction of commercial and residential spaces. The redevelopment of waterfront public and community space is discussed further in **Section 3.3 Urban Design**.