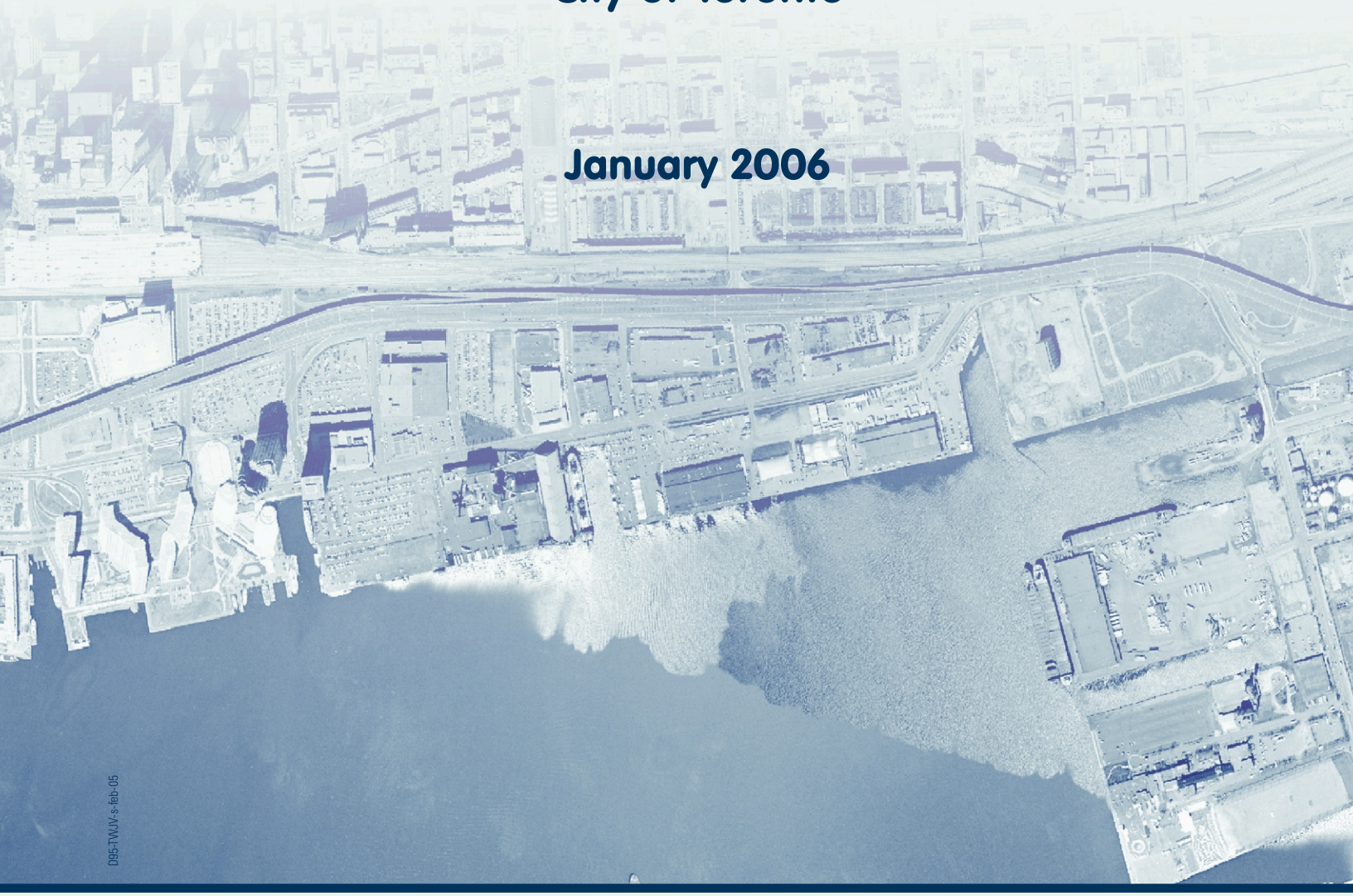
East Bayfront Class Environmental Assessment Master Plan

Toronto Waterfront Revitalization Corporation
City of Toronto

January 2006



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1.0 INTRODUCTION

1.1 Overview

Toronto's waterfront includes approximately 800 hectares of mostly underdeveloped land that has been identified as offering an unprecedented opportunity for the City of Toronto, the Province and Canada. Revitalization of the waterfront includes opportunities to create more parks and recreational destinations, an opportunity for growth, tourism, and residential development and ultimately to improve the quality of life for this vibrant region and the country.

The Toronto Waterfront Revitalization Corporation (TWRC) along with the City of Toronto are proceeding with revitalization based on a mission to transform the Toronto waterfront into a series of sustainable, mixed-use, urban precincts integrated with parks, institutions, and open space. They plan on doing this by creating a series of connections and future gateways through parkland, the development of new precincts and an extension of the transit system from the downtown to the lake and the Don River corridor.

Four areas, the East Bayfront, West Don Lands, Lower Don Naturalization Project and Commissioners Park located in the Portlands, are currently proceeding through the planning process. The Planning for these precincts are closely connected to each other and as a result are either complete or close to completion.

The TWRC and the City have worked closely in the development of the Central Waterfront Secondary Plan, and the East Bayfront Precinct Plan. In order to expedite the delivery of public infrastructure to support revitalization, the TWRC and the City worked as co-proponents to prepare this Class Environmental Assessment Master Plan (Class EA Master Plan).

Changes to the East Bayfront road network will include the reconfiguration of several streets within the study area. However, the existing street network will remain largely intact. Safe and convenient road systems will be provided for pedestrians, cyclists and transit vehicles.

Several alternatives have been considered to upgrade the infrastructure system so that it will be able to service the area as future development takes place. Sustainability objectives for the water system will involve the active use of water conservation, water efficiency strategies and compatibility with Toronto's Water Pollution Solution ("Wet

Weather Flow Management Master Plan"). The wastewater collection system will be designed to integrate with the City's existing system.

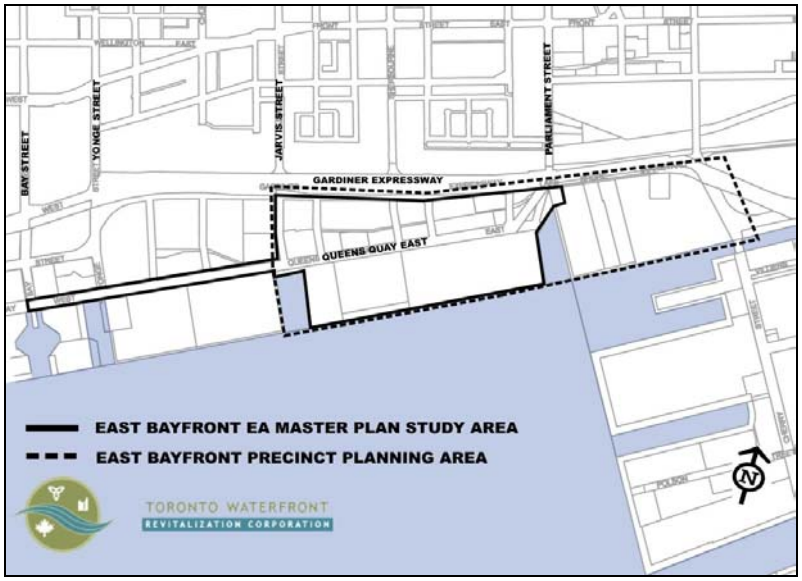
This Class Environmental Assessment Master Plan (Class EA Master Plan) prepared under the Municipal Class Environmental Assessment, June 2000, is being carried out to support the East Bayfront Precinct and is being completed with the TWRC and the City of Toronto as co-proponents for the project.

1.2 The East Bayfront Precinct Plan

The East Bayfront Precinct includes the waterfront area that runs east of Lower Jarvis Street, south of Lakeshore Boulevard, west of Cherry Street/Lakeshore Boulevard, and north of Queens Quay East and Keating Channel. The study area is described in more detail in Section 3.0.

The East Bayfront EA Master Plan addresses the area west of Parliament Street to Lower Jarvis Street and south of the rail corridor (**Exhibit 1-1**). The Queens Quay east extension to Cherry Street will require its own EA and functional planning study. This excluded area also overlaps with the Lower Don Naturalization EA.

Exhibit 1-1: East Bayfront Precinct Area



The East Bayfront District is to be redeveloped as prominent new waterfront neighbourhood benefiting from easy access to both Lake Ontario and the city centre. Although described as a mixed-use area, the proposed East Bayfront Precinct will have a

strong focus on providing new residential development. With 6,300 housing units proposed, this precinct will be remodelled into an urban high-density residential neighbourhood.

The East Bayfront area will also include a series of high quality public spaces, promenades, public services, and commercial buildings. The areas at the foot of Lower Jarvis Street, Lower Sherbourne Street, and Parliament Street have been earmarked for the introduction of public plazas that safeguard views towards the lake. This area may also support some community, recreation, cultural and entertainment facilities. Two neighbourhood open spaces, which includes a public park south of Queens Quay and an urban square north of Queens Quay, will be created on the axis of the existing Aitken Place. The termination point at the lake of each north-south street that meets the dockwall will be celebrated with the introduction of unique public spaces that reveal the rich history of the district.

1.3 Elements of the Master Plan

The Class EA Master Plan addresses water, sanitary, stormwater, and transportation infrastructure servicing requirements necessary to support the proposed land uses (including new and improved parks and public spaces) that are proposed as part of the revitalization of the East Bayfront precinct. The Class EA Master Plan process applies to projects currently contemplated that are considered Schedule A, B and C projects. This is described further in Section 2.

1.4 Elements Not Included in the EA Master Plan

This EA Master Plan makes provision for transit along designated roads but does not address the requirements under the Environmental Assessment Act for completing transit projects. Any transit facilities required in the precinct will be subject to EA processes that will be completed separately from this EA Master Plan.

The EA Master Plan addresses the modifications to Queens Quay East between Lower Jarvis Street and Cooper Street that are required to transition from the existing Queens Quay East right-of-way to the new right-of-way. Further modifications to Queens Quay East between Bay Street and Lower Jarvis Street are the subject of a separate EA study (refer to Section 12.3.2).

2.0 OVERVIEW OF THE PLANNING PROCESS FOLLOWED FOR THIS PROJECT

2.1 Environmental Assessment Act

The Ontario *Environmental Assessment Act* (EA Act) identifies two types of environmental assessment planning and approval processes: Individual Environmental Assessments and Class Environmental Assessments. The Municipal Class Environmental Assessment, June 2000, provides a process in accordance with the EA Act, for municipal infrastructure projects. Once approved, the Class EA establishes a process whereby the municipal projects as defined in the Municipal Class EA and any subsequent modifications, can be planned, designed, constructed, operated, maintained, rehabilitated and retired without having to obtain project specific approval under the EA Act, provided the approved environmental assessment planning process is followed.

2.2 Overview of the Municipal Class Environmental Assessment Process

The Municipal Class EA process is completed following a five phase process (**Exhibit 2-1**). The process addresses projects by classifying them into three schedules according to their environmental significance (Schedule A, B or C). The level of complexity and the potential impacts of a project will determine the Schedule of the project that in turn will determine which phases will need to be addressed. Projects undertaken in the East Bayfront Precinct will vary as to their potential environmental effect(s).

The five phases of the Class EA process are summarized as follows:

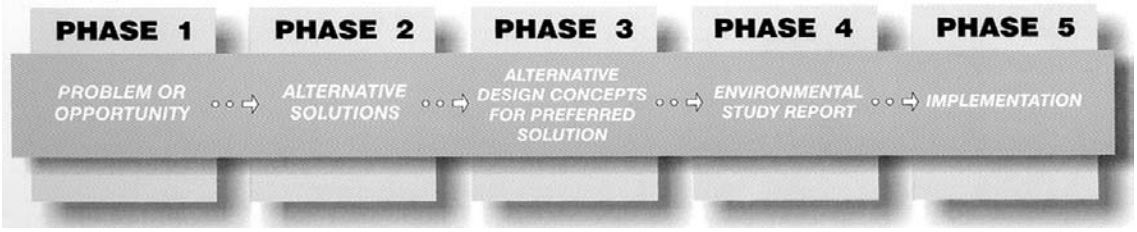


Exhibit 2-1: The Class EA Process

Schedule A projects are limited in scale, have minimal adverse effects and include the majority of municipal road maintenance and operational activities. These projects are approved and may proceed directly to Phase 5 for implementation, without following Phases 2 to 4 of the Class EA process.

Schedule B projects generally include improvements and minor expansions to existing facilities. These projects have some potential for adverse environmental impacts, and consultation with those who may be affected is required. Examples of Schedule B projects include: the installation of traffic control devices, smaller road-related works or the extension of certain types of municipal water/wastewater infrastructure. These kinds of projects require completion of Phases 1 and 2 of the Class EA process.

Schedule C projects generally include the construction of new facilities and major expansions to existing facilities. The East Bayfront Class EA Master Plan Report may also include Phases 3, 4, and 5 for certain Schedule C projects, such as larger projects involving road-related works, construction of underpasses or overpasses, or construction of water or stormwater management systems (MEA, 2000).

2.3 Municipal Class EA Master Plan Process

Class EA Master Plans are long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. The Class EA Master Plan process examines infrastructure system(s) or groups of related projects in order to outline a framework for implementation of subsequent projects and/or developments with environmental protection and mitigation measures integrated into the project.

It is beneficial to begin the planning process by considering a group of related projects, or an overall system (e.g., water, wastewater and/or roads network), or a number of integrated systems (e.g., infrastructure master plan), prior to dealing with project specific issues. By using this process, the need and justification for individual projects and the associated broader context are better defined.

The Class EA Master Plan typically differs from project specific studies in several key respects. Long range infrastructure planning enables the proponent to comprehensively identify need and establish broader infrastructure options. The combined impact of alternatives is also better understood, possibly leading to other more positive solutions. The opportunity to integrate with land use planning also enables the proponent to consider different perspectives when looking at the full impact of decisions.

Once complete, The East Bayfront EA Master Plan Report is adopted by the TWRC and Toronto City Council it is then filed and made available for review by the public and any public agency that expressed interest in the study. Requests to the Minister of

Environment for a Part II Order (to require an Individual EA) are possible only for specific projects identified in the Master Plan, not the Plan itself.

2.4 Relationship to the Canadian Environmental Assessment Act (CEAA) Requirements

The *Canadian Environmental Assessment Act* (CEAA) sets out responsibilities and procedures for the environmental assessment of projects involving the federal government. In addition to satisfying the Provincial EA process by completion of the EA Master Plan, the East Bayfront Precinct Plan may eventually be subject to the requirements of CEAA. Projects subject to CEAA include circumstances where the federal government holds decision-making authority, whether as a proponent, land administrator, source of funding, or regulator. The TWRC would trigger CEAA if funds are transferred from the Government of Canada to enable a project to proceed. The Act requires one (or more) federal agency to act as the Responsible Authority (RA) and it establishes a clear and balanced process that helps the (RA) determine the environmental effects of projects early in their planning stage.

The four stated objectives of the Act are:

- To ensure that the environmental effects of projects receive careful consideration before RA's take action;
- To encourage RA's to take actions that promote sustainable development thereby achieving or maintaining a healthy environment and a healthy economy;
- To ensure that projects to be carried out in Canada or on federal lands do not cause significant adverse environmental effects outside the jurisdictions in which the projects are carried out; and
- To ensure that there be an opportunity for public participation in the EA process.

Should the Federal Government ultimately choose to contribute financially to any component of the Precinct, a separate CEAA study for the funded component will be prepared. The provincial Class EA Master Plan will provide much of the detail with respect to characterizing the environment as well as the alternatives for the CEAA process. Additional work will be required to address federal process requirements outside of the scope of the provincial Class EA, such as cumulative effects. The goal of the EA study is to determine if after implementation of mitigation measures, a project is likely to result in significant adverse environmental effects.

2.5 The City of Toronto Central Waterfront Part II Plan

The City of Toronto Central Waterfront Part II Plan acts as a framework for the activities associated with the Precinct Plan development. The Plan is built on four core principles, which are:

1. Removing Barriers/Making Connections;
2. Building a Network of Spectacular Waterfront Parks and Public Spaces;
3. Promoting a Clean and Green Environment; and
4. Create Dynamic and Diverse New Communities

2.5.1 Removing Barriers/Making Connections

If waterfront renewal is to be truly successful, the waterfront will have to feel like and function as part of the city fabric. The first principle of the Plan is to remove barriers and reconnect the city with Lake Ontario and the lake with the city. This is the key to unlocking the unrealized potential of Toronto's waterfront. The new connections will be north/south and east/west. They are functional, thematic and symbolic in nature.

2.5.2 Building a Network of Spectacular Waterfront Parks and Public Spaces

The second principle of the Plan recognizes the significance of the public realm in transforming the Central Waterfront into a destination for international tourism, national celebration and local enjoyment. The Plan promotes the remaking of the Central Waterfront as a special place imbued with spectacular waterfront parks and plazas and inviting natural settings that please the eye and capture the spirit.

2.5.3 Promoting a Clean and Green Environment

The third principle of the Plan is aimed at achieving a high level of environmental health in the Central Waterfront. A wide variety of environmental strategies will be employed to create sustainable waterfront communities.

2.5.4 Creating Dynamic and Diverse New Communities

The fourth and final principle of the Plan is focused on the creation of dynamic and diverse waterfront communities – unique places of beauty, quality and opportunity for all citizens. New waterfront communities will be acclaimed for their high degree of social,

economic, natural and environmental health and cultural vibrancy, which collectively will contribute to the long-term sustainability of the area and the entire city.

2.5.5 Relationship to this EA Master Plan

The Secondary Plan identifies a number of policies that helped to provide a framework for this EA. Key among these is the notion that future travel demand will be mainly met by non-auto means, and road capacity will be added only to meet local traffic needs. Required rights-of-way will accommodate road and transit network over time. The rights-of-way will be sufficient to accommodate travel lanes, transit, pedestrian and cycling requirements as well as landscaping and other urban design elements. This will include new surface transit routes operating in exclusive rights-of-way in order to ensure efficient movement.

Other key policies include enhancing physical connections between the Central Waterfront, the downtown core and adjacent neighbourhoods through high quality urban design and landscaping on the north/south connector streets, more pedestrian friendly corridors in railway underpasses and view corridors to the lake. Building design, public and private spaces and street layouts will support view corridors and be of high architectural quality.

2.6 East Bayfront Precinct Plan

Toronto is Canada's largest city, a rapidly growing metropolitan region on the north shore of Lake Ontario. To counter urban sprawl and revitalize the waterfront, the three levels of government created the Toronto Waterfront Revitalization Corporation (TWRC), charged with coordinating the redevelopment of a vast tract of waterfront property adjacent to Downtown Toronto. The TWRC's mission is to transform the Toronto waterfront into a series of sustainable, mixed-use urban precincts integrated with parks and open spaces that greatly expand the City's capacity for urban living, employment and recreation.

Precinct Plans have been developed for the areas closest to the Downtown, West Don Lands and East Bayfront. These two Precinct areas connect the Downtown to the Lake and the Don River Corridor, as well as create gateways to future Precincts and public open spaces in the Port Lands. The Don River Corridor will be improved as a natural open space system with its terminus in a re-naturalized river mouth. The water's edge will become a continuous magnificent publicly accessible promenade linking the downtown to the Outer Harbour and ultimately connect to the Eastern beaches. The Port

Lands are a vast peninsula of old industrial land that will become a series of new lakefront urban communities that will connect to waterfront parks, beaches, trails and various amenities.

The East Bayfront Precinct is the most central Waterfront revitalization area to the downtown core. As such, East Bayfront represents an important opportunity for Toronto's city centre to establish a positive and meaningful relationship with its waterfront. The East Bayfront must be a marvelous water-related public destination for all of the people of the City and for visitors. The full extent of the water's edge must become a clear, vibrant public destination with a variety of experiences and amenities along its length. But at the same time it must be a real neighbourhood within the city and have strong connections to adjacent communities. It must be a beautiful and desirable place to both live and work.

The vision for the East Bayfront Precinct is for a new urban waterfront community, a place of design excellence, high levels of sustainability and strong relationships to the water's edge. East Bayfront will accommodate a mixture of uses and a range of urban built form with buildings arranged to collectively give appropriate definition, identity and scale to the public realm of the district while serving their intended use. The existing main north/south streets of Lower Jarvis Street, Lower Sherbourne Street and Parliament Street will be extended into the Precinct south of Queens Quay and will terminate at the water's edge at three special places. The transformation of Queens Quay Boulevard into a landscaped, urban sidewalk hosting all modes of transportation, including the future LRT, will become the commercial spine for the community. A vibrant and beautiful public promenade along the water's edge, defined as a clear destination in its own right, will link the three waterfront public spaces and provide the opportunity for the community and public to access and experience the Lake. Urban Design needs for the road rights-of-way are discussed in more detail in Section 8.3.8.

The objective is for East Bayfront to be a new community, attractive to many different types of households from a wide range of incomes. In addition to a new school and community services, a mix of affordable and market housing will be provided throughout East Bayfront. It is also assumed that a viable and sustainable urban district is not simply a residential quarter of the city, but must be a full time mixed use place of living, employment, recreation, entertainment and public/cultural activities.

2.7 Incorporating the TWRC Sustainability Framework

Sustainable development is the key driver of the revitalization of Toronto's waterfront. The TWRC's Sustainability Framework identifies concrete short, medium and long-term

actions that will lead to remediated brownfields, reduced energy consumption, the construction of green buildings, improved air and water quality, expanded public transit and diverse, vibrant downtown communities. An essential component of the framework also involves monitoring to allow the tracking of progress towards sustainability goals.

The City's Wet Weather Flow Management Master Plan addresses stormwater runoff impacts and focuses on issues such as protecting city infrastructure from stream erosion, cleaning up waterfront beaches that are healthy for swimming and recreation, restoring degraded local streams and improving stream quality. The proposed stormwater, wastewater and water systems discussed in this report address some of these goals.

The East Bayfront Precinct Plan is the first major step in the East Bayfront revitalization. The plan addresses street and block orientation for development and is generally consistent with the major goals of the TWRC's Sustainability Framework. It is important to note, however, that many of the TWRC's sustainability objectives and targets will not be realized at this high level planning stage because they are linked to decisions made at subsequent stages such as detailed building and site design, construction and/or community and educational program development. The TWRC is establishing Green Building design standards to inform subsequent phases.

The various components of the East Bayfront Precinct Plan either strongly support or do not prevent achievement of the TWRC's sustainability vision. The vision includes five major desired outcomes and the Precinct Plan links to these outcomes as follows:

Sharing the Benefits: NETPLUS – Activities outlined in the Precinct Plan will improve the waterfront in a way that provides potential benefits to the city, region, province and country as a whole. These include re-urbanization of under utilized serviced urban lands, reduced car dependency, improved air quality through expanded parkland and enhanced tree canopy, stormwater management consistent with the City of Toronto's Wet Weather Flow Management Master Plan, enhanced terrestrial and aquatic habitat and improved biodiversity.

The Urban Cottage - The East Bayfront Precinct Plan supports the sustainability goals of revitalization that result in a greater degree of tranquility, recreational opportunities, improved aquatic and terrestrial habitat through reduced auto dependency, contributions to improved air and water quality, expanded park land and improved access to the lake.

Feels Like Home – The Precinct Plan makes provisions for affordable and low-cost housing as well as flexibility in unit sizing and needs of different age groups. It also designates and will connect to an extensive park and open space system, providing

recreational opportunities. The plan focuses on dense compact urban form with mixed use emphasizing the ability for a work home environment.

Strength Through Diversity – Improved biodiversity, increased diversity in transportation options along with mixed land use strengthen the long-term viability of the precinct and the economic development of the area. Opportunities to make greater progress on this outcome will be presented during future decision-making on the mix of residential and commercial spaces as well as amenities to attract people year round to the waterfront.

Global Hub of Creativity and Innovation – The surrounding neighbourhoods are creative districts and the East Bayfront precinct does not preclude connecting to and building on these opportunities in the future.

There are ten themes or major areas of focus identified in the draft TWRC Sustainability Framework. The East Bayfront Precinct Plan addresses the sustainability themes in the following ways:

Energy – Energy efficiency opportunities have not been precluded by the precinct planning process and will be addressed during site development and occupancy phases. The transportation planning focuses on "transit first" and on integration of alternate modes of transportation, de-emphasizing the automobile and contributing to reduced green house gas emissions. Renewable energy opportunities are not precluded from site development or building design although large and medium scale options may be constrained by appropriate environmental conditions. Future alternative energy developments in adjacent sites may contribute to the energy demand in this precinct. Energy benefits associated with parks and open spaces will be addressed at a later date.

Land Use – The dense development and mixed use offered by the precinct plan support sustainable development patterns and infrastructure development largely based on recapturing the value of abandoned and under used sites. The design further contributes to a vibrant street life with planned squares and sidewalks, reasonable walking distances between uses and an attractive walking environment. The plan offers significant opportunity in maintaining and enhancing terrestrial and aquatic habitat. Opportunities for use of renewable energy have not been maximized however future site development can support this objective.

Transportation – The transportation plan has focused on transit supportive development with rights-of-way incorporating cycling and dominant pedestrian mobility. The plan

includes no new capacity for automobiles and addresses minimum walking distances between planned transit, parks and residences.

Sustainable Buildings – Site development issues related to building design will be addressed at a later stage. The Precinct Plan has not excluded the opportunity for site-specific sustainable design. Maximizing opportunities through building site size is a unique opportunity in this precinct due to the fact that most of the precinct is held by a single landowner. The TWRC will propose guidelines for building design to advance sustainable design through site development.

Air Quality – The emphasis on mixed use and transit contributes to a local pedestrian oriented environment, which will reduce concentrations of ground level ozone. Mitigation proposed in the EA Master Plan will address short-term air quality concerns associated with construction. Tree plantings and open space will contribute to improved local air quality conditions. Reduced airborne emissions from contaminated sites will be addressed though the remediation plans for contaminated sites.

Water – Stormwater Management for the study area addresses the City's Wet Weather Flow Master Plan objectives. Aquatic habitat enhancements will contribute to improved water quality and site remediation will improve groundwater conditions. Water efficiency will be addressed at the site development phase.

Human Communities – The mixed-use environment will contribute to accessibility to the area year round. This precinct is directly on the water and will likely have tourist related facilities. The new parks and water's edge promenade will provide a vast area contributing to a peaceful and relaxing environment.

Innovation – This precinct is adjacent to creative communities and will attract similar activities. Site development provides opportunities to showcase innovative sustainability achievements and integration of technological advances have not been precluded.

Materials and Waste – Reclamation of materials through site redevelopment will be encouraged and City initiatives for re-use and recycling will be implemented through site development and occupancy.

Natural Resources – Increased open spaces and habitat improvements will contribute to strengthened biodiversity. Remediation of sites will improve soil conditions.

Lessons learned in sustainability from the East Bayfront Precinct Planning exercise and different opportunities in other portions of the waterfront will allow the TWRC to

continue to advance the development of sustainable urban communities throughout the waterfront.

3.0 PLANNING CONTEXT AND OPPORTUNITY STATEMENT

3.1 Study Area

The East Bayfront Precinct includes the waterfront area that runs south of Lake Shore Boulevard East between Lower Jarvis Street and Cherry streets. The East Bayfront EA Master Plan addresses the area west of Parliament Street. **Exhibits 3-1** and **3-2** show the study area.

Exhibit 3-1: Study Area

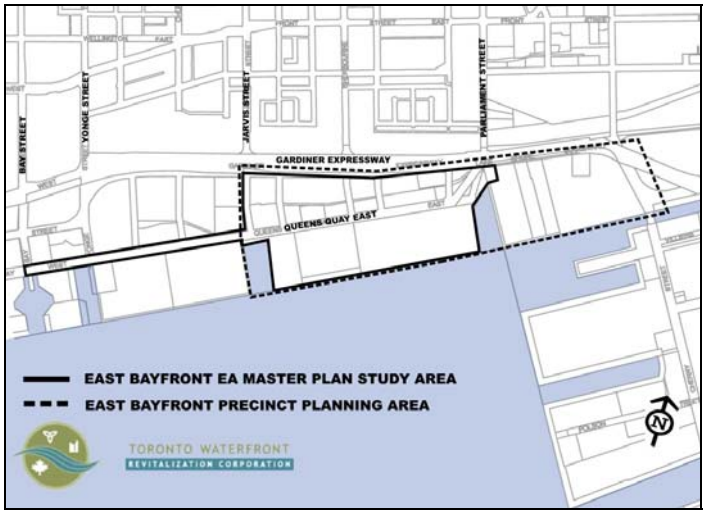


Exhibit 3-2: Aerial Photo of East Bayfront EA Master Plan Study Area and Precinct Planning Area

The study area includes the existing Queens Quay right-of-way west to Bay Street. This is intended to allow the study to address any changes required to transition road improvements east of Lower Jarivs Street with the existing conditions to the west. The right-of-way configuration west of Lower Jarvis Street will be studied in further detail as part of the Lower Yonge Precinct Study and accompanying environmental assessments.

3.2 Planning Horizon

The western half of the East Bayfront Precinct Plan (Jarvis to Parliament) within this EA Master Plan will be implemented over approximately 10-15 year horizon. The broader Waterfront Revitalization program will take approximately 20-30 years.

3.3 Opportunity Statement

The first phase of the Class EA is to define the problem or opportunity. The opportunity statement for this project is described as:

> ***"To address sanitary, water, stormwater servicing, and transportation infrastructure to support the proposed land uses and new and improved parks and public spaces that are proposed as part of the revitalization of the East Bayfront Precinct of the Toronto waterfront."***

As part of the Precinct Plan upgrades to the water, wastewater, stormwater and transportation services must take place in order to support the redevelopment of the area. More information on the Needs and Justification for the upgrades to these services and how they respond to the opportunity statement can be found in sections 5.2 (Water Systems), 6.2 (Sanitary Servicing), 7.2 (Stormwater) and 8.3 (Transportation).

4.0 INVENTORY OF THE EXISTING ENVIRONMENT

The East Bayfront precinct study area is an extensively developed environment. It is an urban brownfield site containing some buildings occupied by industrial or commercial uses, with large areas of underused sites. There are no watercourses running through the site and negligible batches of vegetation with no other features of natural environmental significance.

4.1 Natural Environment

4.1.1 Aquatic Environment

The East Bayfront Precinct is located at the northeast corner of the Inner Harbour between Cherry Street and the southern boundary of Lower Jarvis Street in the City of Toronto. Aquatic habitat associated with the site consists of the Don River and Lake Ontario. The Don River originates north of Major Mackenzie Drive in the Region of York eventually discharging into Lake Ontario through the Keating Channel located east of Cherry Street. Located south of the East Bayfront Precinct is the Lake Ontario shoreline and to the west is the Toronto Inner Harbour. As a result of urbanization and shoreline alteration, diversity of aquatic habitat in the vicinity of the East Bayfront is limited.

Existing conditions were defined using background reports provided by the Toronto and Region Conservation Authority and by site reconnaissance performed by Marshall Macklin Monaghan Limited (MMM) biologist on March 29, 2004.

4.1.2 Fish Community

Fish community sampling was performed by the Toronto and Region Conservation Authority (TRCA) in the spring, summer and fall of 2002 and 2003 at three locations in the vicinity of the East Bayfront Precinct. These sampling locations include the Keating Channel, and two sheltered areas; the York Harbour Square and the Spadina Quay. Although these areas have been modified in a manner that has reduced habitat diversity, fish community sampling by the TRCA resulted in the capture of 17 species including sportfish and forage fish communities. The sportfish community consists of northern pike (Esox lucius), Chinook salmon (Oncorhynchus tshawytscha), brown bullhead (Ictalurus nebulosus), largemouth bass (Micropterus salmoides), rock bass (Ambloplites rupestris), black crappie (Pomoxis nigromaculatus), yellow perch (Perca flavescens) and pumpkinseed (Lepomis gibbosus). Forage fish found in the sampling locations included

alewife (Alosa pseudoharengus), emerald shiner (Notropis atherinoides), spottail shiner (Notropis hudsonius), threespine stickleback (Gasterosteus aculeatus), johnny darter (Etheostoma nigrum), rainbow smelt (Osmerus mordax), gizzard shad (Dorosoma cepedianum), white sucker (Catostomus commersoni) and common carp (Cyprinus carpio) (TRCA, 2004).

With the exception of northern pike that prefer sheltered bays with moderate to dense aquatic vegetation, the fish community associated with the Keating Channel consists primarily of species that are associated with open water in large lakes. The presence of these open water species can be attributed to their preference for shallower water for feeding and gravel substrate in rivers for spawning (Scott and Crossman, 1998; Coad et al, 1995).

The sportfish community is primarily associated with the Spadina Quay and York Harbour Square as a result of the warmer water and sheltered conditions preferred by these species. It is anticipated that these species are also found in the waters surrounding the East Bayfront Precinct, as they are likely to migrate between habitats. The Parliament Street Slip and the Jarvis Street Slip are located within the study area and have the potential to provide similar shelter habitat conditions to the Spadina Quay and York Harbour Square (Scott and Crossman, 1998; Coad et al, 1995).

4.1.3 Aquatic Habitat

According to the Draft Don Watershed Fish Community and Habitat Management Plan, the Keating Channel is classified as estuarine habitat with the water levels being directly influenced by Lake Ontario. The high sediment load and habitat alterations found in the Lower Don are major factors that limit the fish community in the Keating Channel (TRCA, 1997). The Don River also contributes to the quality of habitat in the Inner Harbour due to suspended sediment transport affecting water clarity. Fish habitat including water clarity and cover provided by aquatic vegetation improves along the shoreline travelling further west of the Don River (G. MacPherson, pers. comm. 2003). Water discharging from the Keating Channel has a direct effect on the water clarity along the East Bayfront Precinct shoreline as it flows in a westerly direction under the Cherry Street bridge located at the eastern boundary of the study area.

One of the limiting factors for fish communities within the Toronto Inner Harbour is the lack of shallow or littoral zones that support aquatic plant communities and provide fish habitat. The north shore of the Inner Harbour is hard-edged and relatively deep with little, if any, aquatic vegetation and little in the way of fish habitat. However, aquatic vegetation is found in sheltered areas provided by inlets and quays such as the York

Harbour Square and the Spadina Quay. Aquatic habitat along the shoreline of the East Bayfront Precinct is consistent with the shoreline found within the Inner Harbour consisting of flat concrete with minimal cover and two slips, the Parliament Street Slip and the Jarvis Street Slip.

The TRCA indicates that the shoreline located within the York Harbour Square provides moderate shore and in-water cover with clear water and slow current. The Spadina Quay located further west of the study area provides limited cover consisting of submergent vegetation with a sand and detritus dominated substrate. The Parliament Street Slip and Jarvis Street Slip, located within the East Bayfront Precinct can be assumed to provide similar shelter habitat conditions.

According to sampling performed by Riggs Engineering at sites along north shore of the Inner Harbour adjacent to the Harbourfront Centre, the substrate consists primarily of sand and silt that has been recorded to a depth of 1.9 m (Riggs Engineering, 2003). Borehole information indicates that the substrate in three sampling locations distributed along the north shore at water depths of approximately 8.5 to 9.0 m consisted of a combination of loose black silt, fine sand and zebra mussel *(Dreissena polymorpha*) shells. The substrate in the vicinity of the East Bayfront Precinct likely consists of a similar material however, it may have a higher quantity of silt as a result of its proximity to the Keating Channel outlet.

Harbourfront and East Study Area

The fish community in the Harbourfront area including the Toronto Islands, Tommy Thompson Park (Leslie Spit), the Eastern Gap and the Inner and Outer Harbour is diverse as a result of the microhabitats provided by the various landforms and shorelines. The fish community in the Eastern Gap and Outer Harbour North Shore consist of northern pike, fresh water drum (Aplodinotus grunniens), white sucker, American eel (Anguilla rostrata), yellow perch, brown bullhead, pumpkinseed, threespine stickleback, black crappie, rock bass, emerald shiner, spottail shiner and alewife (TRCA field survey forms, 2000, TRCA field survey information, 2003).

Harbourfront and East Study Area (Inner Harbour)

One of the limiting factors for fish communities within the Inner Harbour is the lack of shallow or littoral zones that support aquatic plant communities and provide fish habitat. The Toronto shoreline is hard-edged and relatively deep with limited fish habitat (woody

debris, aquatic vegetation). The shipping channel along the east shore provides little in the way of fish habitat as the sides of the channel have been lined with concrete, there is no overhead cover for fish and the substrate is disturbed from dredging operations. The dredging of the channel results in a loss of benthic invertebrate communities and aquatic vegetation in the concrete lined watercourse that may become established between dredging episodes.

4.1.4 Terrestrial Environment

The Toronto waterfront is an extensively developed built environment, south of the railway that is dominated by roadway, industrial, commercial and residential buildings. Vegetation communities have colonized embankments, fill areas, and rail corridors and typically consist of cultural woodland, thicket, and meadow habitats. There are a number of significant natural areas along the waterfront including Tommy Thompson Park (Leslie Street Spit) and the Toronto Islands which occur to the south of the site, however the majority of the current landscape has been developed.

The Toronto and Region Conservation Authority (TRCA) conducted fieldwork in 2000 to document existing vegetation communities. These communities were classified to the "ecosite" level of the Ecological Land Classification (ELC) system, and in most cases the finer level of detail provided by "vegetation type" was recorded. As a result of the disturbances caused by the urbanization of these areas many of the vegetation types found in urban areas are not included in the current ELC system. Some of these are highly disturbed areas, which are dominated by exotic species such as Norway maple (*Acer platanoides*).

According to the City of Toronto Natural Heritage Study (2001) meadow habitat was present in the East Bayfront Precinct Study Area in 1999. However the site reconnaissance performed by MMM indicated that the habitat no longer exists in the study area. Instead the study area is comprised mainly of fenced off warehouse facilities and vacant lots consisting of concrete rubble with sparse vegetation. Vegetation was observed mainly along the sidewalk areas and consisted of urban trees including tree of heaven (Ailanthus altissima), Manitoba maple (Acer negundo), cottonwood (Populus deltoides ssp. deltoides), Siberian elm (Ulmus pumila), and red ash (Fraxinus pennsylvanica). Scattered and sparse herbaceous vegetation occurred throughout the vacant lots and alongside fencelines and was composed of queen anne's lace (Daucus carota), canada thistle (Cirsium arvense), bull thistle (Cirsium vulgare), ox-eye daisy (Chrysanthemum leucanthemum), fleabane species (Erigeron sp), viper's bugloss (Echium vulgare), chickory (Cichorium intybus), common nightshade (Circaea alpina), and black bindweed (Polygonum convolvulus).

The existing information on the natural environment features in the vicinity of study area was obtained through a combination of a site reconnaissance conducted by Marshall Macklin Monaghan Limited (MMM) terrestrial biologist on March 29, 2004 and a review of background information to document general habitat features at the East Bayfront Precinct Study Area including vegetation communities and wildlife found on-site. Background information included the City of Toronto–Natural Heritage Study–Final Report (December, 2001), the Lower Don Valley Biological Inventory (February 2004) and the Natural Heritage Information Center website (NHIC, 2003).

4.1.5 Wildlife Community

Small mammalian, herpetofaunal, and avian species that are tolerant of habitat disturbances and other human activities would typically characterize the wildlife community in this type of setting. There are large numbers of birds found in the city but there is a low diversity of species due to limited habitat diversity and shortage of large habitat areas.

The East Bayfront Precinct Study Area is located in close proximity to Tommy Thompson Park (Leslie Street Spit) and the Toronto Islands which provide habitat for local and migrating wildlife species. Many species of birds stop over at Tommy Thompson Park and the Toronto Islands to recuperate during migration and continue their journey after they have rested, and use the habitat provided by the adjacent Lower Don River as a migratory corridor (Lower Don Valley Biological Inventory, 2004). Over 290 species of birds have been observed in the area. In 1991 the TRCA waterbird migration study had good counts of bufflehead (Bucephala albeola), long-tailed duck (Clangula hyemalis) ring-billed gull (Larus delawarensis), herring gull (Larus argentatus) and Canada goose (Branta canadensis). Significant numbers of myrtle (yellow-rumped) warblers (Dendroica coronata), common grackle (Quiscalus quiscula), and snow bunting (Plectrophenax nivalis) were recorded in 2003.

Wildlife observations made during site reconnaissance consisted of common species typical of urban landscapes and migratory species likely use the areas as stopover habitat. Species observed in the East Bayfront Precinct Area during the site reconnaissance and included common grackle, European starling (Sturnus vulgaris), rock dove (Columba livia), house sparrow (Passer domesticus), and American robin (Turdus migratorius). The aquatic habitat located within the harbour adjacent to the site may provide good forage for migratory waterfowl species observed including bufflehead and long-tailed duck as well as suitable habitat for generalist urban species such as the ring-billed gull and Canada goose use the area year round.

Mammals observed to use the area during the site reconnaissance were gray squirrel (Sciurus carolinensis), Norway rat (Rattus norvegicus), feral cats, and house mice (Mus musculus). These species are likely to inhabit the area within and surrounding the East Bayfront Precinct Study Area, as these species are mobile and likely to migrate between habitats (Lower Don Valley Biological Inventory, 2004). The area has the potential to provide habitat for the common gartersnake (Thamnophis sirtalis sirtalis) and corridors by which wildlife can travel through the city and may support coyote (Canis latrans) movements.

4.1.6 Geology and Topography

Since early settlement in Toronto the Lake Ontario shoreline has been altered as a result of lakefilling. For the most part, the shoreline was filled with dredged sediment from the Inner Harbour but also included construction debris, excavated soil, sewage sludge, incinerator refuse, and municipal garbage (Archaeological Services Inc., 2004). The majority of land south of current day Front Street in downtown Toronto is the result of lakefilling activity. The largest effort of filling occurred after the 1912 Waterfront Plan of the Board of the Toronto Harbour Commissioners.

Front Street was constructed just north of the original Toronto waterfront. At that time, the Grand Trunk Railway tracks closely followed the waterfront. A series of wharfs extended into the lake just south of the tracks. Over the years, the Toronto waterfront has advanced southward as the need for additional space south of the City has increased. The easternmost East Bayfront lands were reclaimed from the mouth of the Don River in the 1880s and 1890s. Reclamation of the lands further to the west as far as the Parliament Street Slip commenced in 1912, when reclamation of Ashbridges Bay and the creation of the Port Industrial District began. The reclamation of the East Bayfront lands west of the Parliament Street slip did not proceed until the 1950s, when construction of the St. Lawrence Seaway was underway.

4.1.7 Soil Conditions

Terrain and Soil

In general, the East Bayfront lands were created through the deposition of dredgate from the lake and the placement of surplus/waste materials brought from other parts of the City. While the quality of the lake sediment was generally good from the environmental perspective, the quality of the fill materials was often suspect. At many locations, investigations have revealed that the fill materials contain varying amounts of cinders, tar and other industrial byproducts.

In the East Bayfront area, shale bedrock is found at a depth of approximately 12 m. The upper two metres of the shale is generally heavily weathered. Groundwater from upgradient regions flows through the weathered bedrock and discharges to the lake. Overlying the bedrock are native silts and sands of variable thickness. The fill materials overlying the silts and sands vary in thickness from approximately five metres to more than eight metres. The groundwater table resides in the fill materials and is generally found within one metre of the ground surface.

Potential Site Contamination

Soil impacted by environmental contaminants exists within the East Bayfront area. In general, based on the available information, the contaminants are not found as buried wastes or liquids that have flowed downward into the subsurface. The contaminants are usually adsorbed to soil particles and are present at concentrations that sometimes exceed the currently applicable MOE standards but usually not by a wide margin.

Limited investigative work has been carried out in the lands west of the Parliament Street Slip. In most cases, the investigations have involved only reconnaissance surveys and historical research.

Limited intrusive investigations within the large block of land south of Queens Quay East detected surface or near-surface soil impacted at levels exceeding the MOE industrial/commercial standards. A total of four underground fuel storage tanks at two locations were observed to be present within this area. It can be expected that some degree of petroleum hydrocarbon contamination has occurred in the proximity of the tanks. The available information does not suggest that liquid phase fuel is present in the subsurface. In general, it appears that, while soil impacts exist within the area south of Queens Quay East, the impacts are limited in extent.

Most of the land north of Queens Quay East has been used in the past for the storage of products and by service/retail businesses. The storage facilities included three chemical storage warehouses. While it is possible that chemical spills have occurred in the vicinity of the warehouses, it can be expected that care was taken to minimize losses given the economic value of the products. At least six underground fuel storage tanks at four locations existed in this area. It can be expected that some degree of petroleum hydrocarbon contamination has occurred in the proximity of the tanks. In general, it does not appear that the land north of Queens Quay East has been extensively impacted by environmental contaminants.

4.1.8 Groundwater Conditions

Limited groundwater quality information is available at present. No liquid petroleum hydrocarbon lenses have been detected. However, it is possible such lenses exist in the vicinity of the underground storage tanks found in this area. The results of groundwater sampling programs conducted in the past have indicated that heavy metals and PAHs may be dissolved in groundwater at concentrations that exceed applicable MOE standards.

4.1.9 Air Quality

There is currently no area-specific air quality information available for the East Bayfront. Air pollutants in the City of Toronto originate from a variety of source categories including industry, transportation, fuel combustion, and miscellaneous activities (primarily dry cleaning, painting, solvent use, and fuel marketing). There are five commonly recognized, standard primary air contaminants. They include volatile organic compounds (VOC), particulates (PM), carbon monoxide (CO), nitrogen dioxide (NO2), and sulphur dioxide (SO2).

Air quality in the City is influenced by a multitude of parameters, some of which are increasing in concentration while others are decreasing. For instance, while atmospheric concentrations of sulphur dioxide, lead and particulates have dropped significantly since 1970, while the number of Air Quality Advisories have increased from 1996 to 1999.

A recent study in Toronto (Toronto Public Health, 2000) suggests that in Toronto, nitrogen dioxide is the air pollutant with the greatest adverse impact on human health followed by carbon monoxide. Downtown Toronto experienced 11 incidences of poor air quality between May 14, 2002 and November 11, 2002. Air quality warnings were issued due to elevated concentrations of ground-level ozone with five incidences of poor air quality in July and three incidences in each of August and September. Due to Toronto's dense population, large number of vehicles, industry, light winds, and optimal summer temperatures, the city provides ideal conditions for the formation of ground-level ozone.

4.1.10 Noise

A noise control program was adopted by City Council in December 1973 to ensure that future construction and development be evaluated in light of their impact on Toronto's

acoustical environment. Major noise concerns found within the City of Toronto included noise from air conditioning units, construction, loud music, loading and unloading vehicles, industrial sources, security alarms, animals and public transit. Monitoring results from 1987 to 1993 indicate that for the East Bayfront study area, the 24 hour equivalent sound levels were in the range of 60 to 79 dBA. Noise levels in this range are in the moderately loud category and could be viewed as annoying (City of Toronto 1994).

Noise By-laws within the City restrict the time of day during which construction can take place. All major construction sites, public and private, are regularly inspected to make sure that excessive noise is not being generated from equipment on the site. The Noise By-Law is enforced by both the Toronto Police Services and the City of Toronto's Noise Control Branch.

4.2 Social-Economic Environment

4.2.1 Historical Land Uses

The Toronto Waterfront Revitalization Corporation (TWRC) initiated a study to ensure that the diverse marine uses of the waterfront, including commercial, recreational and industrial activities are accommodated in the context of waterfront revitalization. The following, taken from that report, outlines the marine history and background of the area.

In the late eighteenth century, the North-West Company used the Lower Don as part of their fur trade route to Lake Simcoe and Georgian Bay, and Fort York was established to control entry to the town's harbour. By the early nineteenth century, there was considerable traffic of schooners and smaller vessels as water was the most efficient way to move bulk goods, and the waterfront became the obvious location for industry. From the 1820s to the 1840s, the first harbour facilities, including commercial wharves and piers, were constructed at several locations to the east of John Street, while the British military continued to dominate use of the waterfront to the west (Marine Use Strategy Study 2005).

In the 1850s, the railroads were constructed along the water's edge, and the filling of the harbourfront associated with the development of the Esplanade (between Spadina and the Don River) as the major rail corridor resulted in significant changes to the water's edge. Commercial and industrial development of Toronto's waterfront intensified into the second half of the nineteenth century, and by the mid 1870s shipping interests were promoting a dry dock for Toronto, since at that time the nearest repair facilities were at Port Dalhousie on the Welland Canal, or in Kingston. In 1881, the Toronto Dry Dock

Company was formed to construct the harbour's first dry dock (Marine Use Strategy Study 2005).

The entire Harbourfront was created by lake-filling in the late 19th and early 20th centuries for shipping and industrial uses, and alterations to other pre-existing natural features such as sand spits, marshes and the peninsula led to the formation of the present day Toronto Islands. In 1912, the Toronto Harbour Commissioners' plan for a waterfront industrial park initiated the conversion of one thousand acres of marsh and shoreline into an industrial zone, an engineering feat that included channeling the Don, constructing concrete dockwalls, and dredging up millions of tons of sand to create the Port Lands … The 1912 landfill plan was finally completed when all of East Bayfront south of Queens Quay was filled in 1952 (Marine Use Strategy Study 2005).

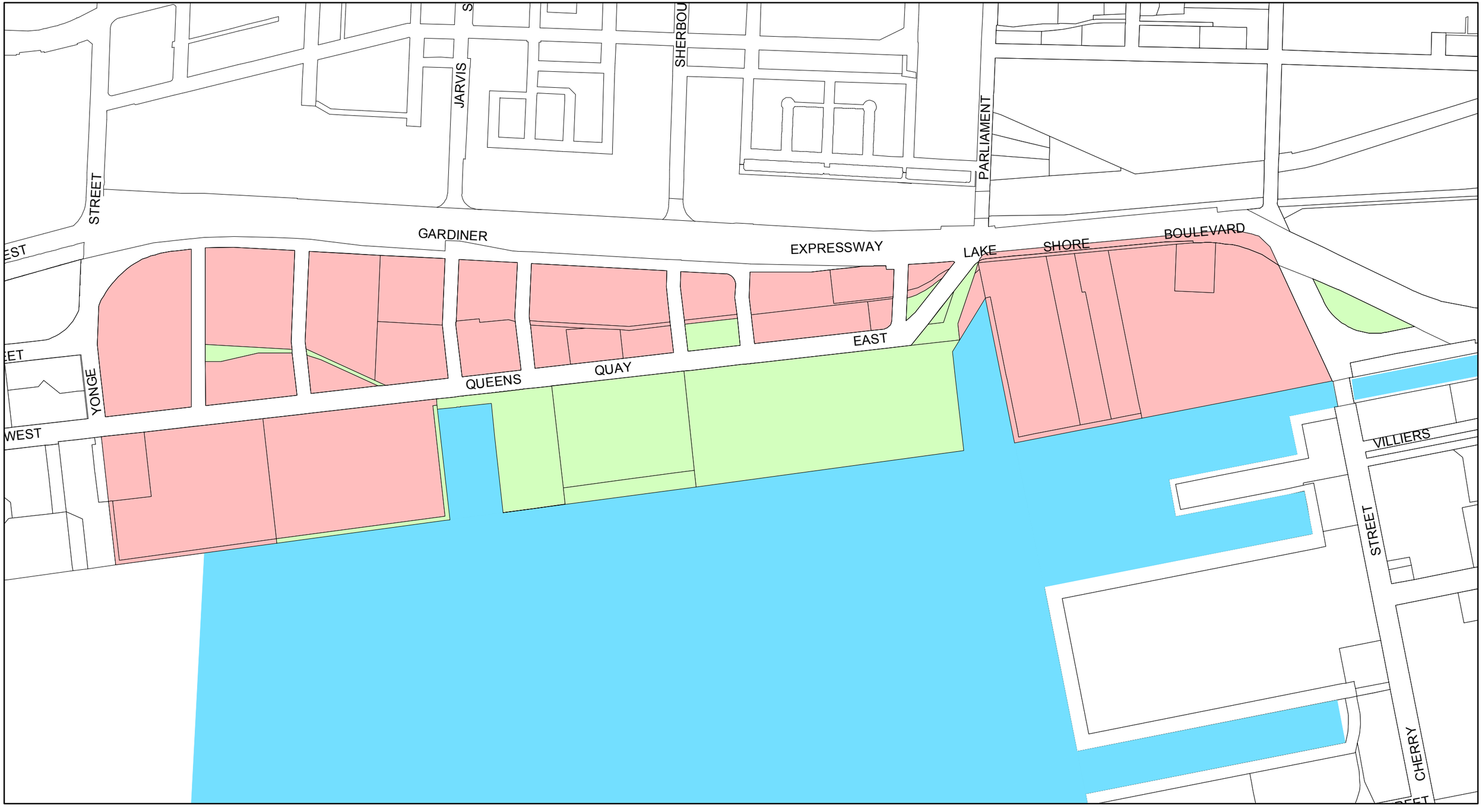
Following the development of the railways and Port Lands, the waterfront became home to large industrial plants such as Victory Soya, Canada Malting, and Redpath Sugar. Recreational uses also played a major role in the history of the waterfront, with several yacht clubs and rowing clubs established in the late 19th and early 20th centuries, some of which still exist today (Marine Use Strategy Study 2005).

Declining activity in the area over the last 30 years has resulted in the removal of most wharves and marine terminals. The remaining industrial users include Redpath Sugars, the LCBO, and storage and distribution terminals. The Gardiner Expressway and Lakeshore Boulevard are the main highway transportation corridors that pass just north of East Bayfront. Adjacent areas contain office buildings, retail and wholesale outlets, and warehouses (Beak 1994).

The Gardiner Expressway, Lakeshore Blvd. and Queens Quay act as the main east west transport connections through the area. Toronto's main rail corridor also runs east-west north of the site. There are a number of north-south road connections but few major arterials. The scale and design of the area's east-west road and rail corridors have effectively resulted in the waterfront being severed from the heart of Toronto's downtown.

4.2.2 Land Ownership

Approximately half of the lands in the East Bayfront lands are owned by the City of Toronto Economic Development Corporation (TEDCO). The remainder are privately owned parcels of land. **Exhibit 4-1** shows a breakdown of public versus privately owned land.



LEGEND

- Private
- Public

Exhibit 4 -1

LAND OWNERSHIP (EAST BAYFRONT)

Scale 1:5,000

January 2006

TORONTO WATERFRONT REVITALIZATION CORPORATION

\\Office\vgen\Data\Water Front\GIS\mxd\P02-0020Rev1.mxd

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4.2.3 Current Land Use Designations

Land Use designations in the East Bayfront are derived from the City of Toronto Central Waterfront Secondary Plan (OPA 257, By-law 346-2003). This includes three types of land use designations, which include:

- Parks and Open Space and Public Use Areas for parks, open space and plazas, and can include compatible community, recreation, cultural and entertainment facilities;
- Development Areas are blocks of land that may be subdivided into smaller areas for a wide variety of mixed-use development ranging from industries to housing to community services and parks, from offices to stores to hotels and restaurants. Heritage buildings within this designation can be used for Development Area uses. The Development Permit system is in place for Development Areas, allowing flexibility in land use.
- Existing Use Areas are currently covered by planning controls consistent with the direction of the Central Waterfront Plan. These lands continue to be governed by existing Official Plan and zoning controls.

The properties north of Queens Quay between Lower Jarvis Street and Parliament Street have been designated as Regeneration Areas by the City of Toronto Official Plan. Currently, the spaces have been revitalized to include a mixture of commercial, retail, office and entertainment spaces. These lands are no longer vacant spaces (except for one unit in 200 Queens Quay) but are occupied by a numerous private businesses.

4.2.4 Business Activity

95 Queens Quay East

The Redpath Sugar refinery is located here. The company merged with Canada Sugar Refining Company Limited of Chatham in 1930 and was acquired by Tate and Lyle, a British company, in 1959. Today it continues to operate under the Redpath label (http://en.wikipedia.org/wiki/Redpath_Sugar).

The Refinery also contains a Sugar Museum, which was established in 1979 to celebrate the 125 Anniversary of the founding of the original refinery in Montreal in 1854.

132 Queens Quay East

The corner of Lower Jarvis Street and Queen Quay has been labeled the “entertainment district” because of the many nightclubs and lounges situated in the area. Guvernment,

Koolhaus, D'Luxe Lounge, Orange Room, The Drink, Charlies, Skybar, The Patio and Tanja are all located in the one building at 132 Queens Quay East.

162 Queens Quay East

This area is comprised of mainly commercial spaces that include Clockwork Productions Inc., The Dock Shoppe and Custom Marine Canvas. These businesses have a central parking facility located in the middle of the complex.

175 Queens Quay East

Cinespace Studios, which provide space to the film and television production industry, occupy this property. It is comprised of 4 studios and 5 fully furnished office suites (http://www.cinespace.com).

178 Queens Quay East

Imperial Parking Canadian Corporation (IPC) main head office is located at 178 Queens Quay East. Directly adjacent to IPC is City Sign, which provides its neighboring businesses such as Redpath Sugar Factory, Guvernment Nightclub, Loblaws parking facilities at a walking distance.

190 Queens Quay East

The only restaurant located between Lower Jarvis Street and Parliament Street is Town and Country Market Fresh Buffet. It is located at 190 Queens Quay East with parking facilities directly adjacent to the space.

200 Queens Quay East

This location is a large property located west of Small Street. It consists of numerous private businesses used for office or commercial purposes. Wolsely Mechanical Group, Know Your Body Best Therapeutics and Supplies Inc., Motion Canada, IMC Video, Security Management, CIBC Mellon Trust Company and Westburne Ruddy Electric are located in this property. At the time of the airfield survey, one vacant unit was available for leasing.

255 Queens Quay East

Waterside Sports Club and Bistro is located at this property. It has seven year-round tennis courts, a weatherproof driving range, a waterfront bistro and 3000 square feet of fitness equipment (http://www.toronto.com/profile/699300/).

261 Queens Quay East

Canpar, a small parcel delivery company, is located in this former marine terminal. Construction of a new facility to replace the current Queens Quay terminal is underway. Once the new facility is complete, 261 Queens Quay East will be vacated.

263 Queens Quay East

An Island ferry, operated by the Royal Canadian Yacht Club (RCYC) at the Parliament Street Slip is located on this property. The RCYC ferry carries 200, 000 passengers across the harbour every year (Marine Use Strategy Study 2005).

4.2.5 Built Heritage Resources

Built heritage resources fall into two categories: listed and designated. Designated properties have designation under the Ontario Heritage Act (OHA) and listed properties have been identified as having cultural and/or historical significance and are placed on the City of Toronto's Inventory of Heritage Properties.

If a property owner wishes to alter the features of a designated property they must receive approval from Council. In the case of demolition, they must also receive approval from Council, however, with the amendments to the OHA, if Council refuses, they now have the power to prevent, not just delay the demolition. Where a demolition or removal application by the owner has been refused, the owner may appeal the matter to the Ontario Municipal Board.

The City's Inventory of Heritage Properties allows preservation staff to monitor any applications that are made that could affect a listed property. If a listed property is threatened with either inappropriate alterations or demolition then Council is usually asked to designate it under the OHA if a compromise cannot be achieved.

There are number of built heritage resources within the East Bayfront that need to be considered. They are as follows:

95 Queens Quay East: Redpath Sugar Refinery

95 Queens Quay East is identified as a significant heritage property for architectural and historical reasons. The Refinery contains a Redpath Sugar Museum which was established in 1979 to celebrate the 125th Anniversary of the founding of the original refinery in Montreal 1854. The museum is located in a converted bag storage warehouse and is used to display the history of the sugar industry, but primarily as an educational source for schools and the public.

Redpath Sugar Refinery

4.2.6 Archaeology

Much of the East Bayfront is made up of modern fill which was dredged, dumped and shaped in the early part of the twentieth century. Human intervention has resulted in an almost wholesale change to the configuration of harbour lands in this area.

Landfill activities, particularly near Yonge Street, significantly extended the shoreline. By 1900, 22 wharves were located between Yonge and Cherry Streets, of which the Gooderham wharves were the most easterly (Archaeological Services Inc., 2004).

Polson Iron Works and Knapp's Roller Boat

Founded in 1883 by father and son railway engineers, William and Franklin Bates Polson, the Polson Iron Works Company built an assortment of marine engines, boilers and general-purpose motors. In 1893, Frank and James Polson, who produced a variety of vessels, purchased the company's bankrupt Toronto operation. This is the only area within the East Bayfront Precinct that may have archaeological potential. Remains of industrial machinery and the marine features and processes may be found below the current land grade on this site. An unusual vessel called the Knapp's Roller Boat, is also believed to be buried in fill under Lakeshore Boulevard west of Lower Sherbourne Street (Archaeological Services Inc., 2004). The Knapp's Roller Boat was an experimental cylindrical ship that was intended to revolutionize the shipping industry. However, it

proved to be unstable in rough weather and it was abandoned (Archaeological Services Inc., 2002).

4.2.7 First Nations Interests

From the end of the first millennium A.D. until the end of the 1600s the dominant aboriginal group in the Toronto area seems to have been culturally Iroquoian. After 1690, the Mississauga, took over the villages and camps of the Iroquoians and were the culture of record when the land treaties were enacted following 1788.

There are several references to the Mississauga occupation of the Humber, Don and Rouge Rivers and the use of the river systems as routes into and out of the back country and the Upper Lakes region. Although no sites have been identified, excavated or analyzed in the study area, there are late 18th and early 19th century references to the presence of persistent encampments between the forks of the Don and the lands around the mouth. (Archaeological Services Inc., 2004)

The Toronto Purchase (1787 and 1805) appears to be the only Treaty within the study area whereby the Mississauga Nation surrendered the lands north of Lake Ontario, not including the Toronto Islands. (www.newcreditfirstnation.com)

There is no apparent current use of the lands by First Nations for traditional purposes.

4.2.8 Population and Socio-Economic Profile

The City of Toronto Community Profiles categorizes the East Bayfront study area as Ward 28 Toronto Centre-Rosedale Profile (**Exhibit 4-2**). The population of Ward 28 grew by 7.9% between 1996 and 2001. The total population is 59,160 and in 2001 consisted of 28,585 households. The East Bayfront study area however does not consist of the majority of this population as the area is primarily commercial and industrial uses.

Exhibit 4-2: Ward 28 Map

Age and Gender

Population, age and gender in this ward reflected growth changes of 7.9% respectively from 1996-2001. The greatest increase in population in Ward 28, in 2001, was in the 25-35 age group of 21.9%. The largest decrease in population for Ward 28 occurred in the ages of 10-14 and 15-19 age group by 4.5%.

Growth Projections

The population by period of migration for Ward 28 has shown some fluctuation over the last two decades. The 1996-2001 information indicates that 28.7% of the ward's total population are immigrants to Canada, which is slightly up from 25.8% in 1991-1995. Ward 28 has also experienced some fluctuation in its immigrant population.

Ward 28 also showed the majority of the population as being non-movers (80.1%) for the first year. The five-year study shows a definite split of the population into non-movers and movers. In Ward 28, 57.5% of the population were movers, while 42.5% were non-movers.

Household Type

Ward 28 comprised the highest population of occupied private dwellings that rent at 76.2%. The number of dwellings owned in Ward 28 is much lower at 23.8% which relates to the large number of households spending 30% or more of their income on rented shelter.

The number of occupied private dwellings was at 3.0% for semi-detached houses, 7.0% for row houses and 3.3% for single-detached houses in 2001. High-rise apartment buildings were at an occupancy high of 75.8% with an occupancy of 10% for low rise apartments.

Income

Ward 28 seems to have a relatively uneven population distribution between the various income levels. The largest percentage of income levels was at 17.2% (2001) for household incomes of $10,000 - $19,999. The lowest percentage was 2.7% (2001) for a household incomes of $90,000 - $99,999. The average household income for ward 28 was $59,424.

Education and Employment

Levels of education between the wards within the waterfront area are fairly comparable. There is a slightly higher percentage of the population that has a university level education in Ward 28 (44.3%).

Household Size

Private households by size in Ward 28 was the highest at 44.8% for one person households while the lowest was 2.1% for households with six or more people.

Family household by type in Ward 28 is 45.8% for one family households, 53.0% non-family households and 1.2% with multiple family households (City of Toronto Ward Profile, 2001).

4.2.9 Employment

In Ward 28 the highest percentage of the population works in the Sales and Services sector (26.1%) with employment in the Business, Finance and Administration sectors at

20.1%. The lowest labour force by occupation was within the Unique to Primary Industry sector 0.3% and Health Occupations rating 3.9%. The other labour force make up the rest of the working force with Management at 13.2% and the rest in the low 3 to 9 percent range. The unemployment rate in Ward 28 was 9.2%.

In Ward 28, 67.7% of the population were in the labour force with 61.5% employed and 6.3% unemployed. Professional, Scientific and Technical services represent the highest labour force by industry with 14.0%, and agricultural, forestry, fishing, hunting, mining, oil and gas extension represents the lowest at 0.1%. Other major industries in this ward include finance and insurance (10.1%), Accommodation and Food Services (10.1%), Transportation and Warehousing (3.4%) and a low of 0.3% for utilities. (City of Toronto Ward Profile, 2001)

4.2.10 Tourism and Recreation

The lands in the East Bayfront are generally not accessible for public uses. There are no existing parks or open spaces.

There is a significant commercial recreational complex from water's edge sports clubs (Waterside Sports), restaurants and night clubs, and tour boat operations.

Approximately 17 companies own and operate 34 charter/tour boats in the Toronto Harbour with a total capacity for over 8,000 passengers. Charter boat operations are primarily located along the dockwall and marine slips of the Central Waterfront from Bathurst Quay in the west to the Parliament Street Slip in the east (Marine Use Strategy Study 2005).

4.3 Infrastructure

Descriptions of the existing municipal infrastructures which service East Bayfront, and assessments of alternative solutions to service future development within the precinct, are provided in the following three chapters. Chapter 5 deals with water supply, Chapter 6 with sanitary sewer service, and Chapter 7 with stormwater.

The East Bayfront contains a major arterial street (Lake Shore Boulevard East), minor arterial streets (Queens Quay East, Lower Sherbourne Street, Parliament Street), collector streets (Lower Jarvis Street, Cherry Street), local streets (Richardson Street, Bonnycastle Street, Small Street) as well as the Gardiner Expressway. TTC and GO Transit services currently serve the East Bayfront district and an operational industrial rail spur serving the Redpath Sugar plant is used for rail car storage and shunting purposes. Existing

pedestrian and bicycle facilities also service the East Bayfront Precinct. Additional detail is provided in Section 8.0.

5.0 WATER SUPPLY

5.1 Existing System

The existing watermain network in the East Bayfront area of the city is within Pressure District #1. All the existing water distribution pipes are 300mm in diameter and each existing public street in the area is served by one of these mains. Current pressures are reported to be in the range of 70 – 85 psi, which is typical and adequate.

The watermain on Lower Sherbourne Street experienced watermain breaks in August 1996 and December 1998. This main is constructed of cast iron, and was built in 1930. Although, the supply mains into the area are considered adequate, Pressure District #1 should be subject to analysis using the City of Toronto's hydraulic model. This includes the expected development in the East Bayfront area from the draft Precinct Plan, the expected development for West Donlands, other waterfront precincts and re-development projects such as Regent Park.

5.2 Rationale for the Systems

An adequate water supply system is required to serve the development proposed for the East Bayfront Precinct as shown in the draft plan. A clean water supply must be provided for residential, commercial and industrial uses and for fire fighting. While meeting all these needs, water conservation, (i.e., minimizing the use of treated potable water) will meet the sustainability objectives of the TWRC which require that sustainability measures be incorporated into the Precinct Plans to the extent practical and at least overall cost. The size of the existing watermains will not have to be changed because the requirements of fire flow are the overriding supply parameter. Nevertheless, water conservation measures could reduce the size of the external trunk water supply system as well as pumping stations, reservoirs and filtration facilities. With the continued growth of the city overall, the other effect of water conservation would be to delay the need for capital investment in infrastructure expansions of these facilities.

Another objective is the utilization of the existing water supply infrastructure where it is appropriate and feasible. Some of the opportunities that exist include the fact that the current water supply system comprises pipes of adequate size and with adequate pressure. Some of the constraints on the use of existing infrastructure include the potential for watermain breaks in certain areas. Some upgrading will be needed for watermains to meet the municipal servicing standards of the City of Toronto and other regulatory agencies. Because the new road network in the Precinct is largely based on the existing

network, with the addition of some new roads to sub-divide some of the larger blocks in a north/ south direction, most of the requirements for the water distribution system will be served by sections of new watermains in new roads and the rehabilitation (inspection, cleaning and lining) of existing watermains in existing roads, with the exception of those existing street locations where frequent breaks have occurred.

Exhibit 5-1 shows the list of proposed infrastructure improvements and applicable Class EA schedules for each of the water servicing options. The proposed infrastructure improvements would be on either existing watermains (rehabilitation) or the construction of new watermains as an extension of the existing water supply system.

Exhibit 5-1: Proposed Water System Improvements and Applicable MEA Class EA Schedules

Proposed Infrastructure Improvement	MEA Class EA Schedule	Rationale
Rehabilitate existing watermains (cleaning and cement mortar lining) to re-establish design capacity and protect water quality.	Schedule 'A'	Normal or emergency operational activities include cleaning and/or relining existing watermains (#1, bullet 11).
Replace existing watermain due to age or deterioration (Same size, location, and capacity).	Schedule 'A'	Normal or emergency operational activities include reconstructing existing facilities to provide operational maintenance or other improvements (#1, bullet 1).
Construction of new watermain in existing ROW to effect an operational improvement.	Schedule 'A'	Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, provided all such facilities are in either an existing road allowance or are in an existing utility corridor (#6).
Construction of new watermains in new streets (new ROW) to service new development.	Schedule 'B'	Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, where such facilities are not in either an existing road allowance or an existing utility corridor (#1).

5.3 Alternative Solutions

5.3.1 Alternative Solutions to the Problem

To address the existing and potential water supply service problems associated with the proposed development in East Bayfront, several alternative solutions were identified. These included using the existing system and making improvements where necessary,

applying conservation measures for water consumption, replacing old watermains, testing, examining and rehabilitating existing watermains, and combining these measures. The alternative solutions are described in **Exhibit 5-2**.

Exhibit 5-2: Alternative Solutions for Water Systems

Alternative Solutions	Details	Description
DO NOTHING	-	• No changes. Use the existing watermains.
ALTERNATIVE 'A'	Reconstruct / Rehabilitate Existing & Construct New	• Reconstruct or rehabilitate existing watermains (e.g., cleaning and lining of pipes) and construct new watermains for new or realigned roads.
ALTERNATIVE 'B	Combination	• Implement water conservation/efficiency measures. • Use existing watermains where possible if capacity is sufficient to service the new development and the pipes are in good condition. • Reconstruct or rehabilitate the existing watermains if pipe conditions are poor or if pipe capacities are insufficient to serve the new development. • Construct new watermains for new and realigned roads or where insufficient capacity of existing watermains requires twinning of pipes.

5.3.2 Evaluation Criteria

In order to evaluate the alternative solutions, detailed criteria were developed from a set of general evaluation criteria as laid out in the EA Act (**Exhibit 5-3**). Within each category, the project-specific evaluation criteria were developed based on the existing characteristics of the Study Area, the alternative solutions, and the opportunity statement.

Exhibit 5-3: Evaluation Criteria – Water System

Main Criterion	Sub-Criteria
NATURAL ENVIRONMENT	Having regard for protecting the natural and physical components of the environment, including consideration of terrestrial habitat, aquatic habitat, surface water quality, ground water quality, aesthetics and landscaping: • Terrestrial Habitat • Land • Water
SOCIAL AND ECONOMIC	Having regard for the potential impact related to private property, archaeological; and cultural heritage resources, employment activity, noise and vibration, traffic disruption, and health and safety: • Cultural Heritage Resources • Traffic Disruption • Recreation and Tourism • Health and Safety • Employment • Noise and Vibration
OPPORTUNITY FOR REVITALIZATION	Having regard for the extent to which each alternative supports the planning and urban design goals of the waterfront revitalization: • Supports the planning and urban design goals
FEASIBILITY AND COST	Having regard for the costs associated with each alternative, and the capability of each alternative to adequately service the study area: • Feasibility of construction (implementation) • Cost – capital and operational
TECHNICAL	Having regard to the technical sustainability, reliability, longevity and other engineering aspects of each alternative solution: • Reliability of Services • Flexibility to Provide Capacity for Future Growth and/or Improved Service Level • Life expectancy • Maintenance Requirements

5.3.3 Assessment and Evaluation of the Alternative Solutions to the Problem

Using the evaluation criteria identified above, the three alternative solutions to the problem were subject to a net effects comparative evaluation. The advantages and disadvantages of each alternative were compared in order to establish a ranking of the alternatives and identification of the recommended alternative. This evaluation is summarized in **Exhibit 5-4**. The following alternatives are identified in order of worst to best along with a rationale for their ranking.

"Do Nothing"

While "doing nothing" has the advantage of minimal costs, minimal disruption to traffic and cultural heritage items and produces no construction noise, it misses the opportunity to revitalize the East Bayfront. It also does not address the technical criteria for service reliability, life expectancy, and reasonable maintenance expenditures. In fact, "doing nothing" would prevent the implementation of the plan in its recommended form because

a number of new watermain facilities are required in order for the plan to be successfully implemented. **The "Do Nothing" alternative is not recommended**.

Alternative A - Reconstruct and Rebuild Existing Facilities and Construct New Watermains.
This solution is better than doing nothing, however, the costs would be higher than alternative B as all watermains are reconstructed or rehabilitated whether they require this action or not. In addition, water conservation measures are not included and these could extend the life of existing facilities. **Alternative A is not recommended**.

Alternative B - Combination
Alternative B combines elements of doing nothing, rebuilding and rehabilitating, and is seen as the best alternative. Water conservation and efficiency measures would be implemented and all existing watermains will be tested and examined. Those in good condition and which do not have reduced capacity will be used, while the other existing watermains would be rehabilitated and relined to restore their capacity and condition. New watermains would be constructed wherever new roads with services are required, and on existing roads where the watermain break history suggests a new watermain replacement is required. In some cases road realignment for the new precinct grid structure would require the replacement of the watermain. All the technical requirements are satisfied for service reliability, future growth, flexibility, life expectancy and reasonable maintenance requirements. Alternative B has greater overall benefits than the other alternatives, and hence **Alternative B is recommended**.

EXHIBIT 5-4: Evaluation Criteria for Water Services

CRITERIA		ALTERNATIVES		
		Water Services		
		Do Nothing	"A" Rebuild	"B" Combination
Natural Environment	Terrestrial Habitat	•	•	•
	Land	•	●	●
	Water	•	•	•
Social & Economic	Cultural Heritage	●	•	•
	Traffic Disruption	●	•	•
	Recreation and Tourism	•	•	•
	Health and Safety	•	•	•
	Employment	•	●	●
	Noise and Vibration	●	•	•
OPPORTUNITY FOR REVITALIZATION		•	●	●
Feasibility & Cost	Feasibility	•	•	●
	Cost	●	•	•
Technical	Service Reliability	•	●	●
	Future Growth Flexibility	•	●	●
	Life Expectancy	•	●	●
	Maintenance Requirements	•	●	●
RECOMMENDED PRELIMINARY ALTERNATIVE SOLUTIONS				✔

KEY	• Poor	• Average or Neutral	● Good

5.3.4 The Preferred Solution

Water conservation and efficiency measures will be applied (to the extent feasible and practical) in the East Bayfront development areas. This is addressed in the "TWRC" Sustainability Framework. This however will likely only have an effect outside the East Bayfront area because the requirement for pipe sizes is governed by fire flow requirements. The watermain on Lower Sherbourne Street will have to be replaced based

on recommendations of the City of Toronto following watermain breaks in August 1996 and December 1998 and because of an alignment change on Lower Sherbourne Street.
A number of new roads will need 300 mm diameter service to adjacent development. The total length of new 300mm diameter watermain, including the replacement section mentioned above, is approximately 1360 meters at an average depth of 1.9 meters. A total of 1,860 meters of existing watermains will require rehabilitation (i.e. cleaning and cement mortar lining).

Exhibits 5-5, 5-6 and **5-7** show details of each watermain location, the Class EA schedule to which it belongs and the type of treatment required. **Exhibit 5-8** is a plan showing the location of each watermain section by EA Class.

Exhibit 5-5: Water System Project Class Environmental Assessment Schedule
Existing Watermains Requiring Rehabilitation (Cleaning and Cement Mortar Lining)

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Gardiner Expressway	Lower Javis Street	Richardson Street	300	105	A
Gardiner Expressway	Richardson Street	Lower Sherbourne St	300	220	A
Gardiner Expressway	Lower Sherbourne St	Bonnycastle Street	300	90	A
Gardiner Expressway	Bonnycastle Street	Small Street	300	240	A
Queens Quay East	Lower Javis Street	Richardson Street	300	105	A
Queens Quay East	Richardson Street	Lower Sherbourne St	300	220	A
Queens Quay East	Lower Sherbourne St	Bonnycastle Street	300	95	A
Queens Quay East	Bonnycastle Street	Small Street	300	235	A
Lower Javis Street	Gardiner Expressway	Queens Quay East	300	175	A
Richardson Street	Gardiner Expressway	Queens Quay East	300	160	A
Bonnycastle Street	Gardiner Expressway	Queens Quay East	300	110	A
Small Street	Gardiner Expressway	Queens Quay East	300	105	A
TOTAL			**1,860**		

Exhibit 5-6: Reconstructed and New Watermains in Existing Road Allowance

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Lower Sherbourne St	Gardiner Expressway	Queens Quay East	300	125	A
TOTAL			**125**		

Exhibit 5-7: New Watermains in New Road Allowance

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Between **SU** site & **E**	Lake Front	Queens Quay East	300	180	B
Lake Front	Special Use site	Sherbourne Park	300	115	B
Between **E** & **F**	Lake Front	Queens Quay East	300	180	B
Between **F** & **G**	Lake Front	Queens Quay East	300	170	B
Lake Front	Parcel **F**	Parcel **J**	300	215	B
Between **H** & **J**	Lake Front	Queens Quay East	300	165	B
Queens Quay East	Small Street	Parliament Street	300	120	B
Parliament Street	Gardiner Expressway	Queens Quay East	300	90	B
TOTAL			**1,235**		

TORONTO WATERFRONT
REVITALIZATION CORPORATION

Water Main Network EA Classification

East Bayfront

LEA

Exhibit 5-8: Watermain Network EA Classification

6.0 SANITARY SERVICING

6.1 Existing Conditions

The existing sanitary sewer system for the East Bayfront Precinct is a separate system with a separate network of sewers provided for stormwater. Most of the sanitary sewers are 300 mm diameter vitreous clay pipes. The most westerly half of the sanitary sewer system drains towards the Scott Street Pumping Station through a sewer flowing north on Lower Jarvis Street. The east half of the sewer shed drains towards the Scott Street Pumping Station in a sanitary sewer which flows north on Lower Sherbourne Street, while the area east of Parliament Street drains towards Cherry Street where it traverses the CNR tracks in a sewer under Cherry Street flowing north.

Sanitary flows arriving at the Scott Street Pumping Station are pumped into the low level interceptor on Front Street / Eastern Avenue.

There are three combined sewer overflows (CSO) which pass through the East Bayfront area carrying combined flows from further north in the City, to Lake Ontario. On Lower Jarvis Street there is a 3 m diameter concrete storm sewer at a depth of 22 metres, which passes under Queens Quay and the Jarvis Street Slip and into Lake Ontario. Another CSO is located on Lower Sherbourne Street. It is a 3 m wide x 2. 7 m high concrete box culvert at a depth of 6 m and passes under Queens Quay and discharges at the dock wall into Lake Ontario.

The CSO on Parliament Street jogs west just north of the CNR tracks in the West Don Lands and passes down Small Street in a 2.1 m wide x 1.8 m high rectangular concrete culvert. It turns southeast to the south of Queens Quay and discharges into the side of the Parliament Street Slip. The depth of the Small Street CSO is 5 metres. The Wet Weather Flow Management Master Plan (WWFMMP) calls for these overflows to be captured in a deep sewer for future treatment and discharge. This EA Master Plan focuses on the local sanitary sewer system within the East Bayfront Precinct, while the future proposed deep sewer interceptor will be the subject of a separate study and Environmental Assessment process.

6.2 Rationale for the Systems

The sanitary sewer system is required to service new development within the East Bayfront Precinct, incorporating TWRC principles of sustainability and principles established by the City of Toronto for the separation of storm and sanitary flows, all in the most cost effective manner. The new sanitary system must have adequate capacity to

deal with the new development flows. Flexibility should be maintained for possible future solutions for the existing constraints on the system while utilizing the existing infrastructure wherever appropriate. Any pumping stations or upgrades that are required to existing pumping stations should be kept to a minimum.

The opportunities that exist for sanitary servicing in this area include the fact that the local sanitary sewer system is already separated from the storm sewer system in the East Bayfront area and many of the existing sewer runs are underutilized due to the large amount of vacant land in the area. The opportunity also exists to encourage water conservation measures which could delay or reduce the need for some of the sanitary sewer infrastructure required (e.g., pumping station upgrades and sewage treatment plant capacity upgrades).

Constraints in the area include the Scott Street pumping station that receives the flows from the East Bayfront sewer shed, which is currently working at or near capacity. As part of a comprehensive assessment for the area, increases to the capacity of existing pumping stations, such as Scott Street, as well as the implementation of new pumping stations will be considered by the City of Toronto and TWRC. Some existing sanitary sewer pipes are also undersized for the level of new development proposed and will need replacement.

The condition of existing sanitary sewers is not currently known. However, if the City conducts an inspection of the existing sanitary sewers in the East Bayfront area, it may be found that some of them will require rehabilitation or replacement, even if their nominal capacity is adequate for new development. **Exhibit 6-1** shows the list of proposed sanitary sewer system improvements and the appropriate Class EA Schedule that would apply to each improvement type.

Exhibit 6-1: Proposed Sanitary Sewer System Improvements and Applicable Class EA Schedules

Proposed Infrastructure Improvement	MEA Class EA Schedule	Rationale
Replacement of an existing sanitary sewer in existing ROW to provide increased capacity for new development.	Schedule 'A'	Establish, extend, or enlarge a sewage collection system and all necessary works to connect the system to an existing sewage or natural drainage outlet, provided all such facilities are in either an existing road allowance or an existing utility corridor. (#9)
New sanitary sewers in existing ROW to extend an existing sewage collection system.	Schedule 'A'	Establish, extend, or enlarge a sewage collection system and all necessary works to connect the system to an existing sewage or natural drainage outlet, provided all such facilities are in either an existing road allowance or an existing utility corridor. (#9)
New sanitary sewers in new streets (new ROW) to serve new development.	Schedule 'B'	Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor. (#1)

6.3 Alternative Solutions

6.3.1 Alternative Solutions to the Problem

To address the existing and potential sanitary servicing problems associated with the proposed development at East Bayfront, we have compared the Do Nothing alternative to other alternative sanitary servicing solutions. Alternative "A" involves rehabilitating and reconstructing all of the existing sanitary sewers and constructing new sanitary sewers in new road alignments. Alternative "B" is a combination of Doing Nothing where nothing is required, implementing part of Alternative "A", (i.e., rehabilitation, reconstruction and new construction) and combining this with the implementation of water conservation and efficiency measures. These alternative solutions are described in **Exhibit 6-2**.

Exhibit 6-2: Alternative Sanitary Servicing Solutions

ALTERNATIVE SOLUTIONS	DETAILS	CONCLUSIONS
DO NOTHING	-	• No changes. Use the existing sanitary sewers to service proposed development.
ALTERNATIVE 'A'	Reconstruct / Rehabilitate Existing & Construct New	• Rehabilitate (e.g. crack repair, reaming of pipes, manhole repairs, lining of pipes) existing sanitary and combined sewers, reconstruct existing sanitary sewers and construct new sanitary sewers for new and realigned roads.
ALTERNATIVE 'B	Combination	• Implement water conservation/efficiency strategies to reduce sanitary flow and utilize existing sanitary sewers if capacity is sufficient to service new development and pipes are in good condition. • Rehabilitate existing sanitary and combined sewers if pipe conditions are poor but have adequate capacity. • Reconstruct existing sanitary sewers if the pipes are in poor condition and rehabilitation cannot be justified, or if pipe capacities are insufficient to serve the new development. • Construct new sanitary sewers where new and realigned roads are proposed.

6.3.2 Evaluation Criteria

In order to evaluate the alternative solutions listed in **Exhibit 6-2**, criteria based on the Environmental Assessment Act and sub-criteria relevant to the evaluation of the sanitary sewer system specifically within the East Bayfront Precinct were developed. These evaluation criteria and sub-criteria are detailed in **Exhibit 6-3**.

Exhibit 6-3: Evaluation Criteria – Water System

MAIN CRITERION	SUB-CRITERIA
NATURAL ENVIRONMENT	Having regard for protecting the natural and physical components of the environment, including consideration of terrestrial habitat, aquatic habitat, surface water quality, ground water quality, aesthetics and landscaping: • Terrestrial Habitat • Land • Water
SOCIAL AND ECONOMIC	Having regard for the potential impact related to private property, archaeological and cultural heritage resources, employment activity, noise and vibration, traffic disruption, and health and safety: • Cultural Heritage Resources • Traffic Disruption • Recreation and Tourism • Health and Safety • Employment • Noise and Vibration
OPPORTUNITY FOR REVITALIZATION	Having regard for the extent to which each alternative supports the planning and urban design goals of the waterfront revitalization, the sub-criterion: • Supports the planning and urban design goals
FEASIBILITY AND COST	Having regard for the costs associated with each alternative, and the capability of each alternative to adequately service the study area, the sub-criteria: • Feasibility of Construction (Implementation) • Cost – Capital and Operational
TECHNICAL	Having regard to the technical sustainability, reliability, longevity and other engineering aspects of each alternative solution: • Reliability of Services • Flexibility to Provide Capacity for Future Growth and/or Improved Service Level • Life Expectancy • Maintenance Requirements

6.3.3 Assessment and Evaluation of the Alternative Solutions to the Problem

Using the evaluation criteria identified in **Exhibit 6-3**, the three alternatives were subject to a net effects comparative evaluation. The advantages and disadvantages of each alternative were compared in order to establish a rank and identify a recommended alternative. The evaluation is summarized in **Exhibit 6-4**, and the alternatives are outlined below.

"Do Nothing"

While doing nothing has the advantage of minimal cost and minimal disruption to traffic and cultural heritage items, and produces no construction noise, it misses the opportunity to revitalize the East Bayfront and does not address the technical criteria for service

reliability, life expectancy, and reasonable maintenance expenditures. "Doing nothing" would in fact prevent the implementation of the Plan as recommended because a number of new sanitary sewers are required on new roads and some sewers require increases in size due to the increased flows that will be produced by the proposed new development. **The "do nothing" alternative is not recommended**.

Alternative A - constructing and rebuilding all the existing sanitary sewers is a much preferred solution than doing nothing, however the costs would be higher than alternative B as all sanitary sewers would be replaced irrespective of their condition. Also water conservation measures are not included with Alternative A and these could extend the life of the existing facilities. **Alternative A is not recommended**.

Alternative B - combines elements of the Do Nothing alternative and Alternative A and is seen as the best alternative. The existing sanitary sewers which are to remain, should be examined by the City of Toronto to determine their condition. If the condition is good, these sanitary sewers can be utilized for the new system. New sanitary sewers will be constructed in the new streets where new service is required, and will be used to replace sewers in existing roads, which are under sized due to the expected level of development in the new East Bayfront Precint. All technical requirements are satisfied for service reliability, future growth, flexibility and life expectancy and reasonable maintenance requirements. Alternative B has greater overall benefits than the other alternatives and hence **Alternative B is recommended.**

EXHIBIT 6-4: Evaluation Criteria for Sanitary Sewer Services

CRITERIA		ALTERNATIVES		
		WATER SERVICES		
		DO NOTHING	"A" REBUILD	"B" COMBINATION
NATURAL ENVIRONMENT	Terrestrial Habitat	•	•	•
	Land	•	●	●
	Water	•	•	●
SOCIAL & ECONOMIC	Cultural Heritage	●	•	•
	Traffic Disruption	●	•	•
	Recreation and Tourism	•	●	●
	Health and Safety	•	•	●
	Employment	•	●	●
	Noise and Vibration	●	•	•
OPPORTUNITY FOR REVITALIZATION		•	●	●
FEASIBILITY & COST	Feasibility	•	•	●
	Cost	●	•	•
TECHNICAL	Service Reliability	•	●	●
	Future Growth Flexibility	•	●	●
	Life Expectancy	•	●	●
	Maintenance Requirements	•	●	●
RECOMMENDED PRELIMINARY ALTERNATIVE SOLUTIONS				✔

KEY	• Poor	• Average or Neutral	● Good

6.3.4 The Preferred Solution

Water conservation and efficiency measures will be applied within the East Bayfront Precinct development according to TWRC Sustainability principles and city policies and to the extent practical, will assist in delaying the requirement for pumping station upgrades and water pollution control plant upgrades in other parts of the City. Some sanitary sewers will need to be replaced because their size will be inadequate for the

future projected flows and some new sanitary sewers will be needed on the new street network. The City of Toronto will use existing sanitary sewers whose size is still adequate to the extent possible following examination and assessment.

A total of just under 710 metres of existing sanitary sewers will need replacing with sewers of larger diameter while a total of 460 metres of new sanitary sewer will be required in new road rights-of-way. **Exhibits 6-5** and **Exhibit 6-6** show details of each watermain location, the Class EA Schedule to which it belongs and the type of treatment (replacement or new construction). **Exhibit 6-7** is a plan showing the location of each sanitary sewer section according to EA Class.

Exhibit 6-5: Sanitary Sewage Project Class Environmental Assessment Schedule
Replace Sanitary Sewer in Existing Road Allowance

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Lower Javis Street	City Sewer Segment Number 3173		375	40	A
Lower Javis Street	City Sewer Segment Number 3174		375	46	A
Lower Javis Street	City Sewer Segment Number 3175		375	17	A
Lower Javis Street	City Sewer Segment Number 3176		375	8	A
Lower Javis Street	City Sewer Segment Number 3177		375	50	A
Lower Javis Street	City Sewer Segment Number 3178		375	12	A
Lower Javis Street	City Sewer Segment Number 3181		375	15	A
Lower Javis Street	City Sewer Segment Number 3189		450	73	A
Gardiner Expressway	City Sewer Segment Number 3187		375	87	A
Gardiner Expressway	City Sewer Segment Number 3188		375	18	A
Gardiner Expressway	City Sewer Segment Number 3145		375	124	A
Gardiner Expressway	City Sewer Segment Number 31467		378	85	A
Gardiner Expressway	City Sewer Segment Number 3147		375	85	A
Gardiner Expressway	City Sewer Segment Number 3148		375	17	A
Lower Sherbourne St	City Sewer Segment Number 3153		450	71	A
TOTAL			**707**		

Exhibit 6-6: Proposed New Sanitary Sewers in New Road Allowance

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Between Gateway site & E	Lake Front	Queens Quay East	300	110	B
Queens Quay East	Queens Quay East	Existing Sewer	300	35	B
Between Sherbourne Park & F	Lake Front	Queens Quay East	300	110	B
Queens Quay East	Queens Quay East	Existing Sewer	300	24	B
Extension of Small St.	Lake Front	Queens Quay East	300	80	B
Small Street	Queens Quay East	Existing Sewer	300	100	B
TOTAL			**459**		

TORONTO WATERFRONT
REVITALIZATION CORPORATION

Sanitary Sewer Network EA Classification

East Bayfront

LEA

Exhibit 6-7: Sanitary Sewer Network EA Classification

7.0 STORMWATER

7.1 Existing Situation

The existing storm drainage system in the area is a separate system; however it discharges into the same pipes that carry Combined Sewer Overflow (CSO flows) from the north to Lake Ontario. The existing westerly conveyance system comprises storm sewers on Lower Jarvis Street and Richardson Street which connect to a storm sewer flowing east on Queens Quay. At the intersection of Lower Sherbourne Street this storm sewer discharges into the Sherbourne Street CSO outfall.

The easterly portion of the East Bayfront existing drainage system comprises a storm sewer running south on Bonnycastle Street connecting into a storm sewer running east on Queens Quay. A further storm sewer drains Parliament Street south to Small Street where both sewers discharge into the Parliament Street/Small Street CSO.

If the Wet Weather Flow Management Master Plan (WWFMMP) pipe is constructed through this area, these outfalls will become exclusively storm sewer outfalls.

Due to the uncertainties over the future of the Gardiner Expressway and Lake Shore Boulevard, the storm system which drains these roads has not been considered in our evaluation. The Gardiner/Lakeshore system is independent of the one draining the remainder of East Bayfront and the storm sewers on Lake Shore Boulevard discharge directly and upstream of the remainder of East Bayfront into the CSO's under Sherbourne Street, Small Street and Cherry Street. In the interim, it is expected that this drainage would be treated with CSO drainage as part of the WWFMMP approach.

The condition of the existing storm sewers within East Bayfront is not known, and so it is possible that some of the existing storm sewers to be re-used may need rehabilitation, or even replacement.

7.2 Rationale for the system

The principle objective of the stormwater management system for East Bayfront is to adhere to the principles of the WWFMMP. These include the separation of clean and dirty stormwater at the source; the acknowledgement that all storm water, clean or dirty will need some further treatment (e.g. disinfection); the encouragement of infiltration; the pumping of clean ground water from foundation drains directly to outfall; a target of 80% removal of total suspended solids in runoff after development; e-coli limits of 500-1000 counts per millilitre during the swimming season and no net increase in overland flow

due to development. Flexibility is required where stormwater systems discharge near a CSO outfall so that independent detention and storage and treatment of stormwater would not preclude the eventual combining of these flows with the future treatment system for combined sewer flows should this be determined to be appropriate (i.e., the future CSO tunnel interceptor).

Other objectives for the stormwater system would include support for the sustainability principles of the TWRC, the use of stormwater as a resource, the utilization of the existing stormwater conveyance system (where appropriate), and the provision of capacity in any new pipes within the system, to convey the five year post development storm.

Opportunities which exist include the proximity of the East Bayfront area to the receiving waters resulting in the opportunity to discharge stormwater directly to the lake without detention for quantity control and ensuring that the local East Bayfront peak flow is discharged before peak flows from the hinterland area have built up to their maximum. The most serious constraints include the proximity of ground levels to lake levels resulting in a submerged storm drainage conveyance system (the design flood level is only between 0.4 and 1.4 metres below ground levels within the Precinct). There is also a high water table, which constrains the opportunities for infiltration. A further constraint on infiltration are the known and potential contaminates in the soil in the area. Intensity of development and the resulting high imperviousness of the Precinct Area limits what can be achieved from a stormwater management perspective, particularly at source on individual development sites. Nevertheless, intense development is sustainable, providing the appropriate stormwater management techniques are put in place.

Exhibit 7-1 shows the list of proposed stormwater improvements identified and the applicable Class EA Schedules for each of the storm sewer systems.

Exhibit 7-1 – Proposed Stormwater System Improvements and Applicable Class EA Schedules

Proposed Infrastructure Improvement	MEA Class EA Schedule	Rationale
Construct new storm sewers in existing road allowances to increase capacity to service new development.	Schedule 'A'	Establish, extend, or enlarge a sewage collection system and all necessary works to connect the system to an existing sewage or natural drainage outlet, provided all such facilities are in either an existing road allowance or an existing utility corridor. (#9)
Construct new storm sewer conveyance system on private lands as a Condition of Approval.	Schedule 'A'	Establish, extend, or enlarge a sewage collection system and all necessary works to connect the system to an existing sewage outlet, where it is required as a Condition of Approval on a Site Plan, Consent Plan of Subdivision or Plan of Condominium, which will come into effect under the Planning Act prior to the construction of the collection system. (#10)
Construct new storm sewers in new street allowances to service new development.	Schedule 'B'	Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor. (#1)
Construct new storm sewer outlet into Parliament Street Slip (Lake Ontario) to provide for increased capacity to service new development.	Schedule 'B'	Establish new stormwater retention/detention ponds and appurtenances or infiltration systems including outfall to receiving water body. (#2)
Construct new stormwater management pond(s) including outfall(s).	Schedule 'B'	Establish new stormwater retention/detention ponds and appurtenances or infiltration systems including outfall to receiving water body. (#2)
Construct underground sedimentation tanks.	Schedule 'B'	Establish new stormwater retention/detention ponds and appurtenances or infiltration systems including outfall to receiving water body. (#2)
Install filters and U.V. disinfection downstream of the underground sedimentation tanks and clean stormwater collection system, to remove additional suspended solids and to destroy bacteria and viruses.	Schedule 'C'	Construct new or modify, retrofit or improve existing retention/detention facility or infiltration system for the purpose of stormwater quality control where chemical or biological treatment or disinfection is included, including outfall to receiving water body. (#7)

7.3 Alternative Solutions – Stormwater Systems

7.3.1 Alternative Solutions

As required by the EA process we have compared the Do Nothing alternative to a number of other alternatives and combinations of alternatives to address the existing and potential stormwater management problems associated with the East Bayfront Precinct redevelopment. **Exhibit 7-2** identifies the alternative solutions.

Exhibit 7-2: Alternative Stormwater Solutions

ALTERNATIVE SOLUTIONS	DETAILS	DESCRIPTION
DO NOTHING	-	• No changes. Use the existing storm sewers.
ALTERNATIVE 'A'	Reconstruct / Rehabilitate Existing & Construct New	• Reconstruct or rehabilitate existing storm sewers and construct new storm sewers for new and realigned roads and where there is insufficient capacity in the existing sewers.
ALTERNATIVE 'B'	Use As A Resource	• Use stormwater for drip irrigation of landscape areas, parkland, lawns and green roofs. Separate stormwater at source to use the cleaner stormwater for aesthetics and recreation (e.g. ponds, streams etc).
ALTERNATIVE 'C'	Infiltrate	• Construct infiltration pits, trenches, ponds swales or perforated stormwater pipes to infiltrate stormwater into the ground.
ALTERNATIVE 'D'	End Of Pipe	• Construct stormwater management facilities to improve stormwater quality before discharge to Lake Ontario (e.g., stormwater ponds, stormwater sedimentation tanks, oil and grit separators and disinfection facilities).
ALTERNATIVE 'E'	Combination	• Use existing storm sewers if capacity is sufficient to service new development, the pipes are in good condition and the existing storm sewer system is compatible with the elevations required for the new scheme. • Rehabilitate existing storm sewers if the pipes are in poor condition but have sufficient capacity. • Construct new storm sewers if pipe capacity is insufficient to service new development or if existing storm sewers do not fit into the new stormwater servicing scheme. • Use stormwater for drip irrigation of landscape areas, parkland, lawns etc, green roofs. Separate stormwater at source to use the cleaner stormwater for aesthetics and recreation, (e.g., ponds, streams etc.). • Infiltrate stormwater into ground where feasible and desirable. • Construct stormwater management facilities to improve quality of stormwater before discharge to the lake.

7.3.2 Evaluation Criteria

In order to evaluate the alternative solutions listed in Exhibit 7-2, criteria based on the Environmental Assessment Act and sub-criteria relevant to the evaluation of the stormwater systems specifically within the East Bayfront Precinct were developed. These evaluation criteria and sub-criteria are detailed in **Exhibit 7-3**.

Exhibit 7-3: Stormwater Evaluation Criteria

MAIN CRITERION	SUB-CRITERIA
NATURAL ENVIRONMENT	Having regard for protecting the natural and physical components of the environment, including consideration of terrestrial habitat, aquatic habitat, surface water quality, ground water quality, aesthetics and landscaping: • Terrestrial Habitat • Land • Water
SOCIAL AND ECONOMIC	Having regard for the potential impact related to private property, archaeological; and cultural heritage resources, employment activity, noise and vibration, traffic disruption, and health and safety: • Cultural Heritage Resources • Traffic Disruption • Recreation and Tourism • Health and Safety • Employment • Noise and Vibration
OPPORTUNITY FOR REVITALIZATION	Having regard for the extent to which each alternative supports the planning and urban design goals of the waterfront revitalization: • Supports the planning and urban design goals
FEASIBILITY AND COST	Having regard for the costs associated with each alternative, and the capability of each alternative to adequately service the study area: • Feasibility of construction (implementation) • Cost – capital and operational
TECHNICAL	Having regard to the technical sustainability, reliability, longevity and other engineering aspects of each alternative solution: • Reliability of Services • Flexibility to Provide Capacity for Future Growth and/or Improved Service Level • Life expectancy • Maintenance Requirements

7.3.3 Assessment and Evaluation of the Alternative Solutions to the Problem

The alternative solutions were evaluated based on the criteria established. The advantages and disadvantages of each alternative were compared in order to rank them and identify a

recommended alternative. The evaluation is summarized in **Exhibit 7-4** and the alternatives are discussed below.

Do Nothing

While "doing nothing" has the advantage of minimal cost, no traffic disruption, noise and vibration, along with no effect on cultural heritage, it ranked poorly because the natural environment is already being degraded by the existing situation, and because of the lost opportunity for revitalization with the new plan. In addition, all the technical sub criteria rate poorly by doing nothing. **The Do Nothing alternative is not recommended**.

Alternative A - Reconstruct and rehabilitate existing and construct new. This alternative while it rehabilitates or replaces existing infrastructure and adds new storm sewers to enable the future planned development, it does nothing to address many of the objectives of the City of Toronto in the WWFMMP or the TWRC and their sustainability objectives. The opportunity to separate the stormwater from East Bayfront from the CSO outfalls would not be taken and water entering the lake would be no cleaner than it is now. While rebuilding has a distinct advantage over doing nothing, the lost opportunities for an improvement in water quality mean that this would not be a preferred alternative. **Alternative A is not recommended**.

Alternative B - Use stormwater as a resource

Using Stormwater as a resource scores highly with respect to certain sub-criteria of the natural environment and all of the social and economic criteria, however, Alternative B is seen as only a partial solution to the problem as there would still be a need to maintain a storm sewer system to cope with flows which cannot be used immediately or whose storage requirements would be excessive. **Alternative B is not recommended.**

Alternative C - Infiltration, while good in principle is not well suited to the East Bayfront lands due to the potential impact of leached-out contaminants from the soil which could enter the lake, and because the high water table in the area would limit severely the uptake of infiltration water by the ground. **Alternative C is not recommended.**

Alternative D – End of Pipe Controls

End of pipe control is seen only as being a partial solution to the problem. Other opportunities such as the use of stormwater as a resource, and rehabilitation and reconstruction of the existing storm system would be lost opportunities in this regard. The opportunity for revitalization would not be served by end of pipe controls alone, as new pipe sections will be required in the new streets to serve newly proposed development. End of pipe controls will form an integral part of the overall solution, and

the choice of which end of pipe control or controls will best meet the environmental assessment criteria is dealt with in Section 7.4. **Alternative D is not recommended.**

Alternative E – Combination of Various Stormwater Servicing Solutions. This alternative solution provides the opportunity to combine the best of all the other alternatives to reach a preferred solution to the problem. When measured against the sub criteria, this alternative scores low only with respect to the disruption caused to traffic, the noise and vibration produced, and the cost.

The various combination elements that would be used for this alternative include:

- Using existing storm sewers provided, on examination, they are in good existing condition and have the capacity necessary for the proposed development within the precinct;
- Reconstruction and rehabilitation of existing storm sewers where they are either in need of repair or require a larger diameter to service the proposed development;
- New sewers will be constructed where new roads are required or re-alignments of roads mean existing sewers have to be abandoned;
- Storm water will be used as a resource wherever possible. The usual source controls should be mandated for all the new development sites and the opportunity has been taken in East Bayfront to separate clean and dirty stormwater, using clean stormwater as a resource before polishing and discharge into Lake Ontario;
- End of pipe stormwater management facilities (analyzed in great detail in later sections of this chapter) will be used for improving the quality of stormwater before discharge into Lake Ontario;

Combining the best elements of the other alternatives, shows that Alternative 'E' ranks highest when evaluated against the EA criteria. **Alternative E is recommended.**

EXHIBIT 7-4: Evaluation Criteria for Stormwater

CRITERIA		ALTERNATIVES					
		STORM WATER SERVICES					
		Do Nothing	"A" Rebuild	"B" Use as Resource	"C" Infiltrate	"D" End of Pipe Control	"E" Combination
NATURAL ENVIRONMENT	Terrestrial Habitat	•	•	●	●	•	●
	Land	•	●	•	•	•	●
	Water	•	•	●	•	●	●
SOCIAL & ECONOMIC	Cultural Heritage	●	•	●	•	•	•
	Traffic Disruption	●	•	●	•	•	•
	Recreation and Tourism	•	•	●	•	●	●
	Health and Safety	•	•	•	•	●	●
	Employment	•	●	●	●	●	●
	Noise and Vibration	●	•	●	•	•	•
OPPORTUNITY FOR REVITALIZATION		•	●	●	●	●	●
FEASIBILITY & COST	Feasibility	•	•	•	•	•	●
	Cost	●	•	•	•	•	•
TECHNICAL	Service Reliability	•	●	•	•	●	●
	Future Growth Flexibility	•	●	●	●	●	●
	Life Expectancy	•	●	•	•	●	●
	Maintenance Requirements	•	●	•	•	•	•
RECOMMENDED PRELIMINARY							✔

KEY	• Poor	• Average or Neutral	● Good

7.3.4 The Preferred Solution

Alternative 'E', the preferred solution, includes source controls, conveyance systems and end-of-pipe controls. The end-of-pipe controls have been evaluated separately from the earlier parts of the system, and the results can be found in Section 7.4 which follows.

The preferred solution was based on the following design principles:

- It should not be dependent on the Gardiner/Lake Shore Boulevard storm drainage system.
- It should utilize as far as possible the existing storm drainage system. (Constructing an entirely new storm drainage system would still result in sewers at similar invert elevations and the new system would still be flooded to the lake level at any given time).
- The existing stormwater conveyance system should be intercepted before it reaches the CSO's, it should then be treated for quality control before being re-introduced into the CSO pipe and discharged into Lake Ontario. This would be done when the CSO's have been intercepted by the proposed CSO tunnel. The old CSO pipe would then be used as a stormwater outfall only. The design of the conveyance system has been based on bringing the East Bayfront stormwater flows to only two collection points so that the stormwater could be treated in the CSO tunnel, if preferred and if feasible.
- The use of source controls will be mandated in the Precinct Plan. Appropriate controls should include:
  - roof gardens and green roofs, where practicable;
  - maximization of landscaping vegetation to encourage evapo-transpiration;
  - storage of stormwater in cisterns for subsequent drip irrigation where feasible;
  - grading plans which direct clean and dirty stormwater to different collection and conveyance systems;
- Taking advantage of the proximity to the lake, and to the extent feasible, separating dirty and clean stormwater, maintaining them in separate conveyance systems until they are ready to be filtered and disinfected and discharged into the lake. This includes:
- Dirty stormwater from roads, driveways and parking lots will be conveyed using the existing or upgraded stormwater drainage system, with additional storm drains in new roads serving new development. Each development parcel will be allowed limited connection to the dirty stormwater system to take stormwater from on-site driveways, drop-offs, turnarounds, loading bays and parking (although any surface parking would be expected to be minimal).
- Clean stormwater includes stormwater from roofs, hard landscaped areas, footpaths and soft landscaping. Wherever possible a surface conveyance system, which forms part of the urban design concept for East Bayfront, will be used for the clean stormwater, and small elevation differences between water levels in adjacent development sites will enable the clean stormwater to be conveyed under the public roads. This technique will use stormwater as a recreational resource – one of the principles of the Wet Weather Flow Management Master Plan. On some

development blocks where development is intense, where underground parking is at a relatively high elevation and without ground cover, a piped conveyance system for clean stormwater may be necessary. Further details of the exact treatment on each site will emerge when site plans are prepared.

- Added together, the dirty and the clean stormwater systems will be designed to take the 5-Year post-development flow in all new pipes.

In summary, the collection and conveyance system will function as follows:

- Ultimately combined sewer overflows will be collected in the new CSO interceptor, and treated (as part of the City's implementation of the WWFMMP);
- Clean and dirty stormwater will generally be collected separately;
- Dirty water will be conveyed to two collection points for end-of-pipe treatment;
- Clean water will be collected on development sites and in parks, and contained at source as much as possible (e.g. green roofs etc). All or some of this water may be re-used, if feasible;
- Remaining clean stormwater will be conveyed on the surface in landscaped architectural features as much as possible. Some sections of piped system may be required. This clean stormwater will be conveyed to the same collection points as for dirty stormwater;

After end-or-pipe treatment, the stormwater will be discharged into Lake Ontario. If the option of treating East Bayfront stormwater in the proposed CSO tunnel is not used, then the CSO outfalls – once they are no longer needed for combined sewer flows – will be used as stormwater outfalls following quality control treatment.

Dirty Stormwater

The dirty stormwater system will be capable of taking 100% of the runoff from public rights of way and 30% of the runoff from development sites. The 30% from development sites is being used for design purposes, however, it should be possible for dirty stormwater flows from each site to be less than 30%. The westerly conveyance system will be based on the existing storm sewer system with replacement pipe sections and small additional connections for new roads. Where this system currently discharges into the Lower Sherbourne Street CSO, it will be disconnected and brought south towards the edge of Sherbourne Park for end-of-pipe quality control treatment before discharge to the lake.

The easterly dirty stormwater conveyance system will also be based on the existing storm drainage system with suitable replacement pipe sections and new storm sewer connections from new streets. Where the existing storm sewer system discharges into the

Parliament Street/Small Street CSO on Queens Quay it will be disconnected, and the flow directed in a new sewer for end-of-pipe quality control treatment before discharge to the lake.

The two lake discharge points, namely the foot of Sherbourne Street Park and the truncated Parliament Street Slip are also the two locations where clean stormwater will be collected and discharged into the lake. The clean stormwater collection system is described below.

Clean Stormwater

Since the way in which each individual development parcel will be developed can only be conceptualized at this time, the clean stormwater collection system will also be conceptual. However, a scheme which responds to the plan as it now exists has been developed. This scheme minimizes the underground pipe system as much as possible in favour of a surface conveyance system using depressed sewers to transport the clean stormwater under the public roads.

The western clean stormwater conveyance system which is focused on Sherbourne Park, will collect 70% of runoff from the development sites to the west of East Bayfront. Depressed sewers will be required under Richardson Street, Sherbourne Street and Bonnycastle Street to deliver stormwater to a piped system which commences just north of Queens Quay and conveys the clean stormwater across the northern edge of the park and around the east side of Sherbourne Park. This piped system would continue south to the end-of-pipe quality control facilities. A piped clean stormwater conveyance system might be required to convey the flows from the special use site and Parcel E to the end-of-pipe quality control facilities and from F, G and H to the end-of-pipe quality control facilities. Hence, all stormwater from this area, both clean, and dirty is collected at one place, treated and discharged into the outfall.

The easterly clean stormwater conveyance system is a combination of some piped sections and some possible flow delivery by gravity in the future from east of Parliament Street. All these flows are focused on the end of the Parliament Street Slip where they are collected and treated at the end-of-pipe quality control facilities. It is noted that the Parliament Street CSO, which is actually located on Small Street within the East Bayfront area, turns southeast at the end of Small Street to discharge into the side of the Parliament Street Slip. This CSO outfall will be abandoned when the flows have been intercepted by the new CSO tunnel, as the end portion of the outfall culvert passes obliquely under the new development block J. If it were to be considered desirable to develop the new Block before the flows have been intercepted by the new CSO tunnel, a diversion section of culvert could be constructed to go around the development site. However, it should be

borne in mind that the north end of J is proposed as a possible construction site for the CSO tunnel dropshaft from the Parliament St. CSO and this proposal would preclude development of Block J until after the CSO Tunnel has been installed.

A total of approximately 855 metres of reconstructed or new sewers for dirty stormwater will be required in existing road allowances, while an additional 463 metres of new storm sewers for dirty stormwater will be required in new road allowances. Approximately 880 metres of new storm sewers will be required for clean stormwater of which approximately 110 metres would be in depressed sewers. **Exhibits 7-5, 7-6, 7-7,** and **7-8** show details of each storm sewer location, the Class EA Schedule to which it belongs and the type of sewer. **Exhibit 7-9** is a plan showing the location of each storm sewer by Class EA Schedule.

End-of-Pipe quality control facilities will be required for treating the stormwater before discharge into the lake and these facilities are discussed and evaluated in Section 7.4.

Exhibit 7-5: Storm Sewer Project Class Environmental Assessment Schedule
Reconstructed or New Dirty Storm Sewers in Existing Road Allowance

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Queens Quay East	City Sewer Segment Number 3244		1200	105	A
Queens Quay East	City Sewer Segment Number 3248		1350	101	A
Queens Quay East	City Sewer Segment Number 3249		1350	85	A
Queens Quay East	City Sewer Segment Number 3251		600	82	A
Queens Quay East	City Sewer Segment Number 3255		900	103	A
Queens Quay East	City Sewer Segment Number 3256		1050	96	A
Queens Quay East	Proposed MH	City Sewer 3248	450	30	B
Lower Sherbourne St	Gardiner Expressway	City Sewer 3249	375	100	A
Small	Proposed MH	Queens Quay East	300	53	A
Queens Quay East	City Sewer 3256	Proposed MH	1050	30	B
Queens Quay East	Proposed MH	Flow Splitter	1050	70	B
TOTAL			**855**		

Exhibit 7-6: Proposed New Dirty Storm Sewers in New Road Allowance

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Between **SU** site & **E**	Lake Front	Queens Quay East	450	105	B
East of **E**	Lake Front	Proposed MH	525	33	B
East of **E**	Queens Quay East	Proposed MH	1350	102	B
East of **E**	Proposed MH	Flow Splitter	1350	13	B
Between **G** & **F**	Lake Front	Queens Quay East	525	110	B
Between **H** & **J**	Lake Front	Queens Quay East	525	100	B
TOTAL				**463**	

Exhibit 7-7: Proposed New Clean Storm Sewers

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Parcel **E**	Special Use Site	East of Parcel **E**	750	130	B
Parcel **E**	Parcel **E**	Proposed MH	750	27	B
Parcel **G**	Parcel **H**	West of Parcel **G**	750	120	B
Parcel **F**	Parcel **G**	West of Parcel **F**	750	45	B
Parcel **F**	Parcel **F**	Sherbourne Park	825	20	B
Queens Quay East	North Sherbourne Park	South Sherbourne Park	900	45	A
Sherbourne Park	Parcel **F**	Lake Front	1350	118	B
Lake Front	Parcel **F**	UV unit	1350	67	B
Sherbourne Park	Queens Quay East	E of Sherbourne Park	1050	42	A
East of Parcel **E**	Flow Splitter	Proposed MH	1350	38	C
East of Parcel **E**	Proposed MH	UV unit	1350	30	C
Lake Front	UV unit	Existing CSO	1350	28	C
Parcel **J**	Parcel **J**	UV unit	375	30	B
East of Parcel **J**	Flow Splitter	UV unit	1050	25	C
East of Parcel **J**	UV unit	Parliament Slip	1050	8	C
TOTAL				**773**	

Exhibit 7-8: Proposed New Clean Storm Sewers (Depressed)

Location	From	To	Diameter (mm)	Length (m)	Class EA Schedule
Richardson Street	Parcel **A1**	Parcel **A2**	500	25	A
Lower Sherbourne St	Parcel **A2**	Parcel **B1**	800	35	A
Small Street	Parcel **B3**	Parcel **B2**	500	25	A
Bonnycastle Street	Parcel **B2**	Parcel **B1**	600	25	A
TOTAL			**110**		

7.4 Alternative End-Of-Pipe Stormwater Management Facility Design Solutions

The existing situation has already been described in Section 7.1. Storm water from the East Bayfront area is currently discharged into Lake Ontario without treatment.

By having two conveyance systems in the future, there will be the advantage of separating cleaner stormwater from dirty stormwater. The end-of-pipe treatments required for these two types of stormwater are different, as the dirty stormwater requires an additional stage of treatment (the preliminary removal of suspended solids).

We reviewed a number of alternative methods of dealing with quality control of dirty stormwater including treating the stormwater in dunkers in Lake Ontario, which would be similar to the facilities at Bluffers Park. However, the City of Toronto has reported troublesome maintenance problems with dunkers, and they would require lake space which is desired for other purposes, typically recreation. As a result, this alternative has not been carried forward.

7.4.1 Alternative End-of-Pipe Stormwater Management Design Solutions

The "do nothing" alternative was compared to a number of other alternatives and combinations of alternatives which would address the requirements of Ministry of the Environment (MOE), the City's WWFMMP, and the TWRC's sustainable design objectives.

The design alternatives are described below:

Design Alternative 'A'- Do Nothing. Continue to discharge untreated stormwater from East Bayfront, into the lake.


LOWER JARVIS STREET
C. N. R.
LOWER SHERBOURNE STREET
LONGBOAT AVENUE
PARLIAMENT STREET
FREDERICK G. GARDINER EXPRESSWAY (ELEVATED)
LAKE SHORE BOULEVARD EAST
GARDINER EXPRESSWAY
A1
A2
B1
B2a
B2b
B3
E
F
G
H
J
QUEENS QUAY EAST
FLOW SPLITTER
Proposed Alignment of Queens Quay Extension
3320m³ UNDERGROUND SEDIMENTATION TANK
UV DISINFECTION
4020m³ UNDERGROUND SEDIMENTATION TANK
SPECIAL USE SITE
ACCESS COVERS
LEGEND:
EA CLASS "A"
EA CLASS "B"
EA CLASS "C"
NO WORK, OR OUTSIDE AREA
ABANDONED
SCALE

Exhibit 7-9: Stormwater System EA Classification

NOTE: SEDIMENTATION TANKS WILL BE PLACED AT SUCH DEPTH AS TO ALLOW AT LEAST 2.0m OF GROWING MEDIUM ABOVE THE TANK, IF LOCATED UNDER PARKLAND.

Design Alternative 'B' - Stormwater Management Ponds. Pump dirty stormwater to the surface for treatment in surface facilities. (It appears more efficient to treat the stormwater before pumping due to the need for temporary storage and large pumps).

Design Alternative 'C' - Sedimentation Tanks. Collect the first flush of dirty stormwater in underground sedimentation tanks. A 2 inch storm can be captured. After settlement the tank can be pumped out and then flushed to clear the sediments. The sediments can be discharged into the sanitary sewer system.

Design Alternative 'D' - Sedimentation Tanks and Filtering and Disinfection. The dirty stormwater would be settled-out as described for Alternative C, then the settled-out dirty stormwater, and the clean stormwater would both be passed through sand filters and the UV disinfection units. This would remove additional suspended solids and destroy bacteria and viruses.

7.4.2 Evaluation Criteria

In order to evaluate the alternative solutions described in Section 7.4.1, criteria based on the Environmental Assessment Act and sub-criteria relevant to the evaluation of the end-of-pipe stormwater management design solutions within the East Bayfront Precinct were developed. These evaluation criteria and sub-criteria are detailed in **Exhibit 7-10**.

Exhibit 7-10: End-Of-Pipe Stormwater Management Evaluation Criteria

MAIN CRITERION	SUB-CRITERIA
NATURAL ENVIRONMENT	Having regard for protecting the natural and physical components of the environment, including consideration of terrestrial habitat, aquatic habitat, surface water quality, ground water quality, aesthetics and landscaping: • Terrestrial Habitat • Land • Water
SOCIAL AND ECONOMIC	Having regard for the potential impact related to private property, archaeological; and cultural heritage resources, employment activity, noise and vibration, traffic disruption, and health and safety: • Cultural Heritage Resources • Traffic Disruption • Recreation and Tourism • Health and Safety • Employment • Noise and Vibration
OPPORTUNITY FOR REVITALIZATION	Having regard for the extent to which each alternative supports the planning and urban design goals of the waterfront revitalization: • Supports the Planning and Urban Design Goals
FEASIBILITY AND COST	Having regard for the costs associated with each alternative, and the capability of each alternative to adequately service the study area: • Feasibility of construction (implementation) • Cost – capital and operational
TECHNICAL	Having regard to the technical sustainability, reliability, longevity and other engineering aspects of each alternative solution: • Reliability of Services • Flexibility to Provide Capacity for Future Growth and/or Improved Service Level • Life Expectancy • Maintenance Requirements

7.4.3 Description of Alternative End-of-Pipe Stormwater Management Designs

Alternative 'A' - Do Nothing

This alternative would effectively continue the present situation where untreated stormwater from the East Bayfront area is added to the CSO flows coming from the north and discharged into Lake Ontario.

Alternative 'B' - Stormwater Management Ponds

These surface stormwater management quality ponds would need to be designed to provide an enhanced level 1 water quality which requires 80% removal of total

suspended solids as described in the Ministry of Environment Stormwater Management Planning and Design Manual, March 2003. This manual also describes the design parameters for a wet pond to achieve the required improvements in quality. For gravity flow, the pond would need a submerged pond inlet. This pond inlet would be at the bottom of the pond and it is noted that the design parameters require that submerged inlets for piped systems with a flat grade less than 1% should be avoided due to the potential for upstream surcharging. It is recommended that only the last 10 metres of pipe should be submerged near the discharge point. The whole of the East Bayfront stormwater conveyance system operates under submerged conditions. In order to make use of a surface stormwater quality pond, it would be necessary to pump the storm flows from the conveyance system to the surface and discharge them into the quality pond. The level of first flush flows the TWRC wishes to treat are for a 2 inch storm period. In order to achieve a reasonable pump size for real-time pumping during a 2 inch storm, a substantial wet-well reservoir would be required. This would require the construction of an underground tank to serve as the feed stock for the pump.

Because of the desire for open spaces as part of the urban design concept for East Bayfront (e.g., Lower Sherbourne Park) and the high cost of land in the area, it is difficult to pick a suitable site for a surface stormwater management pond that would not conflict with other requirements of the Precinct Plan.

Alternative 'C' - Sedimentation Tanks

Due to the fact that the stormwater conveyance system is already submerged, the use of underground sedimentation tanks is a logical alternative. By separating clean and dirty stormwater the quantity of stormwater requiring sedimentation treatment is reduced, and the tank size is smaller than would otherwise be required. The purpose of the tanks would be to collect the first flush of dirty stormwater using a 2 inch storm as the parameter. The main chamber would be pumped out approximately 24 to 36 hours after the rainfall event. The facility would be designed to remove 80% of total suspended solids and the required storage capacity and dwell time before pumping out would need to be confirmed by a detailed stormwater modeling exercise prior to detailed design. A flow splitter would be used to direct flows in excess of the 2 inch storm following first flush collection, to the other end-of-pipe facilities, before discharge to the receiving waters.

The tank would include a flushing system to remove sediment after the rainstorm, the flush water would be directed to the water pollution control plant. Either a second pump would be required for pumping the flush water or a valve/deflector system can be used to collect or redirect flows using the same pump that is used for pumping out the tank. Capital costs for underground tanks can be high, but the costs can be moderated by

incorporating this facility into an underground parking garage or by placing it under another facility such as a surface parking lot or a park. In the case of the sedimentation tank that could be located at the base of Sherbourne Street, the tank could be sited along the periphery of the park. Subject to the agreement of City transportation staff, any access panels, manholes, grilles or grates could be located within the adjacent road right-of-way (probably within a boulevard or sidewalk). Alternatively, most of the access panels could be buried at sufficient depth that they could be sodded-over. The number of access panels would be minimised in any event.

Some venting from the tank may necessary to allow air to escape, as the tanks fills. Every attempt would be made to locate venting grilles outside the park. A monitoring station would be required. However the monitoring is electronic and the station would not have to be located in the park.

The tank would be buried below grade allowing for a minimum of 2.0 metres of growing medium/ clear space above the sedimentation tank to accommodate tree roots, site servicing, and other park design features.

Using these measures, the effect of the underground tank on park infrastructure above it could be minimised.

The same design principles for mitigation would apply to the tank at the base of the Parliament Street slip.

Alternative 'D' - Sedimentation Tanks, Filters and Disinfection
This design alternative is the same as Alternative 'C', but with the provision of filters and disinfection facilities.

The removal of 80% of the total suspended solids in the sedimentation tanks for the dirty stormwater, in combination with stormwater filters and ultraviolet disinfection for both dirty and clean stormwater, will improve the quality of stormwater so that it will meet the objectives of the WWFMMP for removing contaminants, total suspended solids, bacteria and viruses. As part of the development of the implementation plan for East Bayfront, the schedule for constructing and reconstructing the stormwater conveyance system for dirty stormwater, the conveyance system for clean stormwater, the underground tanks, and the filters and UV disinfection will all be determined by TWRC and the City of Toronto. One key issue is the timing of these infrastructure improvements in relation to the construction of the proposed CSO tunnel. The capital cost of installing filters and disinfection and maintaining those facilities is high, and it is questionable if there would be an overall benefit to the receiving waters while large volumes of combined sewer

flows are still entering the Lake through the Jarvis Street, Sherbourne Street and Parliament Street CSO outfalls. Sufficient space should be reserved for the filtering and disinfecting facilities in case they are not installed concurrently with the sedimentation tanks.

The U.V. disinfection units could be associated with the tanks. It may be possible to locate them under the waterfront roadway/ promenade/ boardwalk areas.

In the case of the tank at the foot of Sherbourne Street, the lake outfall from the tank and the U.V. disinfection unit would be the existing Sherbourne CSO which is located under the proposed park at a depth of approximately 6m. A connection to that outfall from the U.V. unit will be needed and it will have to be under the park.

7.4.4 Assessment and Evaluation of Alternative Designs

The previously described end-of-pipe stormwater management designs have been evaluated against the criteria and sub-criteria detailed in **Exhibit 7-10** and this evaluation is summarized in **Exhibit 7-11** (Evaluation of Alternative End-of-Pipe Stormwater Management Designs). The conclusions of this evaluation are summarized below:

Alternative 'A' - Do Nothing
This alternative would not meet MOE, City of Toronto or TWRC Stormwater Quality Standards or Objectives. Further it would not enable East Bayfront to be redeveloped in accordance with the recommended plan. **Alternative A is not recommended**

Alternative 'B'- Stormwater Management Ponds
While stormwater management ponds could achieve the 80% suspended solids removal required by the WWFMMP, they would not be compatible with the land uses desired in the Precinct Plan and they would not be practical from a design point of view due to the need for very large pumps and underground wet-wells. Maintenance would be of paramount importance because if the pumps don't work during a storm, sedimentation would take place within the conveyance system and sediments would later be flushed into the lake. Without additional quality controls (e.g., filters and UV disinfection) the objective of the WWFMMP cannot be achieved. **Alternative B is not recommended**.

Alternative 'C' - Sedimentation Tanks
While these tanks appear to be the most practical alternative for the submerged stormwater conveyance system which exists in East Bayfront, they do not provide for filtering and disinfection, hence by themselves they would not meet the objectives of the WWFMMP. **Alternative C is not recommended**.

Alternative 'D' - Sedimentation Tanks with Filters and UV Disinfection
This alternative would achieve the 80% removal of total suspended solids along with the WWFMMP requirement for the removal of bacteria and viruses in the stormwater. Despite its high capital cost and high maintenance cost this alternative is the only one that meets all the requirements and objectives of the various stakeholders. **Design Alternative D is recommended for end-of-pipe facilities.**

7.4.5 Preferred End-of-Pipe Stormwater Management Design

Grading plans will be required to direct clean and dirty stormwater to different collection and conveyance systems.

The existing stormwater conveyance system will be intercepted before it reaches The CSO's. The stormwater will then be treated for quality control before being re-introduced into the CSO pipe and discharged into the lake.

The number of discharge points into the lake will be kept to 2 to bring stormwater together to common points for end-of-pipe treatment and before discharge. This will allow sedimentation and final filtering and disinfection treatments (before or after the CSO's have been intercepted and no longer discharge directly into the lake). Ultimately, combined sewer overflows will be collected in the new CSO interceptor, and treated (as part of the City's implementation of the WWFMMP).

Clean water will be collected on development sites and in parks, and contained at source as much as possible (e.g., green roofs etc). All or some of this water may be re-used if feasible. The remaining clean stormwater will be conveyed on the surface in landscaped architectural features as much as possible. Some sections of piped system may be required. This clean stormwater will be conveyed to the same collection points as for dirty stormwater.

Before or after the CSO's have been intercepted and the combined flows into the lake no longer occur, the dirty stormwater treated to WWFMMP criteria in sedimentation tanks, and the clean stormwater, will be filtered and disinfected at the same common location before discharge into the lake.

Dirty Stormwater
Where the westerly conveyance system discharges into the Lower Sherbourne Street CSO, it will be disconnected and brought south towards Lower Sherbourne Park. A sedimentation settlement tank of approximately 4,000 cubic metres – representing a 2

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Evaluation For Schedule C Projects

East Bayfront

		ALTERNATIVE DESIGN SOLUTIONS – PREFERRED STORMWATER SYSTEMS			
	ALTERNATIVE DESIGN	DESIGN ALTERNATIVE A	DESIGN ALTERNATIVE B	DESIGN ALTERNATIVE C	DESIGN ALTERNATIVE D
Criteria	Sub - Criteria	No treatment and Direct Discharge to City Stormwater System	Stormwater Management Ponds (Quality)	Sedimentation Tanks	Sedimentation Tanks with Filters and UV Disinfection
Municipal Services (where applicable)	Reliability of services	Requires no maintenance.	Requires large capacity pumps pumping to the surface during storms to collect first flush and deliver it to surface quality pond. This is a method totally reliant on mechanical intervention.	Tanks collect first flush (2" storm), below ground at local storm sewer outfall elevations. Pump to the lake after settlement with smaller pumps.	Tanks collect first flush (2" storm), below ground at local storm sewer outfall elevations. Pump to the lake after settlement with small pumps; through filters and UV disinfection system which can also be used for other stormwater which has not been through the settlement process.
	Flexibility to provide capacity for future growth and/or improved service level	NOT APPLICABLE	Future growth would increase peak flow rates, requiring larger pumps. The pond area would need to be sized for future expansion for future growth. Improving the service level would require the construction of new facilities.	Sedimentation tanks could be pre-built for future growth, or could allow for expansion. Improving the service level would require the construction of new facilities.	Sedimentation tanks could be pre - built for future growth, or could allow for expansion. With provision for filters and UV disinfection, new facilities could be added easily for improved service levels.
	Life expectancy	NOT APPLICABLE	Dependent on Pump life.	Pump life and deterioration of underground structures.	Pump life and deterioration of underground structures. Filters and UV disinfectors have a finite life.
	Maintenance requirements	Requires little or no maintenance.	High maintenance, because if the pump does not work, the First Flush is lost. Ponds require periodic invert excavation of accumulated sediments.	Evacuation pump requires maintenance, and tipping buckets for tank flushing require maintenance.	Evacuation pump requires maintenance, and tipping buckets for tank flushing require maintenance. Filters and UV disinfectors require maintenance.
Natural Environment	Terrestrial Habitat	Not located in an area where there is terrestrial habitat of any significance.	Not located in an area where there is terrestrial habitat of any significance.	Not located in an area where there is terrestrial habitat of any significance.	Not located in an area where there is terrestrial habitat of any significance.
	Aquatic Habitat	No aquatic habitat of any significance. However, discharging untreated stormwater ultimately to the inner harbour may impair aquatic habitat conditions.	Not located near aquatic habitats of any significance. However treating stormwater that ultimately reaches the inner harbour may improve aquatic habitat conditions.	Not located near aquatic habitat of any significance. However treating stormwater that ultimately reaches the inner harbour may improve aquatic habitat conditions.	Not located near aquatic habitats of any significance. However treating stormwater that ultimately reaches the inner harbour may improve aquatic habitat conditions.
	Water Quality	Provides no improvement to stormwater discharge quality.	Improves the quality of stormwater discharge.	Improves the quality of stormwater discharge.	Improves the quality of stormwater discharge, with likely the best overall results.
	Air Quality	No impact to air quality.	No impact to air quality.	No impact to air quality.	No impact to air quality.
	Soil and Groundwater	There is a potential to encounter soil and/or groundwater contamination. Soil and groundwater management plans will be required for all alternatives.	There is a potential to encounter soil and/or groundwater contamination. Soil and groundwater management plans will be required for all alternatives.	There is a potential to encounter soil and/or groundwater contamination. Soil and groundwater management plans will be required for all alternatives.	There is a potential to encounter soil and/or groundwa ter contamination. Soil and groundwater management plans will be required for all alternatives.
Social and Economic	Cultural heritage resources	No cultural heritage resources are affected.	No cultural heritage resources are affected.	No cultural heritage resources are affected.	No cultural heritage resources are affected.
	Impacts to businesses	No businesses will be impacted.	No businesses will be impacted.	No businesses will be impacted.	No businesses will be impacted.
	Impacts to private property	All stormwater facilities will be located on publicly owned lands.	All stormwater facilities will be located on publicly owned lands.	All stormwater facilities will be located on publicly owned lands.	All stormwater facilities will be located on publicly owned lands.
	Noise and Vibration	No noise or vibration impacts are expected.	No noise or vibration impacts are expected.	No noise or vibration impacts are expected.	No noise or vibration impacts are expected.
	Employment	No impacts to employment.	No impacts to employment.	No impacts to employment.	No impacts to employment.
	Recreation	No impacts to recreation.	Stormwater quality ponds could only be located in East Bayfront proposed parkland, and this would reduce the recreational value of the park. However, improved water quality in the adjacent inner harbour would be beneficial to recreation in East Bayfront. Overall, a neutral effect.	No impacts to recreation. Improved water quality in the inner harbour is beneficial to recreation.	No impacts to recreation. Improved water quality in the inner harbour is beneficial to recreation. This option has the highest overall performance.
Opportunity for Revitalization	Ability to support the development objectives of the Precinct Plan	No physical impact to redevelopment plan but would not meet municipal and provincial objectives for stormwater quality.	Stormwater ponds are land intensive and would be less supportive of the contemplated land uses. In addition, stormwater ponds may not be compatible with certain adjacent land uses.	No physical impact to redevelopment plan since facilities are not land intensive and would be located within road allowances, under open spaces or under parkland depending on site location and municipal requirements.	No physical impact to redevelopment plan since facilities are not land intensive and would be located within road allowances, under open spaces or under parkland depending on site location and municipal requirements.
	Ability to support the urban design objectives of the Precinct Plan	No impact to urban design.	Ponds are land intensive and may not be compatible with adjacent built form.	No impact to urban design.	No impact to urban design.
	Ability to support Waterfront wide revitalization	Would not meet municipal and provincial objectives for stormwater quality.	Supports the improvements to water quality.	Supports the improvements to water quality.	Supports the improvements to water quality.
Cost Effectiveness	Capital Cost of Improvements	No capital cost.	Lower capital cost.	Higher capital cost.	Highest capital cost.
	Maintenance Costs	No additional maintenance cost, no treatment provided.	High maintenance cost because extremely reliable pump systems would be required to ensure that storm flows are pumped from the storm sewer system up into the surface stormwater quality pond during the occurrence of the storm.	Moderate maintenance cost.	High maintenance cost.
Technical Considerations	Level of Stormwater Treatment	No treatment provided.	Removal of floating matter and reduction of suspended solids provided.	Removal of floating matter and reduction of suspended solids provided.	Removal of floating matter and reduction of suspended solids as well as bacteria and viruses is provided. This option has the highest overall performance.
	Potential to meet objectives of the City of Toronto Wet Weather Flow Management Master Plan	No treatment provided.	No disinfection provided.	No disinfection provided.	Filtration and UV disinfection provides reduction in concentration of bacteria and viruses.
Recommendations		Not recommended	Not recommended	Not recommended	Recommended

LEGEND:
GOOD NEUTRAL POOR

Exhibit 7-11: Evaluation of Alternative End-of-Pipe Stormwater Management Designs

inch storm (500 m3/ha @ 100% imperviousness) could be provided under Sherbourne Park. Its location will be kept away from the probable access shaft location for the CSO tunnel drive and it will be kept towards the periphery of the park. Flows in excess of the 2 inch rain event will be directed to the filters and UV disinfection unit. Following settlement of suspended solids, the sedimentation tank would be pumped out to the same location. The tank would also include a flushing system (tipping bucket type) to remove sediment after the main tank has been pumped out and the flushing water would be pumped out to the sanitary sewer system.

Where the easterly dirty stormwater sewer system discharges into the Parliament Street/Small Street CSO on Queens Quay it will be disconnected, and the flow directed in a new sewer to a sedimentation settlement tank at the north end of the Parliament Street Slip. It is noted that the Parliament Street Slip will likely be truncated by the continuation of Queens Quay east to Cherry Street, and it is anticipated that the new northern boundary of the Parliament Slip could be adjusted to accommodate the size of tank required. Certainly, there is adequate room for a 2 inch storm tank (3,300 m3) by taking a little more of the Parliament Street Slip. (3,300m3 of sedimentation storage includes an allowance of 800m3 of storage for a 2 inch storm representing an area of dirty stormwater collection of 1.6 ha east of Parliament Street at 100% imperviousness. This represents the area east of Parliament which is expected to be too low for gravity delivery to a stormwater management quality pond). Following settlement, the tank would be evacuated by pumping through filters and the UV disinfection unit into the Parliament Street Slip. The tank would also include a flushing system (tipping bucket type) to remove sediment after the main tank has been pumped out and the flushing water would be pumped out to the sanitary sewer system.

Clean Stormwater

The western clean stormwater conveyance system is focused on Sherbourne Park and will direct flows to the filters and UV disinfection unit at the south end of the park. Hence, all stormwater from this area, both clean and dirty stormwater which has been settled out, is collected at one place, filtered and disinfected by the UV disinfection unit, then discharged into the outfall.

The easterly clean stormwater conveyance system is focused on the end of the Parliament Street Slip where the clean stormwater from Block J is collected and disinfected by the filters and UV disinfection unit along with the treated dirty stormwater from the sedimentation tank at the foot of the Parliament Street Slip. It is noted that the Parliament Street CSO - which is actually located on Small Street within the East Bayfront area, turns southeast at the end of Small Street to discharge into the side of the Parliament Street Slip. This CSO outfall will be abandoned when the flows have been

intercepted by the new CSO tunnel, as the end portion of the outfall culvert passes obliquely under the new development Block J.

8.0 TRANSPORTATION ALTERNATIVES

8.1 Existing Environment

The East Bayfront Precinct area extends along the City of Toronto Lake Ontario waterfront between Lower Jarvis Street and Cherry Street east of downtown Toronto. Its northern boundary is formed by the main line rail corridor serving Union Station within central Toronto. Lake Shore Boulevard East and the Gardiner Expressway pass through the northernmost portion of the Precinct area.

The location and context of the East Bayfront Precinct is shown on **Exhibit 8-1**.

The western portion of the East Bayfront Precinct, which is the subject of this Master Plan exercise, extends eastwards from Lower Jarvis Street approximately to Small Street opposite the Parliament Street slip. The EA Master Plan area also includes the section of Queens Quay East situated between Lower Jarvis Street and Bay Street in order to address the transition of roads from existing to proposed conditions. Detailed planning of this section of Queens Quay East will, however, be undertaken at a later time in conjunction with the development of a Precinct Plan for the surrounding area and an Environmental Assessment being undertaken to determined the need for dedicated transit service along this corridor.

Development lands within the East Bayfront Precinct are currently utilized for a variety of commercial and industrial uses. The Redpath Sugar plant is located just west of the Jarvis Street Slip and just outside the Precinct plan area although a rail spur serving the plant runs along the south side of Queens Quay East through the Precinct area.

8.1.1 Road Network

The existing road network in and surrounding the East Bayfront Precinct Master Plan area is illustrated on **Exhibit 8-2**. Existing lane configurations are also shown.

Road Classifications

The classification and rights-of-way of existing roads within the East Bayfront Precinct Master Plan area is summarized in **Exhibit 8-3**.

Exhibit 8-3: Existing Road Classifications and Rights-of-Way

Street	From	To	Classification	Right-of-Way (Metres)
Gardiner Expressway	-	-	Expressway	-
Lake Shore Boulevard East	-	-	Major Arterial	Varies
Queens Quay East	Lower Jarvis Street	Small Street	Minor Arterial	27.44
Parliament Street	Small Street	Lake Shore Boulevard East	Minor Arterial	25.0
Lower Sherbourne Street	Lake Shore Boulevard East	Queens Quay East	Minor Arterial	20.0
Lower Jarvis Street	Lake Shore Boulevard East	Queens Quay East	Collector	20.0
Richardson Street	Lake Shore Boulevard East	Queens Quay East	Local	20.0
Bonnycastle Street	Lake Shore Boulevard East	Queens Quay East	Local	20.0
Small Street	Lake Shore Boulevard East	Queens Quay East	Local	20.0

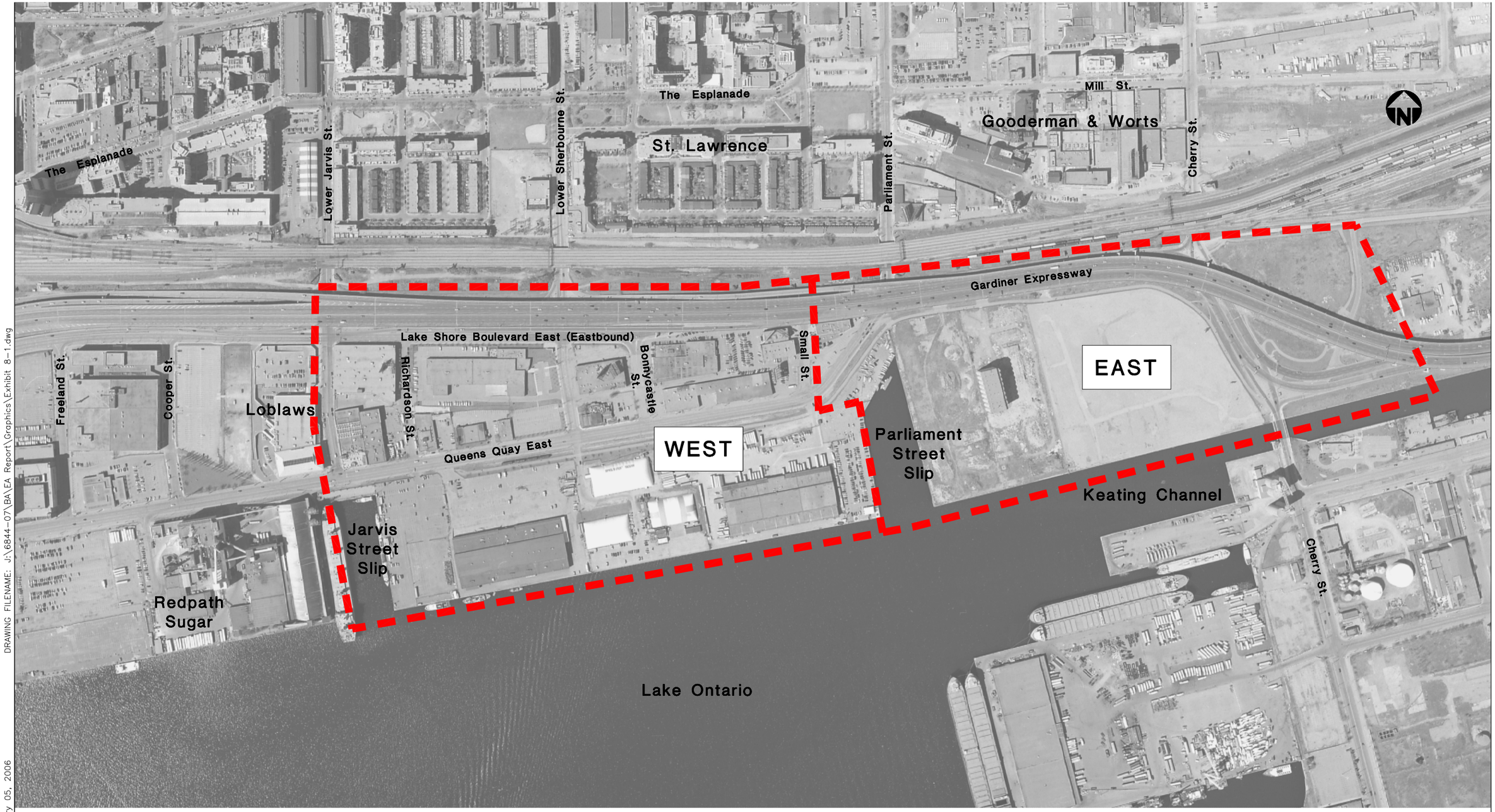
Description of Existing Road Network

A description of the key streets and roadways in the East Bayfront Precinct Master Plan area is provided in the following sections.

Expressways

- **Gardiner Expressway**

The Gardiner Expressway is an east-west oriented, basic 6-lane elevated roadway running along the northern boundary of the East Bayfront Precinct area. On / off ramps are located, in the East Bayfront Precinct environs, at Lower Jarvis Street while an off-ramp is located at Lower Sherbourne Street. The Gardiner Expressway is one of the principal roadways providing regional access to central Toronto and links to the Queen Elizabeth Way (QEW) west of the City, as well as the Don Valley Parkway and Lake Shore Boulevard East east of Don River. It carries high traffic volumes and operates as a controlled access, free-flow, facility with access ramps at Lower Jarvis Street and Lower Sherbourne Streets. The posted speed limit is 90 km/h.



SITE CONTEXT - STUDY AREA

East Bayfront Precinct

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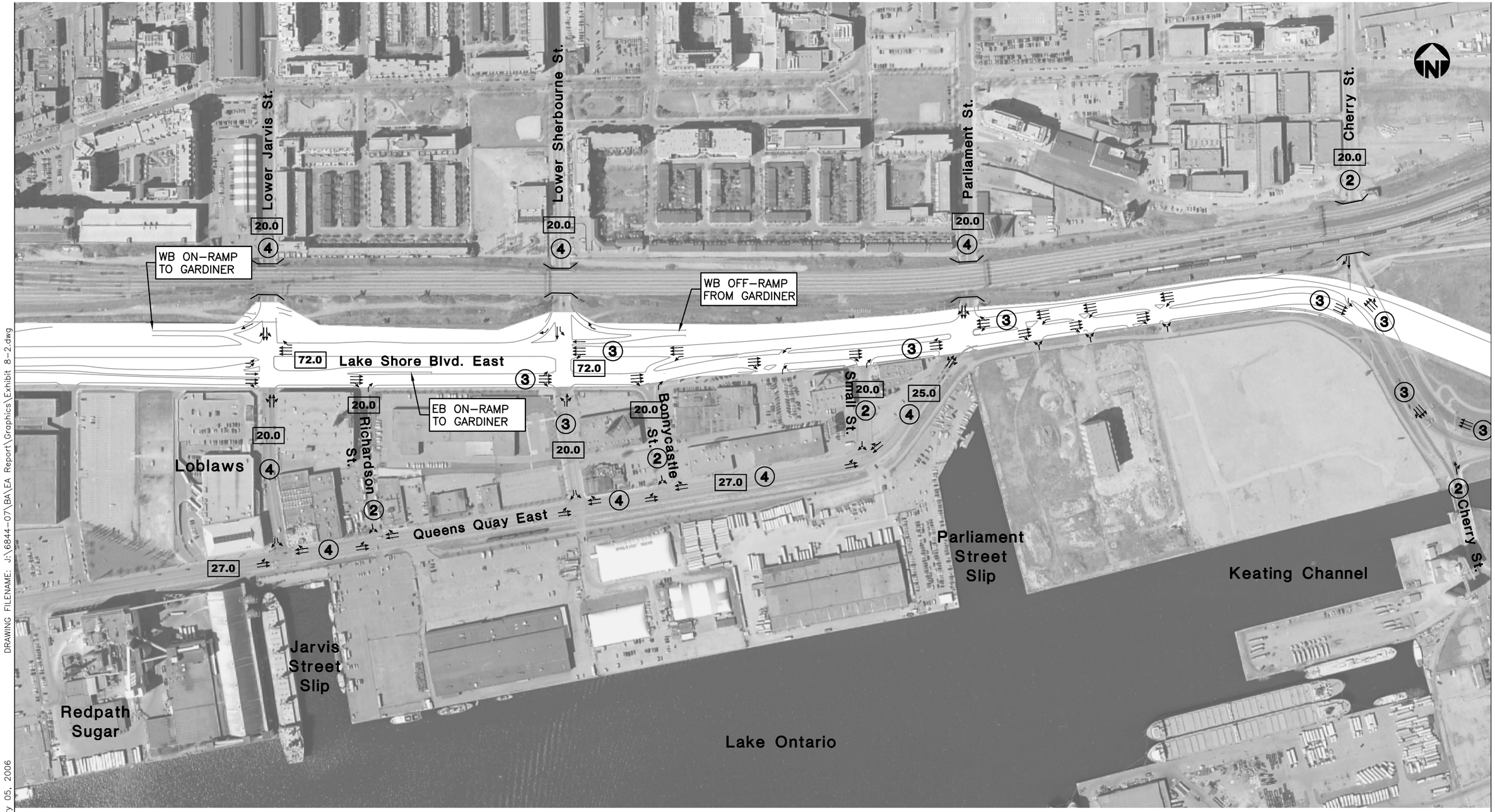
DATE PLOTTED: January 05, 2006

BA GROUP

East Bayfront Precinct EA Master Plan
6844-07 January 2006

Scale 1:5000 Airphoto Date: April 27, 2003 1:52pm

Exhibit 8-1



EXISTING ROAD NETWORK, LANE CONFIGURATIONS & RIGHT-OF-WAY WIDTHS

Notes: 1. All posted speed limits are 50km/h except Lake Shore Boulevard East which is 60km/h.
2. Lake Shore Boulevard East shown below the Gardiner Expressway.

19.0	Right-Of-Way in metres
3	No. of lanes (total)
	Intersection lane configuration

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Major Arterial Streets

- **Lake Shore Boulevard East**

Lake Shore Boulevard East is an east-west oriented, basic 6-lane divided roadway that runs through the East Bayfront Precinct parallel to, and either beneath or to the south of, the Gardiner Expressway. Lake Shore Boulevard East carries relatively large volumes of traffic. Lake Shore Boulevard East connects with each of the main north-south streets serving the East Bayfront Precinct area (Lower Jarvis Street, Lower Sherbourne Street, Parliament Street and Cherry Street) at a series of signalized intersections. The local streets north of Queens Quay East within the Precinct area also connect with Lake Shore Boulevard East. The posted speed limit is 60 km/h.

Minor Arterial Streets

- **Queen Quay East**

Queens Quay is an east-west oriented, basic 4-lane roadway (approximate pavement width of 19.0 metres) that runs parallel to Lake Shore Boulevard across central Toronto. Queens Quay connects from Stadium Road just west of Bathurst Street, runs across the downtown and through the East Bayfront Precinct area, before connecting to Parliament Street at Small Street. Queens Quay East has a basic 27.44 metre right-of-way through the Precinct and EA Master Plan area. The posted speed limit is 50 km/h. The existing Queens Quay East cross-section is illustrated on **Exhibit 8-4**.

The Harbourfront LRT runs, at-grade, along Queens Quay West linking between Union Station and the Manitoba Drive loop within Exhibition Place. The connection to Union Station is provided via a tunnel running beneath Bay Street. The tunnel portal is located just west of Bay Street on Queens Quay West.

An operational industrial rail spur line runs along the south side of Queens Quay East and serves the Redpath Sugar plant located just west of the Jarvis Street slip. There are also a number of disused rail spur crossings of Queens Quay East.

There are also on-street bicycle lanes provided in each direction on Queens Quay East as well as the multi-use Martin Goodman Trail that runs adjacent to the rail spur on the south side of the street.

- **Lower Sherbourne Street**

Lower Sherbourne Street is a north-south oriented, basic 3-lane roadway that extends from Queens Quay East northwards to Lake Shore Boulevard East. Lower Sherbourne Street has a basic 20.0 metre right-of-way within the Precinct and an approximate 14.0 metre wide pavement. Lower Sherbourne Street extends northwards as Sherbourne Street to Bloor Street East.

There are on-street bicycle lanes provided in each direction on both Lower Sherbourne and Sherbourne Streets. These extend as far north as South Drive (just north of Bloor Street East). The posted speed limit is 40 km/h.

- **Parliament Street**

Parliament Street connects with Queens Quay East within the East Bayfront Precinct area at Small Street and extends to Lake Shore Boulevard East as a 4-lane facility with on-street bicycle lanes. It then extends northwards from Lake Shore Boulevard East as a basic 2-lane roadway to Bloor Street East.

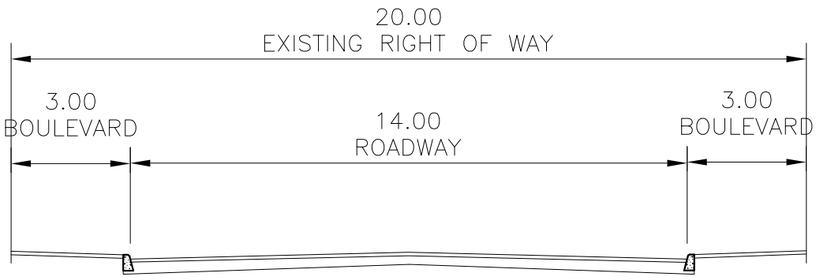
The existing right-of-way on Parliament Street within the EA Master Plan area is 25.0 metres with a pavement width 19.0 metres. The posted speed limit is 40 km/h.

Collector Streets

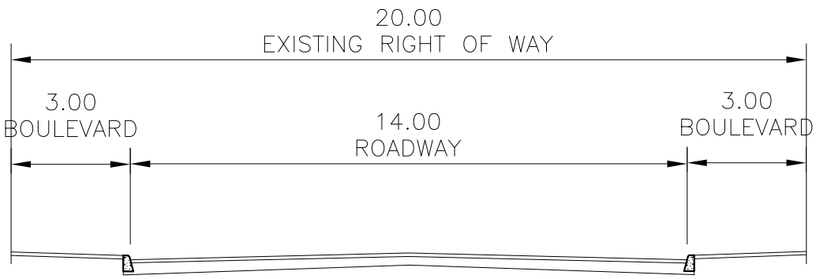
- **Lower Jarvis Street**

The section of Lower Jarvis Street south of Lake Shore Boulevard East and within the East Bayfront Precinct and EA Master Plan area is a 4-lane collector street with a 20.0 metre right-of-way (approximate pavement width of 14.0 metres). The intersection of Queens Quay East and Lower Jarvis Street is signalized. The posted speed limit is 50 km/h.

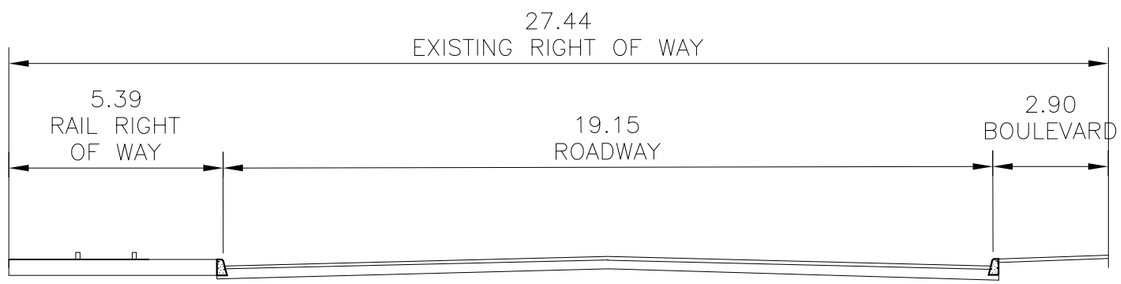
Lower Jarvis Street extends northwards from Lake Shore Boulevard East as Jarvis Street to Bloor Street East.



LOWER JARVIS EXISTING CROSS-SECTION



LOWER SHERBOURNE EXISTING CROSS-SECTION



QUEENS QUAY EAST OF JARVIS EXISTING CROSS-SECTION

EAST BAYFRONT PRECINCT PLAN
EXISTING QUEENS QUAY, LOWER JARVIS & LOWER SHERBOURNE CROSS SECTIONS

Local Streets

There are three local north-south oriented streets linking between Lake Shore Boulevard East and Queens Quay East within the Precinct area. These are as follows:

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

They are all 2-lane roads with 20.0 metre rights-of-way. Existing pavement widths are in the order of 10.0 metres. The posted speed limits are 50 km/h. Their intersections with Lake Shore Boulevard East and Queens Quay East operate under two-way (side street) STOP control . Access to Lake Shore Boulevard East is limited to right turns only except at Bonnycastle Street where the westbound (inbound) left turn is permitted.

Existing Intersection Control and Turn / Stopping / Parking Restrictions

Existing area intersection control measures (i.e., traffic signal or STOP control) and turn restrictions are shown on **Exhibit 8-5**.

Existing on-street parking and stopping restrictions are shown on **Exhibit 8-6**.

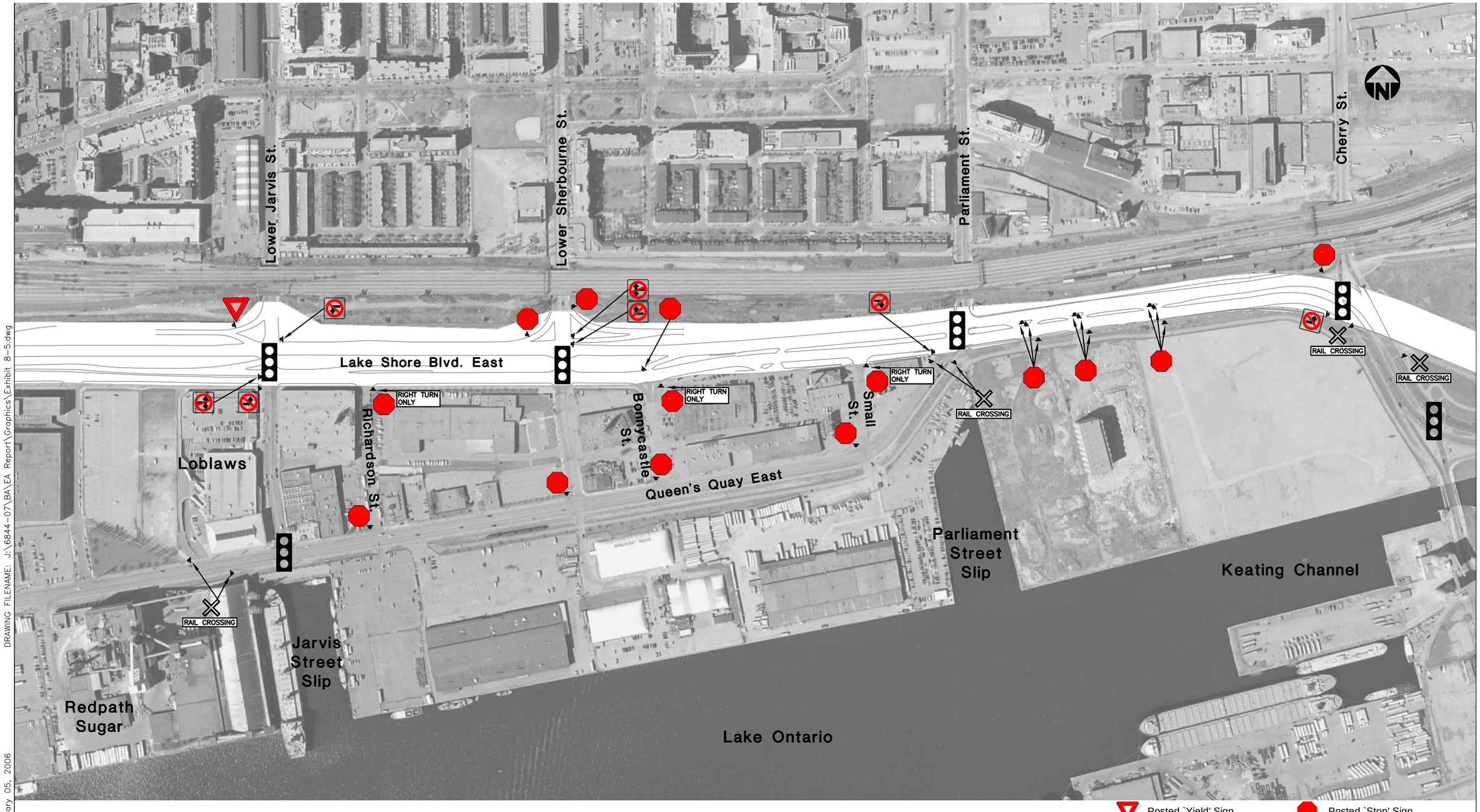
Existing Traffic Volumes – East Bayfront Precinct

Existing baseline traffic volumes for the morning and afternoon street peak hours are illustrated on **Exhibit 8-7**.

Existing base traffic volumes were established at the area intersections within the East Bayfront Precinct Master Plan area based upon traffic count survey information collected by the City of Toronto and BA Group in 2003 and 2004. Count dates are indicated on the exhibit.

Existing Operating Conditions – East Bayfront Precinct

Traffic operations analyses have been undertaken under existing conditions at the key area signalized intersections along the Lake Shore Boulevard East and Queens Quay East corridors within the East Bayfront Precinct Master Plan area. Analysis methodology and findings were originally presented in BA Group's *East Bayfront Precinct, City of Toronto, Transportation Assessment – Update Report* submitted to the City of Toronto in



EXISTING PUBLIC STREET INTERSECTION CONTROL

Note: 1. Lake Shore Boulevard East shown below the Gardiner Expressway.

- Posted `Yield' Sign
- Posted `Stop' Sign
- Posted `No Turns' Sign
- Posted `No Right' Turn
- Posted `No Left' Turn
- Signalized Intersection

February 2005 and most recently in BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006.

Analyses have been undertaken at the following intersections under existing conditions:

- Lake Shore Boulevard East / Lower Jarvis Street
- Lake Shore Boulevard East / Lower Sherbourne Street
- Lake Shore Boulevard East / Parliament Street
- Queens Quay East / Lower Jarvis Street

Traffic operations analyses have been undertaken using the Synchro software package published by Trafficware. This software package provides an analysis of intersection operations based upon the methodologies outlined in the Highway Capacity Manual (HCM). The product of the signalized intersection analysis is a level of service (LOS) designation, ranging from LOS A (little delay) to LOS F (significant delay). This range provides an understanding of the relative time a motorist may have to wait to travel through an intersection. The ratio of demand volume to capacity (V/C ratio) of an intersection or particular movement is also provided where a V/C ratio of 1.0 reflects at capacity conditions.

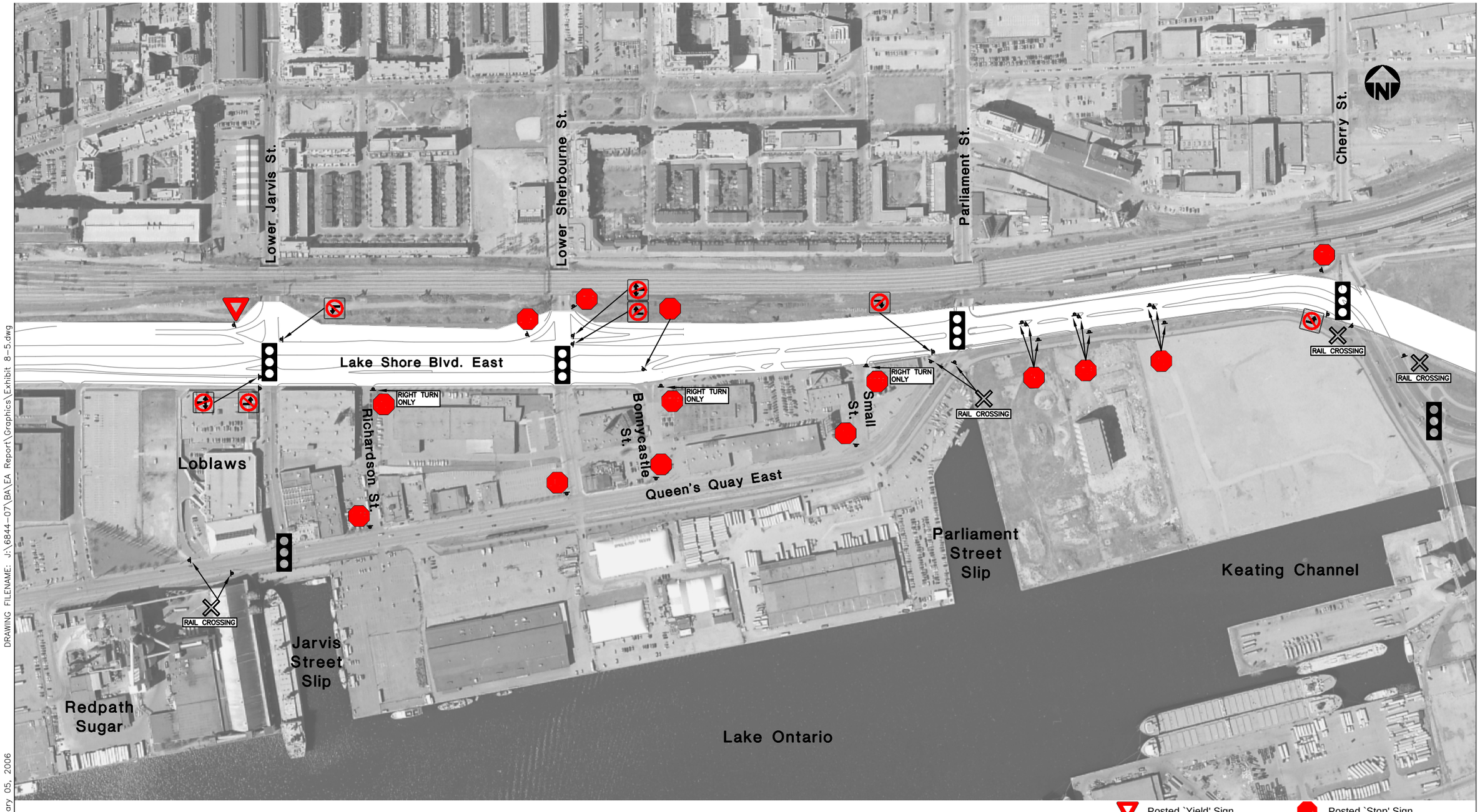
Existing signal timings were obtained for the area signalized intersections from the City of Toronto and were used in the analyses undertaken at the area intersections.

The results of the Synchro traffic operations analyses undertaken for existing traffic conditions are summarized in the **Exhibits 8-8** and **8-9**. Detailed analysis summaries and commentary are provided, most recently, in BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006.

The following provides a summary of observations made on the basis of the traffic operations evaluations undertaken as part of this Master Plan study.

- **Lake Shore Boulevard East and Queens Quay East Corridors**

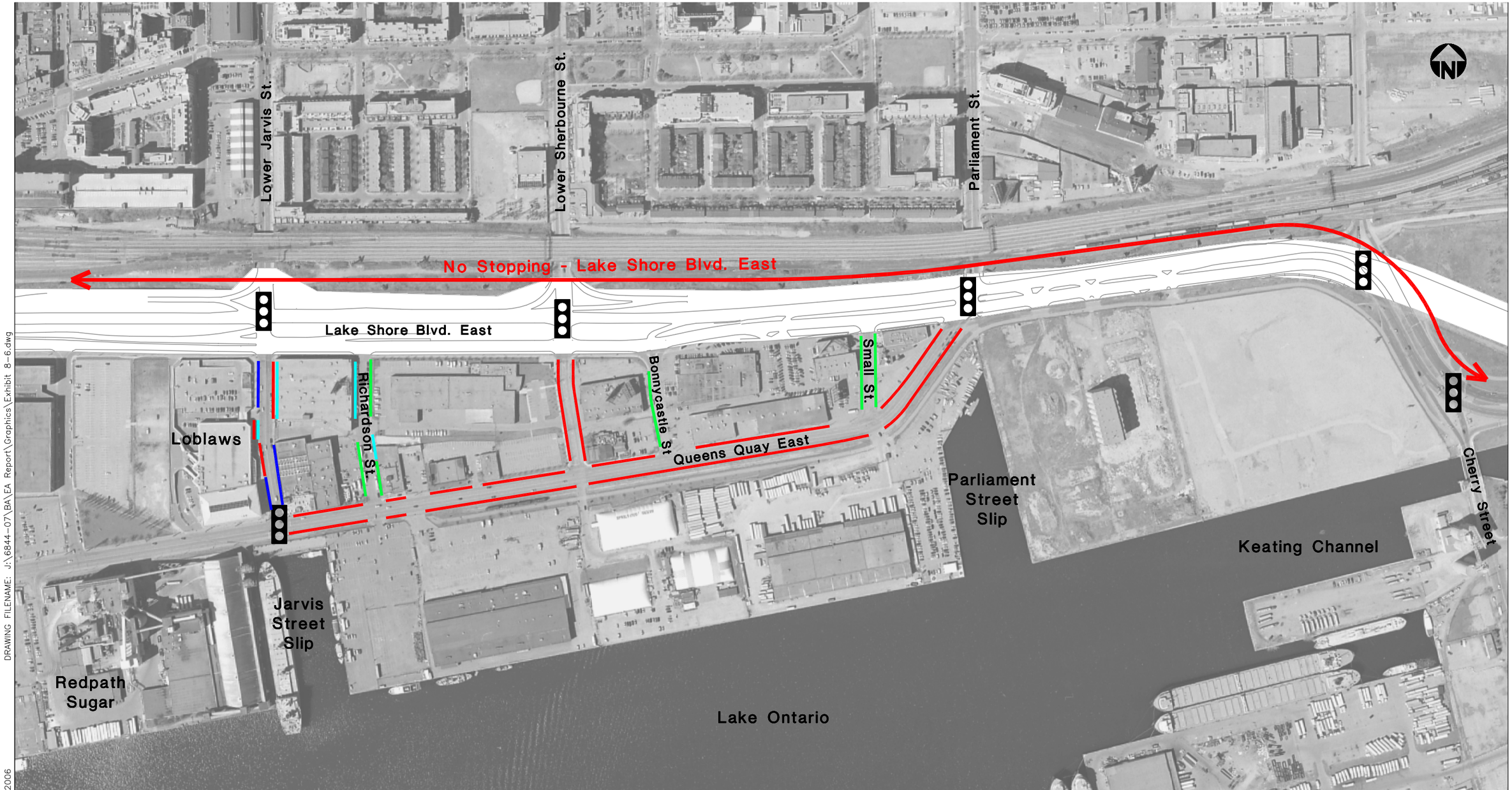
In general terms, the signalized intersections along the Lake Shore Boulevard East and Queens Quay East corridors, other than the Lake Shore Boulevard East / Lower Jarvis Street intersection, operate relatively well today. Overall intersection levels of service range between LOS B and D.



EXISTING PUBLIC STREET INTERSECTION CONTROL

Note: 1. Lake Shore Boulevard East shown below the Gardiner Expressway.

- Posted `Yield' Sign
- Posted `Stop' Sign
- Posted `No Turns' Sign
- Posted `No Right' Turn
- Posted `No Left' Turn
- Signalized Intersection



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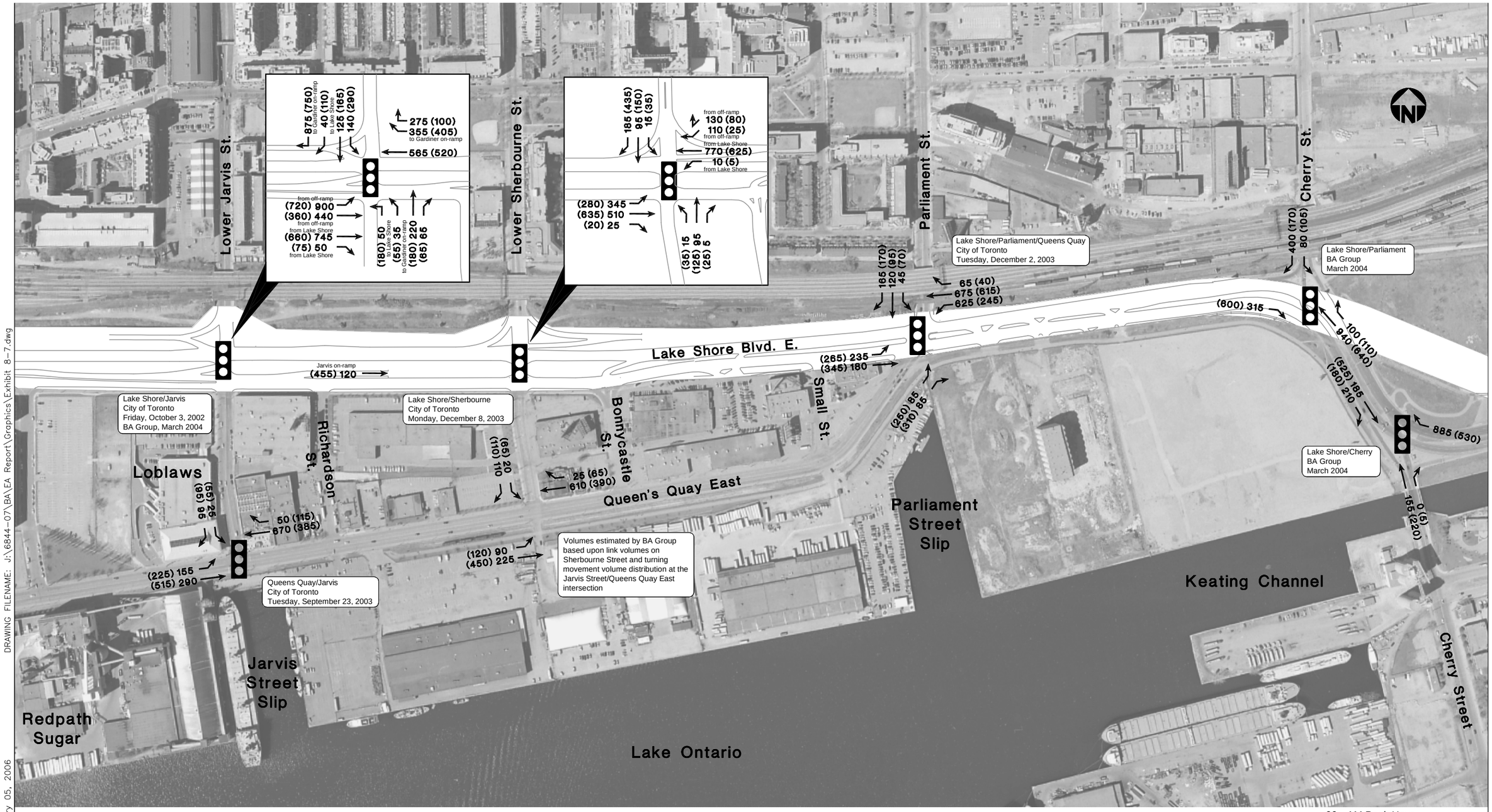
EXISTING ON-STREET PARKING AND STOPPING RESTRICTIONS

Note: 1. Lake Shore Boulevard East shown below the Gardiner Expressway.

On-street Restrictions

- No Stopping
- No Standing
- No Parking
- Parking Permitted
- Signalized Intersection



EXISTING TRAFFIC VOLUMES

00 AM Peak Hour

(00) PM Peak Hour

Existing Traffic Signal

Notes: 1. All traffic volumes are rounded to the nearest 5 vehicles.
2. Lake Shore Boulevard East shown below the Gardiner Expressway.

Exhibit 8-8: Existing Traffic Operations
Intersection Levels of Service – Morning Street Peak Hour

Intersection	Level of Service (V/C Ratio)	Key Movement Level of Service (V/C Ratio)
Lake Shore Boulevard East Corridor		
Lower Jarvis Street	D – 0.78	-
Lower Sherbourne Street	C – 0.42	-
Parliament Street	B – 0.49	-
Queens Quay East Corridor		
Lower Jarvis Street	A – 0.32	-

Note
1. Key movement – V/C > 0.85

Exhibit 8-9: Existing Traffic Operations
Intersection Levels of Service – Afternoon Street Peak Hour

Intersection	Level of Service (V/C Ratio)	Key Movement Level of Service (V/C Ratio)
Lake Shore Boulevard East Corridor		
Lower Jarvis Street	E – 0.94	**Eastbound** Gardiner Off-Ramp LT: E – 0.90 Gardiner Off-Ramp T: E – 0.89 Lake Shore TR: E – 0.92 **Westbound** Lake Shore RT (Gardiner): F – 0.96 **Northbound** Jarvis LT: F – 0.96
Lower Sherbourne Street	B – 0.41	-
Parliament Street	C – 0.45	-
Queens Quay East Corridor		
Lower Jarvis Street	B – 0.40	-

Note
1. Key movement – V/C > 0.85

The Lower Jarvis Street intersection is the 'busiest' intersection along the Lake Shore Boulevard East corridor within the East Bayfront Precinct Master Plan area. Traffic operations are described in more detail in the following section.

The following provides a summary of observations made on the basis of the traffic operations evaluations undertaken as part of this Master Plan study.

- **Lake Shore Boulevard East and Queens Quay East Corridors**

In general terms, the signalized intersections along the Lake Shore Boulevard East and Queens Quay East corridors, other than the Lake Shore Boulevard East / Lower Jarvis Street intersection, operate relatively well today. Overall intersection levels of service range between LOS B and C.

The Lower Jarvis Street intersection is the 'busiest' intersection along the Lake Shore Boulevard East corridor within the East Bayfront Precinct Master Plan area. Traffic operations are described in more detail in the following section.

- **Lake Shore Boulevard East / Lower Jarvis Street Intersection**

This intersection is the key 'valve' which will dictate the amount of traffic that can be processed along the Lake Shore Boulevard East corridor in this area.

Operations at the intersection are affected by its comparatively complex configuration and related signal phasing requirements, physical constraints relating to the Gardiner Expressway supporting structure as well as the high levels of traffic traveling along the Lake Shore Boulevard East corridor, turning onto / from the Gardiner ramp connection links and turning from Lower Jarvis Street (i.e., north and southbound left turns).

Key movements at the intersection generally include the following:

- the westbound through turn lane on Lake Shore Boulevard East that serves the Gardiner Expressway on-ramp located just west of the intersection;
- the eastbound left turn movement from the Gardiner Expressway off-ramp;
- the southbound left turn movement from Lower Jarvis Street, and;
- the northbound left turn movement from Lower Jarvis Street.

Morning Street Peak Hour

During the morning peak hour today, the critical movements at the intersection operate at LOS C to LOS E (volume-to-capacity or V/C ratios in the order of 0.55 to 0.85). The intersection is busy but appears to have residual capacity available to accommodate additional traffic volumes in its current condition.

Afternoon Street Peak Hour

The key intersection movements typically operate under lower levels of service (typically LOS C to F) during the afternoon peak hour with certain movements (the northbound left turn from Lower Jarvis Street and the westbound through lane serving the Gardiner Expressway on-ramp for instance) operating close to capacity. V/C ratios on key movements are in the 0.79 to 0.96 range.

Our analyses and general observations suggest that only there is limited residual capacity available on certain key movements to accommodate additional traffic volumes, from, not only, the East Bayfront Precinct but from other development within the eastern waterfront development areas also, without improvement or without a displacement of existing volumes.

8.1.2 Transit

The Toronto Transit Commission (TTC) and GO Transit services currently serving the East Bayfront Precinct and adjacent areas are illustrated on **Exhibit 8-10**. A brief description of the key TTC services within the East Bayfront Precinct area is given in the following.

- **Route 75 – Sherbourne**

This bus service runs along Sherbourne Street and loops at its southern end within the Precinct area using Lower Jarvis Street, Queens Quay East and The Esplanade. It provides a connection to the Bloor-Danforth subway line that runs east-west along Bloor Street East. Buses run every 11 or 12 minutes during the peak rush periods.

- **Route 6 – Bay**

This bus service loops from central Toronto along Queen Street East and Lower Jarvis Street to the western portions of the Precinct area. From downtown Toronto these services run along the Bay Street urban clearway to the Dupont subway station on the Yonge-University-Spadina subway line. Buses run every 5 to 8 minutes during peak rush periods.

- **Route 72A – Pape**

This limited service route runs from the Pape Subway station on the Bloor-Danforth subway line to Union Station via Cherry Street. Buses run approximately every 13 to 14 minutes in the morning and afternoon rush periods.

GO Transit's Lakeshore East and Stouffville services operate along the main rail-line running along the northern Precinct boundary. The nearest station is Union Station within downtown Toronto.

8.1.3 Bicycles and Pedestrians

Existing pedestrian and bicycle facilities within the East Bayfront Precinct area illustrated on **Exhibit 8-11**. A brief description of the key elements of the existing supporting infrastructure is outlined in the following.

- **Pedestrian Sidewalks**

Sidewalks are provided on all existing public streets within the Precinct Master Plan area except on the south side of Queens Quay East and on sections of Richardson Street and Bonnycastle Street.

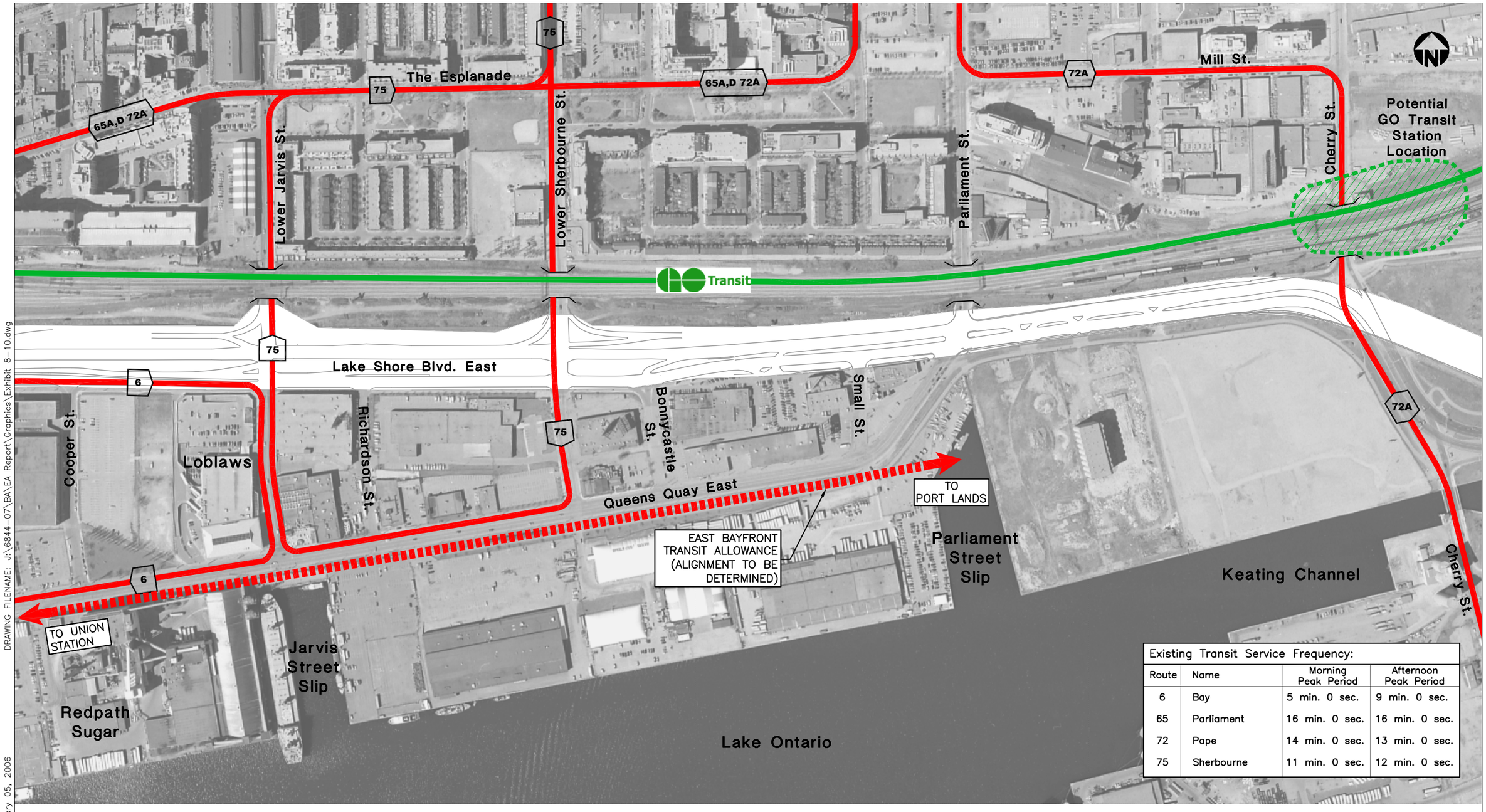
Pedestrians walking on the south side of Queens Quay East are able, east of Richardson Street, to use the multi-use Martin Goodman Trail. However, the Martin Goodman Trail currently ends east of Lower Jarvis Street and pedestrian and cyclists are required to cross Queens Quay East at Richardson Street, without the benefit of any formal crossing facilities, or continue along the existing rail spur alignment, in order to proceed further west.
Sections of the existing sidewalks located on the south side of Lake Shore Boulevard East are regularly obstructed by parked vehicles related to a car dealership west of Small Street.

- **North-South Pedestrian Connections Beneath the Rail-Line**

Sidewalk connections are provided on either side of the north-south streets that run below the mainline rail corridor. The sidewalks are located behind structural elements supporting the bridge structures and are separate from the road travel lanes. These facilities are widely regarded as inhospitable and as a practical barrier between the waterfront and the communities located north of the rail corridor. Several studies have suggested the need to improve the quality of these pedestrian facilities.

- **On-Street Bicycle Lanes**

On-street bicycle lanes are provided in both directions on Queens Quay East and Lower Sherbourne Street.



Existing Transit Service Frequency:

Route	Name	Morning Peak Period	Afternoon Peak Period
6	Bay	5 min. 0 sec.	9 min. 0 sec.
65	Parliament	16 min. 0 sec.	16 min. 0 sec.
72	Pape	14 min. 0 sec.	13 min. 0 sec.
75	Sherbourne	11 min. 0 sec.	12 min. 0 sec.

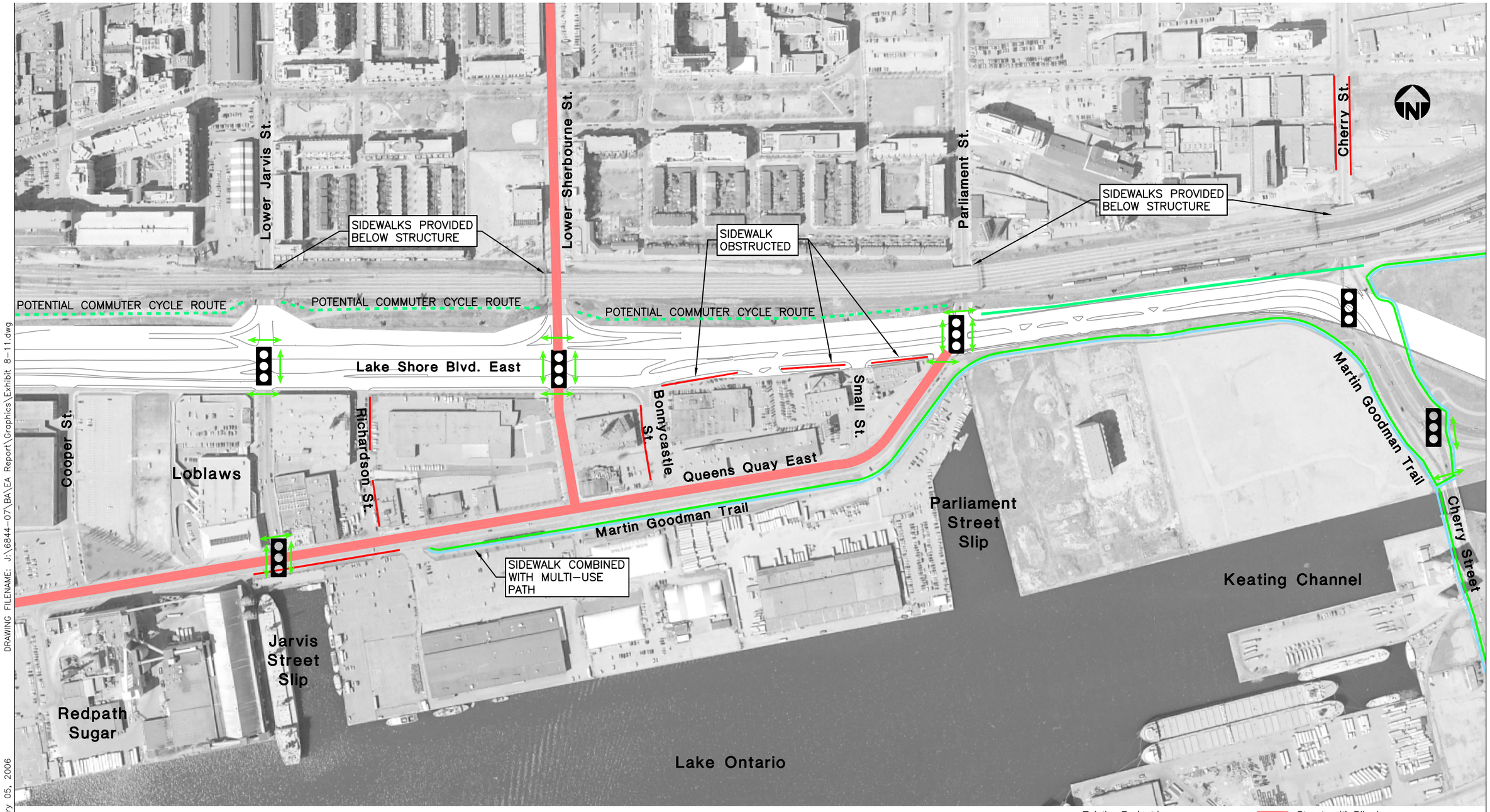
EXISTING TTC & GO TRAIN ROUTES

Existing TTC Bus Route

Existing GO Train Route

75 Direction of Travel & Service Number

Note: 1. Lake Shore Boulevard East shown below the Gardiner Expressway.



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EXISTING BICYCLE & PEDESTRIAN ROUTES

Notes: 1. Major/minor multi-use pathways as defined in the City of Toronto Bicycle Master Plan.
Sidewalks provided on all streets sections except as noted.
2. Lake Shore Boulevard East shown below the Gardiner Expressway.

- Existing Pedestrian Crosswalk at Traffic Signal
- Street Section with no Sidewalk
- Streets with Bike Lanes
- Major Multi-use Pathway
- Minor Multi-use Pathway
- Existing Traffic Signal

BA GROUP

East Bayfront Precinct EA Master Plan
6844-07 January 2006

Scale 1:4000 Airphoto Date: April 27, 2003 1:52pm

Exhibit 8-11

- **Off-Road Multi-Use Facilities**

Part of the Martin Goodman Trail, a major multi-use off-road pathway, runs eastwards from Richardson Street along the south side of Queens Quay East. It continues along the south side of Lake Shore Boulevard East to Cherry Street where it connects to trail systems running into the Port Lands, north along the Don Valley corridor and eastwards on the north side of Lake Shore Boulevard East.

A minor multi-use off-road pathway connects along the north side of Lake Shore Boulevard East between Parliament Street to Cherry Street.

8.1.4 Industrial Rail Spur Lines

Existing heavy rail linkages within the East Bayfront Precinct area are illustrated on **Exhibit 8-12**.

All tracks are owned and controlled by the City of Toronto Economic Development Corporation (TEDCO).

Disused Rail Spurs – North of Queens Quay East

There are two disused rail spur crossings of Queens Quay East that link to the main Redpath Sugar spur line.

One is located just west of Lower Jarvis Street while the second is located near the Queens Quay East / Lake Shore Boulevard East / Parliament Street intersection. These spurs are disused and are completely covered in some areas although the crossings of Queens Quay East, Richardson Street, Bonnycastle Street and Small Street remain in place.

These lines will be eliminated with development of the East Bayfront Precinct.

Redpath Sugar Rail Spur

An operational industrial rail spur line serving the Redpath Sugar (Tate and Lyle) plant runs along the south side of Queens Quay East through the East Bayfront Precinct Master Plan area. Based upon general observations the Redpath rail spur is used on an occasional and relatively infrequent basis for the transportation of refined sugar and

liquid sugar. It is estimated that Redpath may, at times, currently receive up to 10 rail cars over the course of a week.

The Redpath rail spur is serviced from the TEDCO Keating rail yard located to the east of the Don River. The spur runs generally along the south side of the Gardiner Expressway from the TEDCO Keating Yard and crosses Lake Shore Boulevard East near the Cherry Street (north) signalized intersection as it enters the East Bayfront Precinct Master Plan area.

There is a second track running parallel to the main spur generally between Richardson Street and Small Street. This track serves as a siding facility for the Redpath Sugar plant and is used, from our observations, for rail car storage and shunting purposes.

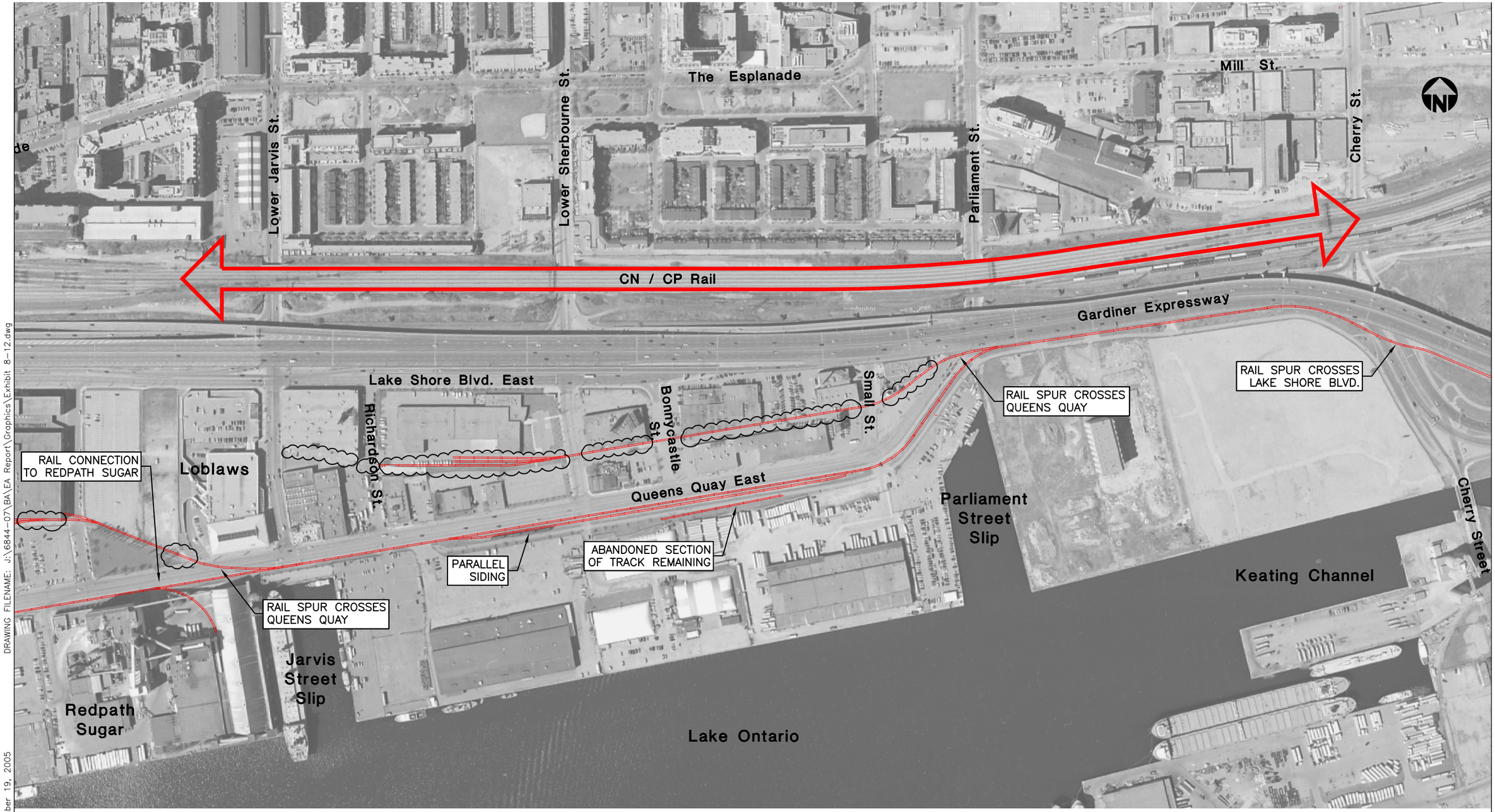
We understand that rail activity on the entire TEDCO system serving the Port Lands and waterfront areas is controlled such that only one train is within the system at any one time for rail safety reasons. Both the Canadian National (CN) and Canadian Pacific (CP) rail companies provide service on the TEDCO system with CN providing service during the morning and CP during the afternoon. Both CP and CN provide service to Redpath Sugar.

8.2 City of Toronto Central Waterfront Secondary Plan - Transportation Considerations

The Central Waterfront Secondary Plan contemplates a number of infrastructure modifications and improvements within and around the East Bayfront Precinct to facilitate the revitalization and redevelopment of, not only this Precinct, but the Central Toronto Waterfront more generally.

Maps A, B and D from the Secondary Plan are shown on **Exhibits 8-13, 8-14** and **8-15** for reference purposes.

Notable initiatives from a transportation perspective that relate to the planning of the East Bayfront Precinct Master Plan area and that provide a planning rationale behind the justification of the need for transportation infrastructure improvements considered as part of the EA Master Plan are discussed briefly in the following sections.



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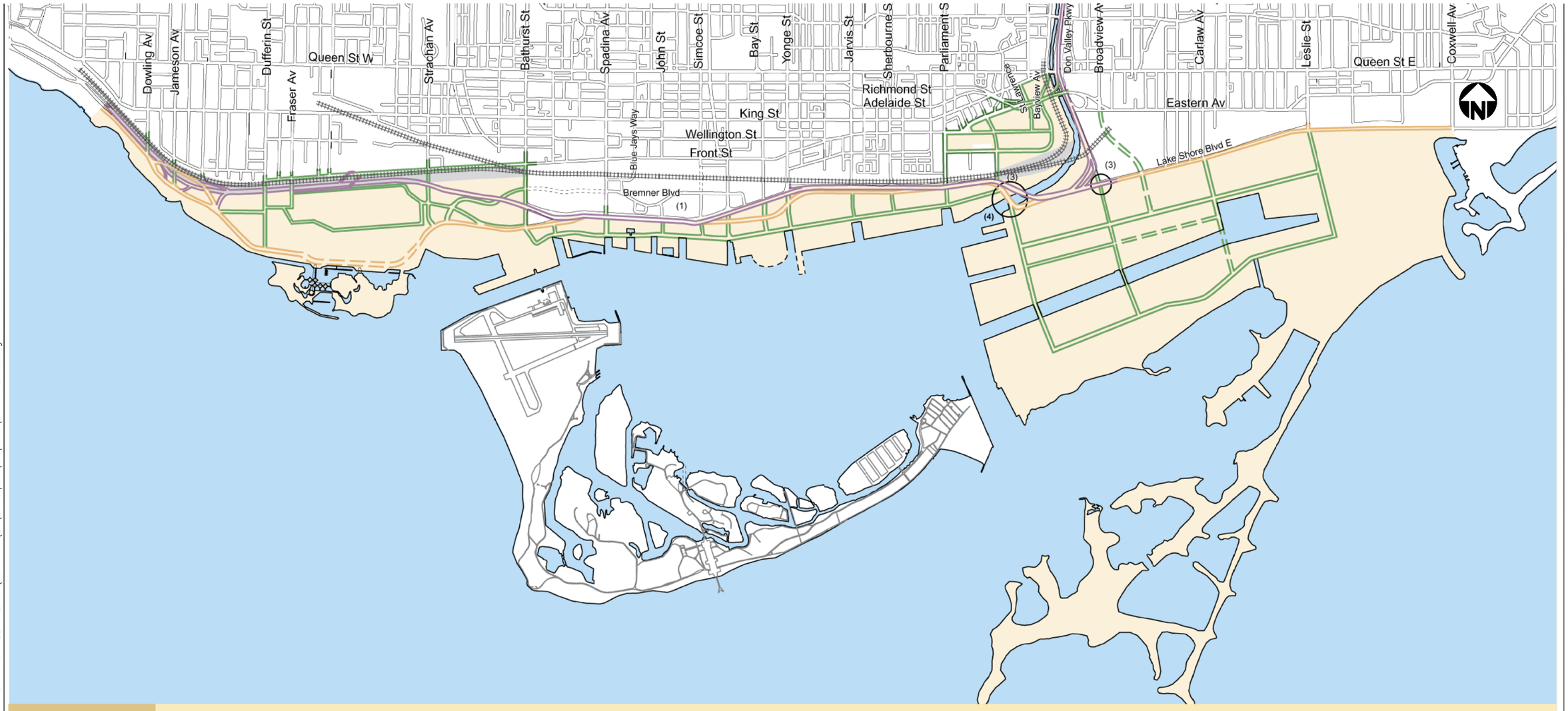
EXISTING RAIL LINKS

Existing Railway Tracks (In Use)

Existing Railway Connection Covered



MAP A

CENTRAL WATERFRONT SECONDARY PLAN
ROADS PLAN

NOTE: (1) GARDINER / LAKE SHORE CORRIDOR AND FRONT STREET EXTENSION SUBJECT TO FURTHER STUDY
(2) SEE SCHEDULE A FOR THE PROPOSED RIGHT-OF-WAY WIDTHS OF MAJOR ROADS
(3) INTERSECTION CONFIGURATION SUBJECT TO FURTHER STUDY
(4) NEW MOUTH OF DON RIVER SHOWN CONCEPTUALLY

MAP INDEX

- EXISTING FREDERICK G. GARDINER EXPRESSWAY
- EXISTING LAKE SHORE BOULEVARD
- REDESIGNED LAKE SHORE BOULEVARD
- MAJOR ROADS (2)
- MAJOR ROADS (LONG TERM) (2)

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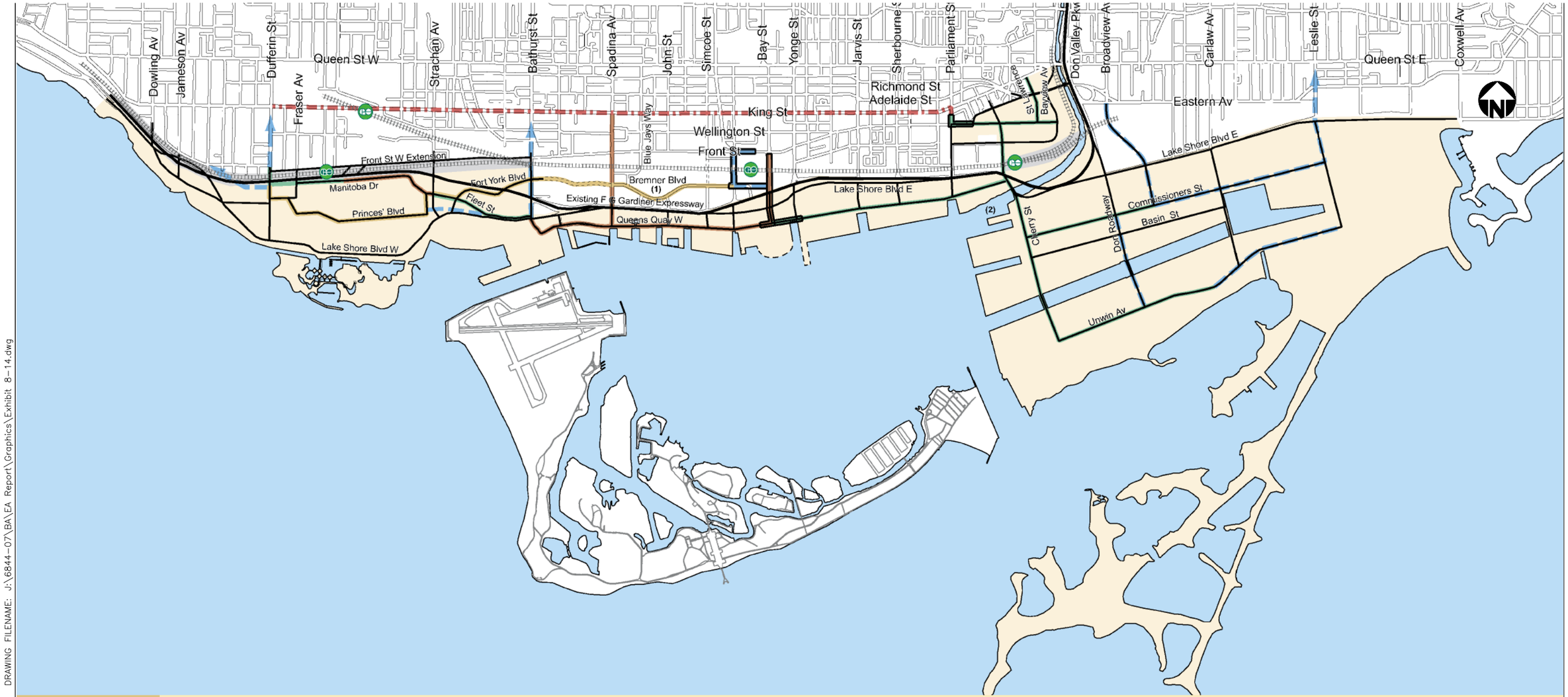

MAP B

CENTRAL WATERFRONT SECONDARY PLAN TRANSIT PLAN

NOTE: (1) COULD EVOLVE TO STREETCAR SERVICE, DEPENDING ON DEMAND / FEASIBILITY
(2) NEW MOUTH OF DON RIVER SHOWN CONCEPTUALLY

MAP INDEX

- EXISTING STREETCAR ROUTE
- EXISTING GO STATION
- TUNNEL SECTION

PLANNED NEW TRANSIT SERVICES

- TRANSIT PRIORITY IMPROVEMENTS
- BUSES OR STREETCARS IN OWN RIGHT-OF-WAY
- STREETCARS IN OWN RIGHT-OF-WAY
- NEW GO STATION

POTENTIAL TRANSIT SERVICES (LONG TERM)

- STREETCARS IN OWN RIGHT-OF-WAY

April 16, 2003

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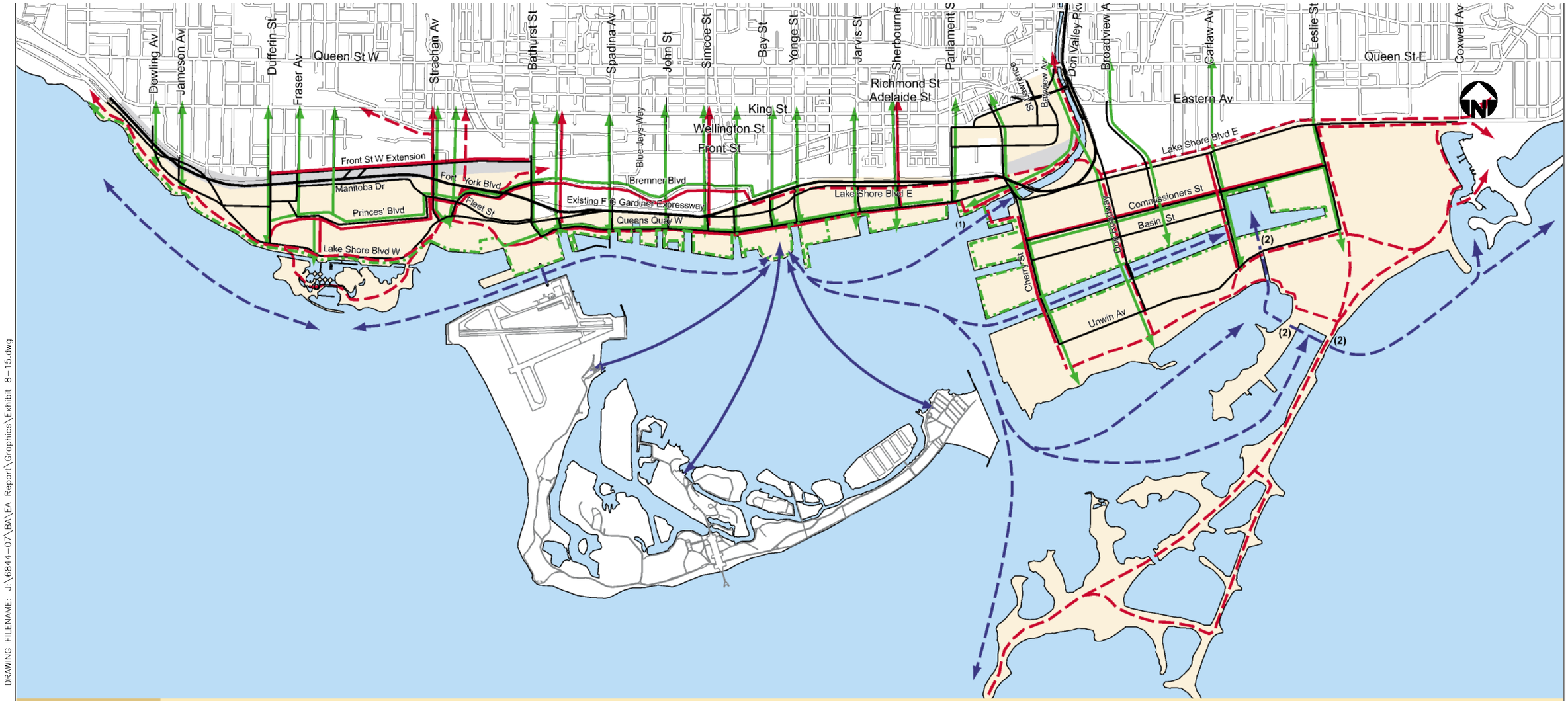
DATE PLOTTED: January 05, 2006



MAP D

CENTRAL WATERFRONT SECONDARY PLAN
PEDESTRIAN, CYCLING AND
WATER ROUTES PLAN

NOTE: (1) NEW MOUTH OF DON RIVER SHOWN CONCEPTUALLY
(2) POTENTIAL LAND BASED (PORTAGE) CONNECTION

MAP INDEX

- PUBLIC PROMENADE (DOCKWALL / WATER'S EDGE)
- KEY PEDESTRIAN LINKS
- MULTI-USE PATHWAYS
- BICYCLE LANES (ON-STREET)
- EXISTING WATER ROUTES
- POTENTIAL WATER ROUTES

April 16, 2003

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8.2.1 Queens Quay East Easterly Extension

An easterly extension of Queens Quay East is contemplated in the Secondary Plan that would ultimately extend existing Queens Quay East to connect to Lake Shore Boulevard East at or near to the existing southern Cherry Street intersection. This would logically involve a reconfiguration of the existing 'angled' section of Queens Quay East / Parliament Street south of Lake Shore Boulevard East and the extension of Parliament Street as a 'regular' north-south street south of Lake Shore Boulevard East. The configuration of the connection to Lake Shore Boulevard East near Cherry Street is the subject of further study.

The extension of Queens Quay East is to be planned in conjunction with the development of plans for the eastern portions of the East Bayfront Precinct Plan. Provision is to be made within this Master Plan area to facilitate a possible future extension of Queens Quay East and a connection to a southerly extension of Parliament Street.

8.2.2 Exclusive Transit Right-of-Way – Queens Quay East

The Central Waterfront Secondary Plan identifies the need for an exclusive transit service facility along Queens Quay East through the East Bayfront Precinct and EA Master Plan area. The streetcar is contemplated as originating from Union Station, initially below grade, and will ultimately serve the East Bayfront and Port Lands areas. This service is to be provided within a dedicated right-of-way.

The need for, and specifics of, the dedicated transit facility (originally identified as necessary as part of travel demand forecasting work undertaken in the development of the Central Waterfront Secondary Plan) will be confirmed (or not) and reviewed further as part of the waterfront wide *Travel Demand Forecasts* study being prepared on behalf of the Toronto Waterfront Revitalization Corporation (TWRC) and a separate Environmental Assessment to be undertaken by the Toronto Transit Commission (TTC) with respect to the planning of a dedicated transit service to the eastern portions of the central Toronto waterfront.

Provision is to be made within the East Bayfront Precinct EA Master Plan to facilitate this higher-order transit facility as an integral component of the waterfront wide transportation strategy to provide a viable alternative to car dependent travel should it confirmed as being required through these above mentioned processes.

8.2.3 Widened Right-of-Way – Queens Quay East

The Central Waterfront Secondary Plan identifies a widened 40.0 metre wide right-of-way for Queens Quay East as being required to accommodate the proposed waterfront road, transit, pedestrian, bicycle and urban design requirements over time. The existing Redpath Sugar rail spur is not included within the 40.0 metre right-of-way.

8.2.4 Pedestrian and Bicycle Linkages

A series of 'key pedestrian links' running along Queens Quay East, Lower Jarvis Street and Sherbourne Street are identified within the Secondary Plan. A new public promenade is also identified running along the water's edge. Facilities meeting these policy objectives are to be incorporated into the planning of the East Bayfront Precinct Master Plan area.

The Secondary Plan also contemplates maintaining the existing on-street bicycle lanes on Queens Quay East as well as on Sherbourne Street through the East Bayfront Precinct and EA Master Plan area.

8.3 Transportation Infrastructure Improvements - Need and Justification

8.3.1 The East Bayfront Precinct Plan

The Central Waterfront Secondary Plan outlines a Precinct planning process for specific areas of the waterfront that is intended to outline development principles and guidelines at a greater level of detail than is possible within the broader Secondary Plan.

A Precinct Plan has been developed for the East Bayfront Precinct area that encompasses the area considered as part of this EA Master Plan. It provides design concepts and a framework guiding the implementation of new public infrastructure to support development of the Precinct (i.e., public streets, transit facilities, park and trails etc.) as well the built form, density and deployment of new development within the Precinct.

While a Precinct Plan was initially developed for the entire East Bayfront Precinct area (Lower Jarvis Street to Cherry Street), the westerly portions of the Plan have been developed in detail to enable the preparation of a comprehensive Zoning By-Law for the Precinct area generally situated between Lower Jarvis Street and Small Street as a primary focus of the planning process for East Bayfront. This Precinct Plan has

undergone extensive review with the City of Toronto, the public and other stakeholder groups through the process of its preparation. The Plan has received approval by City Council. The public infrastructure needs of the westerly portions of the Precinct is the subject of this EA Master Plan.

A series of principles, parcel and building height plans have been prepared to guide the redevelopment of the westerly portions of the East Bayfront Precinct between Lower Jarvis Street and Small Street. An illustrative site plan for the westerly portions of the East Bayfront Precinct prepared by Koetter Kim and Associates (Fall 2005) is shown on **Exhibit 8-16** for reference purposes.

At build-out, up to approximately 800,000 sq. metres (8,630,000 sq. ft.) of total new floor space is contemplated within the western portions of the East Bayfront Precinct that are the subject of this Environmental Assessment Master Plan.

It is anticipated that, based upon TWRC direction, approximately three-quarters (75 percent) of the total floor space will be developed for residential purposes with the remaining quarter (25 percent) for commercial uses. In the range of 6,300 units could be developed depending upon the unit size mix that may ultimately be realized.

The plan contemplates integration of public open spaces and other public facilities into the Precinct Plan including provision for continuous public (pedestrian) access along the Lake Ontario waterfront and a system of weather protected public access thoroughfares (colonnades) through development parcels and adjacent to retail uses proposed at-grade fronting onto key thoroughfares within the Precinct (i.e., Queens Quay East).

It is clear, from a Precinct Planning perspective and based upon the above, that public infrastructure improvements and initiatives are required to meet the development and urban design objectives of the Precinct Plan and Secondary Plan and that the existing transportation infrastructure facilities cannot meet these objectives in its current form.

The need for, and specifics of, infrastructure facility improvements will be determined through this EA Master Plan exercise.

8.3.2 Future Travel Demand Forecasts

Trip Generation – East Bayfront Precinct

A series of travel demand forecasts were originally prepared for the East Bayfront Precinct Master Plan area as part of BA Group's *East Bayfront Precinct, City of Toronto, Transportation Assessment – Update Report* submitted to the City of Toronto in February 2005. These forecasts have subsequently been updated to reflect the current (increased) Precinct development programme and are presented in BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006.

These updated forecast are based upon the development of approximately 6,300 residential units and a mix of commercial uses within the western portions of the East Bayfront Precinct (Jarvis to Small). Forecasts were derived from first principles on a block-by-block basis taking into account the various component uses contemplated within the Precinct.

A summary of the key travel demand forecasts developed by BA Group for the East Bayfront Precinct for the morning and afternoon peak hours is provided in **Exhibit 8-17**. These forecasts reflect composite residential / commercial demands for the Precinct.

Exhibit 8-17: Summary of Travel Demand Forecasts – East Bayfront Precinct Master Plan Area

	Morning Peak Hour		Afternoon Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Total Person Trips	1,625	3,090	4,635	3,665
Vehicle Trips	535	1,000	1,520	1,205
Transit Trips	730	760	1,130	1,645
Other Trips (Walk, bicycle)	305	1,230	1,835	700

Note
1. Volumes rounded to nearest 5 people / vehicles

Traffic Assignments – East Bayfront and West Don Lands Precincts

A series of future vehicular traffic volume assignments have been developed for the western portions of the East Bayfront Precinct reflecting the current Precinct development programme as part of BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006. Reference is also made to the assignment and travel characteristic assumptions used in developing these updated forecasts outlined in BA Group's earlier *East Bayfront Precinct, City of Toronto,*

EAST BAYFRONT PRECINCT PLAN

Source: Koetter | Kim & Associates

Transportation Assessment – Update Report submitted to the City of Toronto in February 2005.

These assignment were developed for the purposes of assessing the adequacy of the area road network to support the redevelopment of the East Bayfront Precinct and reflect significant increases in Precinct traffic activity levels. Traffic operations analyses were undertaken based upon these forecasts to determine the need for modifications and improvements to the existing road system within the EA Master Plan area.

The future traffic volume assignments on the area road system within and surrounding the East Bayfront Precinct EA Master Plan area are shown on **Exhibit 8-18**. These assignments reflect existing traffic activity levels in the area, new traffic generated by development within the East Bayfront EA Master Plan area and allowances for traffic generated by the West Don Lands Precinct.

No specific allowances were made to account for new traffic relating to development in other areas of the Toronto waterfront such as the Port Lands given the uncertainty relating to the configuration of the Gardiner Expressway / Lake Shore Boulevard corridor, the development thresholds being considered within the Port Lands and the way in which these areas may be supported from a road perspective.

For analysis and Precinct Planning purposes, given that detailed travel demand studies will follow, a series of sensitivity analyses considering additional traffic volumes and 2 / 4 lane cross-section options along the Queens Quay corridor were undertaken as part of BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006. These provide insight into the ability of this corridor to accommodate additional 'through' traffic volumes, in excess of that which may be generated by the Master Plan area itself, and travel lane requirements and the implications of a reduction in the number of travel lanes to 2 (total) travel lanes with appropriate turn lanes at intersections.

Waterfront Wide Travel Demand Forecasts

A waterfront wide *Travel Demand Forecasts* study is being prepared by IBI Group on behalf of the Toronto Waterfront Revitalization Corporation (TWRC). This study will examine transportation options that transform the waterfront road system to enable it to support the waterfront wide redevelopment vision while maintaining approximately existing road capacity levels.

Given the substantial levels of growth anticipated in the Waterfront / Central areas, this requires that all modes and elements of the transportation system be enhanced (particularly transit) to provide an overall effective and balanced transportation system that can accommodate future growth and achieve the Waterfront wide redevelopment vision.

A preliminary study report - *Travel Demands Forecasts, Preliminary Findings, Phase 1*- was prepared in August 2004 by IBI Group and provided technical background and a strategic review of Waterfront transportation needs and issues. It focused upon developing a series of travel demand model forecasts that compared the impacts of various alternative configurations being considered for the Gardiner Expressway corridor.

Further detailed work undertaken as part of subsequent phases of this and other related studies will determine the role that Queens Quay East forms in the waterfront wide transportation network in the future and in the context of the adopted Gardiner Expressway corridor configuration alternative and Port Lands infrastructure plan and the traffic volumes it may ultimately carry.

These studies will be used to supplement and refine the findings of the traffic operations analyses undertaken by BA Group with respect to the planning of the East Bayfront Precinct.

8.3.3 Traffic Operations and Vehicular Access Needs

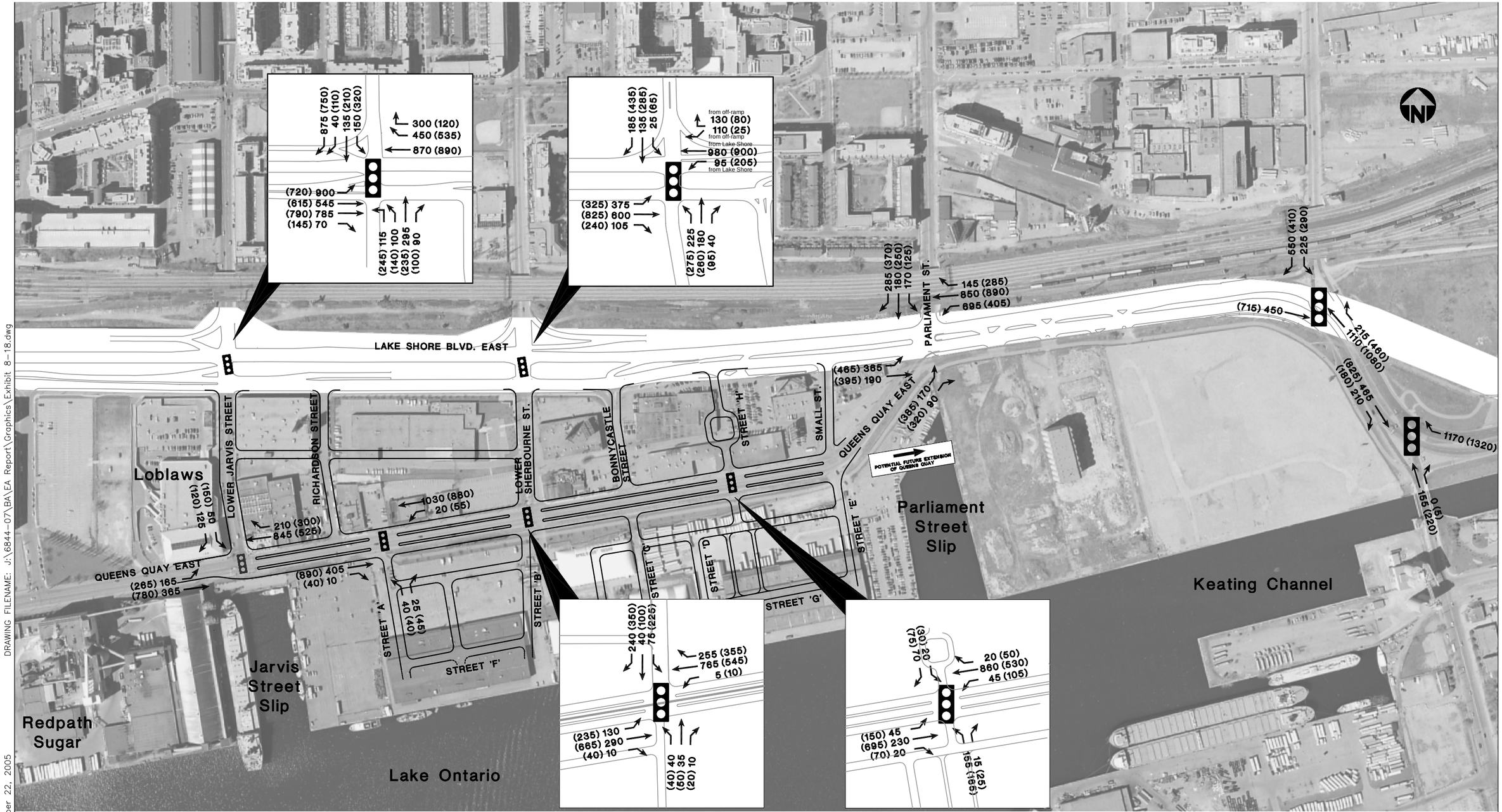
Significant increases in traffic activity levels are forecast as a result of new development within the East Bayfront Precinct.

Local and Waterfront Access

The existing street system within the EA Master Plan area does not provide appropriate levels of vehicular access nor connectivity to / from and within development areas north and south of Queens Quay East and to the Lake Ontario waterfront. Enhanced levels of vehicular accessibility are required from Queens Quay East.

Lower Sherbourne Street

Lower Sherbourne Street is unlikely, in its current configuration, to be able to accommodate forecast demand volumes because of the queuing considerations within the



FUTURE TOTAL TRAFFIC

NOTE: VOLUMES REFLECT BUILD OUT OF WESTERN PORTIONS OF EAST BAYFRONT PRECINCT, WEST DON LANDS PRECINCT PLUS EXISTING TRAFFIC.

Notes: 1. All traffic volumes are rounded to the nearest 5 vehicles.
2. Lake Shore Boulevard East shown below the Gardiner Expressway.

00 AM Peak Hour

(00) PM Peak Hour

Existing Traffic Signal

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existing centre left turn lane between Queens Quay East and the Lake Shore Boulevard / Gardiner Expressway corridor.

The total distance available between the Lake Shore Boulevard East and Queens Quay East intersections is in the order of 115 metres which provides storage for approximately 15 to 20 vehicles (reflecting 6 to 7 metres per vehicle) between the traffic signals situated on Lake Shore Boulevard East and Queens Quay East. Analyses indicate that northbound and southbound left turn queuing activity could individually extend up to 10 to 15 vehicles. As such, it is clear that the storage distance that would be available to accommodate left turn queuing activity between the Lake Shore Boulevard East and Queens Quay East corridors in a back-to-back centre left turn configuration would be inadequate in this circumstance.

Modifications are, thus, required to Lower Sherbourne Street in order for it to function adequately as part of the road network supporting the East Bayfront Precinct.

Lake Shore Boulevard East / Lower Jarvis Street Intersection

Only limited levels of capacity are available at the Lake Shore Boulevard East / Lower Jarvis Street intersection to accommodate additional traffic volumes relating to development, not only within the East Bayfront Precinct, but throughout the Toronto waterfront area. Localized improvements may be considered at this intersection in the future to enable additional traffic volumes to be accommodated at this key intersection. The waterfront wide *Travel Demand Forecasts* study would logically provided further information in regard to the need for such improvements. Preliminary analyses undertaken as part of BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006 suggest that improvements could be appropriately made on the Lower Jarvis Street or on other approaches to the intersection.

8.3.4 Transit Service Needs

Queens Quay East

The Central Waterfront Secondary Plan identifies the need for an exclusive transit service facility along Queens Quay East through the East Bayfront Precinct and EA Master Plan area. This service will, ultimately, provide higher order, reliable and efficient transit service to the East Bayfront Precinct but to other areas of the central waterfront.

The need for, and specifics of, the dedicated transit facility will be determined through a separate Environmental Assessment to be undertaken with respect to the planning of a dedicated transit service to the eastern portions of the central Toronto waterfront.
Provision is being made within the EA Master Plan to accommodate a dedicated transit facility on Queens Quay East should it be required. Modifications are required to the configuration and composition of the existing Queens Quay East right-of-way and cross-section to make appropriate provisions to accommodate such facilities.

8.3.5 Pedestrian Needs

The existing pedestrian environment is inadequate in the context of the proposed redevelopment of the Precinct and the anticipated increases in pedestrian activity levels. The current environment is not conducive to encouraging future residents of the Precinct to travel on-foot in preference to using a vehicle. The condition of the existing pedestrian environment and public realm on Queens Quay East – which is to form the main 'spine' through the Precinct – is of particular concern given the lack of dedicated facilities on its south side. Significant improvements are required to existing pedestrian connections, pedestrian provisions and to the quality of the public realm on streets within the Precinct and elsewhere to make the environment within the Precinct as 'pedestrian friendly' and attractive in this regard as possible.

8.3.6 Bicycle Needs

Queens Quay East, Lower Sherbourne Street and the Water's Edge

An enhanced recreational bicycle route facility through the Precinct and adjacent to the Lake Ontario waterfront is desirable and will supplement the on-street commuter bicycle facilities to be maintained on Queens Quay East and Lower Sherbourne Street. Improvements to the existing connections between the recreational trail and on-street facilities on Queens Quay East at the western extent of the Precinct are required to avoid cyclists from being required to cross Queens Quay East at an informal (unprotected) crossing location.

8.3.7 Rail Spur Needs

Queens Quay East

Rail service is to be maintained to the Redpath Sugar plant. A rail spur is required through the East Bayfront Precinct to link the Redpath plant to the TEDCO Keating Yard. Modification to the existing rail spur alignment is required to better integrate this facility from land-use compatibility and noise / vibration perspectives with planned surrounding new residential and commercial development.

8.3.8 On-Street Parking Needs

Conveniently situated short stay, on-street parking is desirable on streets adjacent to street related retail uses located at-grade. This parking will supplement primary facilities located within the development parcel of the Precinct and will assist in supporting a successful and vibrant range of retail uses at street level.

8.3.9 Public Realm and Landscaping Needs

The existing public realm and landscaping provisions along existing roadways within the East Bayfront Precinct are inadequate in the context of the policies set out in the Central Waterfront Secondary Plan and the primary objectives of the Precinct Plan. Both of these documents talk to the creation of as high a quality urban public space and public realm environment within the Precinct as possible. The Central Waterfront Secondary Plan describes Queens Quay East as '*Toronto's Water View Drive'* and goes on to state that '*Queens Quay will become a scenic water view drive and an important component of the Toronto street network from Bathurst Street to Cherry Street providing ready access to the public activities on waterfront and pedestrian connections to the water's edge. It will be designed to meet the diverse needs of motorists, transit uses, cyclists and pedestrians as well as providing opportunities for vistas to the harbour and lake*'. Wide boulevard and sidewalk facilities on streets are desirable to better facilitate the successful introduction of significant landscape elements and treatments.

Ultimately a great street needs to serve many functions. In addition to addressing the requirements of different modes of travel (auto, transit, freight rail, cycling, and pedestrian), it has to create a street character that will remain vibrant through the different periods of the year.

Design considerations include sun-shade conditions, the relationships between building heights and massing to the street, view corridors, perspectives and transitions to open spaces. It is desirable to create pedestrian-scale spaces through building, landscaping and street design treatments. This is discussed in further detail, as it relates to Queens Quay East, in Section 8.7.

8.3.10 Need and Justification Summary – Infrastructure Improvements

The existing public infrastructure systems within the EA Master Plan area are, based upon the previous sections, clearly deficient in a number of areas that not only relate to meeting the transportation demands of the redeveloped Precinct and adjacent areas but also include meeting public realm, urban design objectives of the Precinct Plan and Central Waterfront Secondary Plan.

Improvements and modifications, which effectively and appropriately balance the needs of all road users and uses, are, thus, clearly required to much of the public infrastructure within the EA Master Plan area.

8.4 Alternative Solutions

8.4. 1 Transportation Alternatives to Address the Opportunity

A total of eleven (11) alternate solutions were identified for evaluation as part of the Phase II Master Plan Environmental Assessment for the East Bayfront Precinct. These were presented to the public at a public information meeting held on December 1, 2003. These are summarized in **Exhibit 8-19**.

Exhibit 8-19: Summary of Alternate Transportation Solutions

Improvement Strategy	Alternative Solution	Description
Do Nothing	A	Retain existing transportation infrastructure
New Roads	B	Provide new roads within the East Bayfront Precinct
	C	Provide new roads outside of the East Bayfront Precinct to support the East Bayfront Precinct
Road Widenings	D	Widen existing roads within the East Bayfront Precinct
	E	Widen existing roads outside of the East Bayfront Precinct to support the East Bayfront Precinct
Road Realignments	F	Realign existing roads within the East Bayfront Precinct
Transit	G	Improve existing bus service to / from the East Bayfront Precinct

Improvement Strategy	Alternative Solution	Description
	H	Construct new and / or extend existing existing rapid transit lines within the East Bayfront Precinct
	I	Construct new and / or extend existing rapid transit lines outside the East Bayfront Precinct to support the East Bayfront Precinct
Waterborne Transportation	J	Improve waterborne transit services to / from / within the East Bayfront Precinct
Bicycles / Pedestrians	K	Construct new and / or extend and improve existing bicycle and pedestrian facilities to / from and within the East Bayfront Precinct

A description of each of the alternative solutions is provided in the following:

- **Do Nothing – Alternative A**

This alternative involves no modifications or changes being made to the existing transportation network within the East Bayfront Precinct Master Plan area.

- **New Roads – Alternatives B and C**

These alternatives include construction of new, or extensions of existing, public roads within (Alternative B) and outside (Alternative C) of the East Bayfront Precinct Master Plan area to support development within the East Bayfront Precinct Master Plan area.

New public roads within the Master Plan area would provide additional street connections to / from and within the Precinct, would define new development parcels, provide development access and address as well as providing the opportunity to enhance the transportation infrastructure facilities available (road, transit, pedestrian and cycle) to appropriately serve the Precinct. New roads being considered within the Precinct could include an extension of Queens Quay to Cherry Street and new streets south of Queens Quay East.

The construction of new public roads outside of the Precinct Plan area to support the Precinct Plan would provide additional transportation capacity to meet increased travel demands arising from development within the Precinct plan.

- **Widen Existing Roads – Alternatives D and E**

These alternatives include widening existing roads within (Alternative D) and outside (Alternative E) of the East Bayfront Precinct Master Plan area to support development within the East Bayfront Precinct Master Plan area.

Widening roads (rights-of-way and / or road pavements) within the Precinct would improve the ability of the existing transportation infrastructure within the Precinct to meet increased travel demands arising from development of the East Bayfront Precinct Plan. Such widenings would provide opportunities to increase existing transportation capacity through a combination of enhancements of roadway, transit, pedestrian and cycle provisions within the Precinct. Possible widening candidates include Queens Quay East and the major north-south streets serving the Precinct area.

Widening roads outside of the Precinct Master Plan area to support the Precinct Plan would, similar to providing new roads, provide additional capacity to meet increased travel demands arising from development within the Precinct.

- **Realign Existing Roads and Intersections – Alternative F**

This alternative involves realigning roadways and intersections within the Precinct Master Plan area to better facilitate the Precinct Plan development and urban design objectives, to normalize intersection configurations, facilitate other transportation infrastructure improvements and enhance access opportunities within the Precinct.

- **Transit – Alternatives G, H and I**

These alternatives include improving existing surface bus services (Alternative G) to / from and within the Precinct Master Plan area, provision for new rapid transit service through and within the Precinct area (Alternative H) and provision for new rapid transit lines outside of the Precinct area (Alternative I). New rapid transit lines would be constructed within their own rights-of-way to minimize delays to transit service. These alternatives would enhance transit service capacity and utility to better support development within the East Bayfront Precinct Master Plan area and along the waterfront more generally.

The provision of enhanced transit service is an integral component of the waterfront wide transportation solution and would provide, once established, an alternative to car dependent travel that would serve to suppress automobile use.

Options being considered could include provision for new rapid transit service along Queens Quay East to serve both the East Bayfront Precinct and the Port Land areas.

- **Waterborne Transit – Alternative J**

This alternative involves improvement of waterborne transit service to / from and within the Precinct Master Plan area across the Lake Ontario waterfront to support development within the East Bayfront Precinct Master Plan area. Such service would supplement other mass transit provisions serving the Precinct.

- **Pedestrian and Bicycle Facilities- Alternative K**

This alternative includes construction, extension or improvement of existing pedestrian and bicycle facilities within the East Bayfront Precinct Master Plan area and will enhance the provision made for these non-auto travel modes. These measures would build upon the facilities outlined on the existing transportation context figure presented to the public at the December 1, 2003 public meeting.

As is the case for transit, encouraging people to walk or to use their bicycles is another key component of the waterfront wide transportation solution that seeks to reduce auto-dependency. These facilities could, for instance, be located along existing or new roads within the Precinct or along the water's edge.

8.4.2 Evaluation Criteria – Alternative Solutions

A number of evaluation criteria were presented to the public at the December 1, 2003 public meeting and were used in establishing which of the alternative solution strategies be carried forward for more detailed review as part of subsequent stages of the Environmental Assessment Master Plan process.

These criteria fall into 5 basic categories – transportation service, natural environment, socio-economic environment, opportunity for revitalization and feasibility / cost. The evaluation criteria are outlined in the following.

Transportation Service

The ability for an alternative solution to address the transportation needs of the East Bayfront Precinct Master Plan area from a transportation service standpoint was evaluated based upon the following:

Road Safety	The effect that a solution would have on the safety of road users including motorists, pedestrians and cyclists.
Ability to satisfy travel demands	The effect that a solution would have on the ability of the transportation system to satisfy travel demands of the Precinct Pan.
Goods movement	Th effect that a solution would have in addressing the materials and other goods movement needs of businesses and development within the Precinct.
Access	The effect that a solution would have on the ability of the transportation system to address the vehicular and pedestrian access needs of the Precinct.
Ability to promote/support transit	The effect that a solution would have in encouraging transit use within the Precinct.
Service to bicyclists	The effect that a solution would have on addressing the needs of cyclists within the Precinct to encourage use of this non-auto travel mode.
Service to pedestrians	The effect that a solution would have on addressing the needs of cyclists within the Precinct to encourage use of this non-auto travel mode.

Natural Environment

The effect that an alternative solution may have on the natural environment has been evaluated based upon the following:

Terrestrial habitat	The effect that a solution would have on the terrestrial habitat.
Land	The effect that a solution would have upon areas of undeveloped land and landscaping.
Water	The effect that a solution would have upon existing water quality and aquatic habitat.
Air	The effect that a solution would have upon air quality.

Socio-Economic Environment

The effect that an alternative solution may have on the socio-economic environment has been evaluated based upon the following:

Noise and vibration	The effect that a solution would have in terms of noise and vibration levels.
Cultural and heritage resources	The effect that a solution would have upon areas or locations of cultural or heritage resources.
Employment	The effect that a solution would have with respect to employment within the East Bayfront Precinct Master Plan area.

Opportunity for Revitalization

The ability for an alternative solution to provide opportunities to support revitalization within the East Bayfront Precinct and across the Toronto waterfront more generally has been evaluated based upon the following:

Ability to guide and support development objectives of the East Bayfront Precinct Plan	The ability a solution would have in guiding and supporting planned development within the Precinct.
Ability to guide and meet the urban design objectives of the East Bayfront Precinct Plan	The ability a solution would have in meeting the urban design objectives of the Precinct Plan.
Ability to support waterfront wide revitalization	The ability a solution would have in supporting the redevelopment and revitalization of the Toronto waterfront outside of the East Bayfront Precinct.

Feasibility and Cost

The feasibility and potential costs that may be involved in implementing a solution are evaluated against the potential benefits that a solution may present in terms of meeting the transportation needs of the East Bayfront Precinct.

8.4.3 Assessment and Evaluation of Alternative Solutions

Evaluation Methodology

The affect or impact that each of the alternate solutions has in regard to each of the evaluation criteria is rated using different coloured and sized circles on the evaluation matrix presented to the public at the December 1, 2003 public meeting. The question

asked in each instance is "what affect will this solution have in regard to the evaluation criteria in question?"

There are four ratings a solution can receive and these are defined as follows:

Good (green large circle)	A solution has a positive impact in regard to the evaluation criteria.
Neutral (blue medium circle)	A solution has neither a positive or negative impact in regard to the evaluation criteria.
Poor (yellow small circle)	A solution has a negative impact in regard to the evaluation criteria.
Rejected (red cross)	A solution is rejected because it has an extremely negative impact on an evaluation criteria.

Solutions that did not receive a "rejected" rating for any evaluation criteria as part of the preliminary evaluation were identified as "preliminary recommended alternative solutions" to be taken forward for public and agency consultation.

Evaluation Findings

The preliminary evaluation of the 11 alternate solutions (including "Do-Nothing") is summarized on **Exhibit 8-20**. This evaluation was presented to the public at the December 1, 2003 public meeting together with the preliminary recommended alternative solutions established based upon the evaluation for public and agency review and consultation.

A discussion relating to the basis for the evaluation outlined in **Exhibit 8-20** is provided in the following. The discussion is provided for each solution with a rationale behind the preliminary evaluation findings identified in each case.

Alternative A – Do Nothing

While the existing transportation infrastructure may function adequately today, the 'Do-Nothing' solution will not address the long-term transportation needs of the East Bayfront Precinct nor of a revitalized Waterfront more generally.

From a transportation service perspective, the existing transportation infrastructure poorly addresses the need to 1) meet increased travel demands of the Precinct, 2) provide appropriate vehicular and pedestrian access to new development within the Precinct, 3) promote and support transit use within the Precinct and 4) provide for pedestrians within

PRECINCT PLANNING

PRELIMINARY EVALUATION OF TRANSPORTATION ALTERNATIVES - EAST BAYFRONT PRECINCT

BA GROUP Transportation Consultants

		ALTERNATIVE SOLUTIONS TO ADDRESS THE TRANSPORTATION NEEDS OF THE EAST BAYFRONT PRECINCT										
	IMPROVEMENT STRATEGY	DO NOTHING	NEW ROADS		ROAD WIDENINGS		ROAD REALIGNMENTS	TRANSIT			WATERBORNE TRANSPORTATION	BICYCLES / PEDESTRIANS
CRITERIA		A Retain existing transportation infrastructure	B Provide new roads within the East Bayfront Precinct	C Provide new roads outside the East Bayfront Precinct to support the East Bayfront Precinct	D Widen existing roads within the East Bayfront Precinct	E Widen existing roads outside the East Bayfront Precinct to support the East Bayfront Precinct	F Realign existing roads and intersections within the East Bayfront Precinct	G Improve existing bus service to/from the East Bayfront Precinct	H Construct new and / or extend existing rapid transit lines within the East Bayfront Precinct	I Construct new and / or extend existing rapid transit lines outside the East Bayfront Precinct to support the East Bayfront Precinct	J Improve waterborne transit services to / from and within the East Bayfront Precinct	K Construct new and / or extend and improve existing bicycle and pedestrian facilities to / from within the East Bayfront Precinct
TRANSPORTATION SERVICE	ROAD SAFETY											
	ABILITY TO SATISFY TRAVEL DEMAND											
	GOODS MOVEMENT											
	ACCESS											
	ABILITY TO PROMOTE / SUPPORT TRANSIT											
	SERVICE TO BICYCLISTS											
	SERVICE TO PEDESTRIANS											
NATURAL ENVIRONMENT	TERRESTRIAL HABITAT											
	LAND											
	WATER											
	AIR											
SOCIO-ECONOMIC ENVIRONMENT	NOISE AND VIBRATION											
	CULTURAL AND HERITAGE RESOURCES											
	EMPLOYMENT											
OPPORTUNITY FOR REVITALIZATION	ABILITY TO GUIDE AND SUPPORT DEVELOPMENT OBJECTIVES OF THE EAST BAYFRONT PRECINCT PLAN	X		X		X				X		
	ABILITY TO GUIDE AND MEET THE URBAN DESIGN OBJECTIVES OF THE EAST BAYFRONT PRECINCT PLAN	X		X		X				X		
	ABILITY TO SUPPORT WATERFRONT WIDE REVITALIZATION	X										
FEASIBILITY AND COST	-											
COMPOSITE RATING	-	X		X		X				X		
PRELIMINARY RECOMMENDED ALTERNATIVE SOLUTIONS		-	👍	-	👍	-	👍	👍	👍	-	👍	👍

LEGEND:

- GOOD
- NEUTRAL
- POOR
- X REJECTED

ALTERNATIVE SOLUTIONS TAKEN FORWARD FOR PUBLIC AND AGENCY CONSULTATION

the Precinct since it does nothing to address the lack of sidewalks on Queens Quay East and other local street sections. Specific needs that cannot be addressed by a 'Do Nothing' alternative include 1) the need to modify the Queens Quay East right-of-way and cross-section to make provision for a dedicated transit facility, 2) the need to increase the number of travel lanes on Lower Sherbourne Street because of queuing considerations, 3) the need for enhanced pedestrian facilities along all streets and, in particular, where there are currently no facilities provided and 4) the potential need to make improvements at the Lower Jarvis Street / Lake Shore Boulevard East intersection to appropriately accommodate future traffic volumes.

The 'Do-Nothing' solution has no impact from a natural and socio-economic environment perspective.

When considering the revitalization opportunities provided by the 'Do-Nothing' solution, it is clear that this alternate provides no benefit in achieving the overall development or urban design objectives of the Precinct Plan. It is likely, in fact, that the 'Do-Nothing' may become an obstacle to revitalization of the Precinct and Waterfront more generally. The 'Do-Nothing' alternative has been rejected with respect to the following evaluation criteria:

- Ability to guide and support development objectives of the East Bayfront Precinct Plan.

  The existing infrastructure in the East Bayfront Precinct cannot, without modification, support the development objectives contemplated within the Precinct. Most notably, the 'Do-Nothing' alternative does not allow for the provision of a rapid transit facility through the Precinct that will promote transit usage within the Precinct. The promotion of transit and other alternative, non-auto travel modes is an essential component and objective of the Precinct transportation solution and will enable the travel demands of development within the Precinct to be met.

- Ability to guide and meet the urban design objectives of the East Bayfront Precinct Plan.

  The development of a high quality public realm and urban environment on all streets, and in particular the key thoroughfares within the Precinct (i.e., Queens Quay East, Lower Jarvis Street and Lower Sherbourne Street), is a primary objective of the East Bayfront Precinct planning process.

It is necessary to modify the existing transportation infrastructure and street system to facilitate significant improvements to the public realm within the East Bayfront Precinct. The 'Do-Nothing' alternative would preclude provision of 1) an appropriate public realm on these streets and 2) new sidewalks and boulevard facilities to enhance the accessibility of areas within the Precinct for non-auto dependent travel.

- Ability to support waterfront wide revitalization.

  The existing transportation infrastructure within the East Bayfront Precinct cannot, without modifications, meet the increased travel demands associated with revitalization of the Waterfront as a whole. This primarily involves the need, that cannot be met with the "Do-Nothing" alternative, for a rapid transit route through the East Bayfront Precinct that serves, not only the East Bayfront Precinct, but other development areas further east within the West Donlands and Port Lands.

The 'Do-Nothing' alternative has been rejected as an option for further consideration based upon the above.

Alternatives B, D and F – New Road, Widening Roads and Realignments Within the Precinct

From a transportation service perspective, the construction of new roads and the widening or realignment of existing roads within the Precinct will, either in combination or separately, 1) provide additional roadway capacity to meet increased travel demands of the Precinct, 2) enhance access opportunities to new development areas within the Precinct and 3) provide opportunities to improve pedestrian facilities within the Precinct (through the introduction of traffic signals across Queens Quay for instance or new sidewalk facilities). They also offer opportunities to provide for new rapid transit rights-of-way within the Precinct (on Queens Quay for instance) and facilitate the construction of new roads (i.e., realignment of the Queens Quay / Parliament Street intersection to enable Queens Quay to be extended eastwards to Cherry Street).

None of these alternatives have a greater impact relative to any other solution from a natural and socio-economic environment perspective.

These alternatives present great opportunities to meet the revitalization goals of the East Bayfront Precinct plan, and across the Waterfront more generally.

From a feasibility and cost perspective these alternatives are practical, viable and cost effective solutions that will assist in meeting the overall transportation needs of the East Bayfront Precinct.

Alternatives B, D and F are, based upon the foregoing, recommended as alternative solutions that should be taken forward for further consideration as part of the Environmental Assessment Master Plan.

Alternatives C and E – New and Widening Roads Outside of the Precinct

While the construction of new and widening of certain existing roads outside of the Precinct area may have benefits in terms of meeting other needs, they would not address the transportation needs of the East Bayfront Precinct itself.

From a transportation service perspective, neither alternative provides 1) additional roadway capacity within the Precinct, 2) access to development within the Precinct, 3) an opportunity to promote transit use within the Precinct or 4) improved service to pedestrians within the Precinct. Furthermore, they do not support realization of any of the development and urban design objectives of the Precinct plan and are basically the "Do-Nothing" alternative in this regard.

These alternatives have been rejected with respect to the following evaluation criteria for the same reasons that the "Do-Nothing" alternative is rejected.

- Ability to guide and support development objectives of the East Bayfront Precinct Plan.

- Ability to guide and meet the urban design objectives of the East Bayfront Precinct Plan.

From a natural and socio-economic environment perspective, neither alternative is expected to have a greater impact relative to any other solution and have been ranked as "neutral" in this regard.

From a feasibility and cost perspective, these alternatives would not represent cost effective solutions to addressing the transportation needs of the East Bayfront Precinct. Solutions within the Precinct area itself are considered to be more cost effective in this regard given that the benefits provided will be more directly focussed upon addressing the needs of the Precinct itself.

Based upon the above, these alternatives have been rejected as options for further consideration.

Alternatives G and J - Improved Bus Service and Waterborne Transportation

From a transportation service perspective, improved bus and waterborne transportation service will have little impact on access and service to pedestrians / cyclists but may assist in satisfying travel demands of the Precinct.

While improvements to waterborne transportation systems will only provide limited levels of additional transit capacity, the provision of improved bus service will, of course, promote and support transit use in an effort to reduce auto-dependency.

It is likely, however, that improvements to bus services ("neutral" ranking) or waterborne transportation services ("poor" ranking) alone will not be able to fully satisfy transit travel demand with build-out of the East Bayfront Precinct and other waterfront areas. The Central Waterfront Secondary Plan identifies the need for a dedicated transit facility along Queens Quay East within the Precinct to meet transit travel demands of not only the Precinct but further east within the Port Lands also. The City of Toronto prepared forecasts in this regard in conjunction with the development of the Central Waterfront Secondary Plan.

From a natural and socio-economic environment perspective, alternatives G and J are not expected to have a greater impact relative to any other solution and have been ranked as "neutral" in this regard except for issues relating to water quality arising from increased motorized boat activity on Lake Ontario ("poor" ranking). Issues relating to air quality with respect to increased bus activity will be offset by the increasing use of "clean" technology and reductions in car volume that increased transit use affords.

Improvements to bus service and waterborne transportation to / from the Precinct are supportive of the development and urban design objectives of the plan. As noted above, with full build out, a more robust transit system will likely be required to fully support these objectives.

Improvements to bus service to / from the Precinct (alternative G) is a cost effective strategy that can be implemented without the need for much in the way of new supporting infrastructure.

Improvements to the waterborne transportation service are less cost effective ("poor" ranking) given that dock loading / unloading facilities are required within the Precinct

and elsewhere and that the service would carry, in comparison to surface transit alternatives, only a relatively limited number of passengers.

The improvement of bus and waterborne transportation services to / from the East Bayfront Precinct will assist in meeting, particularly in the short term, the transportation needs of the Plan and have been recommended for further consideration as part of the Environmental Assessment Master Plan.

Alternative H – New Rapid Transit Lines Within the Precinct

Provision for new rapid transit facilities through the East Bayfront Precinct is an important component of the long term transportation solution for not only East Bayfront but for the revitalization of the entire waterfront (i.e., Port Lands).

From a transportation perspective, new high capacity transit facilities within the Precinct that link to downtown Toronto and across the GTA will not only meet the transit travel demands of the Precinct but also, by providing a high-quality alternate travel mode, will serve to reduce automobile usage within the East Bayfront Precinct and assist in addressing traffic capacity requirements within the Precinct. The provision of transit will have little impact on access, safety and service to pedestrians / cyclists within the Precinct.

From a natural and socio-economic environment perspective, this alternative is not expected to have a greater impact relative to any other solution and has been ranked as "neutral" in this regard except for potential air quality benefits given that the rapid transit system is electrically powered.

The construction of new rapid transit lines within the Precinct is supportive of both the development and urban design objectives of the Precinct Plan and waterfront wide revitalization plan.

Construction of a new rapid transit line is an expensive proposition. However, the benefits in terms of accommodating future travel demands, reducing automobile dependency and facilitating revitalization across the waterfront are considered to be great and justify the likely levels of expenditure.

Alternative H has been recommended for further consideration as part of the Environmental Assessment Master Plan.

Alternative I – New Rapid Transit Line Outside of the Precinct

Similar to the construction of new roads outside of the Precinct, the construction of new rapid transit facilities outside the Precinct will not address the transportation needs of the East Bayfront Precinct itself.

From a transportation service perspective this alternative will not ("poor" ranking) address the need to meet increased transit travel demand within the Precinct and has little impact in terms of 1) access to development within the Precinct and 2) improved service to pedestrians within the Precinct. It does, of course, promote transit usage.

In addition, this alternative does not support realization of the development and urban design objectives of the Precinct plan and amounts to basically the "Do-Nothing" alternative in this regard.

This alternative has been rejected with respect to the following evaluation criteria for the same reasons as the "Do-Nothing" alternative.

- Ability to guide and support development objectives of the East Bayfront Precinct Plan.
- Ability to guide and meet the urban design objectives of the East Bayfront Precinct Plan.

From a natural and socio-economic environment perspective, this alternative is not expected to have a greater impact relative to any other solution and has been ranked as "neutral" in this regard except for save for potential air quality benefits given that the rapid transit system is electrically powered.

Construction of new rapid transit lines is an expensive proposition. Given that any benefits associated with this alternative will be focussed in areas outside of the Precinct, this alternative is not considered to represent a cost effective solution in addressing the transportation needs of the East Bayfront Precinct itself. This solution has been rejected with respect to this evaluation criterion.

Based upon the above the development of new rapid transit outside of the Precinct has been rejected as an option for further consideration as part of the Environmental Assessment Master Plan.

Alternative K – Improve Pedestrian and Bicycle Facilities

This alternative would be pursued in combination with any of the other solutions to address existing deficiencies and discontinuities in the existing pedestrian and bicycle infrastructure and to provide new facilities that support the East Bayfront Precinct Plan. The encouragement of non-auto modes of travel is an important component of the waterfront wide and East Bayfront Precinct transportation solution.

This alternative is generally considered as "good" with respect to each of the evaluation criteria and has no negative impact in any circumstance.

This alternative is recommended for further consideration as part of the Environmental Assessment Master Plan.

8.4.4 Preferred Solutions

A total of 7 "preliminary recommended alternative solutions" (out of the 11 total) were identified (see **Exhibit 8-20**).

Any of these solutions were considered to be able to, either alone or in combination, assist in addressing the transportation needs of the East Bayfront Precinct Plan area and, as such, were recommended on a preliminary basis to be considered further as part of the next stage of the Environmental Assessment Master Plan process.

The solutions that were rejected include (A) 'Do Nothing', (C) providing new roads outside of the East Bayfront Precinct, (E) widening roads outside of the East Bayfront Precinct and (I) constructing new rapid transit facilities outside of the East Bayfront Precinct.

These solutions were rejected, principally, because they would not address the transportation needs nor support the development and urban design objectives of the East Bayfront Precinct Plan.

No specific feedback was provided by the public at the December 1, 2003 public meeting in relation to the recommended or rejected solutions. As such, the 7 identified alternate solutions were confirmed as the recommended alternate solutions to be considered further as part of the Master Plan Environmental Assessment for East Bayfront Precinct.

8.5 Proposed Master Plan – Proposed Infrastructure Improvements

8.5.1 Proposed Road and Bicycle / Pedestrian Route Plans

A transportation infrastructure plan has been developed based upon the recommended preferred alternate solutions identified in Section 8.4 to appropriately support the East Bayfront Precinct Plan and meet the travel and access needs of the Precinct.

The plan recognizes that Queens Quay East forms the main transportation 'spine' serving the Precinct but may also play a role in supporting the revitalization of the Port Lands. The Plan facilitates a potential future easterly extension, as identified in the Central Waterfront Secondary Plan, to Lake Shore Boulevard East near Cherry Street.

The plan is designed to be supportive of non-auto dependent travel modes and makes significant provisions for transit, pedestrian linkages and bicycle facilities to meet this objective. Provision is made, as identified in the Central Waterfront Secondary Plan, for a potential new dedicated transit facility within the centre of Queens Quay East.

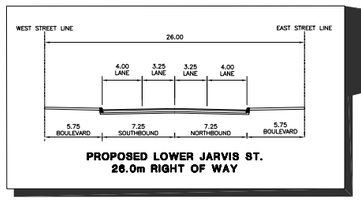
A comprehensive series of pedestrian connections, including a system of weather protected links, are also planned along key routings within the Precinct, including the Lake Ontario waterfront, in addition to the typical sidewalk facilities provided along the area street system. Bicycle routes are also provided through the Precinct area and along the water's edge. The plan also makes provision to maintain the existing Redpath rail spur along Queens Quay East.

Preferred right-of-way allowances and cross-section arrangements have been established for the streets and other linkages within the Precinct area including Queens Quay East. These have been developed to balance the needs of the various uses that would logically be provided for along these linkages while recognizing urban design and pedestrian environment considerations.

A road plan for the Precinct is illustrated on **Exhibit 8-21**. A complementary bicycle and pedestrian routes plan is illustrated on **Exhibit 8-22**.

8.5.2 Proposed Road and Intersection Improvements – Rationale

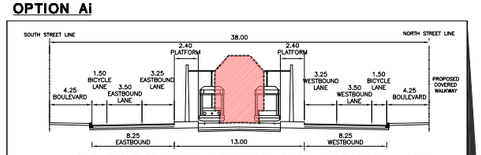
A list of the proposed infrastructure improvements and applicable Class EA Schedules for the transportation network is provided in **Exhibit 8-23** and illustrated on **Exhibit 8-24**.



PROPOSED LOWER JARVIS ST.
26.0m RIGHT OF WAY

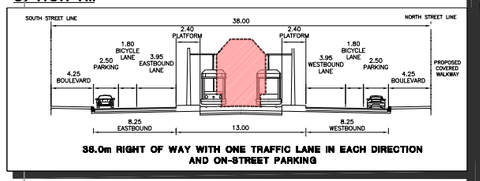
PROPOSED LOWER SHERBOURNE ST.
26.0m RIGHT OF WAY

OPTION Ai



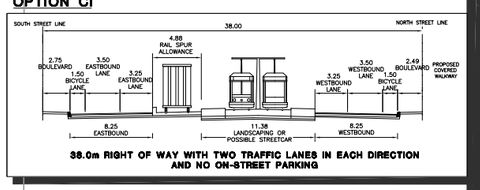
36.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Aii



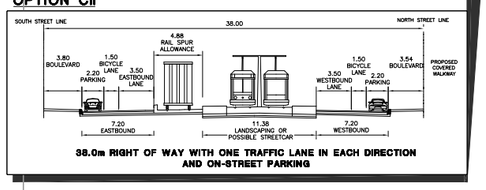
36.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

OPTION Ci



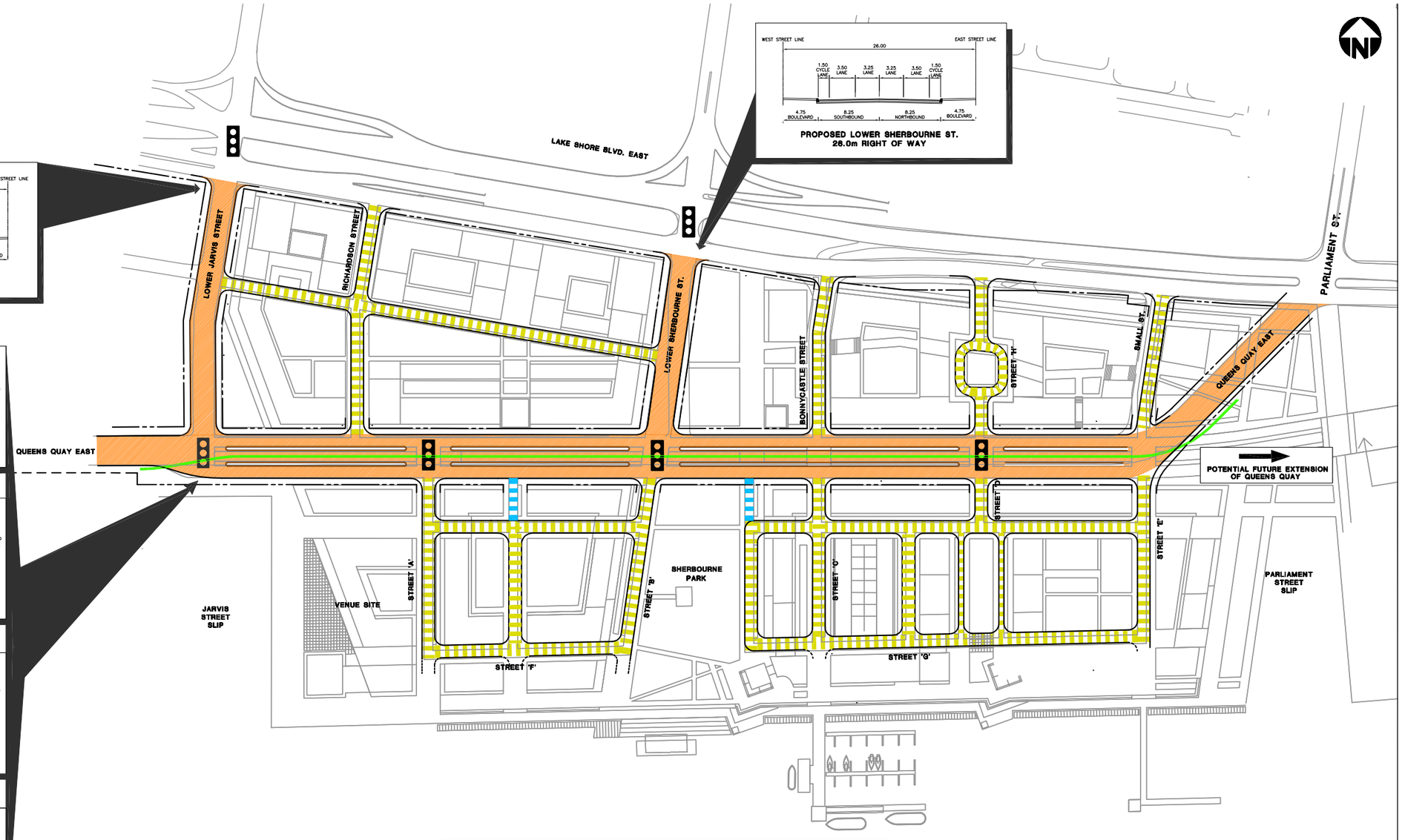
36.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Cii



36.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

* QUEENS QUAY EAST CROSS-SECTION OPTIONS TAKEN FORWARD FOR PUBLIC AND AGENCY CONSULTATION.



NOTE:

LOCAL ROAD AND LANEWAY COFIGURATIONS AND RIGHTS-OF-WAY TO BE PLANNED THROUGH SUBDIVISION, OR OTHER APPROVAL PROCESS

TRAFFIC SIGNAL
REDPATH RAIL SPUR
CITY ARTERIAL/COLLECTOR ROADS
LOCAL ACCESS ROADS AND LANEWAYS
PEDESTRIAN LINK

EAST BAYFRONT PRECINCT PLAN
PROPOSED CROSS SECTION SUMMARY

DRAWING FILENAME: J:\6844-07\BA\EA Report\Graphics\Exhibit 8-21.dwg
DATE PLOTTED: January 02, 2006

POTENTIAL COMMUTER CYCLE ROUTE

POTENTIAL COMMUTER CYCLE ROUTE

Lake Shore Blvd. East

Lower Jarvis

Richardson St.

Lower Sherbourne

Bonnycastle St.

Small St.

Queens Quay East

Loblaws

Park

Parliament Street Slip

Jarvis Street Slip

Lake Ontario

Proposed Alignment of Queens Quay Extension

HARBOR

Pedestrian Crosswalk at Traffic Signal

Proposed/existing Traffic Signal

Streets with On-street Bicycle Lanes

Martin Goodman Trail & Major Multi-use Pathway

Minor Multi-use Pathway

Covered, Weather Protected Pedestrian Linkages

FUTURE BICYCLE & PEDESTRIAN ROUTES

Notes: 1. Lake Shore Boulevard East shown below the Gardiner Expressway.

DRAWING FILENAME: J:\6844-07\BA\EA Report\Graphics\Exhibit 8-22.dwg

DATE PLOTTED: January 05, 2006

LAKE SHORE BLVD. EAST
LOWER JARVIS STREET
RICHARDSON STREET
LOWER SHERBOURNE ST.
BONNYCASTLE STREET
STREET 'H'
SMALL ST.
QUEENS QUAY EAST
PARLIAMENT ST.
POTENTIAL FUTURE EXTENSION OF QUEENS QUAY
Proposed Alignment of Queens Quay Extension
STREET 'D'
STREET 'E'
JARVIS STREET SLIP
VENUE SITE
STREET 'A'
STREET 'B'
SHERBOURNE PARK
STREET 'C'
STREET 'F'
STREET 'G'
PARLIAMENT STREET SLIP

REDPATH RAIL SPUR
MEA CLASS EA SCHEDULE 'A'
ROADS & LANEWAYS BEING PLANNED THROUGH SUBDIVISION APPROVAL PROCESS (MEA CLASS EA SCHEDULE 'A')
PEDESTRIAN LINK
MEA CLASS EA SCHEDULE 'B'
MEA CLASS EA SCHEDULE 'C'
EXISTING OR POSSIBLE SIGNAL

SUMMARY OF PROPOSED INFRASTRUCTURE IMPROVEMENTS

A description of the proposed Schedule A, B and C infrastructure improvements and function in meeting the transportation needs of the East Bayfront Precinct Master Plan area is provided in the following sections.

The identification and evaluation of alternative designs for the Schedule C improvements on Queens Quay East are provided in Section 8.7.

MEA Class EA Schedule A Projects

These Schedule A Projects require approval through Plan of Subdivision, Condominium or Consent, or other appropriate Planning Act approvals as dictated by the City.

Existing Local Roads - Alternative Solutions F & K

It is proposed to maintain Richardson, Bonnycastle and Small Streets between Lake Shore Boulevard East and Queens Quay East in their existing locations.

Potential reductions in the existing rights-of-way on these streets have been contemplated (potentially 16.0 metres from 20.0 metres) to provide flexibility to expand and maximize underground parking opportunities within the abutting development parcels without these facilities extending into the public right-of-way while maintaining a sufficiently wide roadway cross-section to appropriately accommodate vehicular and pedestrian travel, streetscape and underground utility needs. A potential cross-section within the reduced right-of-way width would provide a two lane roadway with parking on one side (8.5 metre pavement width) and two 3.75 metre wide landscaped sidewalks on either side of the roadway.

Exhibit 8-23: Summary of Proposed Road and Intersection Improvements

Infrastructure Improvement	Description	MEA Class EA Schedule	Rationale
Existing Local Streets			
Potential Reduction in ROW Richardson Street, Bonnycastle Street and Small Street		A	Reconstruction where the reconstructed road will be for the same purpose, use, capacity or at the same location as the facility being reconstructed (#19)
New Local Streets and Laneways			
New Streets North and South of Queens Quay East (Streets 'A' to 'H')		A	Local road to be constructed as condition of site plan, consent, plan of sub-division or plan of condominium which will come into effect prior to construction of the road. (#22)
New laneways north and south of Queen Quay East		A	Local road to be constructed as condition of site plan, consent, plan of sub-division or plan of condominium which will come into effect prior to construction of the road. (#22)
Widenings / Realignments			
Queens Quay East Widening	1. 38.0 metre ROW 2. 2 / 4 travel lanes 3. on-street bicycle lanes 4. enhanced sidewalkand streetscape provisions 5. possible on-street parking 6. Redpath rail spur – overlapped with transit or separate	C	Reconstruction or widening where the reconstructed road will not be for the same purpose, use, capacity and at the same location as the facility being reconstructed. Estimated construction cost of widening and associated works: >$1.5 million (#20)
Lower Jarvis Street Widening	1. 26.0 metre ROW 2. 4 travel lanes 3. enhanced sidewalk and streetscape provisions	B	Reconstruction or widening where the reconstructed road will not be for the same purpose, use, capacity and at the same location as the facility being reconstructed. Estimated construction cost: <$1.5 million (#20)
Lower Sherbourne Street Realignment and Widening	1. 26.0 metre ROW 2. 4 travel lanes 3. on-street bicycle lanes 4. enhanced sidewalk and streetscape provisions	B	Reconstruction or widening where the reconstructed road will not be for the same purpose, use, capacity and at the same location as the facility being reconstructed. Estimated construction cost: <$1.5 million (#20)
Intersection Improvements			
Lake Shore Boulevard East / Lower Jarvis Street Intersection Improvements	1. potential improvements and addition of turn lanes to provide additional capacity at the intersection	A	Construction of localized operational improvements at specific locations (e.g. the addition of a ramp to an existing interchange, turning lanes at an intersection, but not a continuous centre left turning lane. Estimated construction cost: < $1.5 million (#12)

Any changes to the right-of-way of these roads will be reviewed in conjunction with applications to development the surrounding development parcels as part of site plan, consent, plan of sub-division or plan of condominium that will come into effect prior to the construction of these roads.

Function / Need:

The primary role of these local streets is to provide direct vehicular and pedestrian access to new development abutting both sides of these streets. Sidewalk facilities will provide linkages to transit services running on Queens Quay East as well as facilitating walk trips within the Precinct.

Their existing locations are generally supportive of the urban design objectives of the Precinct plan and will enable the existing services beneath these streets to be retained in-situ.

These streets will carry low volumes of traffic given that their intersections with Lake Shore Boulevard East will be restricted to right turns only. It is also contemplated that their intersections with Queens Quay East will generally be restricted to right turns only due to the streetcar right-of-way and that these intersection are unlikely to be signalized given their spacing relative to other signalized intersections.

New Local Roads (Streets 'A' to 'H') and Laneways - Alternative Solutions B & K

A system of new roads and laneways is proposed north and south of Queens Quay East within the East Bayfront Precinct Master Plan area that would be classified as local roads and laneways.

These roads will be constructed in conjunction with the surrounding development and be designed as part of the related site plan, consent, plan of sub-division or plan of condominium processes that will come into effect prior to the construction of these roads.

The location, character and cross-section details of these streets and laneways will be established in conjunction with the planning of the surrounding development parcels.

Function / Need:

The primary role of these local streets and laneways is to provide direct vehicular and pedestrian access to new development abutting both sides of these streets / laneways. Sidewalk facilities will provide pedestrian linkages throughout the Precinct and through

development blocks encouraging walk trips as well as providing convenient access to transit services running on Queens Quay East.

The location of these new linkages shown on the illustrative site plan maintain appropriate block and development parcel sizes. These streets and laneways will carry low volumes of traffic.

A description of the role that the new local streets (Streets 'A' to 'H') outlined in the Precinct Plan are contemplated providing is outlined in the following:

- Street 'A' is a north-south connection located mid-block between Lower Jarvis Street and Lower Sherbourne Street and provides access to the special use site and adjacent development parcels. The Street 'A' intersection with Queens Quay East is a logical candidate for signalization and is spaced approximately 150 metres from the adjacent Sherbourne Street and Lower Jarvis Street signalized intersections. Street 'A' is offset east from existing Richardson Street.

- Street 'B' forms a local street extension of Lower Sherbourne Street south of Queens Quay East and will provide a logical and direct connection from north of Queens Quay East to the special use site as well as providing access to Sherbourne Park. The Sherbourne Street extension would also form part of roadway loop, together with Streets 'A' and 'F', connecting between two proposed signalized intersections on Queens Quay East.

- Streets 'C', 'D' and 'E' form a series of links extending southwards from Queens Quay East providing access into the development parcels located between Sherbourne Park and the Parliament Street slip. Street 'C' and 'E' form extensions of existing Bonnycastle and Small Streets, albeit with their intersections with Queens Quay East limited to right turns only. Street 'D' is located mid-block between Sherbourne Street and Parliament Street and its intersection with Queens Quay East is another logical candidate for signalization to provide for left turns into development parcels and pedestrian crossing facilities across Queens Quay East.

- Streets 'F' and 'G' complete proposed 'loop' road systems that link the various north-south roadways south of Queens Quay East. Both Streets 'F' and 'G' are removed modestly from the water's edge to limit general vehicular access and maintain a pedestrian scale focus along the waterfront. Service vehicle access to water's edge maybe provided.

- Street 'H' is a north-south link extending northwards from Queens Quay East to Lake Shore Boulevard East and provides access into development parcels located north of Queens Quay East. Street 'H' forms the northerly extension of Street 'D'.

Lake Shore Boulevard East / Lower Jarvis Street Intersection Improvements - Alternative Solution F

Improvements may be required at the Lake Shore Boulevard East / Lower Jarvis Street intersection to appropriately accommodate future traffic volumes. These improvements would involve the addition of new auxiliary turn lanes at the intersection to improve general traffic operations.

Improvement options that have been considered as part of BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006 (and earlier in BA Group's November 2005 *Traffic Operations Analysis Update* report) are as follows:

1. Additional eastbound through lane on the Gardiner Expressway off-ramp.
2. Additional eastbound through lane on Lake Shore Boulevard East at the intersection.
3. Additional northbound left turn lane on Lower Jarvis Street.

Improvements Options 1 and 2 could be made in isolation or in combination with Option 3. The implementation of these alternatives appears to be feasible based upon the configuration of the existing intersection and Gardiner Expressway structural elements.

Function / Need:

Improvements may be required to provided additional capacity at the intersection to acceptably accommodate new traffic activity related, not only to the East Bayfront Precinct, but also more generally to waterfront wide development. All options provide benefit in terms of the operation of this busy intersection.

The feasibility and determination of the need for such improvements will be confirmed as part of subsequent work undertaken in light of the waterfront wide *Travel Demand Forecasts* study and other studies relating to the future of the Gardiner Expressway and Lake Shore Boulevard corridor.

MEA Class EA Schedule B Projects

Lower Jarvis Street – Lake Shore Boulevard East to Queens Quay East - Alternative Solutions D & K

It is proposed to widen the existing Lower Jarvis Street right-of-way between Lake Shore Boulevard East and Queens Quay East from 20.0 metres to 26.0 metres to provide cross-section element space to meet the demands of vehicular traffic while also addressing pedestrian environment, public realm and landscaping needs.

Function / Need

The existing road right-of-way is 20.0 metres wide and accommodates 4 travel lanes plus sidewalks of approximately 3.0 metres in width on either side of the street. The existing sidewalk widths provide little opportunity to enhance the pedestrian walking environment or to accommodate any significant level of landscaping treatment.

Widened sidewalk facilities are required on this section of Lower Jarvis Street to address pedestrian, public realm and landscaping needs outlined in Section 8.3.8. They will enable improvements to be made in regard to each of these elements of the public roadway and will assist in meeting the urban design objectives of the East Bayfront Precinct Plan as well as encouraging non-automobile travel (walk, cycle and transit) within and through the Precinct.

Lower Jarvis Street is an important collector road vehicular linkage between the Queens Quay East and Lake Shore Boulevard East corridors. It is necessary to maintain the existing four lane cross-section on this section of Lower Jarvis Street to meet the forecast traffic demands with development of the East Bayfront Precinct and given the relative proximity of the signalized intersections on Lake Shore Boulevard East and Queens Quay East (approximately 150 metres storage distance).

Alternative Design Options

Two alternatives are considered to address the above need. These are as follows:

- Option 1 – Maintain Existing Right-of-Way, Reduced Travel Lanes

To provide suitably widened sidewalk / boulevard facilities within the existing right-of-way would require the elimination of a travel lane in each direction. This is not acceptable given traffic operational considerations.

It is, therefore, not possible to appropriately meet pedestrian environment, public realm and landscaping needs on Lower Jarvis Street within the existing right-of-way.

- Option 2 – Widen Right-of-Way to 26.0 Metres

A widening of the existing Lower Jarvis Street right-of-way would enable the width of the existing sidewalk / boulevard facilities to be increased (from 3.0 metres to 5.75 metres) while also providing bicycle friendly curb lanes and maintaining four travel lanes. A possible cross-section is shown on **Exhibit 8-21** that contemplates accommodating the following on Lower Jarvis Street within the widened right-of-way:

- basic 4-lane cross-section (14.5 metre travel lanes)
- 4.0 metre wide 'bicycle friendly' curb lanes
- widened landscaped sidewalks / boulevards in the order of 5.75 metres on both sides of the street

On-street parking may be permitted outside of the peak hours within the curb lanes.

Widened sidewalk / boulevard widths will improve the sidewalk, streetscape and landscaping conditions on Lower Jarvis Street and address the pedestrian environment, public realm and landscaping needs outlined in Section 8.3.9 on this section of Lower Jarvis Street.

Option 2 is preferred.

Widening Options

Widening opportunities on the west side of Lower Jarvis Street may be limited in the short term without the redevelopment of the Loblaws food store property. It may be possible to provide all of the proposed widening on the east side of the street or to adopt an interim and / or staged strategy involving an initial east side widening.

Decisions relating to the widening requirements will be made in conjunction with redevelopment application approvals processes on adjacent properties on the east and west sides of Lower Jarvis Street.

Lower Sherbourne Street – Lake Shore Boulevard East to Queens Quay East - Alternative Solutions D, F & K

It is proposed to widen the existing Lower Sherbourne Street right-of-way between Lake Shore Boulevard East and Queens Quay East from 20.0 metres to 26.0 metres to provide cross-section element space to meet the demands of vehicular traffic, cyclists while also addressing pedestrian environment, public realm and landscaping needs.

It is also proposed to modestly realign Lower Sherbourne Street between Lake Shore Boulevard East and Queens Quay East to connect to Queens Quay East at a location approximately 15 metres west of its current intersection location.

Function / Need

The existing road right-of-way is 20.0 metres wide and accommodates 3 travel lanes (including a centre left turn lane), on-street bicycle lanes plus sidewalks of approximately 3.0 metres in width on either side of the street.

Lower Sherbourne Street is unlikely, in its current configuration, to be able to accommodate forecast traffic demand volumes because of northbound and southbound left turn queuing considerations within a centre left turn lane (as existing) between Queens Quay East and the Lake Shore Boulevard / Gardiner Expressway corridor as outlined in Section 8.3.3. A widening to a 4 lane cross-section is required to enable Lower Sherbourne Street to function adequately as part of the road network supporting the East Bayfront Precinct.

The existing sidewalk widths provide little opportunity to enhance the pedestrian walking environment or to accommodate any significant level of landscaping treatment. Widened sidewalk facilities are required on this section of Lower Sherbourne Street to address pedestrian, public realm and landscaping needs outlined in Section 8.3.9. They will enable improvements to be made in regard to each of these elements of the public roadway and will assist in meeting the urban design objectives of the East Bayfront Precinct Plan.

The westerly realignment of Lower Sherbourne Street north of Queens Quay East to align opposite the western boundary of planned Sherbourne Park enables the extension of a new local street (Street ‘B’) from Queens Quay East as a continuous link to the Lake Ontario waterfront along this corridor. It is not possible to provide this continuous connection to the waterfront without a realignment of Lower Sherbourne Street given the location and configuration of Sherbourne Park as identified in Precinct Plan.

Alternative Design Options

Three alternatives are considered to address the above needs. These are as follows:

- Option 1 – Maintain Existing Right-of-Way, No Realignment

It is not possible to provide four travel lanes on Lower Sherbourne Street and suitably widened sidewalk / boulevard facilities within the existing right-of-way while also maintaining on-street bicycle facilities. This is not acceptable given traffic operational considerations.

It is, therefore, necessary to widen the Lower Sherbourne Street right-of-way to appropriately meet traffic operations and pedestrian environment, public realm and landscaping needs on Lower Sherbourne Street within the existing right-of-way.

Without a realignment of Lower Sherbourne Street it is not possible to provide a continuous public street access routing to the Lake Ontario waterfront along the Sherbourne Street corridor.

- Option 2 – Widen Right-of-Way to 26.0 Metres, No Realignment

A widening of the existing Lower Sherbourne Street right-of-way would enable four travel lanes to be provided between Queens Quay East and Lake Shore Boulevard and the width of the existing sidewalk / boulevard facilities to be increased (from 3.0 metres to 4.75 metres) while also maintaining on-street bicycle lanes. This would address the traffic operations needs on Lower Sherbourne Street as outlined Section 8.3.3 and the pedestrian environment, public realm and landscaping needs outlined in Section 8.3.9.

Without a realignment of Lower Sherbourne Street it is not possible to provide a continuous public street access routing to the Lake Ontario waterfront along the Sherbourne Street corridor.

- Option 3 – Widen the Right-of-Way to 26.0 Metres and Realign

A widening of the existing Lower Sherbourne Street right-of-way would enable four travel lanes to be provided between Queens Quay East and Lake Shore Boulevard and the width of the existing sidewalk / boulevard facilities to be increased (from 3.0 metres to 4.75 metres) while also maintaining on-street bicycle lanes. This would address the traffic operations needs on Lower Sherbourne Street as outlined Section 8.3.3 and the pedestrian environment, public realm and landscaping needs outlined in Section 8.3.9.

The realignment of Lower Sherbourne Street enables continuous public street access routing to the Lake Ontario waterfront along the Sherbourne Street corridor.

A possible cross-section for Lower Sherbourne Street is shown on **Exhibit 8-21** and contemplates accommodating the following:

- a basic 4 lane cross-section (13.5 metre travel lanes)
- on-street bicycle lanes (2 x 1.5 metre lanes)
- widened landscaped boulevards / sidewalks in the order of 4.75 metres on both sides of the street.

Exhibit 8-21 also shows the contemplated realignment of Lower Sherbourne Street to align opposite new Street 'B' on the west side of new Sherbourne Park.

Option 3 is preferred.

Widening Configuration

The widening of Lower Sherbourne Street would logically be made, as appropriate, equally on either side of the street. Lands would be obtained in conjunction with redevelopment application approvals processes on adjacent properties on the east and west sides of Lower Sherbourne Street.

MEA Class EA Schedule C Projects

Queens Quay East – Lower Jarvis Street to Small Street - Alternative Solutions D, H & K

It is proposed to widen Queens Quay East within the East Bayfront Precinct Master Plan area to provide cross-section element space to meet the demands of vehicular traffic, transit, cyclists, pedestrians and existing rail spur service.

A number of alternate cross-sectional and right-of-way combinations for Queens Quay East are reviewed as part of the Phase 3 evaluation for this Schedule C project. The alternate cross-sections considered are described together with the evaluation of alternative designs for Queens Quay East in Section 8.7.

The road plan contemplates maintaining / introducing traffic signal control at each of the major north-south street intersections on Queens Quay East (Lower Jarvis Street and Lower Sherbourne Street) as well as at the Street 'A' and Street 'D'/'H' local access

connections. A minimum signal spacing of 150 metres has been maintained between traffic signals within the Precinct Plan. Introduction of traffic signal control at these locations will provide for left turns across the potential exclusive transit right-of-way located in the centre of Queens Quay East and maintains appropriate levels of accessibility for development parcels within the Precinct.

All unsignalized accesses onto Queens Quay East would be restricted to right turns only because of the planned exclusive transit right-of-way and minimum traffic signal spacing considerations.

Flexibility needs to be maintained to enable a potential future easterly extension of Queens Quay East to a connection with Lake Shore Boulevard East near the Cherry Street intersection. Similarly, sufficient flexibility also needs to be maintained to connect with existing Queens Quay East west of Lower Jarvis Street and a range of potential widening / reconfiguration options that may be considered in the future.

Function / Need:

Queens Quay East forms the principal thoroughfare serving the transportation needs of the western portions of the East Bayfront Precinct given that it basically bisects the Precinct area. It is a minor arterial road that may, in the future, form part of a road network serving the revitalization and redevelopment of the City of Toronto waterfront. Queens Quay East is, given the above, a logical focus for improvement as an effective means of providing much of the transportation infrastructure required to appropriately support the increased travel demands and access needs of the Precinct.

Queens Quay East will need to fulfill a number of functions with build-out of the East Bayfront Precinct including the following:

- Provide for pedestrians and cyclists.
- Provide for landscaping and appropriate urban design treatments.
- Provision of adequate levels of traffic capacity to appropriately accommodate forecast traffic demand volumes considering development of the East Bayfront Precinct Master Plan area and potentially other areas (i.e., Port Lands).
- Provide access to development parcels.
- Accommodate the existing Redpath rail spur.
- Accommodate dedicated transit facilities that serve the Precinct and, potentially, other areas in the future (i.e., Port Lands).
- Provide for on-street parking that is desirable to sustain vibrant, active and successful retail uses along the street.

- Maintain an appropriately sized right-of-way and building separation from an urban design perspective.

Consideration of the facilities required to provide for the needs of each of these factors will clearly influence and then determine the road cross-section and right-of-way width required along Queens Quay East. A widening of Queens Quay East is clearly required to appropriately accommodate a combination of these cross-sectional elements and, in particular, the exclusive transit right-of-way.

It is not possible to accommodate the infrastructure requirements of the East Bayfront Precinct on Queens Quay East within the existing 27.4 metre wide right-of-way while also meeting the urban design, streetscape and enhanced pedestrian realm objectives of the East Bayfront Precinct plan.

8.6 Approvals Being Sought within this EA Master Plan

Approvals are being sought as part of this EA Master Plan with respect to the following:

Identified Schedule 'A' Projects

- Lower Jarvis Street / Lake Shore Boulevard East improvement.

Identified Schedule 'B' Projects

- Lower Sherbourne Street widening and realignment.
- Lower Jarvis Street staged widening.

Identified Schedule 'C' Projects

- The preferred widened right-of-way width for Queens Quay East.
- Preferred location for the widening of the Queens Quay East right-of-way.
- Preferred location for a dedicated transit facility (if required)[1].
- Preferred location for Redpath rail spur.
- Preferred provision of a single rail spur line for the Redpath Sugar plant through the EA Master Plan area.
- Preferred cross-section options for Queens Quay East including establishing basic minimum boulevard and sidewalk facility widths.

Decisions will be made subsequent to this EA Master Plan with respect to the following within an Environmental Assessment being undertaken specifically in regard to a

[1] Subject to confirmation and approval through an Environmental Assessment for the transit facility.

dedicated transit service to the eastern portions of the central Toronto waterfront and in the EA studies that will accompany the Lower Yonge Precinct Plan:

- Confirmation of need for, technology and location of, a dedicated transit facility.
- The potential to overlap the Redpath rail spur and dedicated transit allowances to minimize the widths dedicated for such uses and to optimize widths available for boulevard and sidewalk uses.
- The roadway cross-section on Queens Quay East west of Lower Jarvis Street and the number of travel that can be provided.

Travel lane requirements on Queens Quay East will be confirmed following the completion of the waterfront wide *Travel Demands Forecasts* study. Decisions will be made in conjunction with those made with respect to the number of travel lanes provided west of Lower Jarvis Street West as part of the Environmental Assessment undertaken for the dedicated transit service to the eastern portions of the central Toronto waterfront. The Transit EA may dictate that only two lanes can be provided on

New roads identified as Schedule 'A' projects require approval through a Plan of Subdivision, Condominium, Consent, or other appropriate *Planning Act* approvals as dictated by the City.

8.7 Alternative Designs – Queens Quay East

8.7.1 Approach

A widening of existing Queens Quay East is required to accommodate the transportation infrastructure and complementary public realm elements required to support the development of the East Bayfront Precinct Plan area (Lower Jarvis Street to Small Street).

The alternative design options for a widened Queens Quay East have been developed and evaluated in two stages as follows:

1. Establish a preferred cross-section(s) and right-of-way design that accommodates the component infrastructure elements recognizing the need to balance the needs of varying uses that need to be located within the right of-way.
2. Establish the location of road widening(s) required to implement the preferred cross-section / right-of-way design(s).

8.7.2 Basic Cross-Section Elements

The following provides an overview and discussion relating to the basic cross-section elements that are to be located within the Queens Quay East right-of-way.

It is important to note when considering the appropriate cross-section for Queens Quay East that the Central Waterfront Secondary Plan (By-law 346-2003) describes Queens Quay as "*Toronto's Water View Drive*" and goes on to state that "*Queens Quay will become a scenic water view drive and an important component of the Toronto street network from Bathurst Street to Cherry Street providing ready access to the public activities on the waterfront and pedestrian connections to the water's edge. It will be designed to meet the diverse needs of motorists, transit users, cyclists and pedestrians as well as providing opportunities for vistas to the harbour and lake*".

It is further noteworthy, in this regard that, from an urban design perspective there is a preference to adopt as narrow a right-of-way as possible to minimize building face-to-face distances and the overall scale of the street while providing the necessary cross-sectional elements.

Provision for Exclusive Transit Right-of-Way

The Central Waterfront Secondary Plan identifies the need for an exclusive transit service facility along Queens Quay East through the East Bayfront Precinct and EA Master Plan area. This service is to be provided within a dedicated right-of-way and is contemplated as originating from Union Station, initially below grade, to serve the East Bayfront and Port Lands areas. The dedicated right-of-way will minimize delays to the transit services within the Precinct that may otherwise occur should transit services operate in mixed traffic and assist in providing a reliability and efficient service.

The need for, and specifics of, the dedicated transit facility (originally identified as necessary as part of travel demand forecasting work undertaken in the development of the Central Waterfront Secondary Plan) will be reviewed further as part of the waterfront wide *Travel Demand Forecasts* study being prepared on behalf of the Toronto Waterfront Revitalization Corporation (TWRC) and a separate Environmental Assessment to be undertaken with respect to the planning of a dedicated transit service to the eastern portions of the central Toronto waterfront.

Provision is to be made for a potential new exclusive transit facility within the centre of Queens Quay East through the East Bayfront Precinct should it be determined that such as facility is required as part of Transit EA study.

A standard cross-section for a dedicated transit (streetcar) right-of-way, incorporating side platforms for transit stops and landscaping, provided by the TTC is illustrated on **Exhibit 8-25**. The basic transit right-of-way requirement is 6.58 metres although clearance allowances for curbs are required in addition to this right-of-way where it is adjacent to travel lanes for instance. The desirable platform width is 2.40 metres although a minimum width of 2.0 metres is acceptable from a transit operations perspective.

The TTC has advised that a streetcar turnaround loop should be protected for at a location towards the eastern end of the East Bayfront Precinct Master Plan area. The location of the turnaround will be addressed as part of the Environmental Assessment process to be undertaken for the planning of an exclusive transit service to the eastern portions of the central Toronto waterfront.

Vehicular Travel Lanes

- **Number of Travel Lane Considerations**

Queens Quay East was contemplated as having a basic 4 travel lane cross-section as part of the planning of the Central Waterfront Secondary Plan to accommodate traffic demands of not only new development within the East Bayfront Precinct but also demands relating to new development in other areas of the waterfront and general traffic should it ultimately form an integral part of the overall waterfront road network.

It is notable that, based upon traffic operations analyses undertaken by BA Group (as outlined in BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006), provision of only 1 through lane in each direction (total 2 travel lanes) on Queens Quay East may adequately support development within the East Bayfront Precinct Master Plan area as long as separate turn lanes were provided at key intersections. This would provide additional space within the (say 38.0 metre) right-of-way to provide for on-street bicycle lanes, on-street parking and / or enhanced boulevard space.

However, it is unlikely that additional through volumes could be accommodated along the Queens Quay East corridor with a total of 2 through travel lanes provided. This could, therefore, preclude Queens Quay East from forming a significant component of a road network serving future redevelopment of the Port Lands or as a 'relief' routing available to offset capacity losses should the Gardiner Expressway / Lake Shore Boulevard corridor be reconfigured. It is possible that four travel lanes would be

required in the future to support Port Lands and other waterfront development if Queens Quay East is to form part of the overall road system supporting such development.

The future role of Queens Quay East from the perspective of serving the Port Lands area will be reviewed as part of future studies. The ultimate number of travel lanes required on Queens Quay East can only be determined at a later as part of these studies.

As such, design options that reflect Queens Quay East being either a 2 or 4 travel lane facility are considered as part of this evaluation. In fact, certain options considered protect for the future conversion of a 2 lane Queens Quay East to a 4 lane facility should it be determined that this is required. The same pavement widths are maintained in each case enabling a reallocation of the available space from on-street parking to travel lane use. Decisions in this regard can be made by the City outside of the scope of the Class EA Master Plan process.

- **Lane Widths**

For 2 lane cross-section options the following basic minimum lane widths are adopted:

5.50 metres - combined minimum width of cycle lane and adjacent single travel lane to enable vehicles to pass another disabled vehicle.

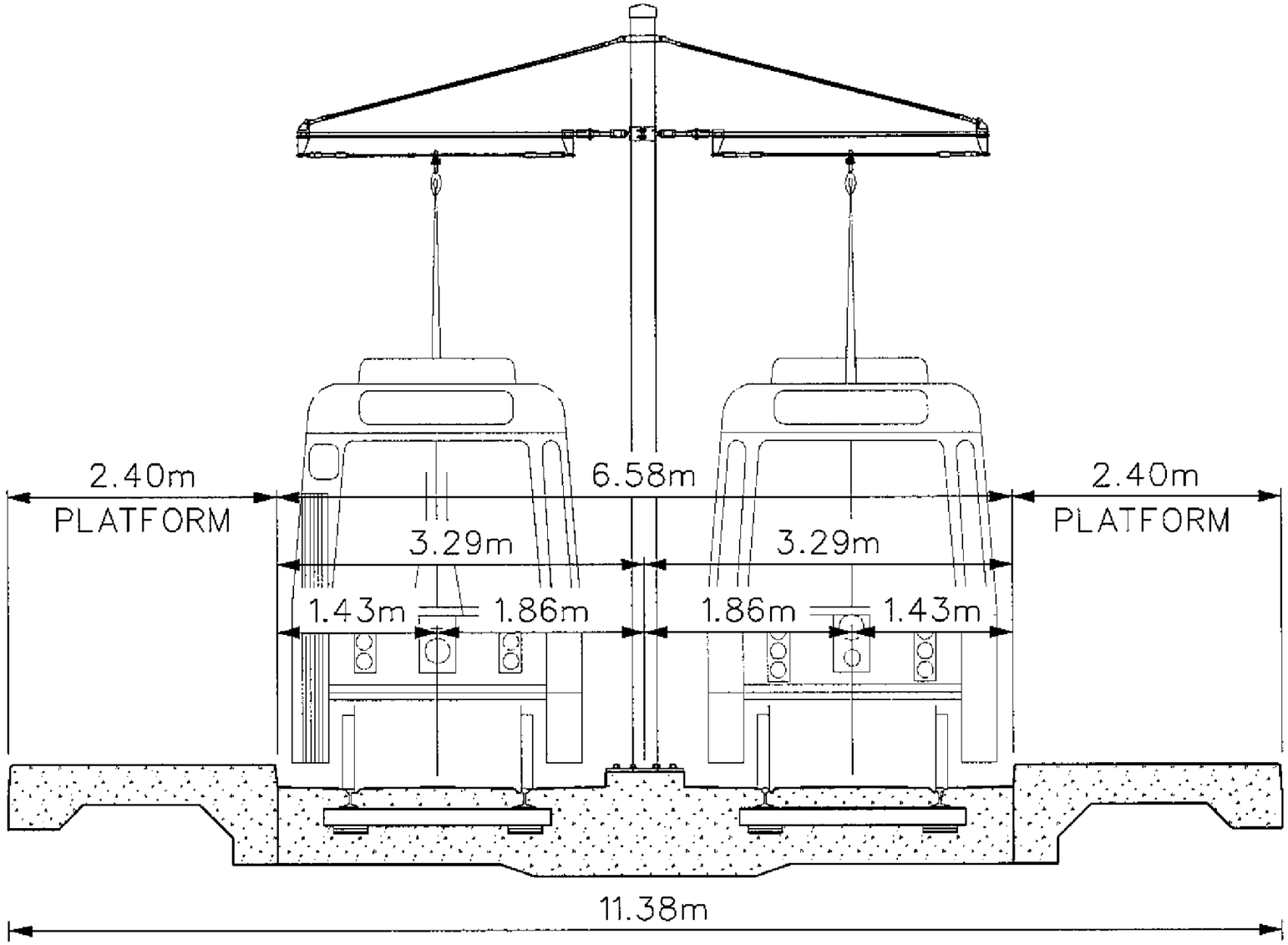
For 4 lane cross-section options the following basic lane widths are adopted:

3.25 metres - inside lane width
3.50 metres - 'curb' lane adjacent to the on-street cycle lanes

On-Street Bicycle Lanes

It is proposed to maintain the existing on-street bicycle lanes on Queens Quay East to provide readily accessible, convenient and direct bicycle facilities within the East Bayfront Precinct Master Plan area that encourage bicycle use.

Bicycle lane widths of 1.5 metres are adopted where the bicycle lane is located adjacent to the curb. A wider 1.8 metre bicycle lane is adopted where the lane is adjacent to on-street parking to provide a greater separation between bicyclists and potentially open car doors.



SECTION 1
PLATFORMS – CENTRE POLES

TTC STREETCAR CROSS SECTION

SOURCE: TORONTO TRANSIT COMMISSION

On-Street Parking

It is desirable to provide on-street parking on Queens Quay East to provide conveniently located at-grade parking to assist in sustaining vibrant, active and successful retail uses along the street.

On-street parking will need to be, where provided adjacent to a bicycle lane, configured in a permanent arrangement (possibly in a lay-by facility) between the on-street cycle lanes and the boulevard. It is not possible with on-street bicycle lanes to permit temporal on-street parking in the curb lane. A 2.5 metre wide parking space width is adopted.

Redpath Rail Spur

The rail spur connection to Redpath Sugar is to be retained to maintain rail service to the Redpath Sugar plant located just west of the Jarvis Street slip.

The existing spur line is planned to be realigned between Small Street and Lower Jarvis Street to run within the Queens Quay East right-of-way in a range of candidate locations as discussed further in Section 8.7.3. The realigned section of spur would be connected to the existing rail track east of Small Street and west of Lower Jarvis Street.

The need for and ability to maintain the second rail siding line currently situated on the south side of Queens Quay East generally between Richardson Street and Small Street is reviewed in the context of the redevelopment of the East Bayfront Precinct and the balancing of space allocations within the proposed Queens Quay East right-of-way, in Section 8.7.4.

Boulevards, Sidewalks and Landscaping Opportunities

Sidewalk and boulevard facilities are required on both sides of the street to provide for pedestrian movement along Queens Quay East. Boulevard areas should be sufficiently wide to provide landscaping and planting opportunities and create an appropriate and desirable public pedestrian realm along Queens Quay East. These measures will serve to encourage pedestrian travel within and through the East Bayfront Precinct.

It is noteworthy that a covered, weather protected walkway is proposed on north side of Queens Quay East and would be integrated into the ground floor of the buildings located on this side of the street. This walkway system forms part of a larger proposed network of inter-connected pedestrian arcades and linkages contemplated routing throughout the

Precinct that will assist in encouraging residents and visitors to walk or take transit as an alternative to using their automobiles.

Pedestrian crossing facilities are to be provided at the each of the existing / proposed traffic signals on Queens Quay East to provide a series of safe and convenient crossing over Queens Quay East and the proposed exclusive transit facility.

8.7.3 Redpath Rail Spur Location Options

The Redpath rail spur line is to be maintained within the Queens Quay East cross-section to provide rail service to the Redpath Sugar plant.

There are a number of considerations that need to be reconciled relating to maintaining heavy rail service along the Queens Quay East corridor in the context of the proposed redevelopment of the East Bayfront Precinct and the related increases in pedestrian, cycle and traffic activity in this currently primarily industrial area. These relate to the following:

- Compatibility with new proposed residential uses within the Precinct.
- Noise and vibration considerations given the proximity and nature of proposed development with the Precinct.
- Safety considerations relating to pedestrian activity in proximity to the rail spur (rail line security) and pedestrian crossing control.
- Road crossing provisions and control.
- Special provisions required at rail crossings of potential TTC streetcar tracks (specialized trackwork) and power supply lines (height clearance conflicts).

The standard clearances required for an industrial rail siding such as the Redpath rail spur would require provision of a horizontal allowance of 4.878 metres (16 ft.) for the spur with a minimum height requirement of 6.706 metres (22'). Provision of this allowance enables unencumbered rail access under industrial siding operation conditions. It is noteworthy that the typical height of the power lines for TTC streetcars is 5.486 metres (18').

A copy of a document outlining the standard clearance requirements is shown in **Exhibit 8-26**.

It is possible to overlap the rail allowance with another element of the road cross-section presuming that suitable temporal (i.e., day or night use restrictions) or physical (i.e., road

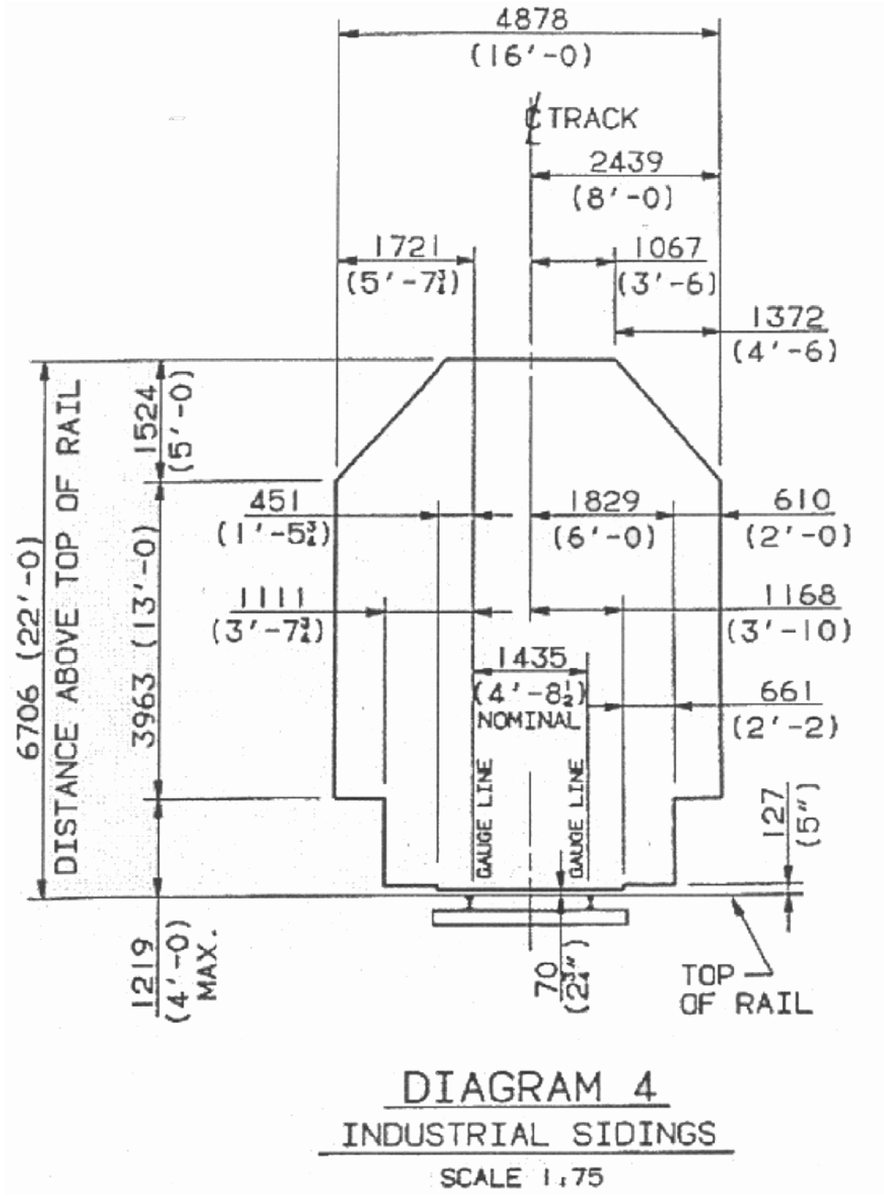


DIAGRAM 4

INDUSTRIAL SIDINGS

SCALE 1:75

RAILWAY CLEARANCE STANDARD FOR INDUSTRIAL SIDING

closures) controls are put in place to eliminate potential rail / other user conflicts. A number of other operational, safety, maintenance and liability issues need to be addressed in such 'overlapped' alternatives.

Physical barriers and signal systems are required at all rail / road crossings. In addition, special provisions are required to facilitate the rail crossing of the TTC streetcar and heavy rail tracks as well as, in certain instance, increasing the height of the TTC streetcar power lines to provide the necessary headroom above the heavy rail vehicles.

Candidate Rail Spur Location Options

A number of candidate options are considered for the rail spur. These are follows:

1. Eliminate the rail spur line and make arrangements with Redpath Sugar for alternate shipping methods such as trucking.
2. Locate the rail spur line within the proposed transit right-of-way within the centre of Queens Quay East and overlapped with TTC transit facilities (i.e., streetcars).
3. Locate within and overlapped with the road travel lanes.
4. Locate within a separate rail allowance on south side of proposed exclusive transit right-of-way generally within the centre of Queens Quay East.
5. Locate within a separate rail allowance on south side of Queens Quay East.

It is desirable given the overall right-of-way width considerations for Queens Quay East, when considering location options for the Redpath rail spur to minimize the amount of space provided solely for rail spur use.

Pre-Screening Evaluation

A discussion relating to each of the 5 candidate options is provided in the following. Options that are to be considered further in the context of the evaluation of the preferred cross-section and right-of-way for Queens Quay East are identified.

Option 1 – Eliminate Rail Spur

- Addresses all compatibility issues with respect to new adjacent residential development.
- Avoids operational and related issues within Queens Quay East right-of-way.
- Removes 'use' that needs to be located within the right-of-way and eliminates potential width requirements.

- Requires alternate measures and arrangements to be taken by Redpath Sugar to replace existing rail service.

This option has not been considered further given that Redpath Sugar relies upon rail service being provided from the TEDCO Keating Yard.

Option 2 – Overlap With Transit Right-of-Way

- Requires a minor widening (approximately 1.0 metre) of the transit right-of-way allowance to enable the streetcar tracks to be separated sufficiently such that the power lines (18' height) to be located outside of the rail allowance (4.878 metres wide).
- Reduces space requirements within right-of-way for rail uses.
- Requires temporal use restrictions and protocol with rail operations limited to night-time use only (typically 2:30 a.m. to 5:30 a.m.). TTC transit services will operate during the daytime.
- Risk of disabled rail car blocking daytime transit service.
- Requires specialized trackwork at heavy rail / TTC streetcar track crossings.
- Requires the height of the TTC streetcar power lines to be increased to 6.706 metres (22') at rail / TTC streetcar track crossings.
- Requires agreements relating to liability and maintenance issues.

This option appears to provide a practical and manageable way to provide for the rail spur within the Queens Quay East right-of-way and is considered further as part of the evaluation of the preferred Queens Quay East cross-section and right-of-way design options.

Option 3 – Overlap With Travel Lanes (Eastbound)

- Requires the full closure of eastbound traffic lanes and turns at intersections between Lower Jarvis Street and Small Street for period of rail service to avoid potential rail / vehicular / bicycle conflicts and address safety considerations.
- Requires development of a traffic and access control (barriers) plan to implement closure.
- No vehicular access is possible to properties on the south side of Queens Quay East during periods of rail service.
- There are significant emergency service access issues to properties on the south side of Queens Quay East during rail service due to closure of eastbound travel lanes and access restrictions.

- Eastbound lane closure may extend for a notable period of time (possibly up to 1 hour continuous closure) during rail service to and from the Redpath Sugar plant along this section of Queens Quay East and shunting activities at the plant. Resulting delays to eastbound through traffic and diversion requirements will be significant during periods of rail service.
- Likely (but not necessary) to limit rail operations to night time periods only to minimize potential impacts to traffic operation during rail service.
- Specialized track treatments required for approximately 600 metres to enable general traffic use of rail lane.
- Increased accident potential for cyclists and motorcycles due to rail and associated flanges running longitudinally along Queens Quay East in eastbound travel lanes. Hazard increases in winter periods.
- Risk of derailment over length of rail spur with road / rail crossing treatment during winter periods due to snow and ice packing within rail flange.

Similar conditions do exist across Canada but are generally being phased out due to safety considerations. This condition is not preferred from a rail safety standpoint due to issues relating to control and security of the roadway / rail allowance in this shared use condition during rail service. The rail / transit overlap option provides better levels of control of the rail allowance during rail service assuming adoption of a temporal use protocol.

This option has not been considered further given the above and the significant potential operational impacts, property access and emergency vehicle access issues relating to the closure of eastbound Queens Quay East during extended periods during rail service.

Option 4 – Separate Allowance Within Centre of Queens Quay East (South Side of Transit)

- Requires provision of a 4.878 metre wide rail allowance within Queens Quay East right-of-way which impacts potential space allocations to other uses and / or potential right-of-way width.
- Avoids operational, maintenance and other related issues associated with overlap with other cross-section uses (i.e., transit).
- Maintains potential for unrestricted rail service access to Redpath Sugar.
- Avoids rail / transit crossings at east (prior to possible extension of Queens Quay East to Cherry Street) and west end of Precinct and related specialized trackwork / power line issues.

This option appears to provide a practical and manageable way to provide for the rail spur within the Queens Quay East right-of-way and is considered further as part of the evaluation of the preferred Queens Quay East cross-section and right-of-way design options.

Option 5 – Separate Allowance on South Side of Queens Quay East

This is similar to the existing rail spur configuration on the south side of Queens Quay East.

- Requires provision of a 4.878 metre wide rail allowance within Queens Quay East right-of-way which impacts potential space allocations to other uses and / or potential right-of-way width.
- Locates rail line immediately adjacent to abutting residential and mixed-use development and entrance areas. This condition is different that the existing situation where buildings are primarily industrial in nature and are set back from the road allowance.
- Located rail line adjacent to pedestrian sidewalk facilities planned on the south side of Queens Quay East and likely requires some form of longitudinal barrier given the increases in pedestrian activity levels forecast with the redevelopment of the Precinct.
- Avoids operational, maintenance and other related issues associated with overlap with other cross-section uses (i.e., transit).
- Maintains potential for unrestricted rail service access to Redpath Sugar.
- Avoids rail / transit crossings at east (prior to possible extension of Queens Quay East to Cherry Street) and west end of Precinct and related specialized trackwork / power line issues.
- Potential rail line security issues and pedestrian safety considerations.
- Emergency service access issues to properties on the south side of Queens Quay East given closure of north-south streets during rail service.

This option has not been considered further given the undesirable proximity of the rail spur immediately adjacent to the new residential and mixed-use buildings on the south side of Queens Quay East, the potential pedestrian / rail conflicts and emergency access issues to the properties on the south side of Queens Quay East during rail service.

8.7.4 Redpath Rail Spur – Siding

Redpath Sugar currently uses the existing siding facility for rail car shunting purposes during rail service.

The existing siding connects to the main spur line at both its east and west ends and provides a 'run-around' facility whereby a locomotive can be located at the front of a train and 'pull' rail cars between the Keating Yard and the Redpath Sugar plant rather than being located at the rear and having to 'push' the cars. This condition is a preferred rail operation.

The basic rail service operation to Redpath Sugar involves the following steps:

1. A train departs the Keating yard and approaches the Redpath Sugar plant on the rail spur.
2. The rail cars in tow are dropped either on the main spur line or on the siding.
3. The locomotive moves ahead into the Redpath Sugar plant and picks up rail cars within the plant that are ready for departure.
4. The locomotive then places the departing cars on the 'other' available track (main spur line or siding depending upon which track was previously used).
5. The train then moves the arriving rail cars into the plant.
6. The locomotive moves to the east end of the departing cars by 'running around' the waiting rail cars using the available track and then proceeds back to Keating Yard leading the train.

While it may be desirable to maintain a rail siding with run-around facility from a rail service convenience and efficiency perspective, the physical implications of locating a second rail line along Queens Quay East within (or just outside of) the East Bayfront Precinct Plan area are significant.

The second line would require width (in the order of 4.878 metres) within the Queens Quay East right-of-way or in an area adjacent to the right-of-way which would either a) reduce the space available for other uses within the cross-section or b) increase the right-of-way. It is unlikely that a second rail line could be overlapped with another road element in addition to the primary spur line.

The existing rail siding length is in the order of 500 metres and extends almost the entire length of the East Bayfront Precinct Master Plan area from approximately Richardson Street to Small Street. Maintaining this length of siding would impact a significant portion of the East Bayfront Precinct Master Plan area. A reduced siding length of approximately 180 metres (switch point to switch point length) would provide sufficient storage for 4 to 5 rail cars during shunting operations that Redpath typically receives at any one time.

Candidate Rail Siding Options

Four candidate options are considered for the rail siding in addition to the Do Nothing alternative of maintaining the existing facility. Options A to C all consider a reduced length (180 metre) siding facility. Maintaining the existing siding length has not been considered in the candidate options but is, implicitly, incorporated into the Do Nothing alternative. The options are as follows:

A. Locate the siding outside of the East Bayfront Precinct west of the Redpath Sugar plant either along Queens Quay East or private property.
B. Locate the siding on the south side of Queens Quay East generally situated between Lower Jarvis Street and proposed Street 'A'.
C. Locate the siding on the south side of Queens Quay East adjacent to the existing rail spur alignment east of Small Street.
D. Eliminate the siding track and modify rail deliver protocols to use the Keating Yard for rail car shunting purposes.

The four alternatives and Do Nothing alternative are illustrated on **Exhibit 8-27**.

As for the rail spur location considerations it is desirable, while considering alternatives for the rail siding, to minimize the amount of space provided for the siding facility given the overall right-of-way width considerations for Queens Quay East.

Pre-Screening Evaluation

A discussion relating to each of the 4 candidate options and Do Nothing alternative is provided in the following. Options that are to be considered further in the context of the evaluation of the preferred cross-section and right-of-way for Queens Quay East are identified.

Do Nothing – Retain Existing Facility

- Requires the existing lands occupied by the rail spur on the south side of Queens Quay East to be retained for rail siding purposes generally between the Jarvis Street and Parliament Street Slips.
- Widens the effective Queens Quay East right-of-way for the length of siding.
- Locates the siding in close proximity to proposed residential and the public venue blocks on the south side of Queens Quay East.

CANDIDATE LOCATIONS FOR INDUSTRIAL RAIL SIDING

Candidate Locations for Industrial Rail Siding

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- Siding location significantly impacts streetscape, landscaping, pedestrian realm and urban design opportunities on the south side of Queens Quay East along the sidings length.
- Locates two rail lines on Queens Quay East along much of the length of the East Bayfront Precinct.
- Maintains current rail service operations to Redpath Sugar.

This option has not been considered further given compatibility issues relating to locating two rail lines on Queens Quay East ('*Toronto's Water View Drive*'), the significant impacts on streetscape, landscaping, pedestrian realm and urban design opportunities on the south side of Queens Quay East and the undesirable proximity of the siding to proposed buildings on the south side of Queens Quay East.

Option A –Locate Siding West of Redpath

- Eliminates requirement for second rail track within the East Bayfront Precinct.
- Facilitates minimized Queens Quay East right-of-way within East Bayfront Precinct Master Plan area.
- Eliminates rail line in close proximity to existing and proposed residential buildings on south side of Queens Quay East.
- Facilitates enhanced urban design, streetscape, pedestrian realm condition on Queens Quay East.
- Maintains current rail service operations to Redpath Sugar.
- Relocates siding to a location adjacent to other existing uses and potential redevelopment parcels outside of the East Bayfront Precinct impacting streetscape, landscaping, pedestrian realm and urban design opportunities on the south side of Queens Quay East in this area.
- Likely requires acquisition of private land outside of existing Queens Quay East right-of-way to provide rail siding. It is not possible to locate the siding within the existing Queens Quay East right-of-way.
- Extends length of existing rail spur westwards to provide suitable run-around facility at westerly switch point.

This option has not been considered further given the need for private property to accommodate the siding and the resulting streetscape, landscaping, pedestrian realm and urban design impacts in the potential location transferred from the East Bayfront Precinct.

Option B –Locate Siding Lower Jarvis Street to Street 'A'

- Requires lands be provided from TEDCO properties on the south side of Queens Quay East be allocated for rail siding from west side of Jarvis Street Slip to Street 'A'.
- Widens the effective Queens Quay East right-of-way for length of siding.
- Locates the siding in close proximity to proposed residential and the public venue blocks on the south side of Queens Quay East.
- Siding location significantly impacts streetscape, landscaping, pedestrian realm and urban design opportunities on the south side of Queens Quay East along the sidings length including the Lake Ontario waterfront in the Jarvis Street Slip area.
- Locates two rail lines on Queens Quay East close to the proposed public venue site and at the western entrance to the East Bayfront Precinct.
- Maintains current rail service operations to Redpath Sugar.

This option has not been considered further given compatibility issues relating to locating two rail lines on Queens Quay East ('*Toronto's Water View Drive*'), the significant impacts on streetscape, landscaping, pedestrian realm and urban design opportunities on the south side of Queens Quay East (particularly at the Jarvis Street Slip) and the undesirable proximity of the siding to proposed buildings on the south side of Queens Quay East and the proposed public venue focal point.

Option C –Locate Siding East of Small Street

- Eliminates requirement for second rail track within the East Bayfront Precinct Master Plan area.
- Facilitates minimized Queens Quay East right-of-way within East Bayfront Precinct Master Plan area.
- Eliminates rail line in close proximity to existing and proposed residential buildings on south side of Queens Quay East.
- Facilitates enhanced urban design, streetscape, pedestrian realm condition on Queens Quay East.
- Maintains current rail service operations to Redpath Sugar albeit with shunting area located approximately 650 metres east of Redpath Sugar plant.
- Likely requires acquisition of private land outside of existing Queens Quay East / Lake Shore Boulevard East right-of-way to provide rail siding.
- Relocates siding to future redevelopment lands within the eastern portions of the East Bayfront Precinct. Siding likely will require subsequent modification in the event that Queens Quay East is extended eastwards to Cherry Street.

- Siding will likely impact adjacent potential redevelopment parcels in the eastern portions of the East Bayfront Precinct as well as streetscape, landscaping, pedestrian realm and urban design opportunities in this area.

This option has not been considered further given a) the need for private property to accommodate the siding, b) the need to likely reconfigure / relocate the siding should Queens Quay East be extended eastwards and c) compatibility issues relating to future development potential and related potential impacts on streetscape, landscaping, pedestrian realm and urban design opportunities within the eastern portions of the East Bayfront Precinct.

Option D –Eliminate Rail Siding

- Removes 'desirable but not necessary' second rail line within or adjacent to the Queens Quay East right-of-way.
- Eliminates requirement for second rail track within the East Bayfront Precinct.
- Facilitates minimized Queens Quay East right-of-way.
- Eliminates rail line in close proximity to existing and proposed residential buildings on south side of Queens Quay East.
- Facilitates enhanced urban design, streetscape, pedestrian realm condition on Queens Quay East.
- Requires that Redpath rail service protocols be modified to facilitate rail service to be provided directly from the Keating Yard.
- Eliminates run-around facility and requires that rail cars 'lead' the train serving the Redpath Sugar plant. Modified operational practices required consistent with this form of service.
- Likely increases rail traffic on rail spur (Keating Yard to Redpath) and service time to Redpath Sugar.

Pre-Screening Evaluation – Preferred Alternative

Option D (eliminate rail siding) is the preferred alternative carried forward in the evaluation of cross-section and widening alternatives for Queens Quay East given the following:

- The significant impacts that maintaining the rail siding would have on the space allocations within the Queens Quay East right-of-way,
- The undesirable proximity of the siding to proposed buildings and potentially the public venue site on the south side of Queens Quay East,

- The impacts on the streetscape, landscaping, pedestrian realm and urban design opportunities on the south side of Queens Quay East.
- Compatibility issues relating to the location of two rail lines within 'Toronto's Water View Drive'.

8.7.5 Alternative Designs – Cross-Sections for Queens Quay East

A total of six (6) alternative cross-section options have been developed for evaluation as part of Phase III Environmental Assessment Master Plan for Queens Quay East in addition to the 'Do Nothing' condition. Following consultations with agencies, two additional alternatives were identified. These are described separately in Section 8.8.

These options fall into two basic categories based upon the cross-sectional elements and related considerations outlined in Sections 8.7.2 to 8.7.4. All options have bicycle lanes and make provision for an exclusive transit right-of-way within the centre of Queens Quay East. The options make varying provisions with respect to the composition of the right-of-way in terms of the number of travel lanes, parking provisions and boulevard widths within 38.0 metre and 40.0 metre right-of-ways.

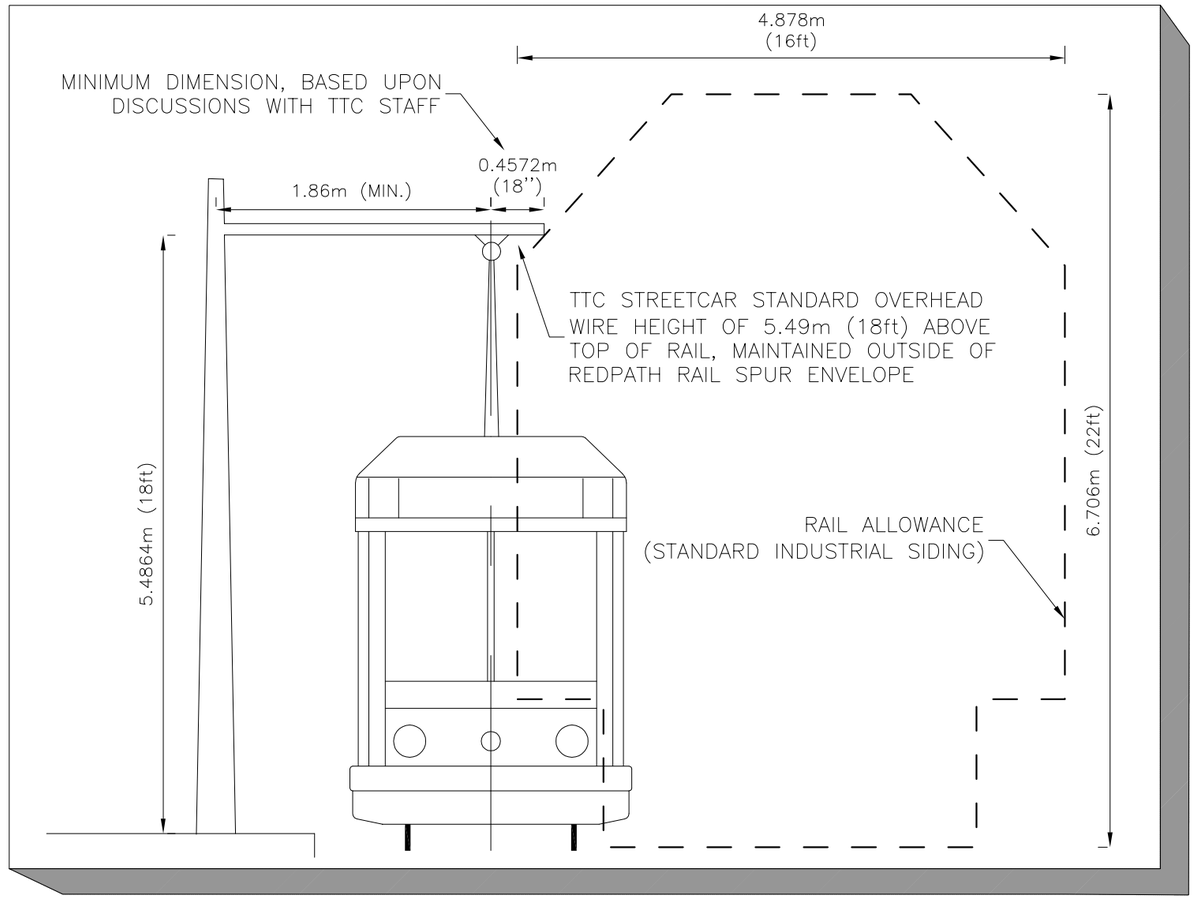
The options are outlined in the following:

- **Redpath Rail Spur Overlapped with Transit**

Option Ai	-	38.0 metre right-of-way, 4 travel lanes, no on-street parking
Option Aii	-	38.0 metre right-of-way, 2 travel lanes, on-street parking
Option B	-	40.0 metre right-of-way, 4 travel lanes, on-street parking

A detail showing a potential arrangement for the rail allowance within the transit right-of-way is illustrated in **Exhibit 8-28**.

To enable the TTC streetcar power lines to remain at the standard 18' clearance above top of rail by locating them outside of the rail clearance envelope for industrial sidings, the standard 6.58 metre wide transit right-of-way has been widened by approximately 1.60 metres. The total width of the transit right-of-way within the centre of Queens Quay East with the overlapped rail configuration, including platforms, is 13.0 metres compared to 11.38 metres (TTC right-of-way cross-section – **Exhibit 8-25**) without the rail line.



ARRANGEMENT OF RAIL ALLOWANCE OVERLAPPED
WITH TRANSIT RIGHT-OF-WAY

- **Separate Rail Right-of-Way**

Option Ci	-	38.0 metre right-of-way, 4 travel lanes, no on-street parking
Option Cii	-	38.0 metre right-of-way, 2 travel lanes, on-street parking
Option D	-	40.0 metre right-of-way, 4 travel lanes, no on-street parking

The alternate cross-sections for Queens Quay East are illustrated on **Exhibits 8-29** to **8-32**.

A description of each is provided in following sections.

Options Ai & Aii

Both options Ai and Aii contemplate adoption of a 38.0 metre right-of-way for Queens Quay East. The following common cross-sectional elements are accommodated in each:

- 13.0 metre wide transit right-of-way in the centre of Queens Quay East. This includes provision for platforms / landscaped medians to the north and south of the exclusive transit allowance.
- The Redpath rail spur located within, and overlapped with, the transit right-of-way.
- On-street bicycle lanes - 1.5 metres where adjacent to a curb and 1.8 metres where adjacent to parking.
- 4.25 metre wide boulevards.

The main differences between the two plans is the number of travel lanes and the provision for on-street parking. Both options have the same pavement width allocated within the cross-section (8.25 metres each direction).

In Option Ai the available pavement width is programmed to provide 4 travel lanes (2 in each direction) in addition to the bicycle lanes should this number of lanes be required in the future. No on-street parking is proposed to assist in reducing the overall width of the Queens Quay East right-of-way to 38.0 metres.

In Option Aii the same 8.25 metres (that would be required to provide 4 lanes) is programmed to provide 2 wide travel lanes, the on-street bicycle lanes and on-street parking to support planned retail uses on Queens Quay East. The combined width of the one travel lane provided in each direction plus bicycle lane enables vehicles to pass another disabled vehicle.

Option Aii could be adopted on an interim basis prior to any extension of Queens Quay East to serve the Port Lands with the ability to readily convert the pavement allocation in the future or on a permanent basis should it be determined that Queens Quay East would serve primarily only the East Bayfront Precinct.

Option B

Option B is a variation on Option Ai.

Option B provides all the same elements as Option Ai plus on-street parking on the north side of the Queens Quay East to support grade related retail uses. A widened 40.0 metre right-of-way is contemplated to accommodate the on-street parking while maintaining acceptable boulevard widths.

The following cross-sectional elements are accommodated:

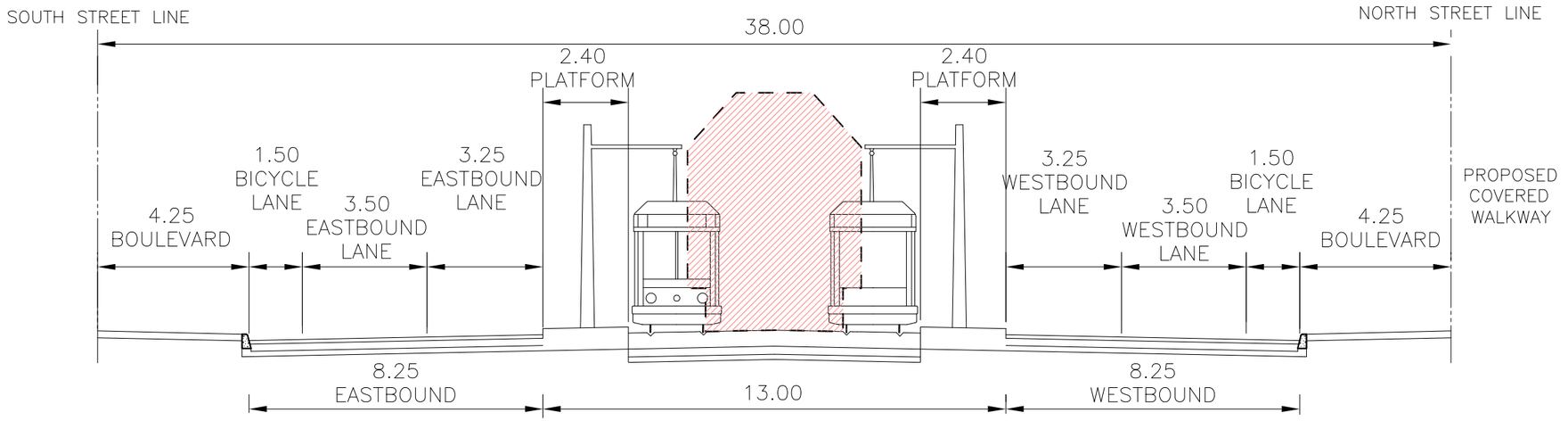
- 13.0 metre wide transit right-of-way in the centre of Queens Quay East. This includes provision for platforms / landscaped medians to the north and south of the exclusive transit allowance.
- The Redpath rail spur located within, and overlapped with, the transit right-of-way.
- On-street bicycle lanes - 1.5 metres where adjacent to a curb (south side), 1.8 metres where adjacent to parking.
- On-street parking lay-by on north side of street.
- 3.45 and 4.25 metre wide boulevards on the north and south sides of Queens Quay East respectively. The north side boulevard is located adjacent to a planned covered and weather protected walkway.
- Four (4) travel lanes.

Options Ci & Cii

Both options Ci and Cii contemplate adoption of a 38.0 metre right-of-way for Queens Quay East. The following common cross-sectional elements are accommodated in each:

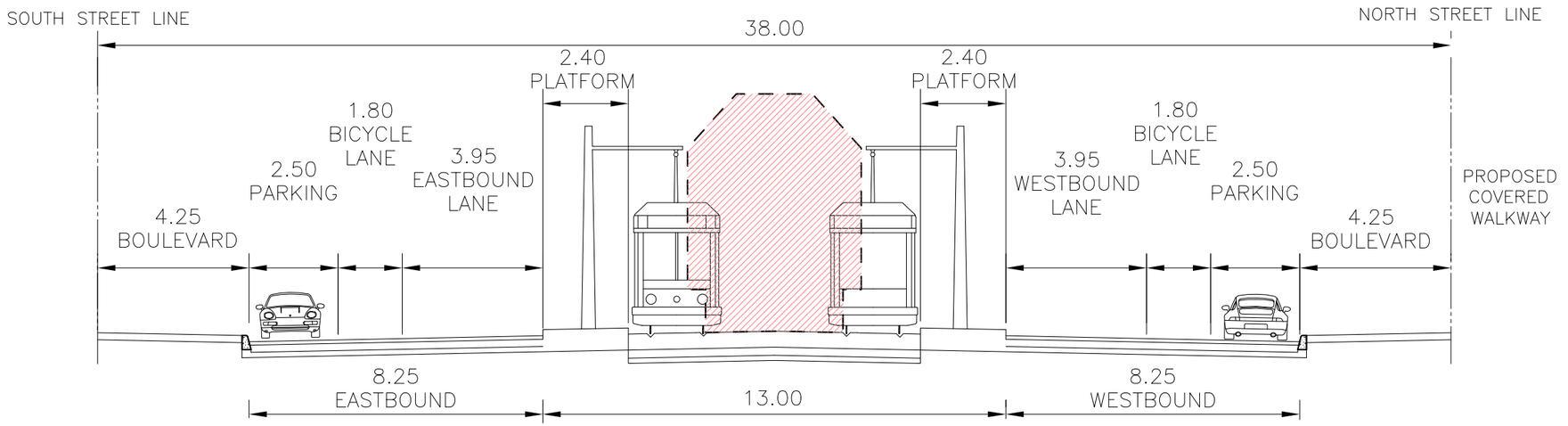
- An 11.38 metre wide transit right-of-way in the centre of Queens Quay East. This includes provision for platforms / landscaped medians to the north and south of the exclusive transit allowance.
- The Redpath rail spur located within its own, separate, allowance located on the south side of the transit right-of-way. The width of rail allowance is 4.878 metres consistent with rail clearance requirements for industrial spurs.

OPTION Ai



38.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

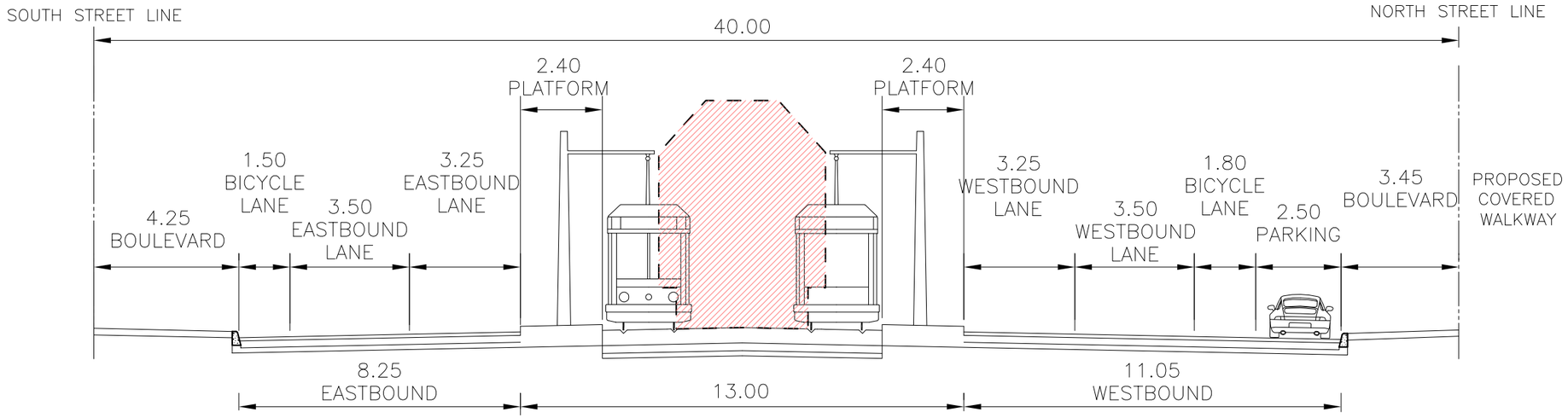
OPTION Aii



38.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

EAST BAYFRONT PRECINCT PLAN
PROPOSED QUEENS QUAY EAST CROSS SECTIONS

OPTION B



40.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND ON-STREET PARKING

EAST BAYFRONT PRECINCT PLAN
PROPOSED QUEENS QUAY EAST CROSS SECTIONS

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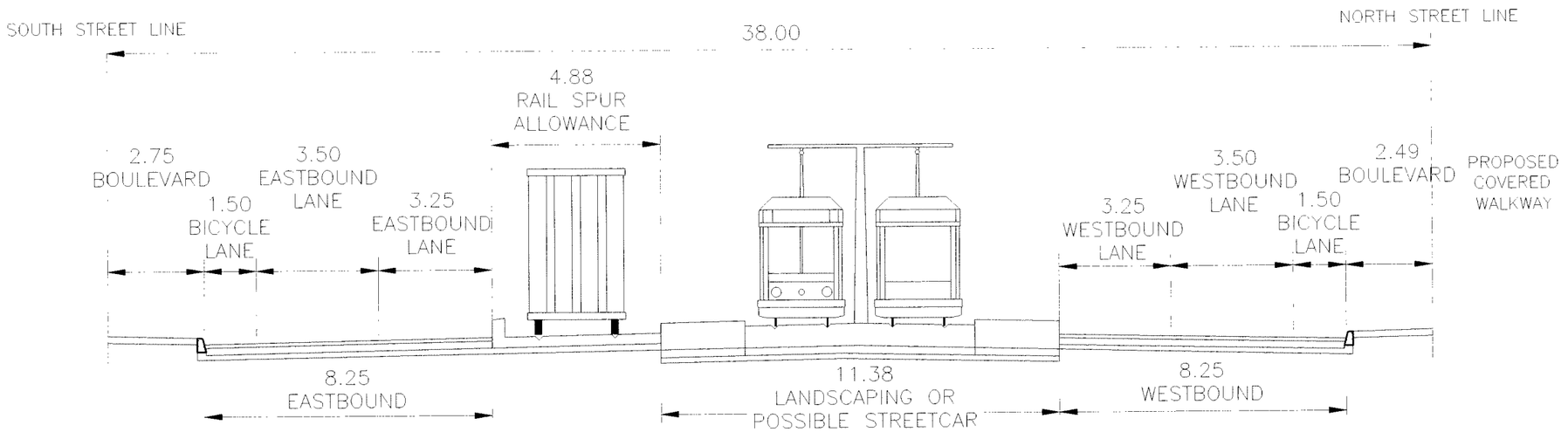
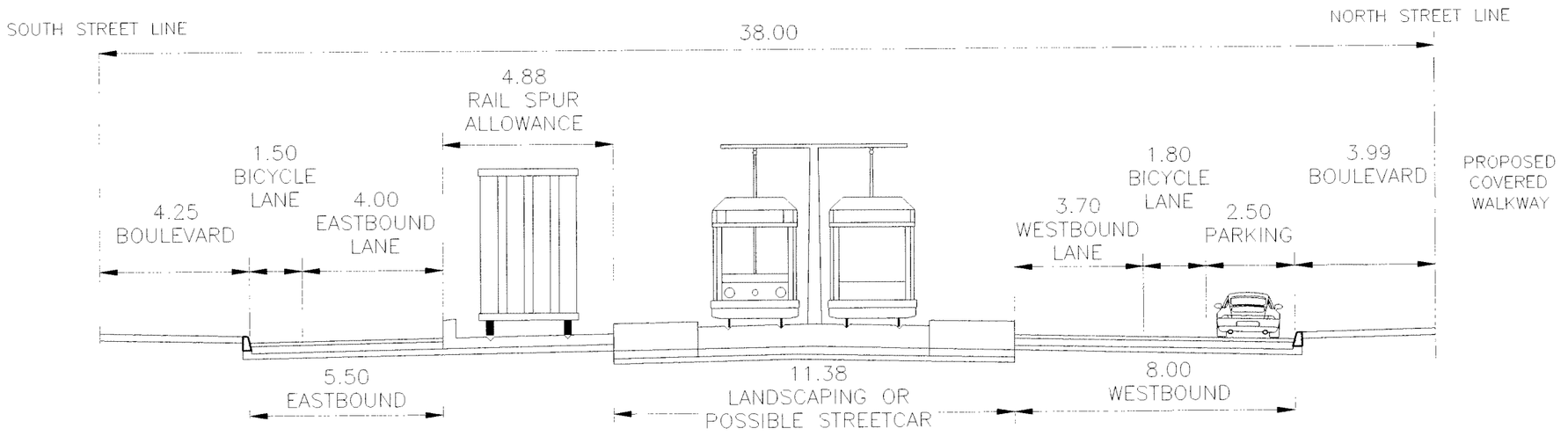
OPTION Ci



38.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Cii



38.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

EAST BAYFRONT PRECINCT PLAN
PROPOSED QUEENS QUAY EAST CROSS SECTIONS

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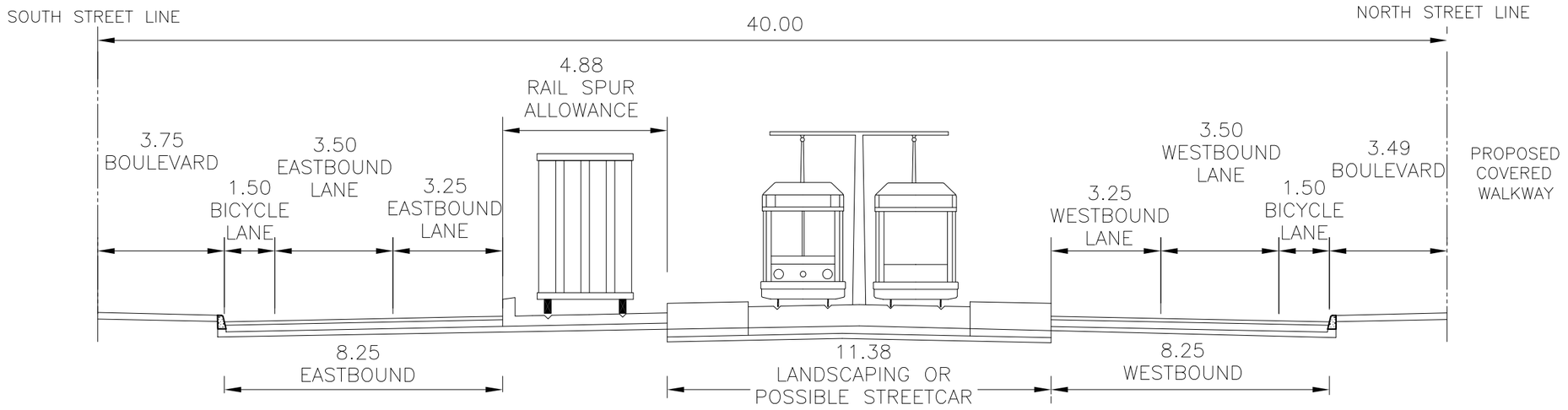
OPTION D



40.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

EAST BAYFRONT PRECINCT PLAN
PROPOSED QUEENS QUAY EAST CROSS SECTIONS

- On-street bicycle lanes - 1.5 metres where adjacent to a curb and 1.8 metres where adjacent to parking.

A total of four (4) travel lanes are provided in Option Ci (two in each direction) in addition to the on-street bicycle lanes. The boulevard widths that can be provided while maintaining the 38.0 metre wide right-of-way are narrow at 2.75 metres on the south side and approximately 2.50 metres on the north side. No on-street parking is proposed.

A total of two (2) travel lanes (one in each direction) and on-street parking on the north side of the street are proposed in Option Cii in addition to the on-street bicycle lanes. The parking will assist in supporting the grade related retail uses planned on Queens Quay East. More generous boulevards are provided (because of the elimination of 2 travel lanes) at 4.25 metres on the south side of the street and approximately 4.00 metres on the north side. A minimum width of 5.5 metres is maintained for the combined width of the one travel lane and bicycle lane provided in each direction to enable vehicles to pass another disabled vehicle.

Option D

Option D is a variation on Option Ci.

Option D provides all the same elements as Option Ci but contemplates a widened 40.0 metre right-of-way to enhance the boulevard widths provided. No on-street parking is provided.

The following cross-sectional elements are accommodated:

- An 11.38 metre wide transit right-of-way in the centre of Queens Quay East. This includes provision for platforms / landscaped medians to the north and south of the exclusive transit allowance.
- The Redpath rail spur located within its own, separate, allowance located on the south side of the transit right-of-way. The width of rail allowance is 4.878 metres consistent with rail clearance requirements for industrial spurs.
- On-street bicycle lanes - 1.5 metres where adjacent to a curb and 1.8 metres where adjacent to parking.
- Approximately 3.50 and 3.75 metre wide boulevards on the north and south sides of Queens Quay East respectively. The north side boulevard is located adjacent to a planned covered and weather protected walkway.
- Four (4) travel lanes.

8.7.6 Evaluation Criteria – Alternative Cross-Section Designs

The criteria listed in the following section are similar to those used in the Phase II Environmental Assessment evaluation of alternate solutions. These criteria fall into 5 basic categories as follows:

- Ability to provide transportation service.
- Impacts on the natural environment.
- Impacts on the socio-economic environment
- Opportunity that the options provide for the revitalization of the East Bayfront Precinct and across the waterfront more generally.
- Feasibility and cost.

The evaluation criteria are outlined in the following:

Transportation Service

Having regard for the transportation suitability, reliability and longevity of each alternative design solution. This is evaluated in terms of:

- Road safety
- Traffic operations
    - Ability to support traffic needs of East Bayfront Precinct
    - Ability to support potential traffic needs of waterfront wide development
    - Impacts to traffic operations
- Transit operations
    - Ability to accommodate / encourage transit
    - Impacts on transit operations
- Facilitation of goods movement
- Support police and emergency service operations
- Service to bicyclists
- Service to pedestrians
- Impacts on cross-sectional element widths and facilities

Natural Environment

Having regard for protecting the natural and physical components of the environment. This is evaluated based upon:

- Terrestrial habitat
- Aquatic habitat
- Air quality
- Noise and vibration
- Landscape provisions

Socio-Economic Environment

Having regard for the potential impact of the various cross-section design options in relation to business impacts, impacts to property and noise and vibration impacts. Business and property impacts are addressed in more specific detail in the evaluation of the location of the preferred Queen Street East cross-section and right-of-way width. This is evaluated based upon:

- Business impacts
- Impacts to property (property taking)

Opportunity for Revitalization

Having regard to the extent to which the alternate cross-section designs supports the planning and urban design objectives of the East Bayfront Precinct Plan and of the waterfront more generally. This is based upon an evaluation of the following:

- Ability to guide and support development objectives of the East Bayfront Precinct Plan
- Ability to guide and meet the urban design objectives of the East Bayfront Precinct Plan
- Ability to support waterfront wide revitalization

Cost Effectiveness

Having regard for the capital costs related to each alternate design and the ongoing maintenance costs. This is based upon an evaluation of the following:

- Capital cost of improvements
- Maintenance costs

8.7.7 Assessment and Evaluation of Alternative Cross-Section Designs

Evaluation Methodology

Consistent with the rating system adopted for the Environmental Assessment evaluation of alternate solutions, the affect or impact that each of the alternate designs has in regard to each of the evaluation criteria is rated using different coloured and sized circles on the evaluation matrix.

There are four ratings a solution can receive and these are defined as follows:

Good (green large circle)	A design has a positive impact in regard to the evaluation criteria.
Neutral (blue medium circle)	A design has neither a positive or negative impact in regard to the evaluation criteria.
Poor (yellow small circle)	A design has a negative impact in regard to the evaluation criteria.
Rejected (red cross)	A design is rejected because it has an extremely negative impact on an evaluation criteria.

Evaluation Findings

The preliminary evaluation of the 6 designs alternatives is summarized on **Exhibit 8-33**.

A discussion relating to the basis for the evaluation outlined in **Exhibit 8-33** is provided in the following section and provides a comparative analysis for each of the 6 design alternatives for each evaluation sub-criteria category.

Transportation Service

- **Road Safety**

All options are equivalent from a road safety and design perspective.

Road configurations for each of the alternative designs are similar with the transit and rail allowances located within the centre of the road removed from pedestrian sidewalks and bicycle facilities. Pedestrian crossing of Queens Quay East and the rail spur / transit right-of-way are facilitated at the four (4) contemplated traffic signal controlled intersections within the Precinct.

TORONTO WATERFRONT
REVITALIZATION CORPORATION

Precinct Planning **East Bayfront**

Queens Quay East - Cross Section Alternatives
Preliminary Evaluation

EVALUATION CRITERIA	ALTERNATIVE DESIGN	DO NOTHING	QUEENS QUAY EAST - REDPATH RAIL SPUR OVERLAP OPTIONS: OPTION Ai			QUEENS QUAY EAST - REDPATH RAIL SPUR SEPARATE ROW OPTIONS: OPTION Ci		
			OPTION Ai	**OPTION Aii**	**OPTION B**	**OPTION Ci**	**OPTION Cii**	**OPTION D**
			38.0 Metre ROW Four Travel Lanes No Parking	38.0 Metre ROW Two Travel Lanes With Parking	40.0 Metre ROW Four Travel Lanes With Parking	38.0 Metre ROW Four Travel Lanes No Parking	38.0 Metre ROW Two Travel Lanes With Parking	40.0 Metre ROW Four Travel Lanes No Parking
TRANSPORTATION SERVICE	ROAD SAFETY	Neutral	Neutral: Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.	Neutral: Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.	Neutral: Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.	Neutral: Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.	Neutral: Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.	Neutral: Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.
	TRAFFIC OPERATIONS 1. ABILITY TO SUPPORT TRAFFIC NEEDS OF EAST BAYFRONT PRECINCT	Neutral	Neutral: Supports and meets the traffic needs of the East Bayfront Precinct.	Neutral: Supports and meets the traffic needs of the East Bayfront Precinct.	Neutral: Supports and meets the traffic needs of the East Bayfront Precinct.	Neutral: Supports and meets the traffic needs of the East Bayfront Precinct.	Neutral: Supports and meets the traffic needs of the East Bayfront Precinct.	Neutral: Supports and meets the traffic needs of the East Bayfront Precinct.
	2. ABILITY TO SUPPORT POTENTIAL TRAFFIC NEEDS OF WATERFRONT WIDE DEVELOPMENT	Good	Good: Provides capacity available to accommodate additional traffic volumes from Waterfront wide development.	Neutral: 2 lane cross-section likely unable to accommodate significant additional traffic volumes. May preclude Queens Quay East from forming a significant component of road network serving Waterfront wide development. Option can be converted to 4 lanes in future within proposed pavement.	Good: Provides capacity available to accommodate additional traffic volumes from Waterfront wide development.	Good: Provides capacity available to accommodate additional traffic volumes from Waterfront wide development.	Poor: 2 lane cross-section likely unable to accommodate significant additional traffic volumes. May preclude Queens Quay East from forming a significant component of road network serving Waterfront wide development.	Good: Provides capacity available to accommodate additional traffic volumes from Waterfront wide development.
	3. IMPACTS TO TRAFFIC OPERATIONS	Neutral	Neutral: Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays.	Neutral: Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays.	Neutral: Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays.	Neutral: Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays. Not possible to provide separate left turn lanes at intersections.	Neutral: Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays.	Neutral: Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays.
	TRANSIT OPERATIONS 1. ABILITY TO ACCOMMODATE/ ENCOURAGE TRANSIT	X (Rejected)	Good: Provision is made for exclusive transit right-of-way	Good: Provision is made for exclusive transit right-of-way	Good: Provision is made for exclusive transit right-of-way	Good: Provision is made for exclusive transit right-of-way	Good: Provision is made for exclusive transit right-of-way	Good: Provision is made for exclusive transit right-of-way
	2. IMPACTS TO TRANSIT OPERATIONS	X (Rejected)	Poor: Temporal use restrictions required to control shared use of transit right-of-way for rail spur service. Special trackwork required at rail/streetcar crossing. Side poles required to support overhead power supply.	Poor: Temporal use restrictions required to control shared use of transit right-of-way for rail spur service. Special trackwork required at rail/streetcar crossing. Side poles required to support overhead power supply.	Poor: Temporal use restrictions required to control shared use of transit right-of-way for rail spur service. Special trackwork required at rail/streetcar crossing. Side poles required to support overhead power supply.	Neutral: Rail spur located outside of transit right-of-way. No temporal restrictions or special trackwork required. Centre poles possible to support overhead power supply.	Neutral: Rail spur located outside of transit right-of-way. No temporal restrictions or special trackwork required. Centre poles possible to support overhead power supply.	Neutral: Rail spur located outside of transit right-of-way. No temporal restrictions or special trackwork required. Centre poles possible to support overhead power supply.
	FACILITATION OF GOODS MOVEMENT	Good	Neutral: Maintain rail service to Redpath Sugar. Rail service required to be restricted to overnight periods only due to overlap with transit. Rail sidings not maintained, operational changes required.	Neutral: Maintain rail service to Redpath Sugar. Rail service required to be restricted to overnight periods only due to overlap with transit. Rail sidings not maintained, operational changes required.	Neutral: Maintain rail service to Redpath Sugar. Rail service required to be restricted to overnight periods only due to overlap with transit. Rail sidings not maintained, operational changes required.	Good: Maintain rail service to Redpath Sugar. Unrestricted service possible. Rail siding not maintained, requires operational changes.	Good: Maintain rail service to Redpath Sugar. Unrestricted service possible. Rail siding not maintained, requires operational changes.	Good: Maintain rail service to Redpath Sugar. Unrestricted service possible. Rail siding not maintained, requires operational changes.
	SUPPORT POLICE AND EMERGENCY SERVICE OPERATIONS	Good	Good: Facililates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.	Good: Facililates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.	Good: Facililates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.	Good: Facililates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.	Good: Facililates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.	Good: Facililates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.
	SERVICE TO BICYCLISTS	Good	Good: Optimal condition. On street bicycle lanes provided.	Good: Optimal condition. On street bicycle lanes provided.	Good: Optimal condition. On street bicycle lanes provided.	Good: Optimal condition. On street bicycle lanes provided.	Good: Optimal condition. On street bicycle lanes provided.	Good: Optimal condition. On street bicycle lanes provided.
	SERVICE TO PEDESTRIANS	Poor	Good: Optimal condition. Widest boulevard provisions.	Good: Optimal condition. Widest boulevard provisions.	Neutral: Boulevard widths modestly reduced compared to Ai & Aii.	Poor: Boulevard/sidewalk widths are marginal at 2.50 and 2.75 metres. Separate rail allowance increases crossing width on Queens Quay East.	Neutral: Boulevard widths modestly reduced compared to Ai & Aii. Separate rail allowance increases crossing width on Queens Quay East.	Neutral: Boulevard widths modestly reduced compared to Ai & Aii. Separate rail allowance increases crossing width on Queens Quay East.
	IMPACTS ON CROSS-SECTIONAL ELEMENT WIDTHS AND FACILITIES	Poor	Neutral: No on-street parking provided with 4 travel lanes. Boulevard widths optional overlapped rail/transit minimizes right-of-way requirement.	Good: Optimal cross-sectional element balance. 2 travel lanes convertible to 4 lanes, within proposed pavement. Overlapped rail/transit minimizes right-of-way requirement.	Neutral: Optimal cross-sectional element balance. Widened right-of-way (40.0m). Overlapped rail/transit minimizes right-of-way requirement.	Poor: Marginal boulevard widths provided. Separate rail allowance impacts space allocation to other elements. No parking on street.	Neutral: Separate rail allowance impacts space allocation to other elements. Reduced number of travel lanes (2).	Neutral: Separate rail allowance impacts space allocation to other elements. Widened right-of-way (40.0m) and no on-street parking provided with 4 travel lanes.
NATURAL ENVIRONMENT	TERRESTRIAL HABITAT	Neutral	Neutral: No terrestrial habitat of any significance.	Neutral: No terrestrial habitat of any significance.	Neutral: No terrestrial habitat of any significance.	Neutral: No terrestrial habitat of any significance.	Neutral: No terrestrial habitat of any significance.	Neutral: No terrestrial habitat of any significance.
	AQUATIC HABITAT	Neutral	Neutral: No aquatic habitat of any significance.	Neutral: No aquatic habitat of any significance.	Neutral: No aquatic habitat of any significance.	Neutral: No aquatic habitat of any significance.	Neutral: No aquatic habitat of any significance.	Neutral: No aquatic habitat of any significance.
	AIR QUALITY	Neutral	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.
	NOISE AND VIBRATION	Neutral	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.	Neutral: Will not move Queens Quay East closer to any sensitive receptors.
	LANDSCAPE PROVISIONS	X (Rejected)	Good: Optimal condition. Widest boulevard/landscaping provisions.	Good: Optimal condition. Widest boulevard/landscape provisions.	Neutral: Boulevard width/landscaping opportunities modestly reduced compared with Ai & Aii.	Poor: Boulevard widths and landscaping opportunities are marginal.	Neutral: Boulevard width/landscaping opportunities modestly reduced compared with Ai & Aii.	Neutral: Boulevard width/landscaping opportunities modestly reduced compared with Ai & Aii.
SOCIO-ECONOMIC ENVIRONMENT	BUSINESSES (Requirement to relocate the businesses.) (Site effect incompatible with continuance.)	Good	Good: Optimal condition. Narrower right-of-way reduces potential impacts on existing businesses.	Good: Optimal condition. Narrower right-of-way reduces potential impacts on existing businesses.	Neutral: Wider right-of-way has greater potential to impact existing businesses.	Good: Optimal condition. Narrower right-of-way reduces potential impacts on existing businesses.	Good: Optimal condition. Narrower right-of-way reduces potential impacts on existing businesses.	Neutral: Wider right-of-way has greater potential to impact existing businesses.
	IMPACTS TO PROPERTY	Good	Neutral: Optimal condition. Narrower right-of-way reduces property requirments.	Neutral: Optimal condition. Narrower right-of-way reduces property requirments.	Poor: Wider right-of-way requires more property.	Neutral: Optimal condition. Narrower right-of-way reduces property requirments.	Neutral: Optimal condition. Narrower right-of-way reduces property requirments.	Poor: Wider right-of-way requires more property.
OPPORTUNITY FOR REVITALIZATION	ABILITY TO SUPPORT THE DEVELOPMENT OBJECTIVES OF THE PRECINCT PLAN	Good	Good: Improvements support redevelopment objectives of Precinct Plan.	Good: Improvements support redevelopment objectives of Precinct Plan.	Good: Improvements support redevelopment objectives of Precinct Plan.	Good: Improvements support redevelopment objectives of Precinct Plan.	Good: Improvements support redevelopment objectives of Precinct Plan.	Good: Improvements support redevelopment objectives of Precinct Plan.
	ABILITY TO MEET THE URBAN DESIGN OBJECTIVES OF THE PRECINCT PLAN	X (Rejected)	Neutral: Reduced right-of-way reduces scales of street, widest boulevards and landscaping opportunities. No on-street parking to support retail. Overlap rail spur with transit minimizes impact on other elements in right-of-way.	Good: Optional condition. Reduced right-of-way reduces scale of street, widest boulevard and landscaping opportunities. On-street parking to support retail. Overlap rail spur with transit minimizes impact on other elements in right-of-way.	Poor: Wider right-of-way increases scale of street undesirably. Above that necessary to accommodate cross-section elements.	Poor: Narrowest boulevards and landscaping opportunities are nominal. Provide marginal streetscape and public realm.	Neutral: Reduced right-of-way reduces scale of street, modestly reduced boulevards and landscaping opportunities compared to Ai & Aii. On-street parking to support retail. Separate rail spur allowance impacts other elements in right-of-way.	Poor: Wider right-of-way increases scale of street undesirably. Above that necessary to accommodate cross-section elements.
	ABILITY TO SUPPORT WATERFRONT WIDE REVITALIZATION	X (Rejected)	Good: Makes provision for transit and bicycle facilities services that may serve Waterfront wide redevelopment. Provides capacity available to support Waterfront wide traffic.	Neutral: Makes provision for transit services and bicycle facilities that may serve Waterfront wide development. 2 lanes cross-section unlikely to form a significant component of road network supporting Waterfront wide development. Option can be converted to 4 lanes with future with proposed pavement.	Good: Makes provision for transit and bicycle facilities services that may serve Waterfront wide redevelopment. Provides capacity available to support Waterfront wide traffic.	Good: Makes provision for transit and bicycle facilities services that may serve Waterfront wide redevelopment. Provides capacity available to support Waterfront wide traffic.	Neutral: Makes provision for transit services and bicycle facilities that may serve Waterfront wide development. 2 lanes cross-section unlikely to form a significant component of road network supporting Waterfront wide development.	Good: Makes provision for transit and bicycle facilities services that may serve Waterfront wide redevelopment. Provides capacity available to support Waterfront wide traffic.
COST EFFECTIVENESS	CAPITAL COST OF IMPROVEMENTS (Including private property costs.)	Good	Neutral: Capitial costs are comparable to other alternatives. Possible marginal increased due to construction of combined rail/transit right-of-way.	Neutral: Capitial costs are comparable to other alternatives. Possible marginal increased due to construction of combined rail/transit right-of-way.	Neutral: Capitial costs are comparable to other alternatives. Possible marginal increased due to construction of combined rail/transit right-of-way.	Neutral: Capitial costs are comparable to other alternatives.	Neutral: Capitial costs are comparable to other alternatives.	Neutral: Capitial costs are comparable to other alternatives.
	MAINTENANCE COSTS	Neutral	Neutral: Road maintenance costs comparable for all options. Transit related costs may be increased due to comnined rail/transit right-of-way.	Neutral: Road maintenance costs comparable for all options. Transit related costs may be increased due to comnined rail/transit right-of-way.	Neutral: Road maintenance costs comparable for all options. Transit related costs may be increased due to comnined rail/transit right-of-way.	Neutral: Road maintenance costs comparable for all options.	Neutral: Road maintenance costs comparable for all options.	Neutral: Road maintenance costs comparable for all options.
COMPOSITE RATING		X (Rejected)	Good	Good	Poor	Poor	Neutral	Poor
PRELIMINARY RECOMMENDED CROSS-SECTION ALTERNATIVE(S)			Primary Recommendation	Primary Recommendation		Secondary Recommendation	Secondary Recommendation	

LEGEND:
- Green dot: GOOD
- Blue dot: NEUTRAL
- Orange dot: POOR
- X: REJECTED
- Thumbs up: ALTERNATIVE DESIGN TAKEN FORWARD FOR PUBLIC AND AGENCY CONSULTATION

BA GROUP
Transportation Consultants

Alternative Design Solutions - Queens Quay East Widening

Exhibit 8-33

Similarly, the same number of rail spur crossings are required under each option. Suitable barriers and crossing controls are required in each case. Temporal restrictions / protocols are required in Option Ai, Aii and B to control use of the shared transit right-of-way and maintain safe rail and TTC transit operations.

The Do Nothing alternative provides similar levels of safety.

- **Traffic Operations – Ability to Support Traffic Needs of East Bayfront Precinct**

Each option, including the Do Nothing alternative, is able to support and meet the traffic needs of the East Bayfront based upon auxiliary turn lanes being required at intersections in the two lane alternative Options Aii and Cii and the analyses contained in BA Group's *East Bayfront Precinct, Traffic Operations Analysis Update* report prepared in January 2006. Queuing activity at certain signalized intersections may be more extensive in the two lanes options (Aii and Cii) but should nonetheless, based upon analyses, generally be acceptably accommodated.

- **Traffic Operations – Ability to Support Potential Traffic Needs of Waterfront Wide Development**

The four lane options (Ai, B, Ci, D and the Do Nothing alternative) provide greater levels of capacity available to support potential additional traffic volumes from development within other areas of the waterfront such as the Port Lands should Queens Quay East be extended eastwards as an important part of the waterfront road network.

It is unlikely that the two lanes options (Aii and Cii) could accommodate significant additional through volumes on Queens Quay East and would preclude Queens Quay East from forming a significant component of a road network serving the future redevelopment of the Port Lands, for instance, or as a relief routing available to offset capacity losses should the Gardiner Expressway / Lake Shore Boulevard corridor be reconfigured.

It is notable, however, that Option Aii provides the ability for the conversion of the two (2) lane cross-section contemplated into a four (4) lane facility (i.e., Option Ai) in the future within the same road pavement through the removal of on-street parking without the need to make any curb or boulevard modifications.

- **Traffic Operations – Impacts on Traffic Operations**

Traffic operations will be similar at intersections for each of the road cross-section options and Do Nothing alternative given that additional turn lanes will be provided at intersections in the two travel lane options (Aii and Cii). Queuing activity at certain signalized intersections may be more extensive in the two lanes options (Aii and Cii) but should nonetheless, based upon analyses, generally be acceptably accommodated. It is assumed that traffic signals could be introduced as necessary under the Do Nothing alternate to appropriately accommodate increased existing and new side street turning volumes.

- **Transit Operations – Ability to Accommodate / Encourage Transit**

All options (except the Do Nothing alternative) make provision for an exclusive transit right-of-way in the centre of Queens Quay East as well as other complementary facilities such as sidewalks / boulevards (albeit of differing widths and quality) on both sides of Queens Quay East and the planned covered, weather protected walkway on the north side of Queens Quay East.

The Do Nothing alternative cannot make provision for such a transit facility which will limit the efficiency of any transit services that could be accommodated on Queens Quay East given that such services would run in mixed traffic. This will limit the ability of the Do Nothing alternative to effectively promote transit as an alternate travel mode or to meet the longer term forecast transit travel demands generated by development contemplated across the Toronto central waterfront. The Do Nothing alternative cannot provide for a dedicated transit facility on Queens Quay East as identified in Central Waterfront Secondary Plan.

All the improved options equally promote the use of transit as an alternate travel mode.

- **Transit Operations – Impacts to Transit Operations**

Overlapped Options Ai, Aii and B

Options Ai, Aii and B require temporal restrictions to be established limiting transit use of the shared / overlapped central median area to outside of the overnight period (nominally 2:30 a.m. to 5:30 a.m). This limits the flexibility provided to the TTC to provide overnight or 24 hour service within this right-of-way although late night bus services could be provided similar to those provided on other TTC subway and streetcar

routes. To ensure safe operation a signal control system and / or moveable barriers will be required to restrict rail and TTC transit service movements on the shared right-of-way.

There is a risk in these overlapped options that a disabled rail car will block transit services during the typical TTC operational hours. All of the overlap options could be unacceptable from a transit operations perspective depending upon the frequency of such service disruptions. Managing these incidents would require contingency plans be established (i.e., emergency bus service) similar to those employed by the TTC when emergencies arise on the existing subway system.

It is also necessary in these options for the rail spur line to cross the eastbound TTC streetcar tracks at the westerly limit of the East Bayfront Precinct as it reconnects to the existing rail spur on the south side of Queens Quay East west of Lower Jarvis Street. Special trackwork is required to facilitate this crossing as well as an increase in the height of the TTC streetcar power line from the standard 18' clearance to 22' as it passes over the rail spur. The TTC has operated streetcars in such circumstances in the past and localized operational restrictions (i.e., speed limit controls) are required to address the reduced trolley pole pressures resulting from the increased power line height and to address dewirement risks.

A potential configuration for the westerly limit of the East Bayfront Precinct and the rail spur / TTC streetcar crossing is illustrated on **Exhibit 8-34**.

Protocols and agreement is also required relative to shared track maintenance and other costs and liability.

Separate Rail Allowance Options Ci, Cii and D

The separate rail allowance options where the rail spur is located outside of and to the south of the transit right-of-way avoid the operational issues and risks outlined above.

Do Nothing Alternative

The Do Nothing alternative also avoids any potential conflicts between the rail spur and transit service. However, the level, capacity, speed and efficiency of the service that can be provided to and through the East Bayfront Precinct will be limited by the fact that such services will have to, without any modifications to Queens Quay East, operate within mixed traffic. This will limit the ability of the TTC to provide appropriate transit service in the long term to the East Bayfront Precinct and other areas of the central waterfront (Port Lands) and impact waterfront transit operations.

- **Facilitation of Goods Movement**

All options maintain the rail spur and rail service to the Redpath Sugar plant.

The Do Nothing alternative reflects the optimal condition in terms of rail service to the Redpath Sugar plant in that it maintains unrestricted service and the existing siding facility.

The overlapped rail / transit options (Ai, Aii and B) require that rail service be restricted to night-time periods only outside of the typical TTC periods of operation. This will require changes to the current Redpath Sugar rail service operation as well as requiring the agreement of the rail service providers or suitable alternate service to facilitate overnight service from the Keating Yard.

It is possible with the separate right-of-way options (Ci, Cii and D) that unrestricted rail service may be provided to the Redpath Sugar plant.

- **Support Police and Emergency Service Operations**

All options and the Do Nothing alternative facilitate police and emergency service vehicle access to the planned residential and mixed use development areas north and south of Queens Quay East. Sufficient combined travel and bicycle lane widths are maintained in the two lane options (Option Aii and Cii) to enable emergency vehicle access should another vehicle be stopped or disabled on Queens Quay East.

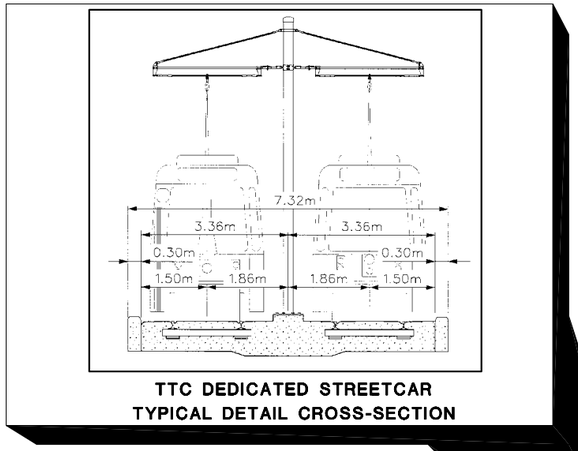
It is important that, in all alternatives, all access to streets on the south side of Queens Quay East not be blocked at the same time during rail service to maintain police and emergency vehicle access.

- **Service to Bicyclists**

All options and the Do Nothing alternative maintain the on-street bicycle lanes on Queens Quay East and are supportive of bicycle travel.

- **Service to Pedestrians**

The Do Nothing alternative does not address the deficiencies in the existing pedestrian environment nor make any provisions to appropriately accommodate anticipated increases in pedestrian activity levels. Significant improvements are required to existing pedestrian connections, pedestrian provisions and to the quality of the public realm on

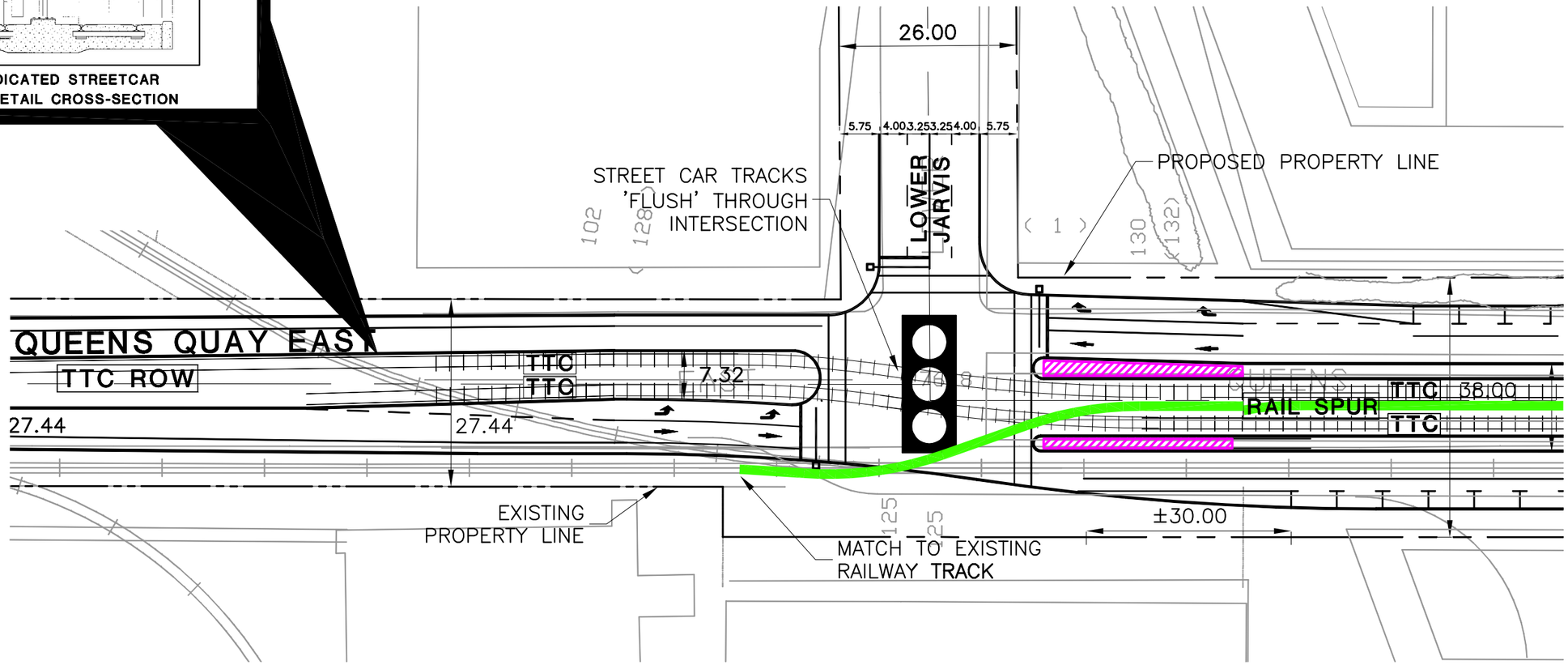


TTC DEDICATED STREETCAR
TYPICAL DETAIL CROSS-SECTION

1. QUEENS QUAY EAST CROSS-SECTION WEST OF LOWER JARVIS STREET SHOWN ASSUMING A DEDICATED TRANSIT RIGHT OF WAY WITHIN THE CENTRE OF THE STREET WITHIN THE EXISTING AVAILABLE RIGHT OF WAY

2. QUEENS QUAY EAST CROSS-SECTION OPTION Aii SHOWN EAST OF LOWER JARVIS STREET

3. TRANSIT OVERHEAD POWER SUPPORT POLES NOT SHOWN



POTENTIAL CONFIGURATION - QUEENS QUAY EAST/LOWER JARVIS STREET INTERSECTION
RAILWAY SPUR/TTC STREETCAR CROSSING

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DATE PLOTTED: January 05, 2006

streets within the Precinct and elsewhere to make the environment within the Precinct as 'pedestrian friendly' and attractive in this regard as possible.

Sidewalks are proposed in all improvement options on both sides of Queens Quay East which will enhance pedestrian movement along the street. Each option is supported by the network of pedestrian linkages contemplated within the East Bayfront Precinct generally including the covered, weather protected walkway on the north side of Queens Quay East.

Pedestrian crossing facilities over Queens Quay East will be provided at 4 signalized intersections. The north-south crossing distances for the three overlap option (Option Ai, Aii and B) are smaller than for the comparable separate rail allowance options (by approximately 3.25 metres).

The boulevard widths provided, however, vary between the options. These widths influence the quality of the pedestrian realm and its ability to promote pedestrian travel through provision of opportunity to enhance the street edge condition from a streetscape, urban design and landscape perspective. This evaluation is provided in the following section '*impacts on cross-sectional element widths and facilities*'.

- **Impacts on Cross-Sectional Element Widths and Facilities**

The Do Nothing alternative makes no provision for on-street parking, enhanced boulevard / streetscape / landscaping opportunities on Queens Quay East or for an exclusive transit service. As such, it does not appropriately balance the needs of the various uses that would logically be located within the Queens Quay East right-of-way.

In general the overlap options (Options Ai, Aii and B) better facilitate the incorporation of on-street parking and enhanced boulevard / streetscape / landscaping provisions into the Queens Quay East cross-section while maintaining flexibility to provide either two (2) or four (4) travel lanes.

The separate rail right-of-way options (Options Ci, Cii and D) reduce the amount of space available within the right-of-way for other, non-rail uses which tends to limit the ability to provide adequately for these facilities if possible at all. It is only possible, for instance, to provide on-street parking while maintaining appropriate boulevard facilities with a separate rail allowance in Option Cii which incorporates a total of two (2) travel lanes.

A. On-Street Parking

On-street parking is desirable to provide convenient short-term parking to support the planned grade related retail uses proposed along Queens Quay East.

On-street parking is provided on both sides of Queens Quay East in the following option:

Option Aii - 2 lane, 38.0 metre right-of-way.

On-street parking is provided on the north side of the street in the following options:

Option B - 4 lane, 40.0 metre right-of-way
Option Cii - 2 lane, 38.0 metre right-of-way

No on-street parking is provided in the following options:

Option Ai - 4 lane, 38.0 metre right-of-way
Option Ci - 4 lane, 38.0 metre right-of-way
Option D - 4 lane, 40.0 metre right-of-way

B. Boulevard Widths and Pedestrian Realm Considerations

The greatest sidewalk / boulevard widths are provided in Options Ai and Aii with 4.25 metre wide sidewalk / boulevards provided on both sides of the street.

The same widths are provided on the south side of Queens Quay East in Options B and Cii. The sidewalk / boulevards provided in these options on the north side of Queens Quay East are modestly reduced at 3.45 metres in Option B and approximately 4.0 metres in Option Cii. Widths are similar (modestly reduced) in Option D and range between 3.50 and 3.75 metres.
The sidewalks / boulevards provided in Option Ci are the narrowest at 2.50 and 2.75 metres and are considered to be marginal given the urban design vision for Queens Quay East and the desired pedestrian environment.

Natural Environment

- **Terrestrial Habitat**

There is no terrestrial habitat of any significance in the Queens Quay East corridor. The options and Do Nothing alternative are equivalent in regard to this criteria.

- **Aquatic Habitat**

There are no existing bodies of water and no aquatic habitat of any significance in the Queens Quay East corridor. The options and Do Nothing alternative are equivalent in regard to this criteria.

- **Air Quality**

None of the alternatives will move Queens Quay East closer to any sensitive receptors.

No additional road capacity is proposed in any of the improvement options compared to that which is available today along the existing Queens Quay East corridor (Do Nothing alternative). The road capacity provided for the four (4) lane options (Option Ai, B, Ci and D) is similar to the existing capacity of Queens Quay East while the two (2) lane options (Option Aii and Cii) would reduce the capacity of the corridor relative to today.

It is not anticipated, however, that the levels of traffic that would be carried by each option would materially change the air quality of the surrounding relative to one another.

- **Noise and Vibration**

None of the alternatives will locate Queens Quay East closer to any sensitive receptors. It is not considered that the different locations being considered for the rail spur line and potential exclusive transit service will materially change the noise and vibration levels for future development on both sides of Queens Quay East relative to one another.

- **Landscape Provisions**

The extent to which natural landscaping can be incorporated into the cross-section will enhance the streetscape, pedestrian realm and overall urban design for Queens Quay East as well assisting in encouraging residents and visitors to the East Bayfront Precinct to walk or take transit.
Options that provide the widest boulevard widths on either side of Queens Quay East provide the greatest opportunities for landscaping and significant planting.

The Do Nothing alternative provides little opportunity to provide any landscaping and planting to improve the public realm on Queens Quay East. The width of the north side sidewalk is not adequate to enable any significant planting. The location of the rail spur on the south side of the street precludes the introduction of any significant planting on the south side of the street within the right-of-way.

Options Ai and Aii thus provide the greatest opportunity to provide landscaping and planting within the cross-section. Option Ci provide little opportunity to provide any level of notable landscaping.

Planting opportunities are available in each option within the medians on either side of the transit right-of-way.

Socio-Economic Environment

- **Businesses**

The Do Nothing alternative provides the optimal condition relative to impact on existing businesses in that it requires no property.

The wider 40.0 metre right-of-way options (Options B and D) require a greater widening and thus more property than the other 38.0 metre wide right-of-way options (Options Ai, Aii, Ci and Cii). As such they have a greater potential to impact existing businesses operating along Queens Quay East.

The location of the preferred right-of-way and cross-section and the relative impacts of the various widening options on existing businesses along Queens Quay East will, as described earlier in Section 8.7.1, be addressed as part of the evaluation of widening options outlined in Section 8.7.8.

- **Impacts to Property**

The wider 40.0 metre right-of-way options (Options B and D) require a greater widening and more property than the other 38.0 metre wide right-of-way options (Options Ai, Aii, Ci and Cii). The Do Nothing alternative requires no property.

The location of the widening(s) and related property impacts required to implement the preferred right-of-way and cross-section for Queens Quay East determined as part of the first stage of the Phase III Environmental Assessment (as outlined in Section 8.7.1) will be reviewed as part the evaluation of widening options outlined in Section 8.7.8.

Opportunity for Revitalization

- **Ability to Support the Development Objectives of the Precinct Plan**

Each option and the Do Nothing alternative is able to appropriately support the development objectives of the East Bayfront Precinct Plan.

- **Ability to Meet the Urban Design Objectives of the Precinct Plan**

The urban design vision for Queens Quay East is described in the Central Waterfront Secondary Plan. The plan describes Queens Quay East as '*Toronto's Water View Drive*' and goes on to state that '*Queens Quay will become a scenic water view drive and an important component of the Toronto street network from Bathurst Street to Cherry Street providing ready access to the public activities on the waterfront and pedestrian connections to the water's edge. It will be designed to meet the diverse needs of motorists, transit users, cyclists and pedestrians as well as providing opportunities for vistas to the harbour and lake*'.

Clearly the street is to be designed to function not only as a transportation facility and thoroughfare but as a street in which the needs of non-auto (and heavy rail) users such as pedestrians and cyclists are also appropriately provided for and which will succeed in fulfilling its role as a '*scenic water view drive*'.

The provision of generous boulevards that provide opportunities for landscaping and the creation of an enhanced pedestrian realm and streetscape condition are paramount in this regard. Similarly, the overall scale of the street (i.e., relationship between street width and building height and massing) is of concern with a general desire to minimize the right-of-way to the extent practical to create a more intimate pedestrian scale street condition.
A further consideration is creating a vibrant street condition with successful retail uses located along Queens Quay East. Key in this regard is the desire to provide convenient short stay parking on-street along the street.

The right-of-way width for Queens Quay East has, given the above, been reviewed in detail from an urban design and planning perspective as part of the Precinct Planning process and development of the Precinct Plan.

The 38.0 metre wide right-of-way, illustrated in Options Ai, Aii, Ci and Cii, has been assessed through these planning processes as acceptable and preferred over the 40.0 metre wide options. This review has taken into account a number of planning factors

including built form, building height and massing along the street, street edge relationships and the creation of opportunities to create an attractive public realm, pedestrian environment and streetscape along the street while maintaining an appropriately scaled street. The assessment has also recognized that Queens Quay East is an important transportation corridor supporting the Precinct and adjacent waterfront areas.

In this regard the options that provide the widest boulevards and enhanced public realm opportunities within the narrowest overall right-of-way, that also accommodate the necessary supporting transportation infrastructure, are considered to be optimal from an urban design perspective.

The potential to reduce the right-of-way any further, while maintaining key transportation functions of the street, would tend to have a negligible benefit and could even be counterproductive in terms of creating pedestrian spaces that are vibrant and inviting.

Do Nothing Alternative

The Do Nothing alternative is inconsistent with the urban design objectives of the Precinct Plan notwithstanding that the right-of-way is narrower than any of the improvement options. It makes no provision for landscaping and the creation of an enhanced pedestrian realm and streetscape condition compatible with the Central Waterfront Secondary Plan vision for the street.

Options Ai and Aii

Option Ai and Aii are both 38.0 metre wide right-of-way options with the rail spur overlapped with the transit right-of-way that provide the greatest boulevard provisions of all 6 options. Option Aii also incorporates on-street parking through the reduction in the number of travel lanes on Queens Quay East.

Overlap Options Ai and Aii will require double the number of poles to support side mounted transit overhead power wires compared to options in which the rail spur and TTC transit rights-of-way are separate. In this regard, the additional poles will add to the visual clutter of the street in these options and potentially detract from the '*scenic water view drive*' vision outlined in the Central Waterfront Secondary Plan.

Options Ci and Cii

Option Ci is considered as poor from an urban design perspective given that it provides only nominal boulevard spaces on either side of Queens Quay East in an effort to accommodate four (4) travel lanes in addition to the separate rail allowance within the 38.0 metre right-of-way. Option Cii, through a reduction in the number of travel lanes, provides wider boulevard facilities and on-street parking on the north side of Queens Quay East.

Options B and D

Options B and D are both 40.0 metre right-of-way options that increase the scale of the street compared to the 38.0 metre alternatives.

Overlap Option B will, as for Options Ai and Aii, require double the number of poles to support transit overhead power wires compared to options in which the rail spur and TTC transit rights-of-way are separate. This may add to the visual clutter of the street and potentially detract from the '*scenic water view drive*' vision outlined in the Central Waterfront Secondary Plan.

- **Ability to Support Waterfront Wide Revitalization**

All options, except the Do Nothing alternative, make provision for an exclusive transit allowance within the Queens Quay East cross-section which will serve potential future development within other areas of the waterfront such as the Port Lands. The Do Nothing alternative is not able, for this reason, to support the development of other areas on the City of Toronto waterfront.

All options for Queens Quay East within the East Bayfront Precinct are compatible with, and do not preclude, the future potential extension of Queens Quay East to Cherry Street through the remaining easterly portions of East Bayfront Precinct or potential reconfiguration alternatives for Queens Quay East west of Lower Jarvis Street.

From a traffic capacity perspective, the four lane options (Ai, B, Ci, D and Do Nothing alternative) provide greater levels of capacity available to support potential additional traffic volumes from development within other areas of the waterfront such as the Port Lands. It is unlikely that the two lanes options (Aii and Cii) could form a significant component of a road network supporting the future redevelopment of the Port Lands although Option Aii is convertible to a four lane cross-section if required in the future.

Cost Effectiveness

- **Capital Cost of Improvements**

The Do Nothing alternative is the least costly from a capital construction cost perspective.
The improvement options are generally comparable from a capital construction cost and potential utility relocation cost perspectives. The overlap design options (Options Ai, Aii and B) will be more expensive to construct due to the requirement for double the number of poles required to support the overhead wiring, special treatment of the overhead power supply systems at crossing points with the rail spur line, the requirement for special safety control systems and the construction costs of the combined TTC streetcar / heavy rail track-bed and specialized trackwork. The need for barriers and other rail related crossing facilities are common to all options.

- **Maintenance Costs**

Road maintenance costs will be comparable for each of the options. Transit related maintenance and operational costs may be greater in overlap options Ai, Aii and B given the sharing of the right-of-way with heavy rail uses.

Recommended Preferred Alternate Cross-Sections Design Option

Based upon the evaluation presented in **Exhibit 8-33**, it is clear that Queens Quay East cannot appropriately support the East Bayfront Precinct in its current form (the Do Nothing alternative).

The evaluation also indicates that the differences between the alternate improvement cross-section options for Queens Quay East from a natural environment, socio-economic and cost effectiveness standpoint are minor.

The key differences are primarily related to their treatment of the Redpath rail spur, the number of travel lanes that is to be provided on Queens Quay East and the implications that these considerations have upon the ability to create appropriate boulevard and streetscape opportunities from an urban design perspective.

Alternate Cross-Section Design Options Not Recommended

The 40.0 metre right-of-way alternatives (Options B and D) are not preferred in that they create a wider road facility that undesirably increases the scale of the street above that

considered necessary from an urban design and Precinct Planning perspective to accommodate the various cross-sectional elements that need to be located within Queens Quay East.

Primary Recommendations for Preferred Alternate Cross-Section Design Option

Provided that the operational and safety issues regarding overlapping of the rail spur and exclusive TTC transit right-of-way can be resolved, the 38.0 metre wide overlapped rail spur / transit right-of-way street options (Options Ai and Aii) are preferred. These options minimize the amount of space provided within the right-of-way for heavy rail uses while maintaining rail service to the Redpath Sugar plant. The overlap of the rail and transit rights-of-way enables the space allocations provided to other cross-section elements to be optimized thereby appropriately balancing the needs of all of the users of the Queens Quay East right-of-way.

Of these two options, **Option Aii**, with two (2) travel lanes, is recommended as a preferred design for Queens Quay East on the basis that it meets the travel demand needs of the East Bayfront Precinct Plan area and also provides on-street parking to support contemplated retail uses on Queens Quay East.

It is recognized, however, that there may be a need in the future to provide four (4) travel lanes on Queens Quay East should Queens Quay form part of the wider waterfront road network supporting development within the Port Lands. For this reason, and given the potential to convert Option Aii to this option in the future if necessary, Option Ai is also recommended as a preferred design for Queens Quay East.

Secondary Recommendations for Preferred Alternate Cross-Section Design Option

It is also recognized that, although not a preferred condition, a separate rail spur allowance may be necessary in addressing rail service related issues on Queens Quay East.

As such, a secondary recommendation is made also identifying Options Ci and Cii as preferred designs in the event that neither of the primary recommendations can be feasibly or practical achieved.

Of these two alternatives, Option Cii (two travel lane alternative) is strongly preferred over Option Ci given the relative boulevard provisions of these alternative designs. In fact, Option Ci is only maintained to provide a four (4) lane alternative for public and

agency consultation should it be determined that this number of travel lanes are required and that a separate rail allowance is required.

The ultimate choice between Options A and C will be confirmed during the Environmental Assessment for Transit Facilities in East Bayfront and the choice of Aii vs. Ai (or Cii vs. Ci) will be confirmed after the TWRC Travel Demand Forecasts are completed.

8.7.8 Queens Quay East – Widening Considerations

A widening of Queens Quay East is required to implement any of the four (4) recommended primary and secondary preferred alternate cross-sections.

The existing Queens Quay East right-of-way within the East Bayfront Precinct Master Plan area is approximately 27.4 metres. The proposed right-of-way in any of the preferred alternative cross-sections is 38.0 metres requiring a widening of approximately 10.6 metres.

A number of design widening options are considered in establishing a preferred widening configuration for Queens Quay East. These and the evaluation of alternatives are outlined in the following sections.

Queens Quay East Widening - Land Ownership Considerations

The lands on the south side of Queens Quay East within the East Bayfront Precinct Master Plan area are primarily owned by the City of Toronto Economic Development Corporation (TEDCO) including the existing rail spur alignment.

The lands on the north side of Queens Quay East are almost exclusively owned by private landholders.

Existing Area Businesses

There are a number of operating businesses on both sides of Queens Quay East.

North Side of Queens Quay East

Those located on the north side of the street have buildings typically located close to the existing northern Queens Quay East property line. Between Lower Jarvis Street and

Richardson Street, no. 130 Queens Quay East (the Guvernment building) is located on the property line. Two of the three (3) buildings located between Richardson Street and Lower Sherbourne Street are located between 5.0 and 6.0 metres from the property line while the third (no. 178 – eastern building) is located immediately adjacent to Queens Quay East. The existing buildings (no.s 190 and 200) located between Lower Sherbourne Street and Small Street are located between 1.0 and 2.0 metres away from the Queens Quay East right-of-way.

Parking areas serving the businesses operating within these buildings on the north side of Queens Quay East are located adjacent to the existing buildings.

Vehicular access to the properties on the north side of Queens Quay East is provided via a number of driveways linking directly to Queens Quay East and the three (3) north-south local streets – Richardson Street, Bonnycastle Street and Small Street.

South Side of Queens Quay East

The buildings on the south side of Queens Quay East within the East Bayfront Precinct Master Plan area are well set back (80.0+ metres) from the existing Queens Quay East right-of-way.

Parking areas serving the businesses operating within these buildings are located between the Queens Quay East right-of-way and the existing buildings.
Access is provided directly from Queens Quay East at a number of driveways that cross the existing Redpath Rail spur line.

8.7.9 Alternate Designs - Widening Alternatives for Queens Quay East

A total of four (4) alternative widening design options have been developed for evaluation as part of Phase III Environmental Assessment for the Queens Quay East.

These options are as follows:

Widen One-Side Only

1. Widen north side	• 10.6 metre widening (all recommended cross-section alternatives)
2. Widen south side	• 10.6 metre widening (all recommended cross-section alternatives)

Widen Both Sides

3. Widen symmetrically on north and south sides	• 5.3 metre widenings (all recommended cross-section alternatives)

4. Widen primarily on the south side (Holding existing north curbline)	• Option Ai / Aii
	  • NS - 1.90 metre widening
	  • SS - 8.70 metre widening
	• Option Ci
	  • NS - 0.15 metre widening
	  • SS - 10.45 metre widening
	• Option Cii
	  • NS - 1.65 metre widening
	  • SS – 8.95 metre widening

Please note that representative widening dimensions are measured just west of Small Street. Widenings will be similar in other sections of Queens Quay East.

These widening options are illustrated on **Exhibit 8-35**.

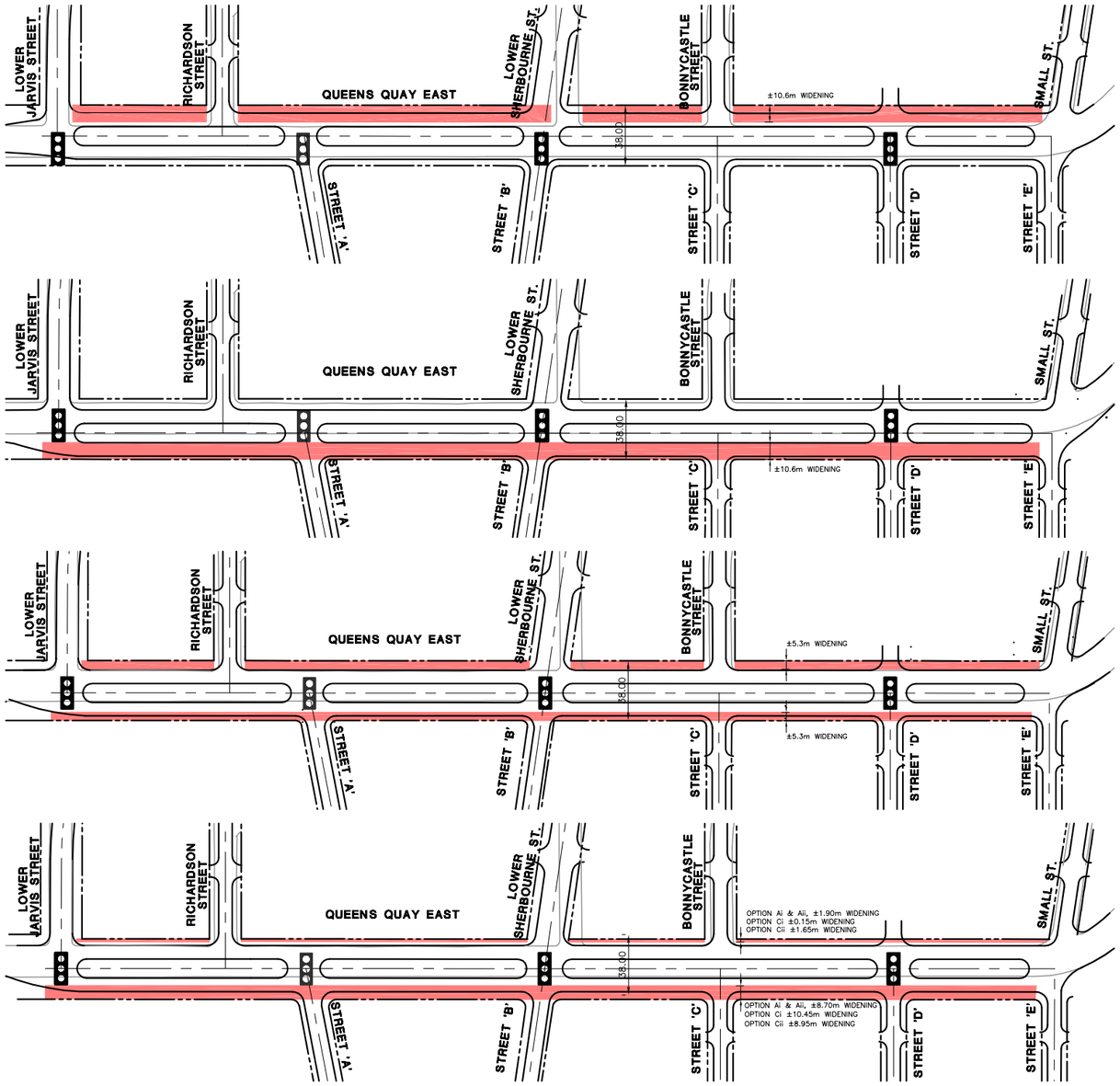
8.7.10 Evaluation Criteria – Alternate Widening Designs

The alternate widening designed are evaluated for the recommended primary and secondary cross-section design alternatives based upon 3 basic categories as follows:

- Socio Economic Environment
- Cost Effectiveness
- Opportunity for Revitalization

The evaluation criteria have been focussed upon considerations involved in establishing a preferred widening alternative design and the implications of the various widening options given that the preferred cross-section and right-of-way (38.0 metres) for Queens Quay East has been previously determined (Sections 8.7.2 to 8.7.7).

QUEENS QUAY EAST - WIDENING ALTERNATIVES (38.0 Metre ROW)



DESIGN ALTERNATIVE '1'
- WIDEN NORTH SIDE

DESIGN ALTERNATIVE '2'
- WIDEN SOUTH SIDE ONLY

DESIGN ALTERNATIVE '3'
- WIDEN NORTH & SOUTH SIDES SYMMETRICALLY

DESIGN ALTERNATIVE '4'
- WIDEN NORTH & SOUTH SIDES HOLDING EXISTING NORTH CURB LINE (PROPERTY ON NORTH SIDE TAKEN AS DEVELOPMENT OCCURS)

NOTE: WIDENING DIMENSIONS MEASURED JUST WEST OF SMALL STREET

ROAD WIDENING

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Queens Quay Widening Options - East Bayfront Precinct

Exhibit 8-35

The evaluation criteria are described in the following:

Socio-Economic Environment

The effect that an alternative widening design may have on the social-economic environment has been evaluated based upon the following:

- Business operations - 1. requirement to relocate businesses
  2. impact to parking areas
  3. impact to site access

- Impacts to property (property taking) - 1. public property
  2. private property

Cost Effectiveness

The potential costs that may be involved in adopting an alternate widening design are evaluated based upon an assessment of the following:

- Capital costs (including private property costs)
- Maintenance costs

Opportunity for Revitalization

The effect that an alternative widening design may have with respect to its ability to support revitalization within the East Bayfront Precinct Plan is evaluated based upon the following:

- Ability to support the development objectives of the Precinct Plan

8.7.11 Assessment and Evaluation of Alternate Widening Designs

Evaluation Methodology

Consistent with the rating system adopted for the Environmental Assessment evaluation of alternate cross-section designs, the affect or impact that each of the alternate widening designs has in regard to each of the evaluation criteria is rated using different coloured and sized circles on the evaluation matrix. The question asked in each instance is "what

affect will this widening design alternative have in regard to the evaluation criteria in question?"

There are four ratings a solution can receive and these are defined as follows:

Good (green large circle)	A design has a positive impact in regard to the evaluation criteria.
Neutral (blue medium circle)	A design has neither a positive or negative impact in regard to the evaluation criteria.
Poor (yellow small circle)	A design has a negative impact in regard to the evaluation criteria.
Rejected (red cross)	A design is rejected because it has an extremely negative impact on an evaluation criteria.

Evaluation Findings

The preliminary evaluation of the 4 alternate widening designs is summarized on **Exhibit 8-36**.

A discussion relating to the basis for the evaluation outlined in **Exhibit 8-36** is provided in the following section and provides a comparative analysis of each of the 4 design alternatives for each evaluation sub-criteria category.

Business Operations – Requirement to Relocate Businesses

Options 1 and 3 require the demolition of a number of existing buildings (three) on the north side of Queens Quay East and the relocation of the businesses operating within them to facilitate the implementation of the preferred primary and secondary cross-section designs for Queens Quay East.

Option 4 requires, ultimately, the relocation of same three buildings as for Options 1 and 3 and the relocation of the businesses within them. However, Option 4 facilitates a staged implementation of the preferred primary and secondary cross-sections for Queens Quay East whereby all elements of the improved cross-section required to facilitate development with the East Bayfront Precinct can be constructed, except for the improved north side boulevard, without the need for any property on the north side of Queens Quay East on an interim basis. The existing north side sidewalk / boulevard would be maintained as an interim condition until the additional lands required to fully develop the preferred cross-section (the full 38.0 metres) is obtained through the appropriate

Queens Quay East - Widening Alternatives
Preliminary Evaluation

		QUEENS QUAY EAST ALTERNATE WIDENING DESIGNS			
		ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
		North Side Widening	South Side Widening	North & South Side Widening (Symmetrical widening)	North & South Side Widening (Holding north curbline)
SOCIO-ECONOMIC ENVIRONMENT	BUSINESS OPERATIONS 1. Requirement to relocate businesses	(Poor) Requires demonlition of 3 buildings on North side of Queens Quay East & relocation of existing businesses that operate within them.	(Good) No businesses relocations required.	(Poor) Requires demonlition of 3 buildings on North side of Queens Quay East & relocation of existing businesses that operate within them.	(Good) Ultimately requires demonlition of these buildings and the relocation of businesses operating within there to implement full widening requirements. Facility to stage widening on North side of Queens Quay East whereby property is obtained overtime as properties develop eliminates this requirement and, business impacts related.
	2. Impact to parking areas	(Poor) Impacts multiple parking areas supporting businesses on North side of Queens Quay East. Supply reductions may be significant.	(Neutral) Impacts large parking areas supporting businesses on South side of Queens Quay East. Impacts likely minor.	(Poor) Reduced impact to parking areas on North side of street compared to Alternative 1. Impacts on South side of street reduced compared to Alternative 2 are minor.	(Neutral) Ultimately impacts multiple parking areas on North side of Queens Quay East. Facility to stage widening, whereby property is obtained over-time as properties redevelop elminates impacts to existing parking areas. Impact on South of street.
	3. Impact to site access	(Good) Existing site access provisions maintained. Construction of access driveways likely required.	(Good) Existing site access provisions maintained. Construction of access driveways likely required.	(Good) Existing site access provisions maintained. Construction of access driveways likely required.	(Good) Existing site access provisions maintained. Construction of access driveways likely required.
	IMPACTS TO PROPERTY (Property Taking) 1. Public property	(Good) No public property required.	(Poor) Greatest widening (10.6 metres) and property requirement from public (TEDCO), property on South side of Queens Quay East.	(Neutral) Reduced (5.3 metres) property requirement from public (TEDCO) lands as South side of Queens Quay East compared to Alternative 2.	(Neutral) Reduced (up to 8.3 metres) property requirement from public (TEDCO) lands on the South side of Queens Quay East compared to Alternative 2.
	2. Private property	(Poor) Greatest widening (10.6 metres) and property requirement from multiple private lands on North side of Queens Quay East.	(Good) No private property required.	(Neutral) Reduced (5.3 metres) property requirement from multiple private lands on North side of Queens Quay East compared to Alternative 1.	(Neutral) Ultimately up 1.90 metres (less than Alternative 3) of property required from private properties on North side of Queens Quay East. Facility to stage widening, whereby property is obtained over-time as properties redevelop, elminates property impacts in short term until properties develop.
COST EFFECTIVENESS	CAPITAL COST (Including private property costs)	(Poor) Capital costs of all alternatives will be similar. Increased costs associated with obtaining private property from multiple landowners to facililate Queens Quay East improvements.	(Good) Capital costs of all alternatives will be similar.	(Poor) Capital costs of all alternatives will be similar. Increased costs associated with obtaining private property from multiple landowners to facililate Queens Quay East improvements.	(Good) Capital costs of all alternatives will be similar Property required from private landowners on North side of Queens Quay East obtained on a site-by-site basis overtime as properties redevelop through the appropriate City of Toronto approvals process. Property costs likely minimal.
	MAINTENANCE COSTS	(Good) Maintenance costs will be similar for all alternatives.	(Good) Maintenance costs will be similar for all alternatives.	(Good) Maintenance costs will be similar for all alternatives.	(Good) Maintenance costs will be similar for all alternatives.
OPPORTUNITY FOR REVITALIZATION	ABILITY TO SUPPORT THE DEVELOPMENT OBJECTIVES OF THE PRECINCT PLAN	All alternatives support the development objectives of the East Bayfront Precinct Plan. Requires lands from multiple private property on North side of Queens Quay East to implement improvements. May impact ability to provide improvement and adequate infrastructure only in the redevelopment of the Precinct and development potential that could be achieved in short term. Property expropriation may be required.	All alternatives support the development objectives of the East Bayfront Precinct Plan. Facililates implementation of improvements to Queens Quay East early in the redevelopment of the East Bayfront Precinct, independent of the location where redevelopment occurs, without the need for private land on the North side of Queens Quay East.	All alternatives support the development objectives of the East Bayfront Precinct Plan. Requires lands from multiple preivate property on North side of Queens Quay East to implement improvements. May impact ability to provide improvement and adequate infrastructure only in the redevelopment of the Precinct and development potential that could be achieved in short term. Property expropriation may be required.	All alternatives support the development objectives of the East Bayfront Precinct Plan. Facililates implementation of improvements to Queens Quay East early in the redevelopment of the East Bayfront Precinct, independent of the location where redevelopment occurs, without the need for private land on the North side of Queens Quay East.
COMPOSITE RATING		(Poor)	(Neutral)	(Poor)	(Good)
PRELIMINARY RECOMMENDED ROAD WIDENING ALTERNATIVE(S)					👍

Existing ROW - approx. 27.4 metres
38.0 metre ROW requires total 10.6 metre widening

LEGEND:

- GOOD
- NEUTRAL
- POOR
- X REJECTED

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redevelopment approvals processes on a site by site basis as the properties on the north side of Queens Quay East redevelop.

Option 2 does not require the relocation of any businesses to implement the primary and secondary cross-section designs for Queens Quay East.

Business Operations – Impact to Parking Areas

Option 1 impacts the multiple existing parking areas the north side of Queens Quay East. Parking areas are generally small and dispersed and a loss such that this widening options may significantly reduce the potential supply available to support the existing businesses and buildings located on private property on this side of the street.

Option 2 impacts the existing large parking areas on the south side of Queens Quay East. Impacts are relatively minor given the scale of the available parking area.

Option 3 impacts parking on both sides of Queens Quay East. The impacts on the parking supporting businesses on the north side of the street are reduced compared to Option 1. Impacts on the south side of Queens Quay East are, as for Option 2, relatively minor.

Option 4 will ultimately impact parking areas on both sides of Queens Quay East. On an interim basis, however, Option 4 provides facility to stage the implementation of the preferred Queens Quay East cross-section which enables all elements of the improved cross-section required to facilitate development with the East Bayfront Precinct to be constructed, except for the improved north side boulevard, without impacting any parking supporting existing businesses on the north side of Queens Quay East.

Business Operations – Impact to Site Access

Existing site access provisions can be maintained with each of the four (4) widening alternatives. Reconstruction of access driveways may be required in each case.

Impacts to Property – Public Property

All options require approximately 10.6 metres of additional property in total to implement any of the preferred cross-section designs. Land requirements from the north side of Queens Quay East impact private property while those from the south side impact public lands owned by TEDCO.

No land is required for Option 1 from the primarily public (TEDCO) lands on the south side of Queens Quay East to implement any of the preferred primary and secondary cross-section design alternatives.

Option 2 requires a 10.6 metre widening and additional property from the primarily public lands on the south side of Queens Quay East to implement the preferred cross-section alternatives.

Option 3 requires a 5.3 metre widening and additional property from the primarily public lands on the south side of Queens Quay East to implement the preferred cross-section alternatives.

Depending upon the preferred alternate cross-section design is question, widenings of 8.45 metres (Alternative Cii), 8.70 metres (Alternatives Ai and Aii) and 10.45 metres (Option Ci) are required under Option 4 from the public TEDCO lands on the south side of Queens Quay East.

Impacts to Property – Private Property

All options require approximately 10.6 metres of additional property in total to implement any of the preferred cross-section designs. Land requirements from the north side of Queens Quay East impact private property while those from the south side impact public lands owned by TEDCO.

Approximately 10.6 metres of property is required to implement the required widening under Option 1 from private properties on the north side of Queens Quay East.

No land is required for Option 2 from the private properties lands on the north side of Queens Quay East to implement any of the preferred alternative cross-section designs.
Option 3 requires a 5.3 metre widening and additional property from the private properties on the north side of Queens Quay East to implement any of the preferred cross-section alternatives.

Depending upon the preferred alternate cross-section design is question, widenings of 1.90 metres (Alternatives Ai and Aii), 0.15 metres (Alternative Ci) and 1.65 metres (Option Cii) are required under Option 4 from the private properties located on north side of Queens Quay East.

Cost Effectiveness – Capital Costs

The capital costs related to construction of the four (4) alternate widening designs will be similar in each case.

Property costs associated with obtaining private property to facilitate construction of any of the preferred alternate cross-section alternatives are the greatest for Options 1 and 3.

Option 2 requires no private property while Option 4 provides facility to obtain the required widenings from private properties on a staged basis through the appropriate City development approval processes. Private property cost should be, in this option, minimal.

Cost Effectiveness – Maintenance Costs

Maintenance costs will be similar for each of the alternate widening design alternatives.

Opportunity for Revitalization - Ability to Support the Development Objectives of the Precinct Plan

All options facilitate the improvements necessary on Queens Quay East to support the development objectives of the East Bayfront Precinct Plan.

Options 2 and 4 enable the construction of any of the elements of the preferred primary and secondary cross-section designs required to support development within the East Bayfront Precinct Master Plan area without the need for private property on the north side of Queens Quay East. A staged widening is contemplated in Option 4 as described previously. This enables, presuming that the public (TEDCO) property on the south side of Queens Quay East can be made readily available, the appropriate transportation infrastructure to be put in place early in the redevelopment of the East Bayfront Precinct independent of where that redevelopment occurs.

Of these, Option 4 provides a more even balance of the lands required from both public and private properties to facilitate the required widening and implementation of any of the preferred alternate cross-section designs.

Options 1 and 3 requires that private property be obtained from each of the affected properties on the north side of Queens Quay East before improvements required to support development within the East Bayfront Precinct can be undertaken on Queens Quay East. This may impact the ability to provide adequate transportation infrastructure

early in the redevelopment of the East Bayfront Precinct Plan area which may affect the development potential that could be achieved in the shorter term and / or may require that private lands be expropriated.

Recommended Preferred Alternate Cross-Sections Design Option

Based upon the evaluation presented in **Exhibit 8-36**, the key difference between the four (4) options relates to the need and timing for property on the north side of Queens Quay East and the impact that this may have on the following:

- The need to eliminate existing buildings and relocate the existing businesses operating within them.
- The ability to construct appropriate transportation infrastructure on Queens Quay East and any of the preferred primary and secondary cross-section design alternatives early in the redevelopment of the East Bayfront Precinct.

Recommendation for Preferred Alternate Widening Design Option

Option 4 is recommended as the preferred widening alternative for Queens Quay East.

Option 4 facilitates the implementation of required improvements on Queens Quay East and any of the preferred primary and secondary cross-section alternatives without the need to obtain private property, on an interim basis, from the multiple private landowners on the north side of the street. A staged widening of the existing right-of-way is contemplated for Queens Quay East that maintains, until the properties on the north side of the street redevelop, the existing sidewalk / boulevard width as a minimal, interim condition. Upon redevelopment, and as the fronting retail uses emerge, the street would be widened to its full extent through a property taking undertaken through the appropriate City of Toronto approvals processes.

Option 4 is preferred over Option 2, which also avoids requiring private property on the north side of Queens Quay East, given that it more evenly balances the public and private land requirements to implement the preferred right-of-way widening.

Alternate Widening Options Not Recommended

Options 1 and 3 are not preferred in that they rely upon obtaining private property from multiple landowners on the north side of Queens Quay East to enable the construction of any of the preferred primary and secondary cross-section alternatives. This may impact the ability to implement the required improvements on Queens Quay East that will

provide appropriate transportation infrastructure to adequately support emerging new development within the Precinct. This may influence the development potential achievable within the Precinct in the short term prior to obtaining the necessary lands from all of the properties on the north side of Queens Quay East OR may require that these lands be expropriated. Both outcomes are undesirable.

Option 2 does not require property on the north side of Queens Quay East to implement any of the preferred cross-section alternatives. However, this option is not preferred compared to Option 4 in that the entire 10.6 metre required widening is to be obtained from the public TEDCO lands located on the south side of Queens Quay East. A more balanced land acquisition distribution is preferred as noted above.

8.7.12 Intersection Configurations Considerations

A series of potential representative intersection configurations are illustrated, for information purposes, on **Exhibit 8-37** for the two primary preferred cross-section alternatives (Ai and Aii) for the preferred widening alternative. The Queens Quay East / Lower Sherbourne Street intersection is used for demonstration purposes.

Left turn lanes are incorporated into each arrangement either as separate lanes through a reallocation of road pavement width (elimination of on-street parking) and reductions in the median or boulevard widths at the intersections. Potential locations of rail barriers and signal facilities are also indicated on each of the roadway approaches entering the intersection.

A potential barrier configuration (not shown on **Exhibit 8-37**) that could be pursued, if rail barriers of sufficient length are able to be fabricated, would locate the barriers longitudinally along Queens Quay East on either side of the rail / transit right-of-way. This would enable access to the rail right-of-way to controlled while maintaining access to / from each of the side streets (Lower Sherbourne Street in this case) during rail service.

8.7.13 Potential Reconfiguration Options West of Lower Jarvis Street

Potential arrangements for the ways in which the widened section of Queens Quay East (preferred cross-section Option Aii) within the East Bayfront Precinct may connect to a number of potential alternate configurations that may be adopted west of Lower Jarvis Street are illustrated on **Exhibit 8-38**.

Three arrangements west of Lower Jarvis Street are shown reflecting the range of alternatives that could be adopted in the future should that section of Queens Quay East be widened as part of an overall redevelopment plan or modified to incorporate an exclusive at-grade transit right-of-way.

The three arrangements are as follows:

- **Existing Cross-section West of Lower Jarvis Street**
  This option presumes no provision is made for an at-grade exclusive transit right-of-way on Queens Quay East and contemplates the widened 38.0 metre section of Queens Quay East within the East Bayfront Precinct being tied into the existing cross-section (with Redpath Rail Spur) west of Lower Jarvis Street.

- **Existing Right-of-Way West of Lower Jarvis Street – Provision for Transit**
  This option presumes that the existing right-of-way on Queens Quay East is maintained west of Lower Jarvis Street but that provision is made for an exclusive transit right-of-way within the centre of the roadway (7.32 metres – consistent with TTC standards).

  The plan contemplates the widened 38.0 metre section of Queens Quay East within the East Bayfront Precinct being tied into a reconfigured cross-section (with Redpath Rail Spur) west of Lower Jarvis Street.

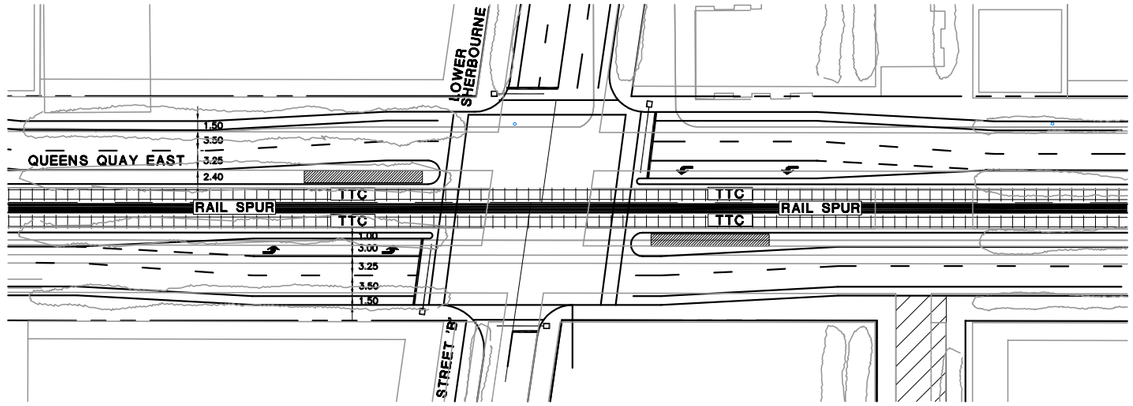
  It is only possible to maintain one (1) travel lane in each direction with on-street bicycle lanes within the existing right-of-way west of Lower Jarvis Street (approximately 27.4 metres) with the introduction of the transit allowance.

- **Widened Right-of-Way West of Lower Jarvis Street**
  This option illustrates a widening of the existing right-of-way west of Lower Jarvis Street to 38.0 metres consistent with that preferred for Queens Quay East within the East Bayfront Precinct.

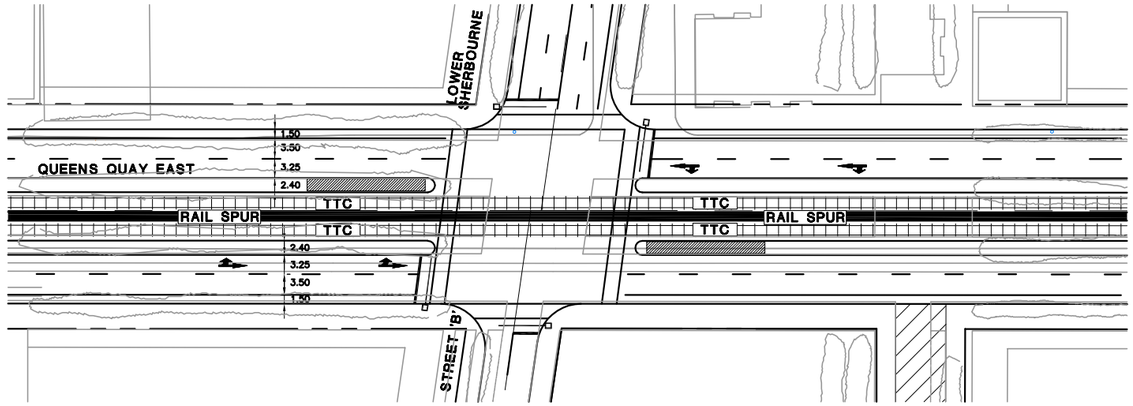
  The Option Aii cross-section is shown for illustration purposes and includes an exclusive transit right-of-way plus one (1) basic travel lane in each direction with bicycle lanes and on-street parking.

All options are compatible with the preferred cross-section and widening designs for Queens Quay East within the East Bayfront Precinct Master Plan area. No reasonable alternative for Queens Quay East west of Lower Jarvis Street is precluded by the alternatives being considered within the East Bayfront Precinct.

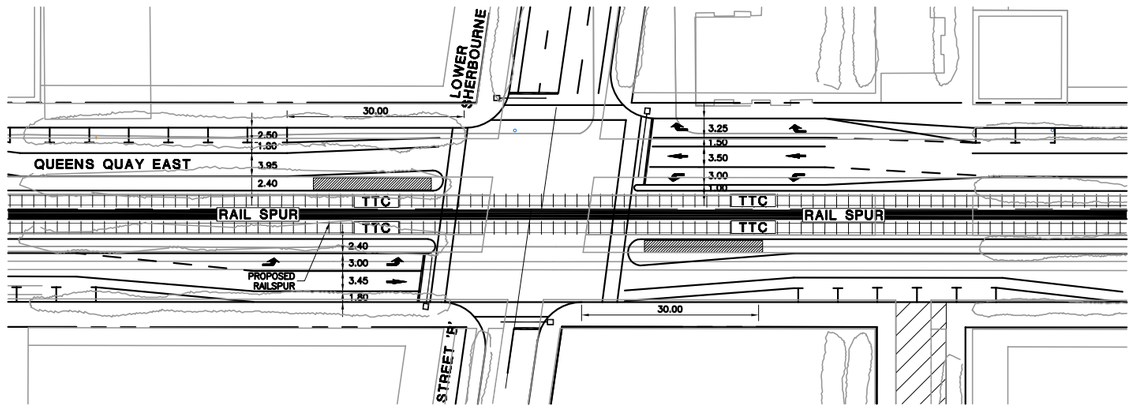
OPTION Ai
LEFT TURN LANE
4 TRAFFIC LANES
BICYCLE LANES



OPTION Ai
THROUGH-LEFT LANE
4 TRAFFIC LANES
BICYCLE LANES



OPTION Aii
LEFT TURN LANE
RIGHT TURN LANE
2 TRAFFIC LANES
BICYCLE LANES
ON-STREET PARKING



NOTE: TRANSIT OVERHEAD POWER SUPPORT POLES NOT SHOWN
(SIDE POLES REQUIRED DUE TO OVERLAP WITH RAIL SPUR).

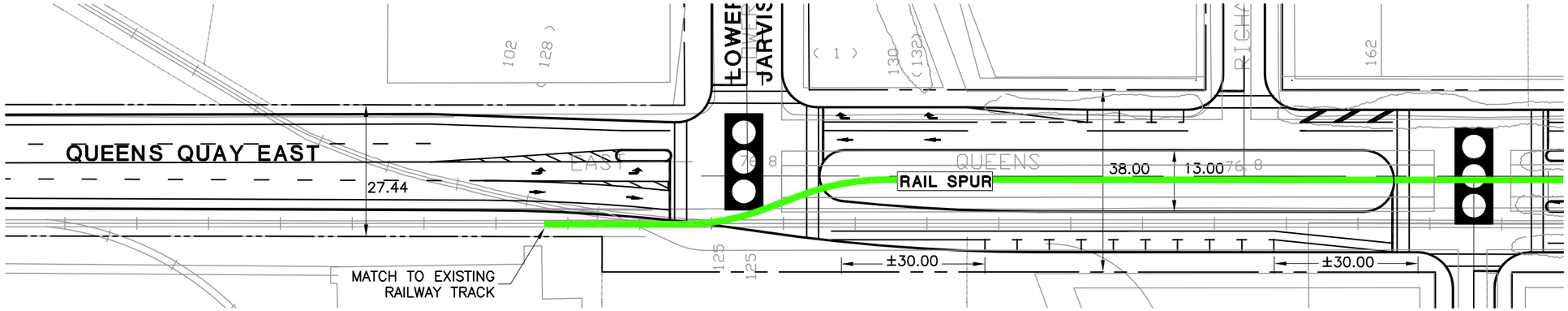
TTC TRANSIT STOP & PLATFORM

RAIL BARRIERS & SIGNALS

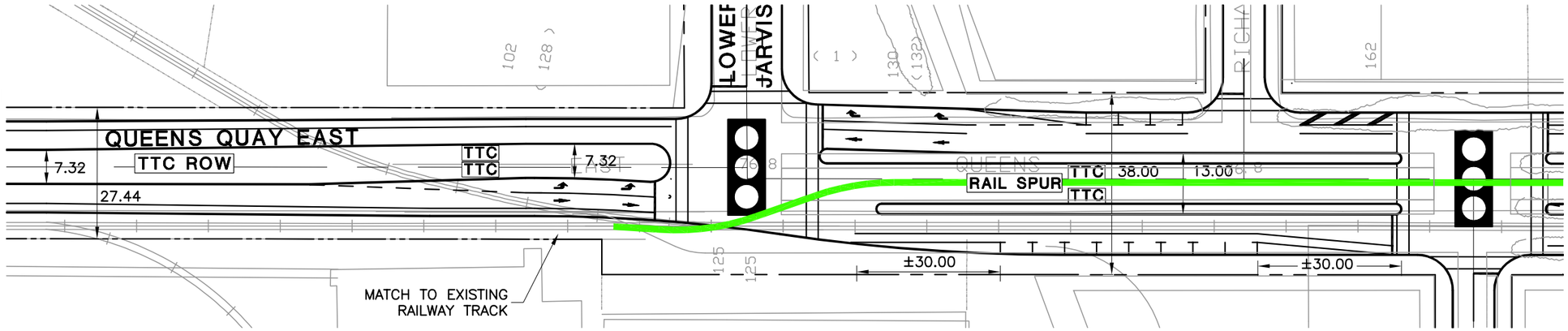
EAST BAYFRONT PRECINCT PLAN
REPRESENTATIVE SIGNALIZED INTERSECTION CONFIGURATIONS

DRAWING FILENAME: J:\6844-07\BA\EA Report\Graphics\Exhibit 8-37.dwg
DATE PLOTTED: January 05, 2006

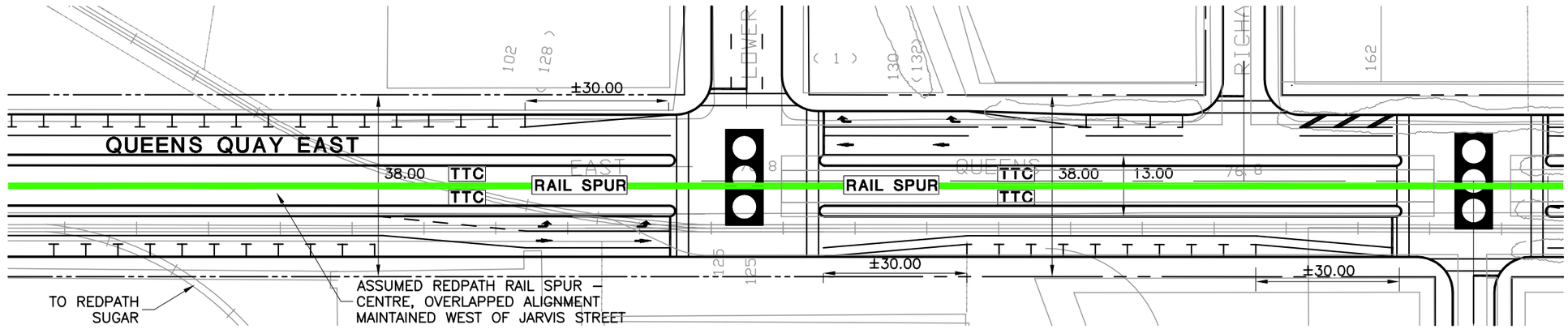
- 38.0m ROW CROSS SECTION OPTION Aii EAST OF JARVIS
- EXISTING ROW WEST OF JARVIS
- NO PROVISION FOR AT GRADE TRANSIT



- 38.0m ROW CROSS SECTION OPTION Aii EAST OF JARVIS
- EXISTING ROW WEST OF JARVIS
- PROVISION FOR TRANSIT AT GRADE



- 38.0m ROW CROSS SECTION OPTION Aii EAST OF JARVIS
- 38.0m WEST TO BAY WITH WIDENED ROW
- PROVISION FOR TRANSIT AT GRADE



SIGNALIZED INTERSECTION

EAST BAYFRONT PRECINCT PLAN - POTENTIAL QUEENS QUAY EAST CONNECTION OPTIONS - WESTERN PRECINCT LIMIT

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DATE PLOTTED: January 05, 2006

8.8 Additional Cross-Sections for Queens Quay – Agency Comments

8.8.1 Additional Cross-Section Designs - Description

Two further cross-section alternatives have been developed based upon Agency comments.

These options are variations on Option Ai and Aii in that they consider an overlapped rail spur condition. The options essentially propose to locate the Redpath rail spur on the south side of the dedicated transit right-of-way within a widened (compared to Option Ai and Aii) central median on Queens Quay East. The rail spur clearance allowance is overlapped, at intersections, with the eastbound TTC transit platforms.

The two options (Ei and Eii) are described in the following and are illustrated on **Exhibit 8-39**.

Options Ei & Eii

Both options Ei and Eii contemplate adoption of a 38.0 metre right-of-way for Queens Quay East. The following common cross-sectional elements are accommodated in each:

- 14.60 metre wide transit right-of-way in the centre of Queens Quay East. This includes provision for platforms / landscaped medians to the north and south of the exclusive transit allowance.
- The Redpath rail spur located on the south side of the transit way within the median but overlapping, at intersections, with TTC platforms.
- On-street bicycle lanes - 1.5 metres where adjacent to a curb and 1.8 metres where adjacent to parking.
- 3.45 metre wide boulevards.

The main differences between the two options is, as for Options Ai and Aii, the number of travel lanes and the provision for on-street parking. Both options have the same pavement width allocated within the cross-section (8.25 metres each direction).

In Option Ei the available pavement width is programmed to provide 4 travel lanes (2 in each direction) in addition to the bicycle lanes should this number of lanes be required in the future. No on-street parking is proposed to assist in reducing the overall width of the Queens Quay East right-of-way to 38.0 metres.

In Option Eii the same 8.25 metres (that would be required to provide 4 lanes) is programmed to provide 2 wide travel lanes, the on-street bicycle lanes and on-street parking to support planned retail uses on Queens Quay East. The combined width of the one travel lane provided in each direction plus bicycle lane enables vehicles to pass another disabled vehicle.

Option Eii could be adopted on an interim basis prior to any extension of Queens Quay East to serve the Port Lands with the ability to convert the pavement allocation in the future or on a permanent basis should it be determined that Queens Quay East would serve primarily only the East Bayfront Precinct.

Representative signalized intersection layout for Options Ei and Eii are illustrated on **Exhibit 8-40** (Lower Sherbourne Street / Queens Quay East intersection).

8.8.2 Evaluation Criteria – Additional Cross-Section Designs

The criteria listed in Section 8.7.6 are used in the evaluation of the two additional cross-section options.

8.8.3 Assessment and Evaluation of Additional Cross-Section Designs

Evaluation Methodology

The rating system adopted in the evaluation of these additional cross-section designs is the same as that outlined in Section 8.7.7.

Evaluation Findings

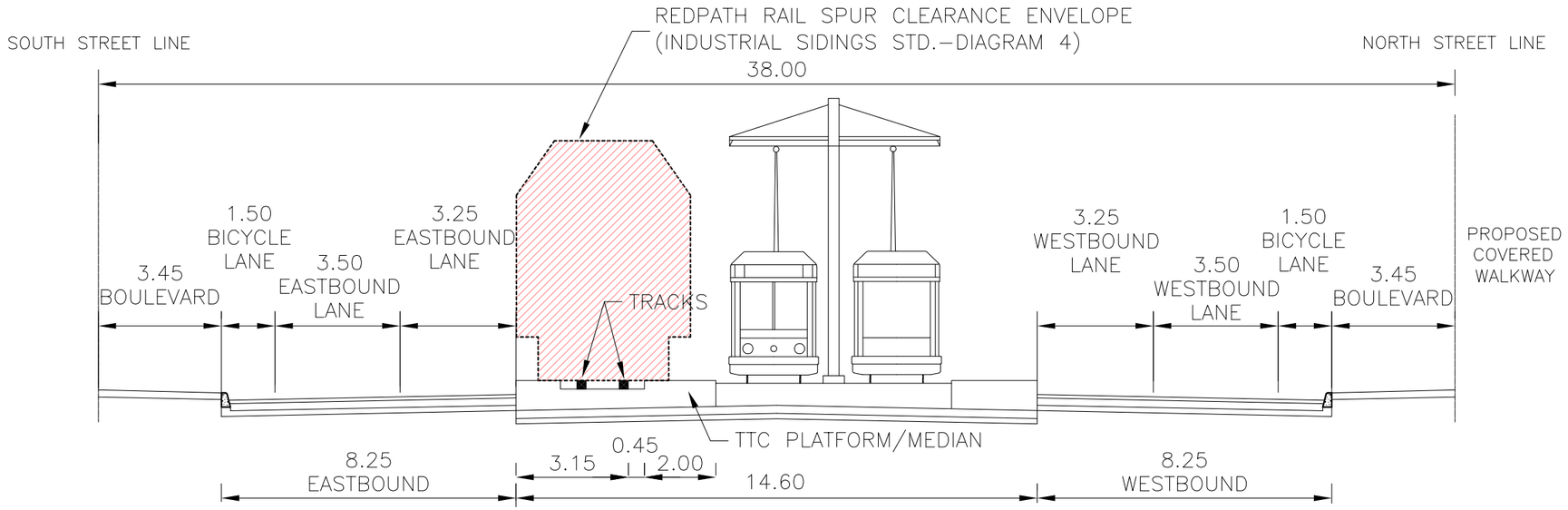
The preliminary evaluation of the two additional cross-section design – Option Ei and Eii, is summarized on **Exhibit 8-41**.

A discussion relating to the basis for the evaluation outlined in **Exhibit 8-41** is provided in the following section.

Transportation Service

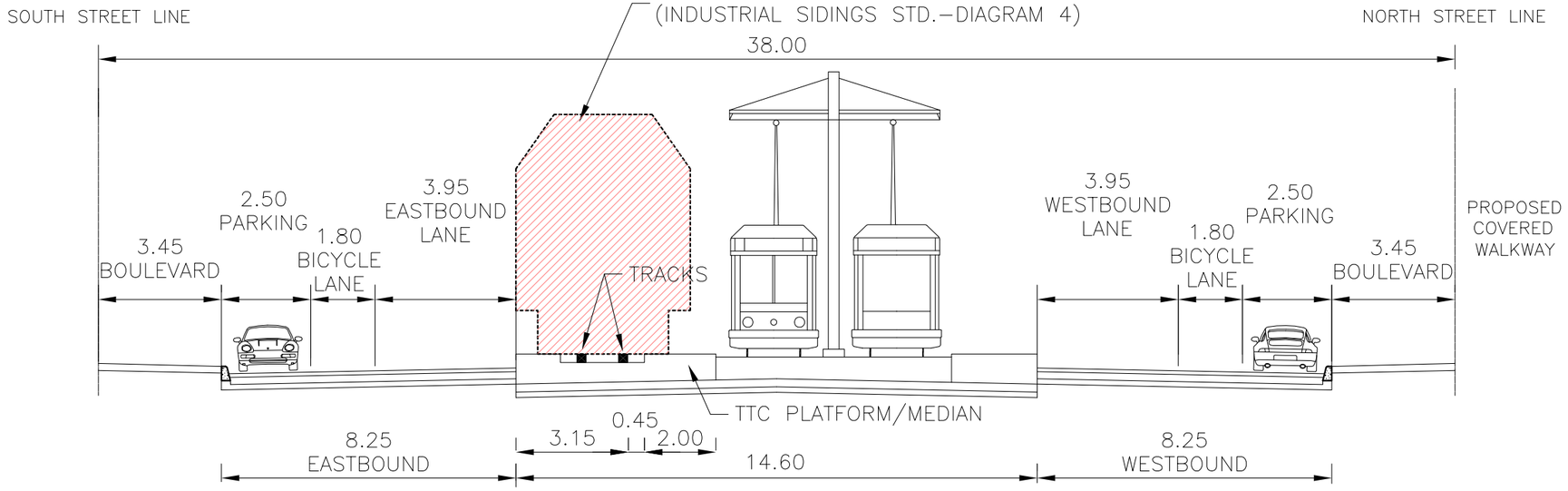
Options Ei and Eii are equivalent to Options Ai and Aii respectively compared to all Transportation Service evaluation criteria except *Service to Pedestrians* (Options Ei and Eii) and *Impacts on Cross-Sectional Element Widths and Facilities* (Option Eii).

OPTION Ei



38.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Eii

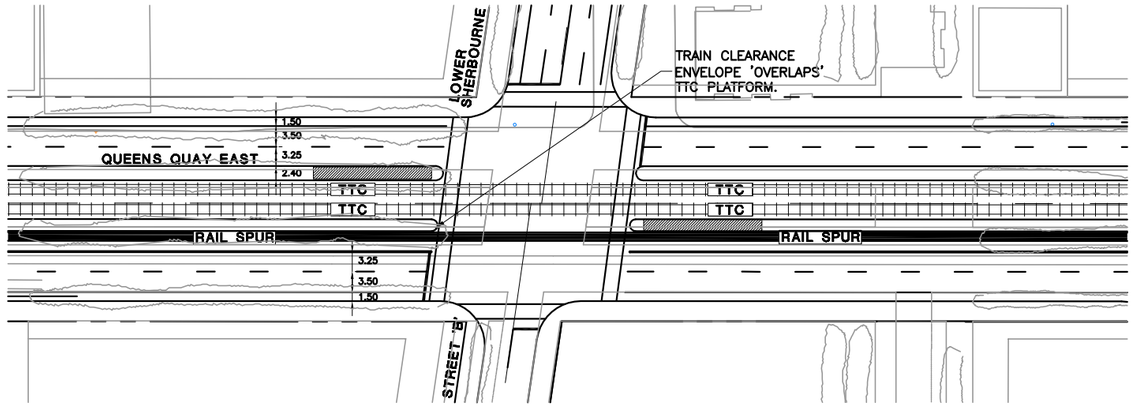


38.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

EAST BAYFRONT PRECINCT PLAN
PROPOSED QUEENS QUAY EAST CROSS SECTIONS

OPTION Ei

4 TRAFFIC LANES
BICYCLE LANES

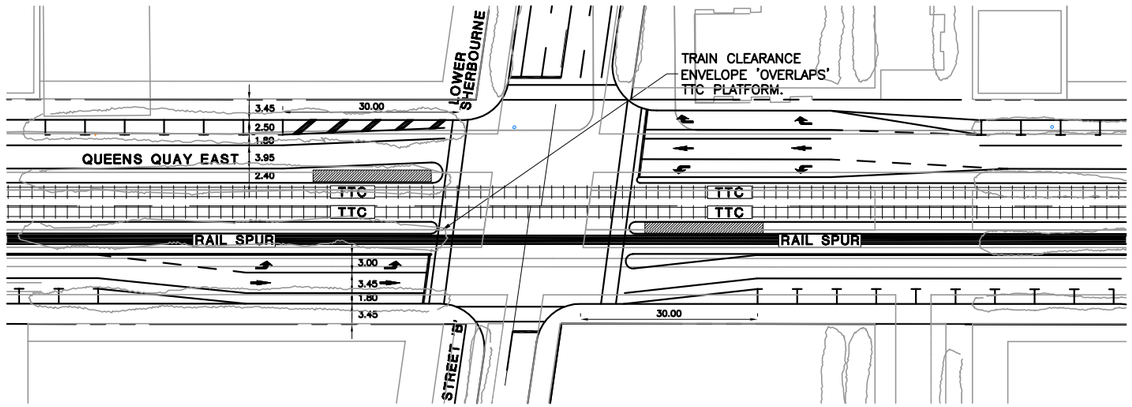


NOTE:

PROVISION OF EB/WB LEFT TURN LANES WOULD SIGNIFICANTLY REDUCE THE AVAILABLE BOULEVARD WIDTHS AT INTERSECTIONS.

OPTION Eii

2 TRAFFIC LANES
BICYCLE LANES
ON-STREET PARKING



EAST BAYFRONT PRECINCT PLAN
REPRESENTATIVE SIGNALIZED INTERSECTION CONFIGURATIONS - OPTION Ei & Eii

TTC PLATFORM

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EAST BAYFRONT PRECINCT PLAN
QUEENS QUAY EAST - CROSS SECTION ALTERNATIVES PRELIMINARY EVALUATION

		QUEENS QUAY EAST - REDPATH RAIL SPUR HYBRID OPTIONS	
	ALTERNATIVE DESIGN	OPTION Ei	OPTION Eii
EVALUATION CRITERIA		38.0 Metre ROW Four Travel Lanes No Parking	38.0 Metre ROW Two Travel Lanes With Parking
TRANSPORTATION SERVICE	ROAD SAFETY	Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.	Rail line crosses North & South streets and Queens Quay East. At-grade rail crossing facilities required.
	TRAFFIC OPERATIONS 1. ABILITY TO SUPPORT TRAFFIC NEEDS OF EAST BAYFRONT PRECINCT	Supports and meets the traffic needs of the East Bayfront Precinct.	Supports and meets the traffic needs of the East Bayfront Precinct.
	2. ABILITY TO SUPPORT POTENTIAL TRAFFIC NEEDS OF WATERFRONT WIDE DEVELOPMENT	Provides capacity available to accommodate additional traffic volumes from Waterfront wide development.	2 lane cross-section likely unable to accommodate significant additional traffic volumes. May preclude Queens Quay East from forming a significant component of road network serving Waterfront wide development. Can be converted to 4 traffic lanes.
	3. IMPACTS TO TRAFFIC OPERATIONS	Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays. Not possible to provide separate left turn lanes at intersections.	Traffic movements required to be restricted by barriers at rail crossings of North/South streets and Queens Quay East. Occasional spur activity may cause vehicular delays.
	TRANSIT OPERATIONS 1. ABILITY TO ACCOMMODATE/ ENCOURAGE TRANSIT	Provision is made for exclusive transit right-of-way	Provision is made for exclusive transit right-of-way
	2. IMPACTS TO TRANSIT OPERATIONS	Rail spur located outside of transit right-of-way. Temporal use restriction required for TTC platform because of train overlap. Special treatment required for TTC platform because of train overlap. Centre pole possible to support overhead power supply.	Rail spur located outside of transit right-of-way. Temporal use restriction required for TTC platform because of train overlap. Special treatment required for TTC platform because of train overlap. Centre pole possible to support overhead power supply.
	FACILITATION OF GOODS MOVEMENT	Maintain rail service to Redpath Sugar. Unrestricted service possible. Rail siding not maintained, requires operational changes.	Maintain rail service to Redpath Sugar. Unrestricted service possible. Rail siding not maintained, requires operational changes.
	SUPPORT POLICE AND EMERGENCY SERVICE OPERATIONS	Facilitates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.	Facilitates police and emergency access to planned residental and mixed use areas. Controls required to ensure that access to lands South of Queens Quay East maintained during rail service.
	SERVICE TO BICYCLISTS	Optimal condition. On street bicycle lanes provided.	Optimal condition. On street bicycle lanes provided.
	SERVICE TO PEDESTRIANS	Boulevard widths modestly reduced compared to Ai & Aii. Separate rail allowance increases crossing width on Queens Quay East. Overlap of train envelope & TTC pedestrian platform poses potential safety concerns.	Boulevard widths modestly reduced compared to Ai & Aii. Separate rail allowance increases crossing width on Queens Quay East. Overlap of train envelope & TTC pedestrian platform poses potential safety concerns.
	IMPACTS ON CROSS-SECTIONAL ELEMENT WIDTHS AND FACILITIES	No on-street parking with 4 lanes. Separate rail allowance impacts space allocation to other elements. Sidewalk widths reduces compared to Option Ai.	Separate rail allowance impacts space allocation to other elements. Two travel lanes convertible to four lanes within proposed pavement. Sidewalk widths reduced compared to Option Ai.
NATURAL ENVIRONMENT	TERRESTRIAL HABITAT	No terrestrial habitat of any significance.	No terrestrial habitat of any significance.
	AQUATIC HABITAT	No aquatic habitat of any significance.	No aquatic habitat of any significance.
	AIR QUALITY	Will not move Queens Quay East closer to any sensitive receptors.	Will not move Queens Quay East closer to any sensitive receptors.
	NOISE AND VIBRATION	Will not move Queens Quay East closer to any sensitive receptors.	Will not move Queens Quay East closer to any sensitive receptors.
	LANDSCAPE PROVISIONS	Boulevard width/landscaping opportunities modestly reduced compared with Ai & Aii.	Boulevard width/landscaping opportunities modestly reduced compared with Ai & Aii.
SOCIO-ECONOMIC ENVIRONMENT	BUSINESSES (Requirement to relocate the businesses.) (Site effect incompatible with continuance.)	Optimal condition. Narrower right-of-way reduces potential impacts on existing businesses.	Optimal condition. Narrower right-of-way reduces potential impacts on existing businesses.
	IMPACTS TO PROPERTY	Optimal condition. Narrower right-of-way reduces property requirments.	Optimal condition. Narrower right-of-way reduces property requirments.
OPPORTUNITY FOR REVITALIZATION	ABILITY TO SUPPORT THE DEVELOPMENT OBJECTIVES OF THE PRECINCT PLAN	Improvements support redevelopment objectives of Precinct Plan.	Improvements support redevelopment objectives of Precinct Plan.
	ABILITY TO MEET THE URBAN DESIGN OBJECTIVES OF THE PRECINCT PLAN	Reduced right-of-way reduces scale of street, modestly reduced boulevards and landscaping opportunities compared to Ai & Aii. No on-street parking to support retail. Provision for rail spur allowance impacts other elements in right-of-way.	Reduced right-of-way reduces scale of street, modestly reduced boulevards and landscaping opportunities compared to Ai & Aii. On-street parking to support retail. Provision for rail spur allowance impacts other elements in right-of-way.
	ABILITY TO SUPPORT WATERFRONT WIDE REVITALIZATION	Makes provision for transit and bicycle facilities services that may serve Waterfront wide redevelopment. Provides capacity available to support Waterfront wide traffic.	Makes provision for transit services and bicycle facilities that may serve Waterfront wide development. 2 lanes cross-section unlikely to form a significant component of road network supporting Waterfront wide development.
COST EFFECTIVENESS	CAPITAL COST OF IMPROVEMENTS (Including private property costs.)	Capitial costs are comparable to other alternatives.	Capitial costs are comparable to other alternatives.
	MAINTENANCE COSTS	Road maintenance costs comparable for all options.	Road maintenance costs comparable for all options.
COMPOSITE RATING			
PRELIMINARY RECOMMENDED CROSS-SECTION ALTERNATIVE(S)			

LEGEND:
- GOOD
- NEUTRAL
- POOR
- X REJECTED

Options Ei and Eii are rated as 'poor' (compared to 'good' for Options Ai and Aii) with respect to *Service to Pedestrians* given significant concerns relating to potential conflicts that may occur during rail spur use (at night) and pedestrians looking to wait / stand on the eastbound TTC platforms located within central median of Queens Quay East. The rail clearance envelope overlaps with this pedestrian refuge area. Special signage / controls will be required to prevent pedestrians from accessing these platforms during periods of rail service.

Option Eii is rated as 'neutral' (compared to 'good' for Option Aii) with respect to *Impacts on Cross-Sectional Element Widths and Facilities.* This reflects the narrower boulevard and sidewalk conditions provided in Option Eii compared to Option Aii.

Options Ei and Eii are rated as 'poor' relative to *Impacts to Transit* (the same as Options Ai and Aii) notwithstanding that the separation of the rail spur line from the dedicated transit right-of-way will provide operational benefits. This rating, however, reflects pedestrian safety concerns on the eastbound TTC platforms during periods rail service and the need for special measures at these locations.

Natural Environment

Options Ei and Eii are equivalent to Options Ai and Aii respectively compared to all Natural Environment evaluation criteria except for *Landscape Provisions*.

Options Ei and Eii are rated as 'neutral' (compared to 'good' for Options Ai and Aii) given the reduction in opportunities for landscaping afforded in these options within the reduced width boulevards and south side median area.

Socio-Economic Environment

Options Ei and Eii are equivalent to Options Ai and Aii respectively compared to all Socio-Economic Environment evaluation criteria.

Opportunity for Revitalization

Options Ei and Eii are equivalent to Options Ai and Aii respectively compared to all Opportunity for Revitalization evaluation criteria except for *Ability to Meet the Urban Design Objectives of the Precinct Plan* (Option Eii).

Options Eii is rated as 'neutral' (compared to 'good' for Option Aii) given the reduced boulevard widths and related opportunities to enhance the public realm provided in this option.

Cost Effectiveness

Options Ei and Eii are equivalent to Options Ai and Aii respectively compared to all Cost Effectiveness evaluation criteria.

Comparison to Recommended Preferred Alternate Cross-Sections Design Options

Based upon the evaluation presented in **Exhibit 8-39** Options Ei and Eii are not recommended as preferred alternate cross-section designs for Queens Quay East. This relates to the following:

- Options Ei and Eii increase the width of the median facility compared to the primary preferred alternative designs (Options Ai and Aii) thereby reducing the width of the sidewalks and boulevards.
- Options Ei and Eii both incorporate a configuration that overlaps the clearance envelope of the rail spur with eastbound TTC platforms. This could result in significant pedestrian / rail conflicts and pedestrian safety concerns during periods of rail service (i.e., night time).

9.0 ENVIRONMENTAL EFFECTS AND MITIGATION

9.1 Overview

This chapter discusses the potential impacts of the various projects that form part of this Class EA Master Plan. It examines the potential interactions between the projects and the environment and describes potential resulting environmental effects and it also describes environmental management measures to eliminate or reduce those effects. It is recognized that the East Bayfront Precinct Plan involves a series of individual projects that have their own impacts which may also act in combination to create greater impacts.

In this section the environmental impacts (**Exhibit 9-1**) are assessed based on the four major infrastructure projects including improvements to the transportation, stormwater, sanitary and waste water systems.

Exhibit 9-1 – Criteria Used for the Assessment

Environmental Component	Criteria
Terrestrial	• Wildlife Species • Wildlife Habitat
Aquatic	• Fish Species • Fish Habitat
Air	• Air Quality and Climate Change • Noise / Vibration
Geophysical	• Soil and Sediment • Groundwater • Surface Water
Socio-Economic	• Businesses and Employment • Built Heritage • Archaeology • Traffic and Movement of Goods and Services and Emergency Services • Private Property • Recreation • Traditional Use of Land and Resources by First Nations • Health and Safety

9.2 Potential Interactions

To assess the impacts of the infrastructure work proposed for the East Bayfront Precinct matrices (**Exhibits 9-2** to **9-4**) show the project activities and their potential interactions with the environment based on environmental criteria described above. The matrices show that there will be positive interactions on business and employment, private properties, and soil and groundwater. There will be minimal potential negative interactions on the terrestrial environment, aquatic environment and air during construction.

9.3 Potential Environmental Effects and Mitigation

Exhibit 9-5 provides additional detail on the potential environmental effects and illustrates the potential environmental management practices used to mitigate the effects due to infrastructure development. If the proposed mitigation measures are implemented there should be no adverse residual effects on the environment.

The effects to terrestrial species and habitat are minimal, and generally limited to site clearance activities. Since the area was previously developed, there are no significant terrestrial features to be affected. Migratory bird habitat should be protected during key migration periods. Limiting construction activities from spreading to adjacent natural areas, and adding new vegetation through landscaping (with an emphasis on native materials) will mean that there is no residual adverse effect.

Aquatic habitat can be affected by construction related sedimentation, and accidental spills. Appropriate sediment control measures and spill response plans should mitigate these effects. Once implemented, the new stormwater management measures (consistent with the WWFMMP) for the precinct should contribute to improved aquatic conditions.

Air quality effects may arise from construction activities and site remediation activities. Construction related effects can be mitigated through appropriate dust and emission controls. There may be minor incremental increases in emissions from vehicles using an enhanced road system, but this is likely balanced by the improvement to the system for other modes of travel.

Noise and vibration effects are primarily associated with construction. Appropriate equipment controls and conformity with local noise control by-laws will mitigate any adverse impacts.

Exhibit 9-2: Water and Sanitary Sewer Servicing Matrix

Potential Interactions for Water and Sanitary Sewer Servicing Projects																	
	Terrestrial		Aquatic		Air		Geophysical			Socio-Econmic							
Environmental Sub-Components	**Wildlife Species**	**Wildlife Habitat**	**Fish Species**	**Fish Habitat**	**Air Quality and Climate Change**	**Noise / Vibration**	**Soil and Sediment**	**Groundwater**	**Surface Water**	**Business and Employment**	**Built Heritage**	**Archaeology**	**Traffic and Movement of Goods and Services - Emergency Services**	**Private Property**	**Recreation**	**Traditional Use of Land and Resources by First Nations**	**Health and Safety**
Property Acquisition										-				-/+			
Clear site of debris and scrub vegetation and/or demolition of structures, buildings or roads	-	-			-	-			-	-/+		-					+
Temporary Road or Land Closures										-/+			-				
Excavation for underground service trench - subsurface structures	-	-			-	-	-	-	-	+		-					
Excavated material separation					-	-			-	+							
Site remediation (off site)					-	-	+	+		+			-				+
Site remediation (in-situ)					-	-	+	+		+							+
Utilities, removal or modification					-	-				+							
Modification or construction of the new infrastructure					-	-											
Backfilling and re-grading					-	-	-/+		-	+							
Paving [1]										+							
Operations									+					+			

Notes

1 "Paving" refers to a wide range of potential treatments, including asphalt, brick pavers, hard packed gravel surfaces etc.

Exhibit 9-3: Stormwater Servicing Matrix

Potential Interactions for Stormwater Projects																	
	Terrestrial		Aquatic		Air		Geophysical			Socio-Econmic							
Environmental Sub-Components	**Wildlife Species**	**Wildlife Habitat**	**Fish Species**	**Fish Habitat**	**Air Quality and Climate Change**	**Noise / Vibration**	**Soil and Sediment**	**Groundwater**	**Surface Water**	**Business and Employment**	**Built Heritage**	**Archaeology**	**Traffic and Movement of Goods and Services Emergency Services**	**Private Property**	**Recreation**	**Traditional Use of Land and Resources by First Nations**	**Health and Safety**
Property Acquisition										-				-/+			
Temporary Road Land Closures										-/+			-				
Clear site of debris and scrub vegetation and/or demolition of structures, buildings or roads	-	-	-	-	-	-			-	-/+		-					+
Excavation for underground service trench - subsurface structures					-	-	-		-	+		-					
Excavated Material Separation					-	-				+							
Site remediation (off site)					-	-	+	+		+			-				+
Site remediation (in-situ)					-	-	+	+		+							+
Install new underground pipes and catchbasins					-	-				+							
Install oil and grit separator					-	-		-		+							
Inlet and outfall structure installation					-	-				+							
Utilities, removal or modification					-	-				+							
Shoreline stabilization		+		+	-	-				+							
Modification or construction of the new infrastructure					-	-				+							
Backfilling and re-grading					-	-				+							
Paving [1]										+							
Topsoil placement and landscaping	+									+							
Operations									+					+			

Note: 1 - "Paving" refers to a wide range of potential treatments, including asphalt, brick pavers, hard packed gravel surfaces etc.

Exhibit 9-4 Transportation Matrix

Potential Interactions for Transportation Projects																	
	Terrestrial		Aquatic		Air		Geophysical			Socio-Econmic							
Environmental Sub-Components	**Wildlife Species**	**Wildlife Habitat**	**Fish Species**	**Fish Habitat**	**Air Quality**	**Noise**	**Soil**	**Groundwater**	**Surface Water**	**Business and Employment**	**Built Heritage**	**Archaeology**	**Traffic and Movement of Goods and Services Emergency Services**	**Private Property**	**Recreation**	**Traditional Use of Land and Resources by First Nations**	**Health and Safety**
Project Activity																	
Property Acquisition														-/+			
Clear site of debris and scrub vegetation and/or demolition of structures, buildings or roads	-	-			-	-			-	-/+		-					+
Municipal road demolition					-	-			-	-/+			-	-	-		
Excavated material separation					-	-	+										
Excavation for new road base					-	-	-										
Temporary Road or Lane Closures										-			-		-		
Site remediation (off site)					-	-			-	+							+
Site remediation (in-situ)					-	-	+	+	-	+							+
Drainage Improvements				+	-	-	+	+	-/+	+		-					
Re-grading					-	-			-	+		-					
Relocation of Freight Rail Siding					-	-			-	-			-				
Construction road base					-	-			-	+							
Excavation for utilities, removal or modification					-	-			-	+		-					
Municipal road construction or reconstruction					-	-			-	+			-				
Installation of street lighting and signals					-	-				+		-					
Construction of dedicated pedestrian and/or cycling paths (either on road, or off-road)					-	-			-	+			+		+		
Paving [1]					-	-			-	+							
Landscaping/ Blvd. Treatment					-	-			-	+	-	-		+	+		
Operations					-/+	-			+				+		+		

Notes: 1 - "Paving" refers to a wide range of potential treatments, including asphalt, brick pavers, hard packed gravel surfaces ect.

Exhibit 9-5
Potential Effects and Environmental Management Practices for Transportation, Stormwater, Wastewater and Sanitary Systems

Environmental Sub-Components	Potential Effects based on Potential Environmental Interactions	Potential Environmental Management Practices
Terrestrial Species and Habitat	• Damage or reduction in habitat due to loss of vegetation during site clearing associated with construction activities. • Temporary reduction in migratory bird habitat due to loss of vegetation during construction activities. • Disturbance to adjacent habitat by construction activities. • Improved conditions for species and habitat through site remediation.	• Identify migratory bird habitat areas, protect areas during key migration periods. • Ensure all construction material is handled and stored on-site to avoid effects to border areas.
Aquatic Species and Habitat	• Degradation of aquatic habitat as a result of sedimentation and soil erosion into surface water bodies and along shore due to construction activities. • Degradation of aquatic environment from accidental spills.	• Institute runoff/sedimentation and erosion controls during all construction work and monitor and maintain/upgrade controls appropriately until the site is stabilized. • Cover stockpiles with sheeting, tarps, or vegetation cover. • Minimize vegetation cover removal. • Filter or settle out sediment before the water enters any drainage pathway, including storm water systems. • Initiate planting or reseeding of disturbed areas immediately after construction is completed, with native non-invasive species. • Control overland flow up gradient of exposed areas by use of diversion ditches, bales, vegetation filter strips, and/or sediment traps. • Create new fish habitat opportunities by applying appropriate restoration techniques referring with TRCA's Aquatic Habitat Strategy for best practices that may be applied. • Use permeable surface treatments wherever possible. • Require construction contractors to have a spill response plan.
Air Quality	• Decrease in ambient air quality for short term from pollution, odour or dust (suspended particulate) and emissions resulting from wind erosion of disturbed ground surfaces, and associated with demolition, excavation and construction vehicles (diesel fumes, oils, other fuels and lubricants). • Minor incremental changes in localized air quality where road length is increased or new lanes were added. • Decrease in harmful emissions (e.g., volatile organic compounds) as a result of the clean up of contaminated sites. • Opportunities for alternative modes of transportation (future transit, cycling, walking) contributes to improved air quality.	• Ensure emission control devices on equipment are functional and effective. • Minimize dust emissions through the use of dust control measures (e.g., water spray or calcium chloride on exposed soil surfaces). • Use physical barriers (e.g., shrouds, scaffold canopies) to contain dust.
Noise/Vibration	• Short term noise associated with construction vehicles and activities. • Relocated roads may impact localized noise conditions.	• Restrict construction activities to hours prescribed by local noise by-law. • Ensure equipment is in sound working order. • Recommend and implement noise attenuation measures for new construction, where necessary. • Review noise conditions and abatement requirements for all new development. • Noise and vibration control measures in new buildings through development approval process.
Soil	• Degradation of soil quality as a result of spills (oil, gas, and lubricants) associated with construction activities. • Improved soil quality as a result of remediation activities.	• Prepare a spill response plan. • Immediately report and manage any leakage or spillage. with appropriate spill contingency equipment and measures • Lubricants, solvents, paints and other chemicals will not be stored on-site over night except within construction trailers secured with lock and key, on bermed and lined sites. • All construction equipment shall be in good working order, especially with respect to leaks or oil, fuel or hydraulic fuels. • Use designated storage and refueling areas well removed from surface water bodies. • Segregate excavated materials (clean material, impacted but re-useable material, material requiring treatment or disposal). • Develop remediation plans that comply with the Guideline for use at Contaminated Sites in Ontario.

Exhibit 9-5
Potential Effects and Environmental Management Practices for Transportation, Stormwater, Wastewater and Sanitary Systems

Environmental Sub-Components	Potential Effects based on Potential Environmental Interactions	Potential Environmental Management Practices
Groundwater	• Change in groundwater recharge due to change in permeability of the site. • Degradation of groundwater quality as a result of spills (e.g., oil, gas, and lubricants) associated with construction operation. • Minor de-watering may take place, however quantities will be minimal, and not in areas where groundwater is used as potable drinking water.	• Prepare a spill response plan. • Design dewatering measures to minimize volume of potentially contaminated ground water to manage.
Surface Water Quality/Quantity	• Increased runoff and alterations of flow patterns due to changes in permeability of the site by the removal of structures by demolition or excavation activities. • Degradation of surface water quality as a result of sediment washoff during construction and as a result of stockpiling of construction wastes near water bodies or in natural drainage paths. • Increased infiltration opportunities associated with permeable paving and landscaping. • Progressive approaches to managing stormwater can have a beneficial impact on surface water quality.	• Institute runoff/sedimentation controls during the work. • Manage lubricants, solvents etc. as described above. • Control overland flow up gradient and down gradient of exposed areas by use of diversion ditches, bales, vegetation filter strips, and/or sediment traps. • Minimize impermeable surfaces in design. • Minimize vegetation cover removal. • Initiate replanting or reseeding of disturbed areas immediately after construction is completed.
Business and Employment	• New employment associated with construction activities. • Impacts on businesses located within the study area. • Temporary disruptions to access to business from construction activities. • Disruption of freight rail service to Redpath. • Alterations to rail operations by Redpath.	• City Economic Development in partnership with TEDCO will assist businesses to find new accommodation. • Construction Staging plans to maintain business access or limit access restrictions to times outside of core business hours. • TWRC and the City will work with Redpath and the TTC to develop a rail operations plan.
Aboriginal Use of Traditional Land Resources	• No interactions expected.	• Keep First Nations informed.
Built Heritage	• Heritage structures are avoided.	• Consult with the City's Heritage Presentation staff where construction occurs in close proximity to heritage buildings.
Archaeology	• Potential for disturbance to archaeological remains during subsurface soil excavation.	• If buried artifacts are located during construction, contact a licensed archaeologist and notify the Ministry of Culture. • Stage 2 archeological assessment will be performed in the area where the Knapp's Roller Boat is thought to be located.
Private Property	• Potential for disturbances to private properties.	• Retain access to all private properties during construction. • Minimize nuisance impacts to private properties during construction.
Recreation	• An interconnecting grid of roads with cycling and walking paths will provide opportunities for recreation. • Improve alternate modes of recreation and transportation by access to new lands uses and construction of non-vehicle bridges (subject to future EA approvals). • Underground stormwater sedimentation tanks (Sherbourne Park or at the base of the Parliament street Slip), need to be designed to minimize interference with park operations.	• Alternate detour routes will maintain access during construction. • Bury tanks below grade allowing for a minimum of 2.0 metres of growing medium/clear space above the sedimentation tank to accommodate tree roots, site servicing, and other park design features. • Design tanks for the soil weight and other loadings. • Subject to agreement of City transportation staff, locate any access panels, manholes, grilles or grates within the adjacent road right-of-way. • Locate venting grilles outside the park (or if tank is close to the lakeshore boardwalk, side-vents through the dock wall will be considered). • Pipes and other servicing infrastructure associated with the tank and stormwater collection system would be kept out of the park as much as possible and follow appropriate rights-of way to connect with the existing CSO, sedimentation tank(s) or UV filter(s). The lake outfall from the tank and the UV disinfection unit will be the existing Sherbourne CSO which is located under the proposed park at a depth of approximately 6m.
Traffic and Movement of Goods and Services – Emergency Services	• Service or traffic disruptions may occur (e.g., temporary road or lane closures). • Construction of structures may have temporary or long term impact on navigation in water ways. • During construction there may be some disruption to emergency vehicle movements. • Improved pedestrian and cycling opportunities. • Disruption of freight rail service to Redpath. • Alterations to rail operations by Redpath.	• Implement alternative route options or traffic controls during construction. • Minimize service/access disruptions during construction. • Ensure that police and emergency vehicles are aware of the road construction. • Prepare alternate routes for vehicles that normally use these roads.

Soil and groundwater quality will improve overall as a result of remediation of infrastructure corridors and adjacent development sites. Surface water quality should improve with the implementation of new stormwater quality management measures, consistent with the WWFMMP.

The redevelopment of the district may result in the relocation of some businesses. This is a result of the broader land use changes. The City's Economic Development group working with ORC can assist businesses to find new locations. Temporary disruptions during construction can be managed through construction staging plans.

The preferred solutions avoid impacts to built heritage resources. Although archeological finds are not expected, a Stage 2 Archaeological Assessment is recommended for works in the vicinity of the Thornton Blackburn Site.

Private property impacts have been generally avoided. The TWRC and the City will need to work with Redpath and the TTC to develop a rail operations plan to work out the details of continuing rail service in the area. Nuisance impacts associated with construction can be mitigated. Lands will be required from the City of Toronto Economic Development Corporation.

The plan should have a substantial positive impact on recreation. The improved infrastructure will create new linkages for cycling and walking.

There will be short-term effects to transportation due to construction-related lane closures. Route detours and minimizing land closures through construction staging should minimize effects on traffic, the movement of goods and services and emergency services.

In summary, there are no adverse effects that cannot be mitigated. On this basis, there are no significant adverse residual effects on the environment.

10.0 PUBLIC AND AGENCY CONSULTATION

Public consultation was conducted in accordance with the Class EA requirements. Notices were published in local newspapers (The Toronto Star and the St. Lawrence Community Bulletin) and letters were sent out to stakeholders and residents within the surrounding study area to ensure widespread public awareness (Appendix A). This informed affected residents, property owners, and stakeholders regarding the project.

From October 2003 to August 2005, a comprehensive public consultation program was implemented as an integral part of the East Bayfront Precinct Planning Process. Consultation events were held at strategic points in the planning process to give the design team an opportunity to communicate their design concepts for East Bayfront to consultation participants and to engage stakeholders and the public in the precinct planning process.

The East Bayfront Precinct Plan was produced from an inclusive consultation process designed to get people excited about the East Bayfront precinct planning as a significant city-building initiative, and to share information with and seek feedback from targeted stakeholders and the public regarding the future of East Bayfront. The consultation process was comprised primarily of five public forums, five stakeholder roundtables and Environmental Assessment Open Houses. Members of the public were invited to contact TWRC's Consultation Contact between meetings and to provide comments via the TWRC's website.

10.1 Public Forums

The public forum sessions were open to the public and generally attracted between 200 and 250 participants per meeting. Each meeting provided an opportunity to communicate ideas about East Bayfront with the broader community and to receive participant feedback on the design team's work. Notification for each forum was provided through the media, direct e-mail invitation, and via the TWRC website.

Public Forum #1 was held on October 7th, 2003 and was designed to give the public an introduction to the precinct planning and consultation process, and to provide an opportunity to help the design team understand the issues and opportunities in the East Bayfront community. Approximately 250 people, representing approximately 60 organizations, participated in this meeting.

The second public forum was held on December 1st, 2003 and gave participants an opportunity to consider and provide comments on three precinct plan alternatives and their key components. Approximately 200 people attended this forum and were given the opportunity to share what they liked and disliked about the design alternatives. The design team used this information to produce a draft precinct plan for East Bayfront.

On March 3rd, 2004 TWRC hosted the third public forum for East Bayfront, with approximately 200 people attending. The purpose of this forum was for the design team to present the draft precinct plan, and to receive feedback on the six main elements of the plan, including:

- Connections, Streets, and Lanes
- Parks and Open Spaces
- Water's Edge
- Built Form
- Heritage, Culture, and Community Facilities
- Sustainability and Affordable Housing.

The fourth public forum was held on February 3rd, 2005, and provided participants with an opportunity to view and comment on the final draft Precinct Plan, which had addressed the feedback obtained at and following Public Forum #3. Approximately 250 participants attended, commenting on what were viewed as the most important elements of the draft final plan, as well as concerns about the plan or implementation process.

A local public forum was held on August 22nd, 2005 to convey modifications to the Precinct Plan resulting from agency and shareholder discussions.

10.2 Stakeholder Roundtables

Stakeholder roundtables were designed to ensure local issues and concerns were addressed during the East Bayfront Precinct Planning process and generally involved 15 to 25 participants who represented a wide range of local organizations and interests. Notification of Stakeholder Roundtables was provided by e-mail invitation to participants.

The purpose of the first Stakeholder Roundtable, held on October 27th, 2003, was to build on and refine the feedback received at the first Public Forum – expanding on and clarifying the issues and opportunities in the East Bayfront area.

The second Stakeholder Roundtable was held on December 15th, 2003, to build on and refine feedback received from Public Forum #2, and to look specifically at the affordable housing, community facilities, sustainability and infrastructure elements of the three precinct plan alternatives.

The third Stakeholder Roundtable was held on February 25th, 2004. The purpose of the meeting was to obtain feedback from stakeholders regarding refinements made to the draft design and concept plan for East Bayfront.

The fourth Stakeholder Roundtable was held jointly with the West Don Lands Stakeholder Group, on April 1st, 2004. The goal of the meeting was to update stakeholders on the work completed since the last round of consultations on both precinct plans, and to provide an opportunity for stakeholders to ask questions and share comments on the work.

The fifth and final Stakeholder Roundtable was held on January 19th, 2005 and enabled participants to preview the final draft East Bayfront Precinct Plan, and to discuss how the revised plan had addressed stakeholder and public feedback from and following Public Forum #3.

10.3 Environmental Assessment Open Houses

The public consultation for the precinct plan development process was also designed to meet the requirements of the Municipal Class Environmental Assessment process (June 2000).

The first EA Open House was held on December 1st, 2003, for two hours immediately preceding Public Forum #2. Participants were asked to review a series of displays related to the EA process in general and the four types of infrastructure for which EA approvals are being sought (Transportation, Water and Wastewater and Stormwater). Participants provided comments, feedback and suggestions on this material.

A second Open House was held on August 22nd, 2005. This meeting was split into two parts, starting with the Open House component, which sought public input on the design details for the preferred alternatives for Schedule C projects. This was followed by a presentation and a facilitated discussion, which provided an update on the East Bayfront Precinct Plan. Participants were encouraged to submit comments, feedback and suggestions.

10.4 Suggestions for Improvement

Participants also identified some remaining concerns about the plan, as well as suggestions on how these concerns can be addressed. The group consistently identified two main concerns: (1) there are not enough green spaces, and (2) buildings are too high. Other commonly identified concerns were: issues regarding the amount of sun and shade, transit, densities are too high, not enough community spaces and political issues surrounding the TWRC and funding. A summary list of concerns related to infrastructure or the environment from both PIC's, suggested solutions, and TWRC's responses are included in the table below.

Exhibit 10-1 – Public Comments and Responses

Comment #	Concern	Suggestion	TWRC Response
1	Need to articulate sustainable living component	Include creative stormwater practices, energy use, community gardens	The plan contemplates district level beneficial use of stormwater in public spaces. In addition, TWRC is preparing Green Building Design Standards for a wide range of sustainability criteria at the building level.
2	Too much emphasis on car access and not enough on transit	Consider striped lanes vs. dedicated lanes for bikes and reduce car facilities	The plan accommodates a wide range of transportation modes including higher-order transit, cycling and pedestrian travel.
3	Loss of Martin Goodman Trail	Move Martin Goodman Trail to the water's edge, put a bike/pedestrian bridge over Parliament Street	There is both an on-street and water's edge component to the cycling and recreational trail system.
4	Width of Queens Quay	Limit or eliminate parking, or include lane in each direction	Every effort has been made to rationalize the width of Queens Quay East - taking into account urban design objectives balanced with the need to accommodate several different transportation functions (e.g., autos, transit, cycling and freight rail).
5	Visitor parking	Parking under the Gardiner	Parking needs to be located generally close to the buildings. In addition, the space under the Gardiner in this area is occupied by lanes of Lake Shore Boulevard East.
6	Noise and air quality concerns	Need for buffer between residential and commercial/retail to mitigate noise	A vibrant community includes a mix of uses. Most new uses will not generate significant noise or air quality concerns, so buffering is not warranted. Appropriate setbacks from continuing industrial operations were considered.

Comment #	Concern	Suggestion	TWRC Response
7	Plan is too boxy and there are too many straight edges in layout/design which create a canyon effect, especially at Queens Quay	Plans need to depict meandering paths, streets and include more open green spaces	The plan has tried to maintain the City's historic grid system, to protect continuous views to the water, and to create pedestrian and transit friendly block sizes. Building design standards (including setbacks at cornice height) will be used to minimize the "canyon" effect.
8	Need to catch stormwater before it reaches waterfront	No suggestions	This plan is consistent with the objectives of the Wet Weather Flow Management Master Plan. It includes new stormwater quality control measures.
9	Need LRT to access north-south route as well as east-west	No suggestions	This will be studied in the Transit EA.
10	Grass and trees along shoreline as well as streets	No suggestions	The rights-of-way have been set to accommodate this.
11	Reduce on-street parking.	No suggestions	On-street parking may be needed to support ground floor retail uses.
12	One driving lane only & 5m minimum sidewalks	No suggestions	The programming of the Queens Quay East right-of-way will be reviewed following the completion of Waterfront Travel Demand Forecasting.
13	Preserve rail option for Queens Quay East to allow other sites (in addition to Redpath) to use rail service in the future	No suggestions	Rail service to Redpath is proposed to be maintained. This may allow other uses in the future.
14	Queens Quay East does not need to support more traffic	No suggestions	See response to #12.
15	Streetcar should loop north up Parliament	No suggestions	See response to #9.
16	Minimize car-truck lanes to promote LRT, have bike rentals, minimize pollution	No suggestions	See response to #12.
17	North-south connections are too dangerous	No suggestions	TWRC is commencing a new EA for the areas to the east, including a review of the north-south connections at Parliament Street and Cherry Street

Comment #	Concern	Suggestion	TWRC Response
18	LRT - will it run in a dedicated right-of-way?	No suggestions	This will be studied in the Transit EA.

10.5 Agency Comments

Appropriate government review agencies (**Exhibit 10-2**) were notified of the undertaking to solicit comments. Letters were sent to commenting agencies announcing the project initiation and outlining the purpose, schedule and contact persons for the project. Notification letters requested comments and invited review agencies to the public meetings. A Notice of Completion will be distributed upon release of this report to the same agencies. No agency comments have been received to date. Comments from City of Toronto staff were integrated into the report and are not shown separately.

Exhibit 10-2 - List of Review Agencies

Ministry of Natural Resources	Toronto Hydro Corporation
Ministry of Citizenship and Immigration	Toronto Public Health – Toronto Office
Ministry of Municipal Affairs and Housing	Works and Emergency Services
Ministry Culture	Toronto District School Board
Ministry of Tourism	Toronto Catholic District School Board
Ministry of the Environment	Emergency Medical Services Toronto
Ministry of Health and Long-Term Care	Toronto Police Service
Ministry of Transportation	Toronto Fire Services Headquarters
Department of Fisheries and Oceans	Toronto and Region Conservation Authority
Works and Emergency Services	City of Toronto
Ministry of Culture, Heritage Operations	Ontario Realty Corporation
Union Gas	Transport Canada
Toronto Hydro Corporation	Enersource Corporation
Ontario Native Affairs Secretariat – Ministry of the Attorney General	Bell Canada
Association of Iroquois and Allied Indians	Anishinabek Nation/Union of Ontario Indians
Mississaugas of New Credit First Nations	HydroOne
Toronto Economic Development Corporation	

11.0 PROCESS TO AMEND THE MASTER PLAN

During the time that the East Bayfront Precinct Plan is implemented, it may be necessary to amend this Class Environmental Assessment Master Plan, for the following reasons:

- Extend the applicability of the Class EA Master Plan beyond five years from the date of the filing of the Notice of Completion, if there is a delay in implementing a project
- Major changes to the original assumptions
- Significant changes to components of the Class EA Master Plan
- Significant new environmental effects
- Major changes in the proposed timing of projects within the Class EA Master Plan

The Municipal Class Environmental Assessment does not define "significant changes to components" of the EA Master Plan. However, for the purposes of this Class EA Master Plan, significant changes will include:

- New infrastructure elements not shown in the original Class EA Master Plan;
- A change in the location of a stormwater facility, sewer or watermain where such a change would take the infrastructure outside of a public road allowance or publicly-owned land (i.e., where it would require the taking of private property);
- A change in the location of a road or that would require the taking of private property.

Where an Addendum is required, the following process will be followed:

- The TWRC and the City of Toronto will review the planning and design process to ensure that the project and the mitigation measures are still valid given the current planning context.
- The TWRC and the City of Toronto will document the circumstances necessitating the change, the environmental implications of the change, and what, if anything can and will be done to mitigate any negative environmental effects.
- Notification to interested stakeholders and agencies is mandatory for any amendments to this Class EA Master Plan.
- The TWRC and the City will issue a Revised Notice of Completion to all potentially affected members of the public and review agencies. Members of the public have the opportunity under the Environmental Assessment Act to request the Minister to issue a Part II order for those elements of the project that are the subject of the addendum, in accordance with the 30-day review period in the Municipal Class EA.

12.0 NEXT STEPS FOR PROJECT IMPLEMENTATION

12.1 Project Construction and Staging

For implementation purposes, the East Bayfront Precinct is divided into four development phases (**Exhibit 12-1**). The focus of initial development will be Phase 1, the area surrounding the new Sherbourne Park, both north and south of Queens Quay Boulevard and includes the first phase of opening up the water's edge as a public promenade from Lower Jarvis Street to the Parliament Street slip. Phase 2 is envisioned as the area between Lower Jarvis Street and Phase 1, north of Queens Quay Boulevard, and allows for the linking of the new Sherbourne Park community with the Lower Jarvis Street corridor. Phase 3 incorporates the territory east of the Sherbourne Park neighbourhood and extends to the Parliament Street slip. The Special Use Site at the foot of Lower Jarvis Street will be implemented as a great public destination at the time when a better understanding of its component parts have been achieved.

12.2 Further Study Requirements

Based on the findings of this Class EA Master Plan, the following further studies are required:

- TWRC is preparing a remediation strategy for the East Bayfront. This will provide further detail for environmental management of soil and groundwater issues associated with infrastructure development.
- TWRC is working with the City of Toronto to prepare and infrastructure phasing plan.
- Schedule A roads require approval through Plan of Subdivision Condominium or Consent, or other appropriate *Planning Act* approvals as dictated by the City.
- Actual pipe sizes for water and wastewater services will be confirmed through detailed design.
- The decision to replace versus rehabilitate individual segments of buried infrastructure will be confirmed through detailed design, following a confirmation of conditions.
- The actual programming of the Queens Quay right-of-way travel lanes will be confirmed following the completion of the Waterfront Travel Demand Forecasting.

12.3 Elements Requiring Further EA Approvals

12.3.1 Transit Projects

Further EA approvals are required for work in the East Bayfront on transit projects. A new exclusive transit service is contemplated along Queens Quay East through the East Bayfront Precinct area. The streetcar is contemplated as originating from Union Station, initially below grade, and will ultimately serve the East Bayfront and Port Lands areas. This service is to be provided within a dedicated right-of-way.

Provision is to be made within the East Bayfront Precinct Master Plan to facilitate this higher-order transit facility as an integral component of the waterfront wide transportation strategy to provide a viable alternative to car dependent travel. New public transit facilities will be evaluated and approved as separate studies under the EA Act.

12.3.2 Queens Quay (West of Lower Jarvis)

Any further modifications to the Queens Quay right-of-way between Bay Street and Lower Jarvis Street as a result of the Lower Yonge Precinct Plan will require approval under the Municipal Class EA. These will be studied concurrently with TWRC's Lower Yonge Precinct Study, scheduled to begin in the Fall of 2005.

12.4 Other Approvals

The following approvals will also be required for the implementation of the East Bayfront EA Master Plan infrastructure:

12.4.1 Department of Fisheries and Oceans (DFO) Authorization

On July 24, 1998 the TRCA signed a Level 3 Agreement with the DFO which established a streamlined approach to addressing issues pertaining to the Federal Fisheries Act. Through this agreement, TRCA staff, in consultation with the DFO staff, is responsible for co-ordinating the review of proposed works that may potentially result in the harmful alteration, disruption or destruction (HADD) of a fish habitat. TRCA staff reviews development proposals and works with the proponents/project consultants to mitigate any harmful impacts caused by the interference of watercourses. Reports are periodically sent to DFO to determine if a proposal has been mitigated in a way that will prevent a HADD from occurring.

PDF: \\Office\vgen\Data\Water Front\GIS\pdf\P02-056Rev4.pdf

GIS: \\Office\vgen\Data\Water Front\GIS\mxd\P02-056Rev4.mxd

EXHIBIT 12-1

EAST BAYFRONT PHASING PLAN

PARLIAMENT

EXPRESSWAY

LAKE

QUEENS QUAY EAST

2

1

3

Special Use Site

Legend

1 Phasing No.

N

TORONTO WATERFRONT JV

Prior to the development of detailed designs TRCA requests a review of the final stormwater discharge design and location, as well as the proposed pedestrian bridge which has been identified. The potential redesign of the stormwater discharge at Cherry Street falls within TRCA's regulatory area.

12.4.2 OWRA/EPA

Certificates of Approval will be required for water, wastewater and stormwater facilities, and outfalls to Lake Ontario under the Ontario Water Resources Act and/or the Environmental Protection Act.

12.5 Five Year Review Requirements

A time lapse may occur between the filing of the Master Plan and the implementation of the project. In such cases, the proposed project and the environmental mitigation measures proposed may no longer be valid.

If the period of time from filing of the Notice of Completion of the Master Plan in the public record to the proposed commencement of construction for the project exceeds five years, the proponent shall review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures are still valid given the current planning context. The review shall be recorded in an addendum to the Master Plan which shall be placed on the public record.

Notice of Filing of Addendum shall be placed on the public record with the ESR and shall be given to the public and to the review agencies; a period of 30 calendar days shall be provided for review and response. The Notice shall include the public's right to request a Part II Order during the 30-day addendum review period. If no request is received, the proponent is free to proceed with implementation and construction.

13.0 CONCLUSION

The revitalization of the East Bayfront presents an enormous opportunity to improve the City by addressing derelict brownfield sites and the associated infrastructure. The result will be a significant new neighbourhood that also provides significant new water's edge public spaces. It is expected that there will be short-term construction-related nuisance effects. However, these can be mitigated. Long term improvements to soil, groundwater, surface water and socio-economic conditions will result from the implementation of the infrastructure projects in this Class EA Master Plan.

In conclusion, the repair and development of new infrastructure in the East Bayfront will have an overall positive effect on the environment, and no significant adverse residual effects. It will positively support the Toronto Waterfront Revitalization initiative.

14.0 REFERENCES

Archaeological Services Inc. *Stage 1 Archaeological Assessment of the East Bayfront, West Don Lands and Portlands Areas.* April 2004.

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APPENDIX A
Public Consultation Materials

Public Information Centre #1

CLASS ENVIRONMENTAL ASSESSMENT – MASTER PLAN
NOTICE OF STUDY COMMENCEMENT AND
PUBLIC INFORMATION CENTRE #1

East Bayfront Precinct Planning Area

The Toronto Waterfront Revitalization Corporation/City of Toronto is carrying out a Class Environmental Assessment (EA) Master Plan Study to address water, sanitary servicing, stormwater, transit reserve and transportation alternatives for the East Bayfront Precinct Planning Area. This study is being conducted in accordance with the requirements of the *Municipal Class Environmental Assessment, June 2000*, which is an approved process under the Environmental Assessment Act.

Public consultation is an important element of this study and the broader East Bayfront Precinct Planning process. Consultation on the East Bayfront EA Master Plan will take place during the Open House component of the next East Bayfront Public Forum:

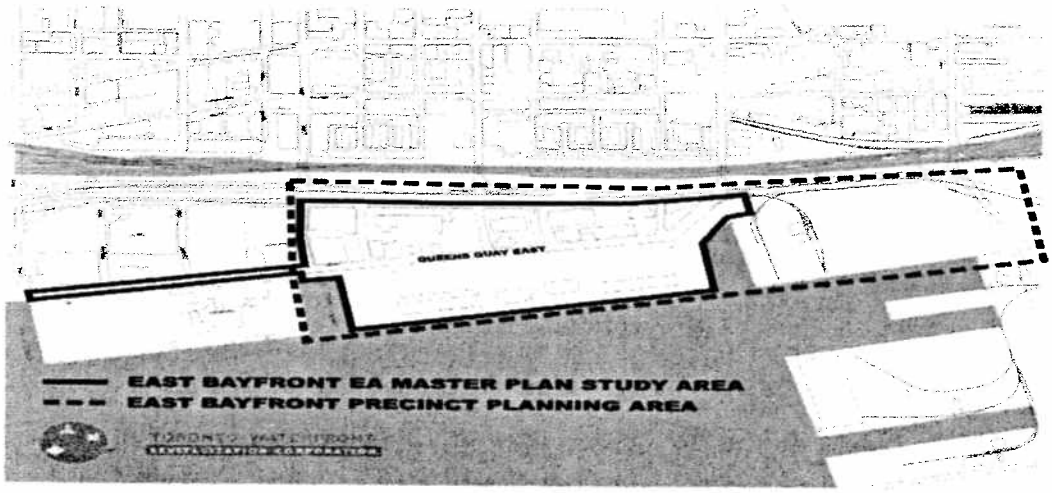
East Bayfront Public Forum

When:	Monday, December 1, 2003
Where:	Bambu by the Lake, 245 Queen's Quay West
EA Master Plan Consultation:	5:00 – 7:00 pm, Open House
Precinct Plan Consultation:	7:00 – 9:30 pm, Presentation and Discussion

The consultation plan provides many opportunities for the public to participate in the EA Master Plan Study process. The December 1st Open House will focus on seeking input from the public on the opportunity/problem, and alternative solutions.

The map shows the approximate limits of the study area.

Study Area



If you have any questions or wish to be added to the study mailing list, please contact:

Erin Walker
TWRC
207 Queen's Quay West
Suite 822
Toronto, ON M5J 1A7
Phone: (416) 214-1344 ext. 239
Fax: (416) 214-4591
Email: ewalker@towaterfront.ca

TORONTO WATERFRONT
REVITALIZATION CORPORATION

East Bayfront Precinct Planning
Environmental Assessment Study Guide

Class Environmental Assessment Master Plan
East Bayfront Precinct Planning Area
Toronto Waterfront Revitalization Corporation
and The City Of Toronto

December 1, 2003

What's Inside...

- EA Project Description
- Study Area Map
- Overview of the 5 Phase Process
- How to Get More Information

The information on comment sheets is collected under the authority of the Environmental Assessment Act and will become public information. All comments will be included in the documentation of the Environmental Assessment Master Plan Report to be prepared and made public at the conclusion of the study. Personal information including addresses and phone numbers will not be disclosed.

The Proposed Project – The East Bayfront EA Master Plan

The Toronto Waterfront Revitalization Corporation, in cooperation with the City of Toronto, is carrying out a Class Environmental Assessment (EA) Master Plan Study for the East Bayfront Precinct Planning Area.

Class EA Master Plans integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. The Municipal Class EA process enables the planning of municipal infrastructure to support existing and future land use, to be undertaken in accordance with an approved procedure under the Ontario Environmental Assessment Act, designed to protect the environment.

The East Bayfront Precinct Planning Process will design new districts of public and neighbourhood spaces for the area. *The East Bayfront Class EA Master Plan* will address water, sanitary servicing, stormwater, a utility corridor, and transportation alternatives (including provision for transit), for a section of the East Bayfront Precinct Planning Area. Coordination of *The East Bayfront Class EA Master Plan* with the precinct planning process ensures that land use planning and EA process decisions are integrated for a best overall design of a fully integrated community.

The Study Area

The East Bayfront Precinct includes the waterfront area that runs south of the rail corridor between Jarvis and Cherry streets.

The East Bayfront EA Master Plan addresses the area west of Parliament Street. The Queen's Quay east extension to Cherry Street will require its own EA and functional planning study. This excluded area also overlaps with the Lower Don Naturalization EA.

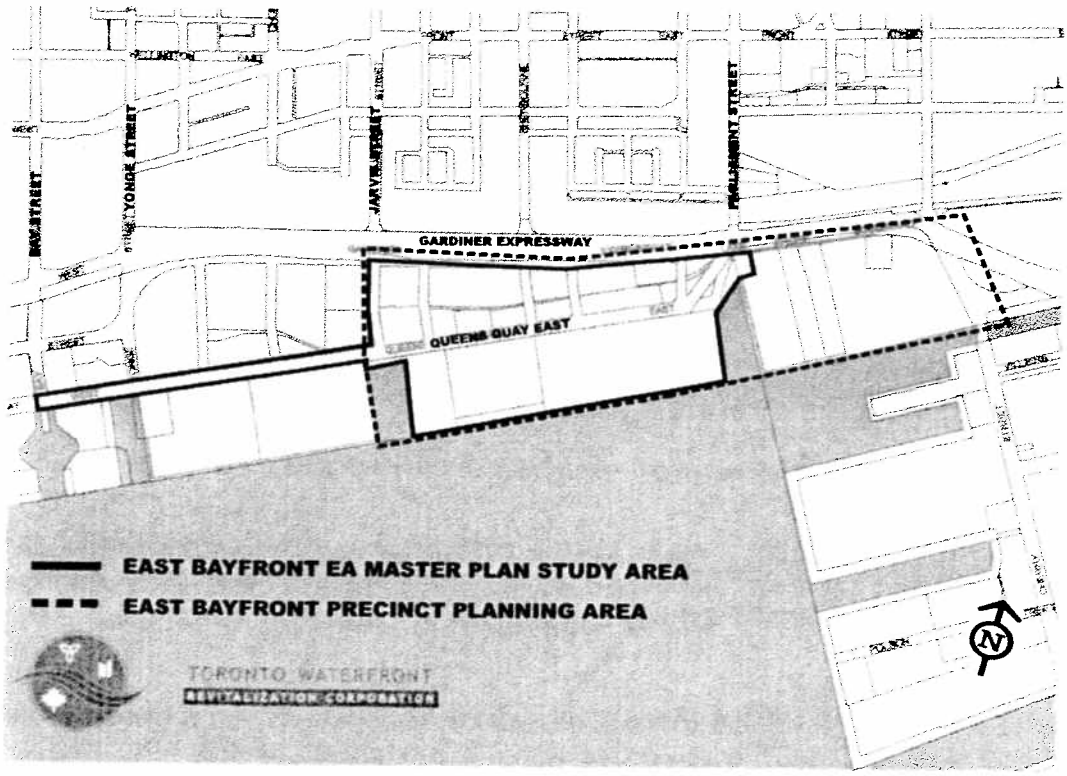


Figure 1 - The Class EA Master Plan Study Area.

Guide to the Class EA Master Plan Process

Overview of the Five Phases

The five phases of the Class EA process are summarized as follows:

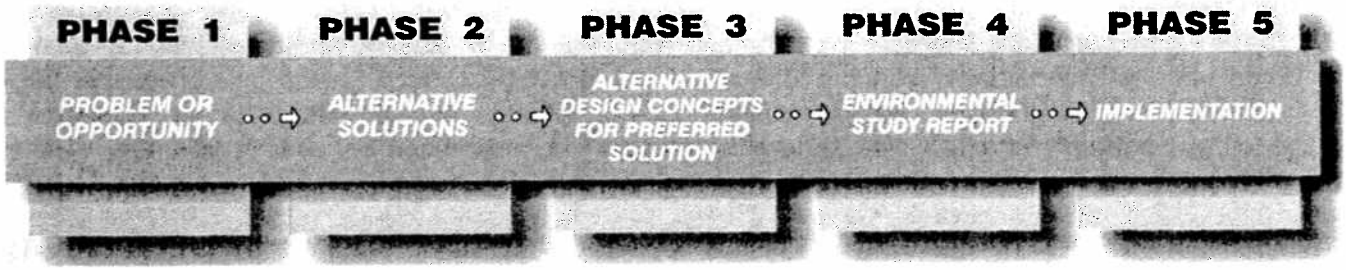


Figure 2 – The Class EA Process

Types of Projects

***The East Bayfront Class EA Master Plan* process will cover the requirements of both Schedule B and Schedule C projects.**

Schedule B projects generally include improvements and minor expansions to existing facilities. These projects have some potential for adverse environmental impacts, and consultation with those who may be affected is required. Examples of Schedule B projects include: the installation of traffic control devices, smaller road-related works or the addition of lagoons. These kinds of projects require completion of Phases 1 and 2 of the Class EA process.

The East Bayfront Class EA Master Plan Report may also include Phases 3 and 4 for certain Schedule C projects, such as larger projects involving road-related works, construction of underpasses or overpasses, or construction of new sewer systems. Schedule C projects generally include the construction of new facilities and major expansions to existing facilities.

Once complete, *The East Bayfront Master Plan Report* is filed and made available for review by the public and any public agency that expressed interest in the study. Requests to the Minister of Environment for a Part II Order (to require an Individual EA) are possible only for specific projects identified in the Master Plan, not the Plan itself.

Opportunity Statement - Phase 1 of the EA Process

"To address sanitary, water, stormwater servicing, and transportation infrastructure to support the proposed land uses and new and improved parks and public spaces that are proposed as part of the revitalization of the East Bayfront Precinct of the Toronto waterfront."

Special Issues
Elements of the waterfront revitalization not included as part of this project include the future of Gardiner Expressway and the Lower Don Naturalization Environmental Assessment.

Guide to the Class EA Master Plan Process – Continued

Phase 2 of the EA Process - Alternatives Considered

Alternative solutions to address the opportunity statement will be evaluated using environmental and socio-economic criteria.

For Schedule B projects, alternatives to the project will be assessed to comply with the Class EA. For Schedule C projects, both alternatives to the project and alternative design solutions (Phase 3) will be considered.

Once public and agency input has been considered, a preferred approach will be finalized.

Assessment Criteria
Through the study, a range of environmental issues will be addressed and mitigation measures to minimize potential adverse impacts will be considered. This process will include assessment criteria based on:

- Natural Environment
- Socio-Economic Environment
- Opportunity for Revitalization
- Feasibility and Cost

These criteria will be customized by the technical teams to address different types of infrastructure.

Phase 3 of the EA Process - Design Criteria

Alternative designs for the preferred alternatives to will be assessed using environmental and socio-economic criteria. These evaluations will be presented at a future public consultation session.

Next Steps

A second public consultation session on *The East Bayfront Class EA Master Plan* is planned for January 2004. This event will provide an opportunity for comment on the design alternatives. *The East Bayfront Class EA Master Plan Report* will be prepared once the preferred design alternatives are selected (at the end phase 3).

How to Get More Information

Information requests or questions may be directed to:

Erin Walker
Toronto Waterfront Revitalization Corporation (TWRC)
207 Queen's Quay West, Suite 822
Toronto, ON M5J 1A7
Phone: (416) 214-1344 ext. 239 Fax: (416) 214-4591
Email:ewalker@towaterfront.ca

Additional information will also be regularly updated on the TWRC Website: **www.towaterfront.ca**

OPPORTUNITY STATEMENT

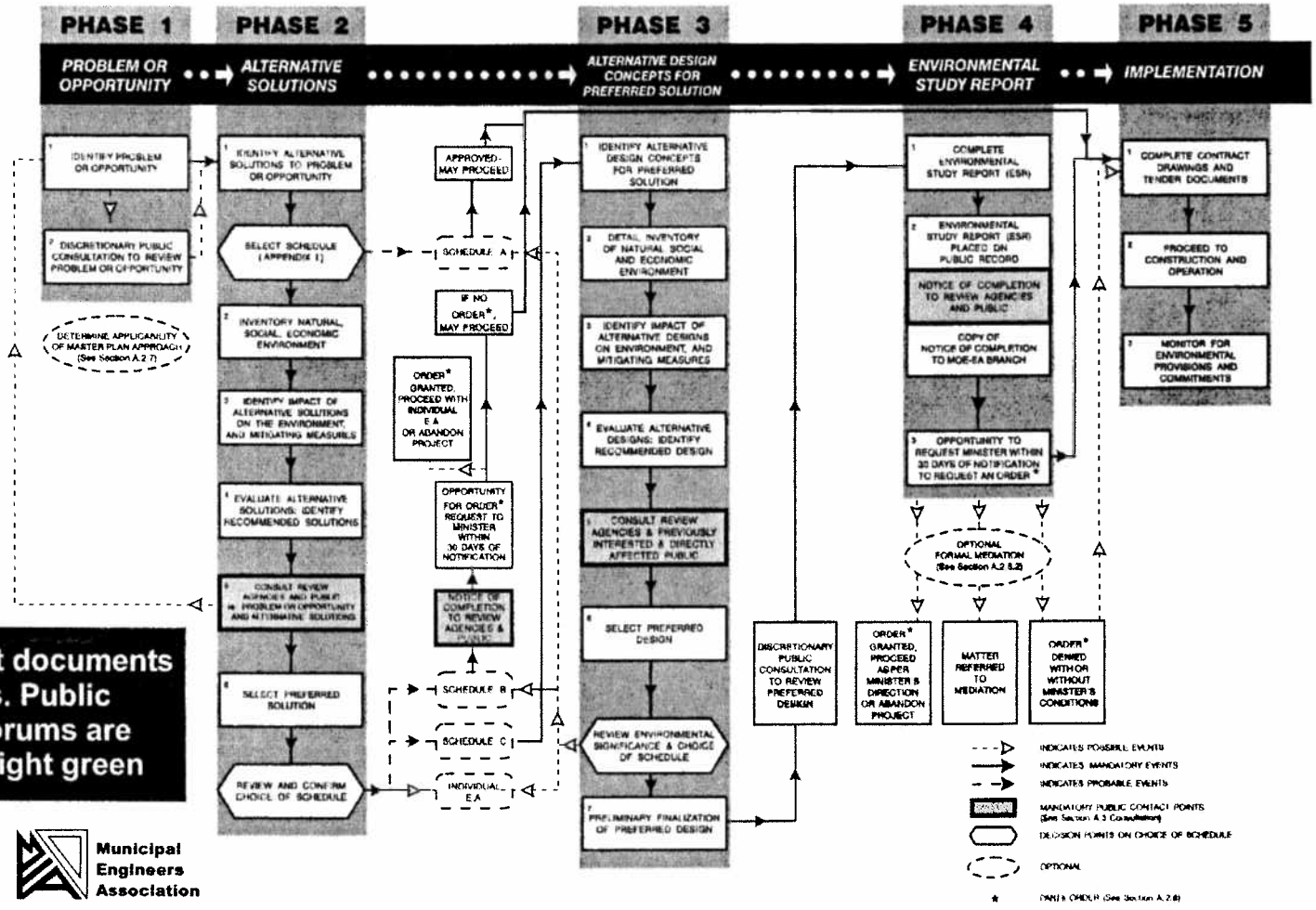
"To address sanitary, water, stormwater servicing, utility corridor and transportation infrastructure to support the proposed land uses and new and improved parks and public spaces that are proposed as part of the revitalization of the East Bayfront Precinct of the Toronto waterfront."

MASTER PLAN - NEXT STEPS

- A second public consultation session is planned for January 2004.
- This will provide an opportunity for comment on the design alternatives.
- We will finalize the design alternatives.
- We will then select a preferred alternative.
- The EA Master Plan Report will be prepared.

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

Note: This flow chart is to be read in conjunction with Part A of the Municipal Class EA



This flow chart documents the EA Process. Public Consultation forums are highlighted in light green

Municipal Engineers Association

Source: Municipal Engineers Association 2000

MASTER PLAN

The Toronto Waterfront Revitalization Corporation in cooperation with the City of Toronto is carrying out a Class Environmental Assessment (EA) Master Plan Study for the East Bayfront Precinct Planning Area.

Master Plans incorporate infrastructure requirements for existing and future land use with environmental assessment planning principles.

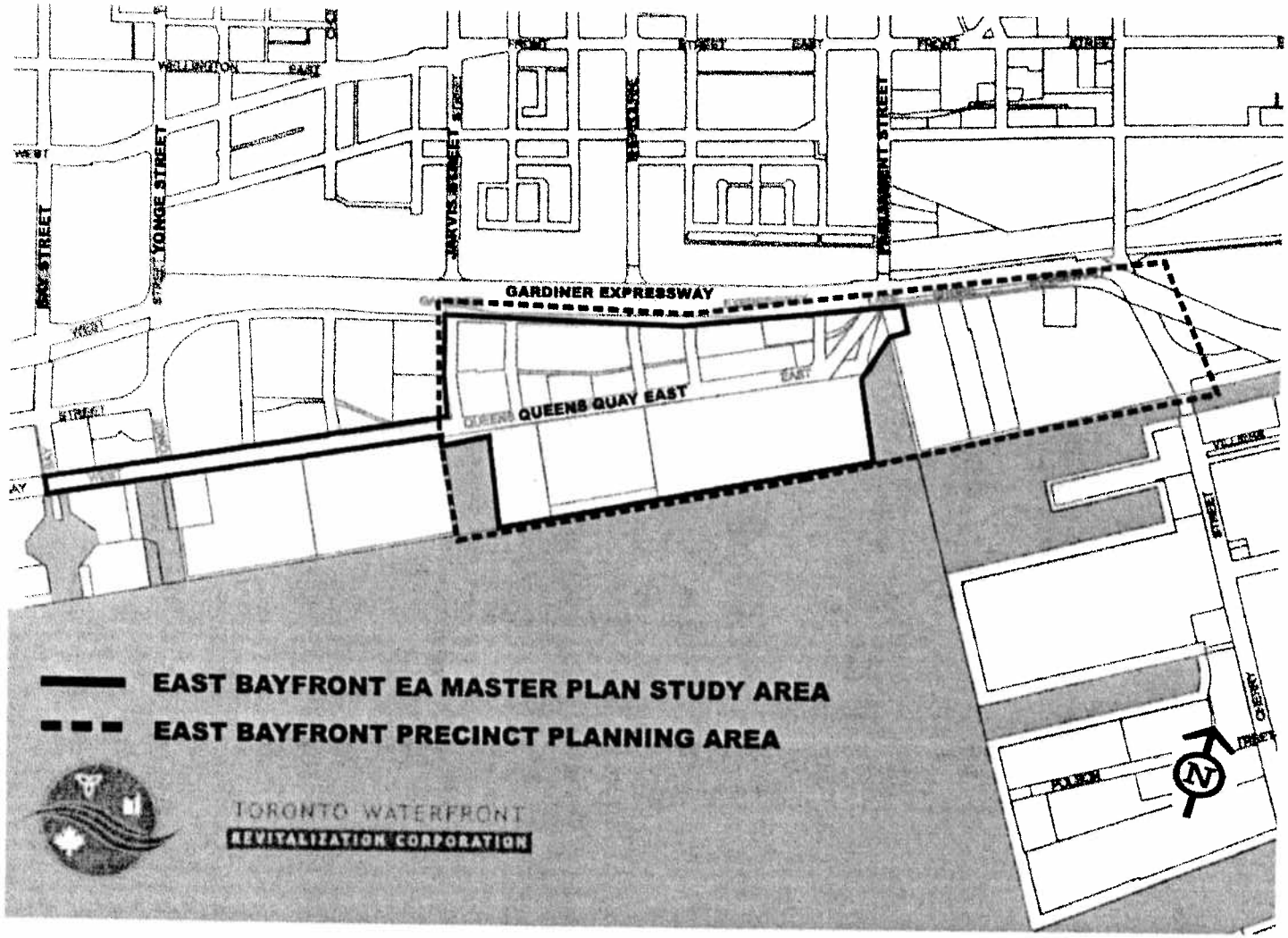
The Master Plan will address:

- Water;
- Sanitary servicing;
- Stormwater;
- Utility corridor; and
- Transportation alternatives (including provisions for transit).

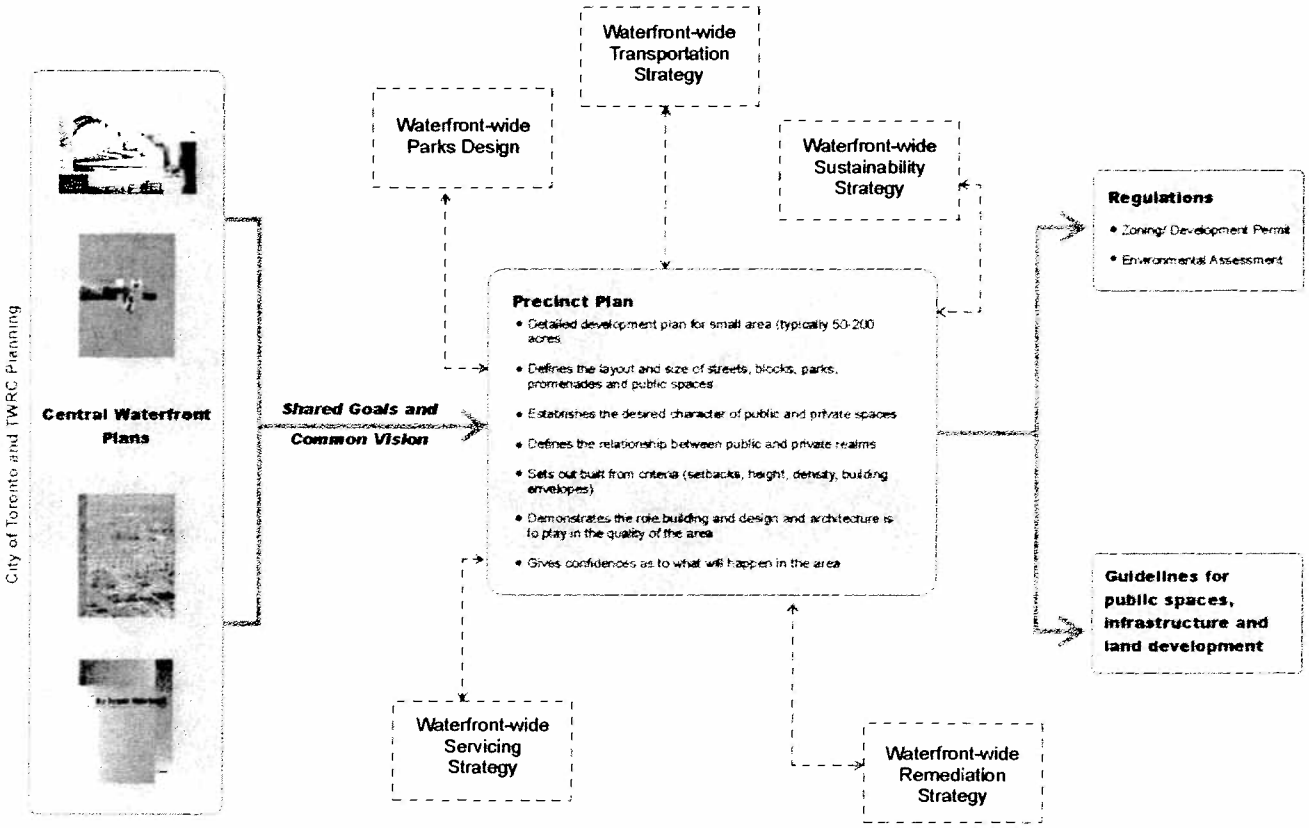
EVALUATION CRITERIA

Evaluation Component	Rationale / Definition
Natural Environment	The expected impact on terrestrial habitat, surface water quality, aquatic habitat, soil stability, aesthetics and landscaping.
Socio-Economic Environment	Issues related to access to private property, archaeological and cultural heritage resources, employment activity and noise and vibration.
Opportunity for Revitalization	The extent to which the alternative supports the planning and urban design goals of the waterfront revitalization.
Feasibility and Cost	Cost and capability to adequately service the study area.

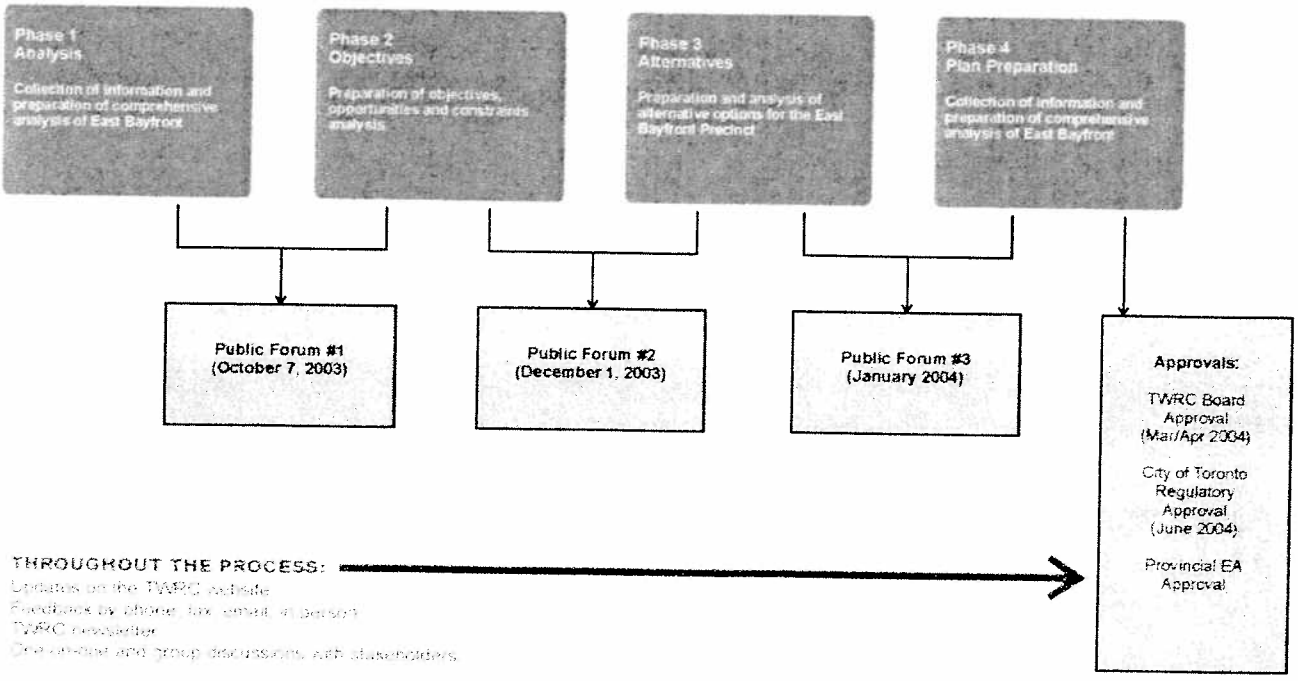
STUDY AREA

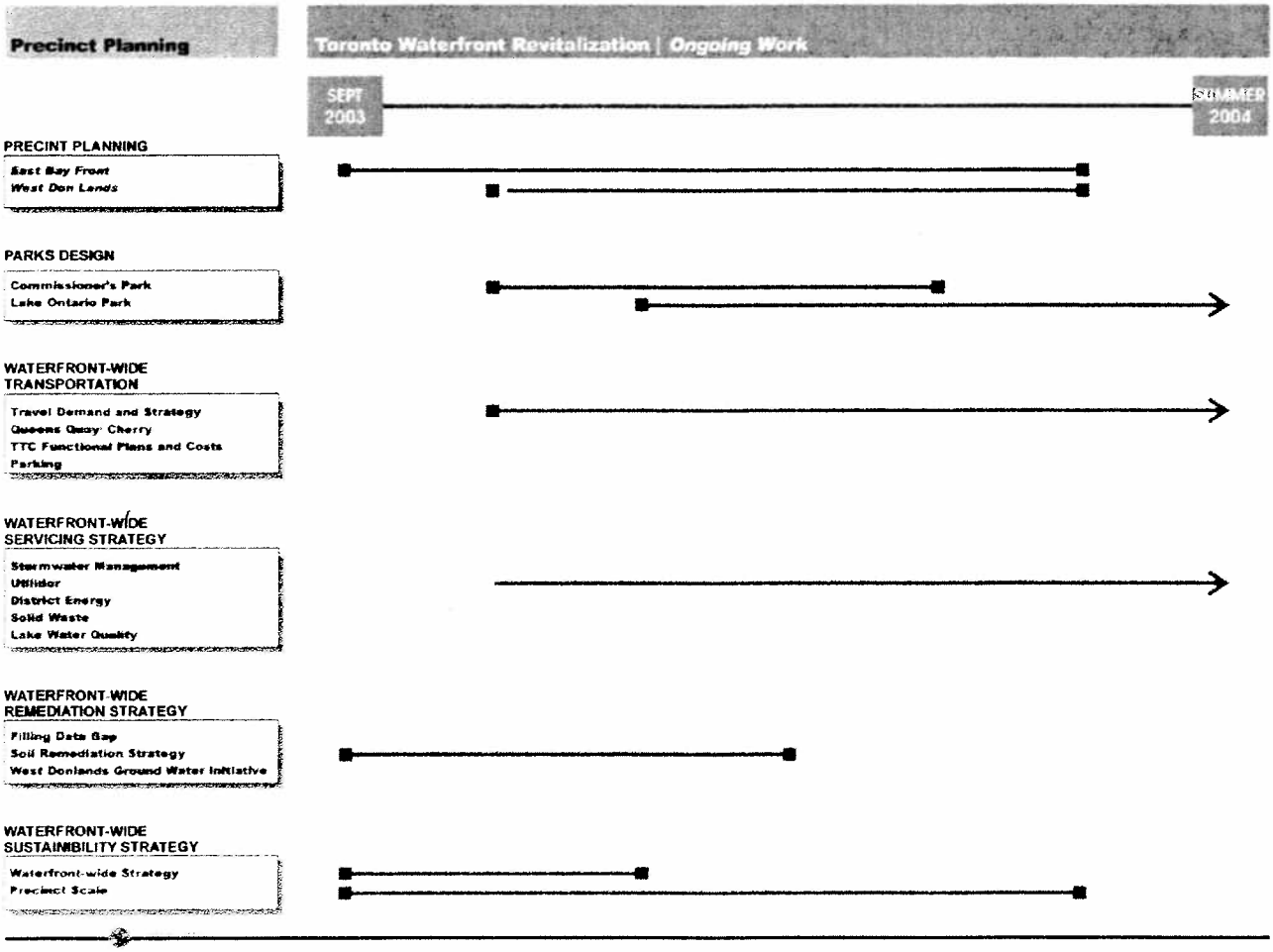

YONGE STREET
JARVIS STREET
PARLIAMENT STREET
GARDINER EXPRESSWAY
QUEENS QUAY EAST
EAST BAYFRONT EA MASTER PLAN STUDY AREA
EAST BAYFRONT PRECINCT PLANNING AREA
TORONTO WATERFRONT
REVITALIZATION CORPORATION

What is Precinct Planning?



The Precinct Planning Process




Precinct Planning
Toronto Waterfront Revitalization | Ongoing Work
SEPT 2003
SUMMER 2004
PRECINT PLANNING
East Bay Front
West Don Lands
PARKS DESIGN
Commissioner's Park
Lake Ontario Park
WATERFRONT-WIDE TRANSPORTATION
Travel Demand and Strategy
Queens Quay Cherry
TTC Functional Plans and Costs
Parking
WATERFRONT-WIDE SERVICING STRATEGY
Stormwater Management
Utilidor
District Energy
Solid Waste
Lake Water Quality
WATERFRONT-WIDE REMEDIATION STRATEGY
Filling Data Gap
Soil Remediation Strategy
West Donlands Ground Water Initiative
WATERFRONT-WIDE SUSTAINMBILITY STRATEGY
Waterfront-wide Strategy
Precinct Scale

Public Information Centre #2

EAST BAYFRONT PRECINCT PLAN UPDATE & CLASS ENVIRONMENTAL ASSESSMENT MASTER PLAN PUBLIC INFORMATION CENTRE #2

East Bayfront Precinct Planning Area

The Toronto Waterfront Revitalization Corporation in cooperation with the City of Toronto is finalizing a precinct plan for the East Bayfront as well as carrying out a Class Environmental Assessment (EA) Master Plan Study to address water, sanitary servicing, stormwater management, and transportation needs (including provisions for transit), for a section of the East Bayfront Planning Area. The EA process is being coordinated with a concurrent precinct planning exercise to design new communities in the East Bayfront.

East Bayfront includes the waterfront area that runs south of the rail corridor between Jarvis and Cherry Streets.

This study is being conducted in accordance with the requirements of the *Municipal Class Environmental Assessment, June 2000*, an approved process under the Environmental Assessment Act. The Master Plan will address Phases 1 to 4 of the Municipal Class EA process addressing requirements for Schedule B and some C projects.

The second consultation on the East Bayfront EA Master Plan will take place during the Open House component for the next East Bayfront Public Forum:

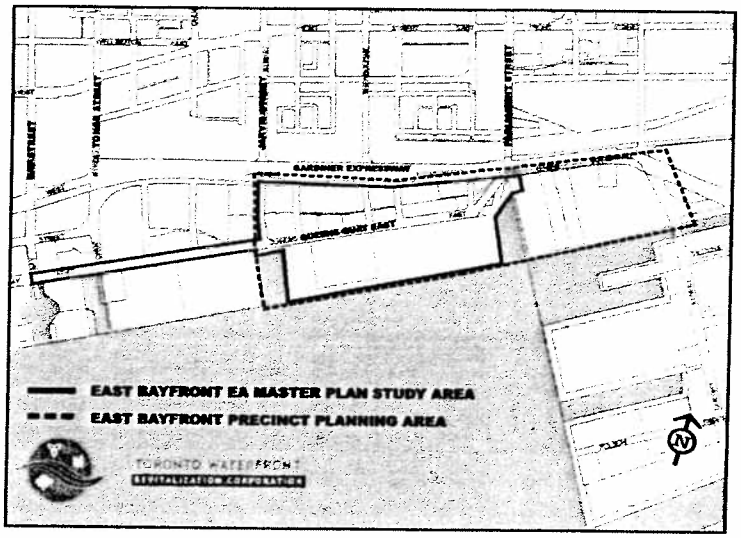
East Bayfront Public Forum

When:	Monday, August 22, 2005
Where:	St. Lawrence Great Hall, 157 King Street East
EA Master Plan Open House:	6:00 pm to 7:00 pm
Precinct Plan Update Presentation:	7:00 pm to 9:00 pm

This Open House will seek public input on the design details for the preferred alternatives for Schedule C projects. Subject to comments received, we will finalize the preferred alternative designs and prepare an Environmental Assessment Master Plan Report, which will be placed on public record for a minimum 30 day review period.

The map shows the approximate limits of the study area.

STUDY AREA



If you have any questions or wish to be added to the study mailing list, please contact:

Tanya Hardy
Toronto Waterfront Revitalization Corporation
207 Queen's Quay West, Suite 822
Toronto, Ontario, M5J 1A7
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TORONTO WATERFRONT REVITALIZATION CORPORATION

TORONTO
WATERFRONT JV

207 Queen's Quay West
Suite 822
Toronto, Ontario M5J 1A7
Tel: (416) 214-1344
Fax: (416) 214-4591

August 8, 2005
95.03002.08.P03

«Title» «FirstName» «LastName»
«JobTitle»
«Company»
«Address1»
«Address2»
«City», «State», «PostalCode»

Dear «Title» «LastName»,

Subject: **Public Information Centre #2**
Class Environmental Assessment Master Plan
East Bayfront Planning Area

The Toronto Waterfront Revitalization Corporation (TWRC) in cooperation with the City of Toronto is carrying out a Class Environmental Assessment (EA) Master Plan Study to address water, sanitary servicing, stormwater, and transportation alternatives (including provisions for transit), for a section of the East Bayfront Planning Area.

A second Public Forum will take place on Monday, August 22 to provide members of the public an opportunity to comment on the design details of the preferred alternatives for Schedule C projects. Subject to comments received, we will finalize the preferred alternative designs and prepare an EA Master Plan Report, which will be placed on the public record for a minimum 30-day review period.

Please refer to the attached notice for information regarding the location and time of the second Public Forum.

More information on both the Precinct Planning and the EA Master Plan is available on the TWRC website: www.towaterfront.ca.

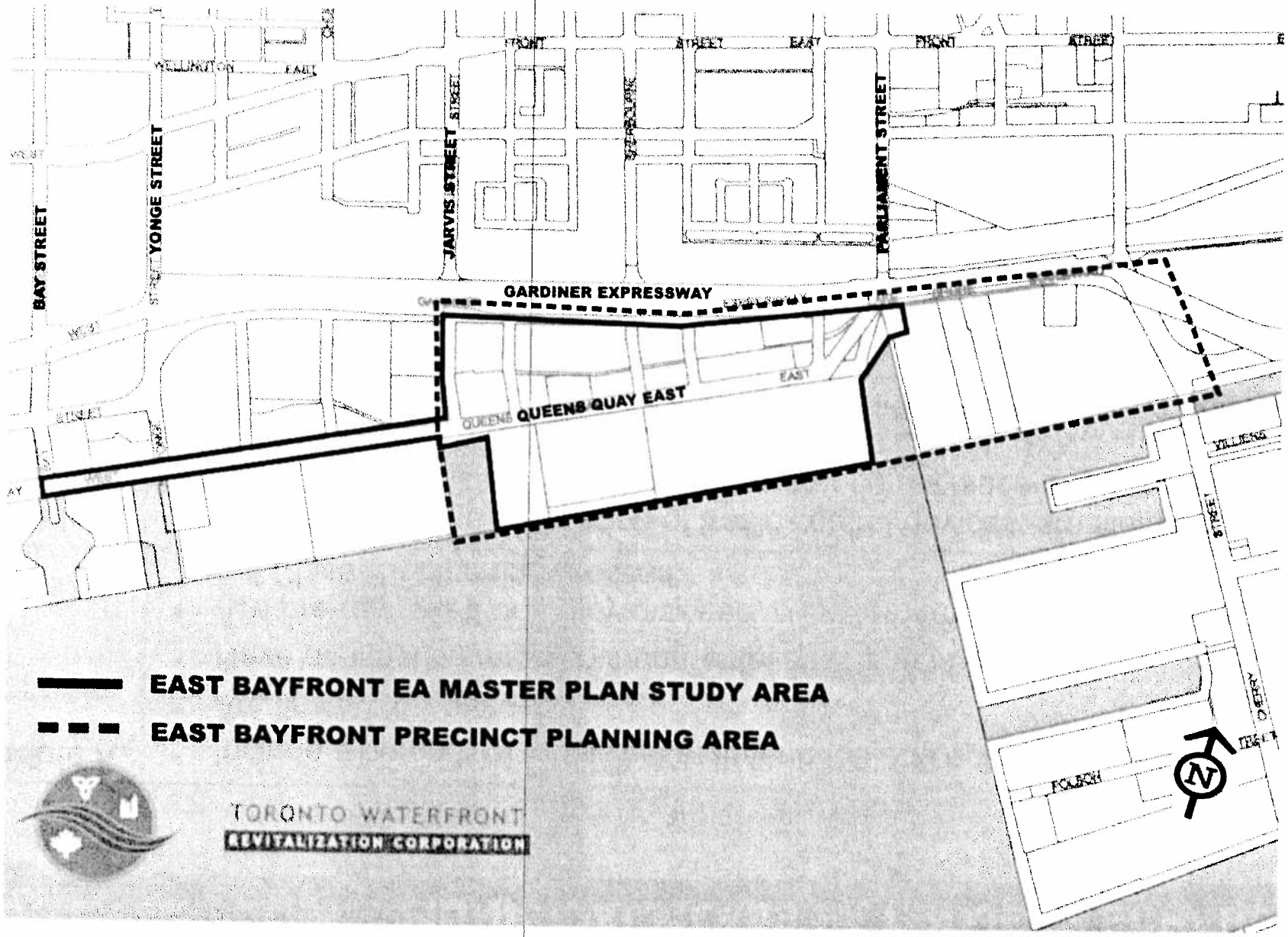
If you have any comments or questions please contact me at (905) 882-4211 ext. 448 or at williss@mmm.ca.

Yours truly,
TORONTO WATERFRONT JOINT VENTURE

Stephen Willis, MCIP, RPP

\\Office\VGEN\Data\Water Front\East Bayfront EA Master Plan\PIC #2 -\Letter to Agencies (rev2).doc

STUDY AREA

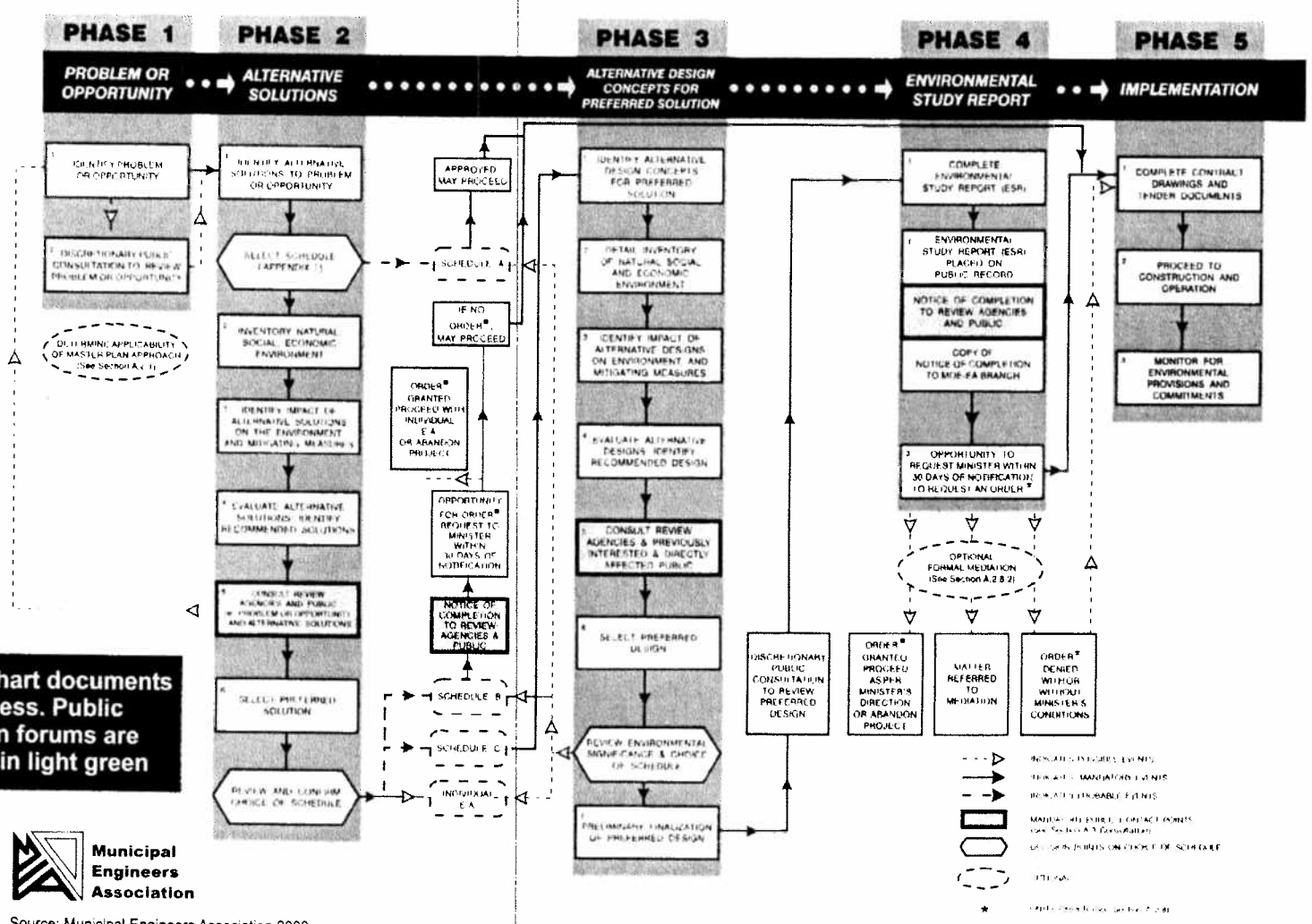

BAY STREET
YONGE STREET
JARVIS STREET
PARLIAMENT STREET
GARDINER EXPRESSWAY
QUEENS QUAY EAST
EAST BAYFRONT EA MASTER PLAN STUDY AREA
EAST BAYFRONT PRECINCT PLANNING AREA
TORONTO WATERFRONT
REVITALIZATION CORPORATION

MUNICIPAL CLASS EA PROJECT SCHEDULES

Schedule A	• Include a number of municipal maintenance and operational activities; • Are limited in scale; • Have minimal adverse environmental effects; and • Are pre-approved and may proceed to implementation without following the full Class EA planning process.
Schedule B	• Would involve the installation of traffic control devices, smaller road-related works or the building of water/wastewater conveyance and stormwater works; • Have the potential for some adverse environmental effects; • Proponents are required to complete Phases 1 and 2 of the Class EA process including evaluating Alternatives to the Project; and • May proceed to implementation if there are no outstanding concerns.
Schedule C	• Are larger projects involving road-related works, construction of under-passes or overpasses, and more substantial water/wastewater projects; • Have the potential for significant environmental effects; • Proponents must proceed under the full planning and documentation procedures specified in the Class EA (Phases 1 to 5) including evaluating Alternatives to the Project as well as Alternative Designs; and • Requires preparation of an Environmental Study Report that is filed for review by the public and review agencies.

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

Note: This flow chart is to be read in conjunction with Part A of the Municipal Class EA



This flow chart documents the EA Process. Public Consultation forums are highlighted in light green

Municipal Engineers Association

Source: Municipal Engineers Association 2000

The Toronto Waterfront Revitalization Corporation in cooperation with the City of Toronto is carrying out a Municipal Class Environmental Assessment (EA) Master Plan Study for the East Bayfront Planning Area.

Municipal Class EA Master Plans incorporate infrastructure requirements for existing and future land use with environmental assessment planning principles.

The Municipal Class EA Master Plan will address:

- Water;
- Sanitary servicing;
- Stormwater; and
- Transportation alternatives (including provisions for transit).

"To address sanitary, water, stormwater servicing, and transportation infrastructure to support the proposed land uses and new and improved parks and public spaces that are proposed as part of the revitalization of the East Bayfront Precinct of the Toronto waterfront."

TORONTO WATERFRONT REVITALIZATION CORPORATION

EVALUATION CRITERIA FOR ALTERNATIVE DESIGNS

Criteria	Sub-Criteria	Rationale / Definition
Natural Environment	Terrestrial habitat	The expected impact on terrestrial habitat, surface water quality, aquatic habitat, soil stability, aesthetics and landscaping.
	Aquatic habitat	
	Water quality/quantity	
	Air quality	
	Soil and groundwater	
Socio-Economic Environment	Employment	Issues related to access to private property, archaeological and cultural heritage resources, employment activity, noise, and vibration.
	Cultural heritage	
	Impacts to businesses	
	Impacts to private property	
	Recreation	
	Noise and vibration	
Opportunity for Revitalization	Ability to support the development objectives of the Precinct Plan	The extent to which the alternative supports the planning and urban design goals of the Waterfront revitalization.
	Ability to support the urban design objectives of the Precinct Plan	
	Ability to support Waterfront wide revitalization	
Cost Effectiveness	Capital cost of improvements	Cost and capability to adequately service the study area.
	Maintenance costs	

EVALUATION CRITERIA FOR ALTERNATIVE DESIGNS (CONT'D)

Criteria	Sub-Criteria	Rationale / Definition
Transportation Service (where applicable)	Road safety	The expected impacts that the various forms of transportation service may have on road safety, bicyclists, pedestrians, public transit and travel demands.
	Ability to satisfy travel demand	
	Access	
	Ability to support/promote transit	
	Service to bicyclists	
	Service to pedestrians	
	Facilitation of goods movement	
Municipal Services (where applicable)	Reliability of services	The ability to service future community demands in a reliable and cost effective way.
	Flexibility to provide capacity for future growth and/or improved service level	
	Life expectancy	
	Maintenance requirements	

TRANSIT FACILITIES

The EA Master Plan for East Bayfront cannot be used for transit projects. However, it does include consideration of space requirements for future public transit facilities in road allowances.

New public transit facilities must be evaluated and approved as separate studies under the EA Act.

FURTHER EA WORK

- Transit projects will require separate EA studies.
- The Class EA Master Plan will specify the process to be followed if there are any changes to the proposed projects.
- Significant changes (e.g., new alternatives) will require further analysis and consultation with stakeholders.

MASTER PLAN - NEXT STEPS

- Comments received from the public and agencies on the alternative designs will be used to confirm or refine the evaluation (August 2005).

- An EA Master Plan Report will be prepared (August/September 2005).

- The EA Master Plan will be submitted to City Council (September/October 2005).

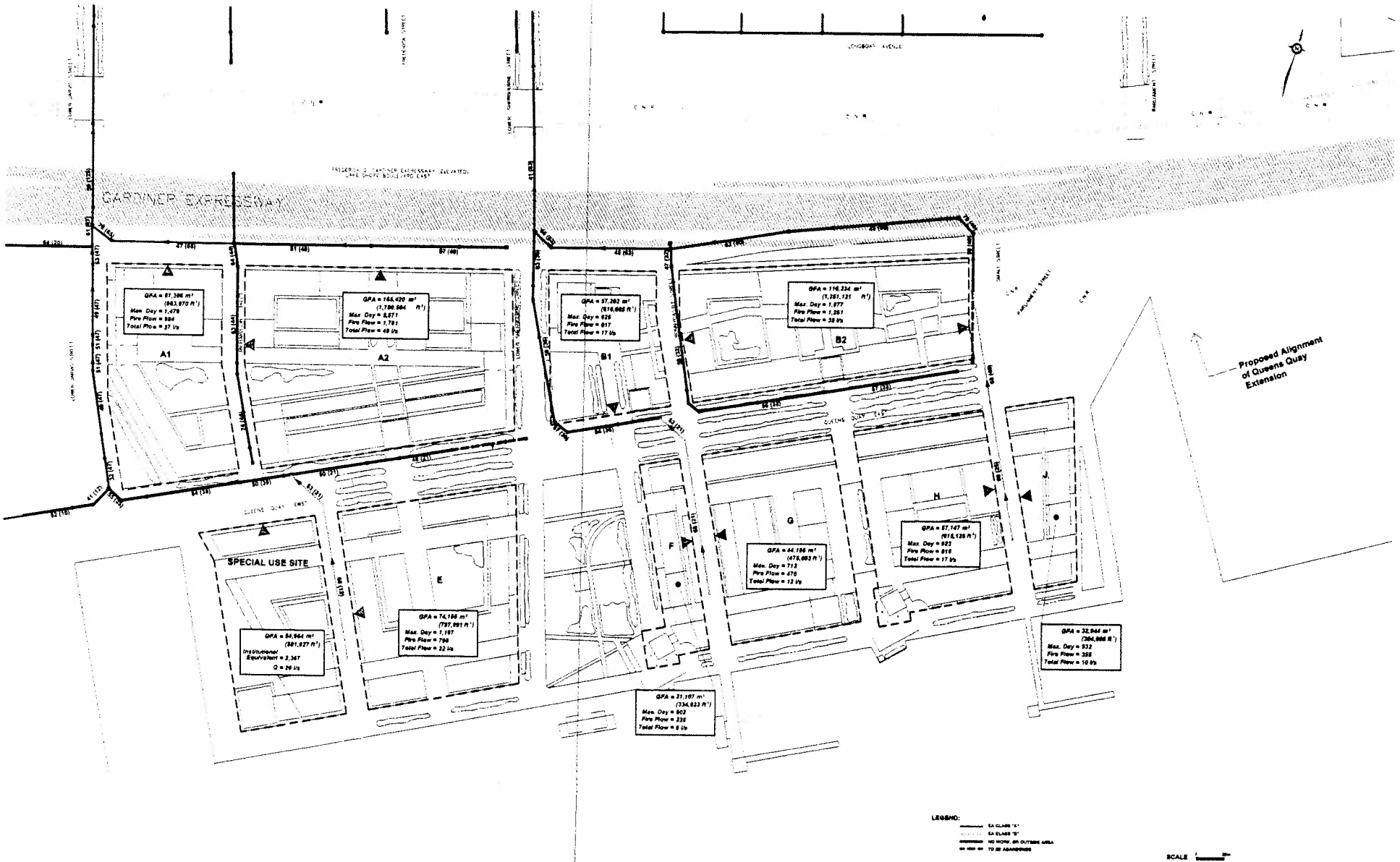
- A Notice of Study Completion will be published in the local newspaper and sent to stakeholders on the mailing list (October 2005).

- The report will be available for a 30 day review period during which time comments can be sent to the Minister of Environment.

TORONTO WATERFRONT
REVITALIZATION CORPORATION

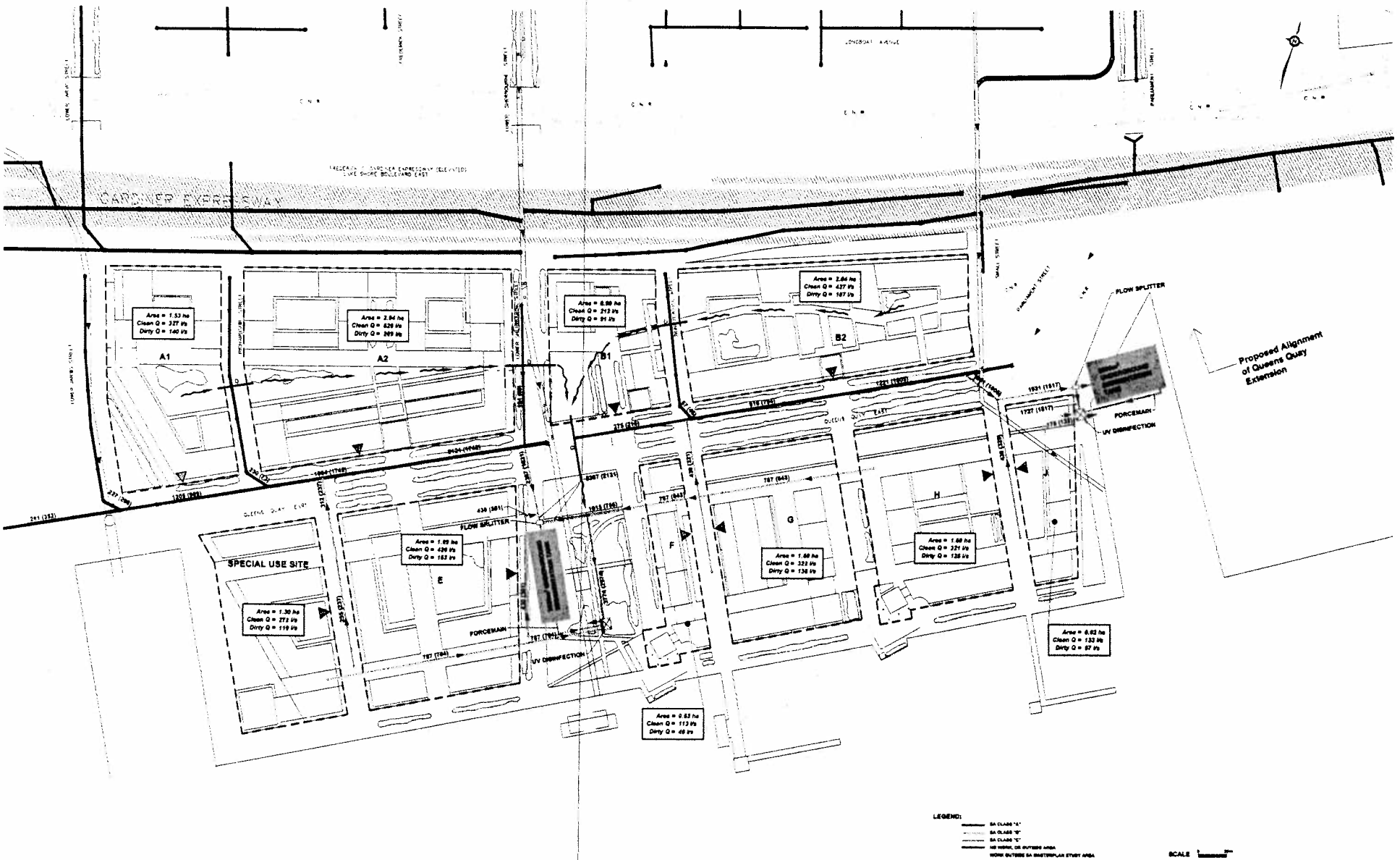
Sanitary Sewer Network EA Classification

East Bayfront



Stormwater System EA Classification

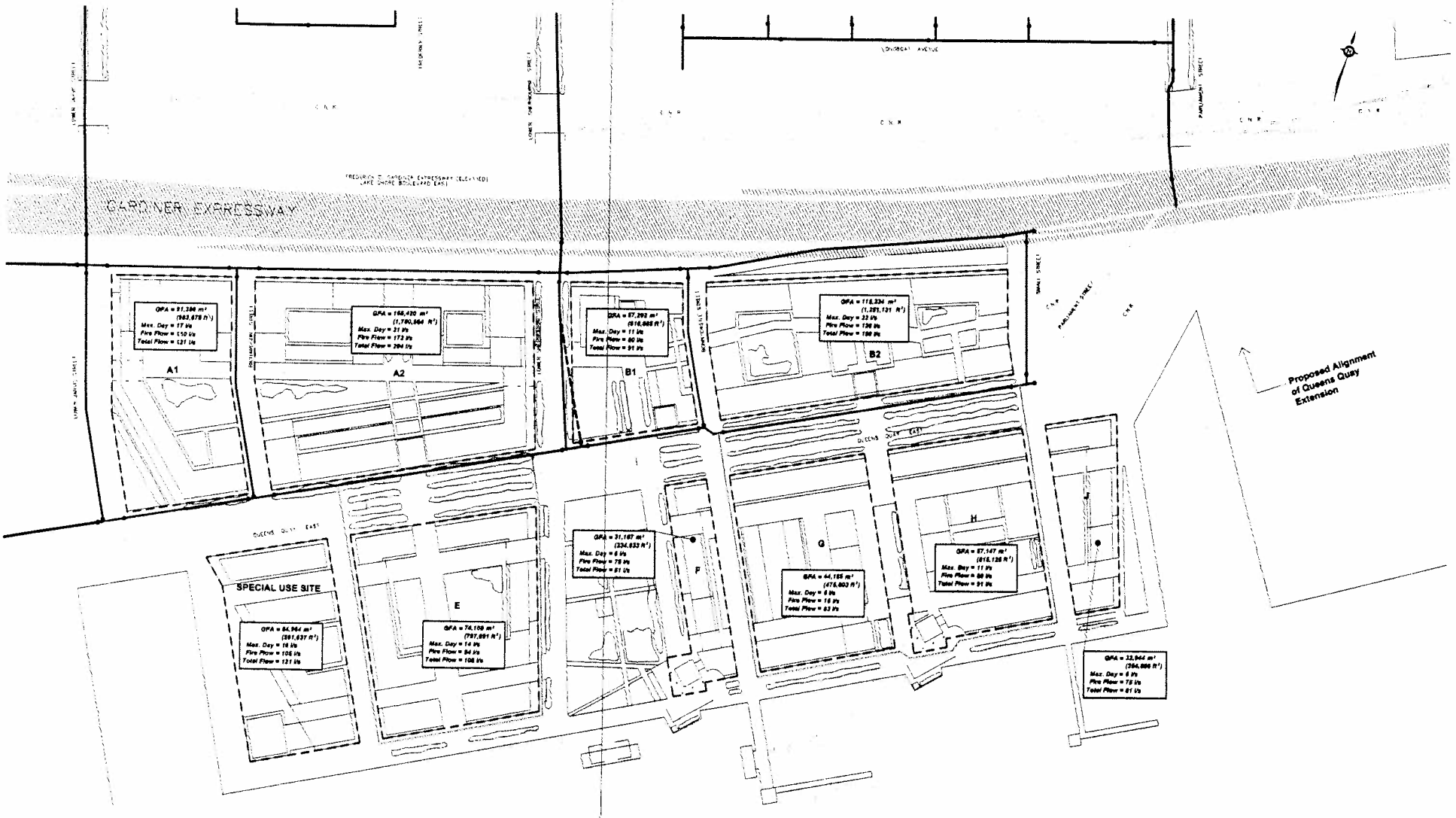
East Bayfront



TORONTO WATERFRONT
REVITALIZATION CORPORATION

Water Main Network EA Classification

East Bayfront



		ALTERNATIVE DESIGN SOLUTIONS – PREFERRED STORMWATER SYSTEMS			
	ALTERNATIVE DESIGN	DESIGN ALTERNATIVE A	DESIGN ALTERNATIVE B	DESIGN ALTERNATIVE C	DESIGN ALTERNATIVE D
Criteria	Sub - Criteria	No treatment and Direct Discharge to City Stormwater System	Stormwater Management Ponds (Quality)	Sedimentation Tanks	Sedimentation Tanks with Filters and UV Disinfection
Municipal Services (where applicable)	Reliability of services	● Requires no maintenance.	○ Requires large capacity pumps pumping to the surface during storms to collect first flush and deliver it to surface quality pond. This is a method totally reliant on mechanical intervention.	● Tanks collect first flush (2" storm), below ground at local storm sewer outfall elevations. Pump to the lake after settlement with smaller pumps.	● Tanks collect first flush (2" storm), below ground at local storm sewer outfall elevations. Pump to the lake after settlement with small pumps; through filters and UV disinfection system which can also be used for other stormwater which has not been through the settlement process.
	Flexibility to provide capacity for future growth and/or improved service level	NOT APPLICABLE	○ Future growth would increase peak flow rates, requiring larger pumps. The pond area would need to be sized for future expansion for future growth. Improving the service level would require the construction of new facilities.	● Sedimentation tanks could be pre-built for future growth, or could allow for expansion. Improving the service level would require the construction of new facilities.	● Sedimentation tanks could be pre - built for future growth, or could allow for expansion. With provision for filters and UV disinfection, new facilities could be added easily for improved service levels.
	Life expectancy	NOT APPLICABLE	○ Dependent on Pump life.	● Pump life and deterioration of underground structures.	● Pump life and deterioration of underground structures. Filters and UV disinfectors have a finite life.
	Maintenance requirements	● Requires little or no maintenance.	○ High maintenance, because if the pump does not work, the First Flush is lost. Ponds require periodic invert excavation of accumulated sediments.	● Evacuation pump requires maintenance, and tipping buckets for tank flushing require maintenance.	● Evacuation pump requires maintenance, and tipping buckets for tank flushing require maintenance. Filters and UV disinfectors require maintenance.
Natural Environment	Terrestrial Habitat	● Not located in an area where there is terrestrial habitat of any significance.	● Not located in an area where there is terrestrial habitat of any significance.	● Not located in an area where there is terrestrial habitat of any significance.	● Not located in an area where there is terrestrial habitat of any significance.
	Aquatic Habitat	○ No aquatic habitat of any significance. However, discharging untreated stormwater ultimately to the inner harbour may impair aquatic habitat conditions.	● Not located near aquatic habitats of any significance. However treating stormwater that ultimately reaches the inner harbour may improve aquatic habitat conditions.	● Not located near aquatic habitat of any significance. However treating stormwater that ultimately reaches the inner harbour may improve aquatic habitat conditions.	● Not located near aquatic habitats of any significance. However treating stormwater that ultimately reaches the inner harbour may improve aquatic habitat conditions.
	Water Quality	○ Provides no improvement to stormwater discharge quality.	● Improves the quality of stormwater discharge.	● Improves the quality of stormwater discharge.	● Improves the quality of stormwater discharge, with likely the best overall results.
	Air Quality	● No impact to air quality.	● No impact to air quality.	● No impact to air quality.	● No impact to air quality.
	Soil and Groundwater	● There is a potential to encounter soil and/or groundwater contamination. Soil and groundwater management plans will be required for all alternatives.	● There is a potential to encounter soil and/or groundwater contamination. Soil and groundwater management plans will be required for all alternatives.	● There is a potential to encounter soil and/or groundwater contamination. Soil and groundwater management plans will be required for all alternatives.	● There is a potential to encounter soil and/or groundwa ter contamination. Soil and groundwater management plans will be required for all alternatives.
Social and Economic	Cultural heritage resources	● No cultural heritage resources are affected.	● No cultural heritage resources are affected.	● No cultural heritage resources are affected.	● No cultural heritage resources are affected.
	Impacts to businesses	● No businesses will be impacted.	● No businesses will be impacted.	● No businesses will be impacted.	● No businesses will be impacted.
	Impacts to private property	● All stormwater facilities will be located on publicly owned lands.	● All stormwater facilities will be located on publicly owned lands.	● All stormwater facilities will be located on publicly owned lands.	● All stormwater facilities will be located on publicly owned lands.
	Noise and Vibration	● No noise or vibration impacts are expected.	● No noise or vibration impacts are expected.	● No noise or vibration impacts are expected.	● No noise or vibration impacts are expected.
	Employment	● No impacts to employment.	● No impacts to employment.	● No impacts to employment.	● No impacts to employment.
	Recreation	● No impacts to recreation.	● Stormwater quality ponds could only be located in East Bayfront proposed parkland, and this would reduce the recreational value of the park. However, improved water quality in the adjacent inner harbour would be beneficial to recreation in East Bayfront. Overall, a neutral effect.	● No impacts to recreation. Improved water quality in the inner harbour is beneficial to recreation.	● No impacts to recreation. Improved water quality in the inner harbour is beneficial to recreation. This option has the highest overall performance.
Opportunity for Revitalization	Ability to support the development objectives of the Precinct Plan	○ No physical impact to redevelopment plan but would not meet municipal and provincial objectives for stormwater quality.	○ Stormwater ponds are land intensive and would be less supportive of the contemplated land uses. In addition, stormwater ponds may not be compatible with certain adjacent land uses.	● No physical impact to redevelopment plan since facilities are not land intensive and would be located within road allowances, under open spaces or under parkland depending on site location and municipal requirements.	● No physical impact to redevelopment plan since facilities are not land intensive and would be located within road allowances, under open spaces or under parkland depending on site location and municipal requirements.
	Ability to support the urban design objectives of the Precinct Plan	● No impact to urban design.	○ Ponds are land intensive and may not be compatible with adjacent built form.	● No impact to urban design.	● No impact to urban design.
	Ability to support Waterfront wide revitalization	○ Would not meet municipal and provincial objectives for stormwater quality.	● Supports the improvements to water quality.	● Supports the improvements to water quality.	● Supports the improvements to water quality.
Cost Effectiveness	Capital Cost of improvements	● No capital cost.	● Lower capital cost.	○ Higher capital cost.	○ Highest capital cost.
	Maintenance Costs	● No additional maintenance cost, no treatment provided.	○ High maintenance cost because extremely reliable pump systems would be required to ensure that storm flows are pumped from the storm sewer system up into the surface stormwater quality pond during the occurrence of the storm.	● Moderate maintenance cost.	○ High maintenance cost.
Technical Considerations	Level of Stormwater Treatment	○ No treatment provided.	● Removal of floating matter and reduction of suspended solids provided.	● Removal of floating matter and reduction of suspended solids provided.	● Removal of floating matter and reduction of suspended solids as well as bacteria and viruses is provided. This option has the highest overall performance.
	Potential to meet objectives of the City of Toronto Wet Weather Flow Management Master Plan	○ No treatment provided.	○ No disinfection provided.	○ No disinfection provided.	● Filtration and UV disinfection provides reduction in concentration of bacteria and viruses.
Recommendations		Not recommended	Not recommended	Not recommended	Recommended

LEGEND:
● GOOD ● NEUTRAL ○ POOR

Note: For Alternative D, filters and disinfection would be installed concurrently with the implementation of the Wet Weather Flow Management Master Plan proposals to virtually eliminate combined sewer overflow discharges into the Inner Harbour from the Jarvis Street, Parliament Street and Cherry Street combined sewer outfalls.

Queens Quay East - Cross Section Alternatives
Preliminary Evaluation

		QUEENS QUAY EAST - REDPATH RAIL SPUR OVERLAP OPTIONS			QUEENS QUAY EAST - REDPATH RAIL SPUR SEPARATE ROW OPTIONS		
	ALTERNATIVE DESIGN	OPTION AI	OPTION AII	OPTION B	OPTION CI	OPTION CII	OPTION D
EVALUATION CRITERIA		38.0 Metre ROW Four Travel Lanes No Parking	38.0 Metre ROW Two Travel Lanes With Parking	40.0 Metre ROW Four Travel Lanes With Parking	38.0 Metre ROW Four Travel Lanes No Parking	38.0 Metre ROW Two Travel Lanes With Parking	40.0 Metre ROW Four Travel Lanes No Parking
TRANSPORTATION SERVICE	ROAD SAFETY	●	●	●	●	●	●
	TRAFFIC OPERATIONS						
	1. ABILITY TO SUPPORT TRAFFIC NEEDS OF EAST BAYFRONT PRECINCT	●	●	●	●	●	●
	2. ABILITY TO SUPPORT POTENTIAL TRAFFIC NEEDS OF WATERFRONT WIDE DEVELOPMENT	●	●	●	●	✱	●
	3. IMPACTS TO TRAFFIC OPERATIONS	●	●	●	●	●	●
	TRANSIT OPERATIONS						
	1. ABILITY TO ACCOMMODATE/ ENCOURAGE TRANSIT	●	●	●	●	●	●
	2. IMPACTS TO TRANSIT OPERATIONS	✱	✱	✱	●	●	●
	FACILITATION OF GOODS MOVEMENT	●	●	●	●	●	●
	SUPPORT POLICE AND EMERGENCY SERVICE OPERATIONS	●	●	●	●	●	●
	SERVICE TO BICYCLISTS	●	●	●	●	●	●
	SERVICE TO PEDESTRIANS	●	●	●	✱	●	●
	IMPACTS ON CROSS-SECTIONAL ELEMENT WIDTHS AND FACILITIES	●	●	●	✱	●	●
NATURAL ENVIRONMENT	TERRESTRIAL HABITAT	●	●	●	●	●	●
	AQUATIC HABITAT	●	●	●	●	●	●
	AIR QUALITY	●	●	●	●	●	●
	NOISE AND VIBRATION	●	●	●	●	●	●
	LANDSCAPE PROVISIONS	●	●	●	✱	●	●
SOCIO-ECONOMIC ENVIRONMENT	BUSINESSES	●	●	●	●	●	●
	IMPACTS TO PROPERTY	●	●	✱	●	●	✱
OPPORTUNITY FOR REVITALIZATION	ABILITY TO SUPPORT THE DEVELOPMENT OBJECTIVES OF THE PRECINCT PLAN	●	●	●	●	●	●
	ABILITY TO MEET THE URBAN DESIGN OBJECTIVES OF THE PRECINCT PLAN	●	●	✱	✱	●	✱
	ABILITY TO SUPPORT WATERFRONT WIDE REVITALIZATION	●	●	●	●	●	●
COST EFFECTIVENESS	CAPITAL COST OF IMPROVEMENTS	●	●	●	●	●	●
	MAINTENANCE COSTS	●	●	●	●	●	●
COMPOSITE RATING		●	●	✱	●	●	✱
PRELIMINARY RECOMMENDED CROSS-SECTION ALTERNATIVE(S)		Primary Recommendation	Primary Recommendation		Secondary Recommendation	Secondary Recommendation	

LEGEND:

● GOOD
● NEUTRAL
✱ POOR
ALTERNATIVE DESIGN TAKEN FORWARD FOR PUBLIC AND AGENCY CONSULTATION

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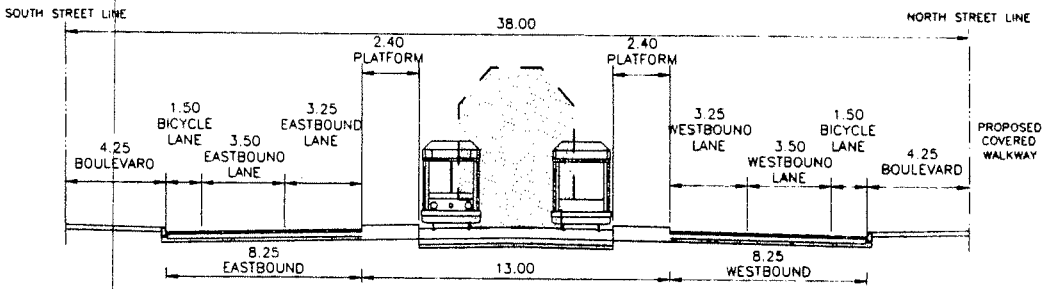
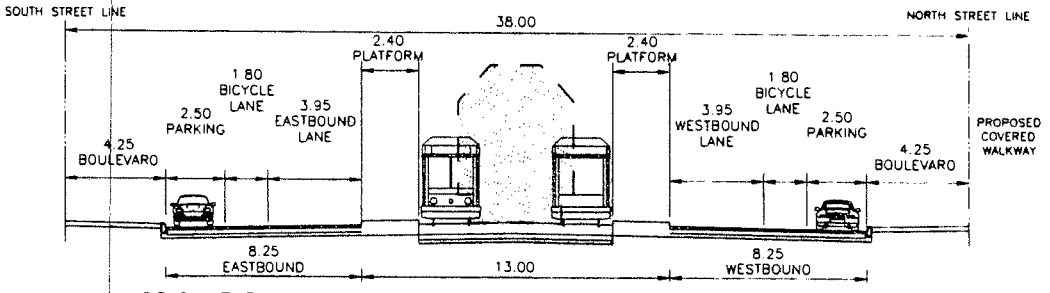
Queens Quay East - Proposed Cross Sections

OPTION Ai



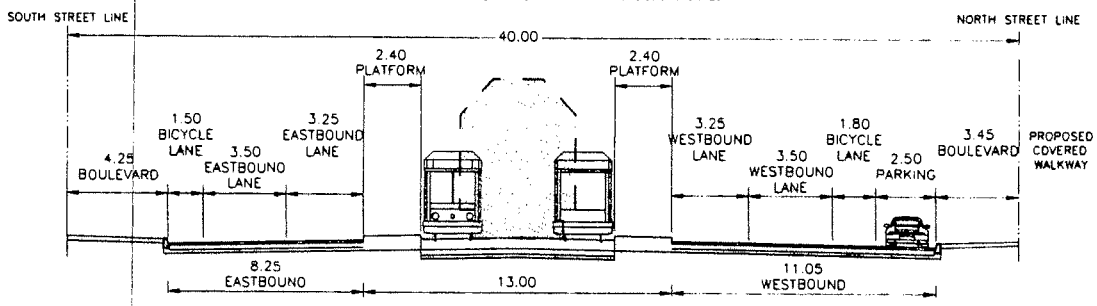
38.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Aii



38.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

OPTION B

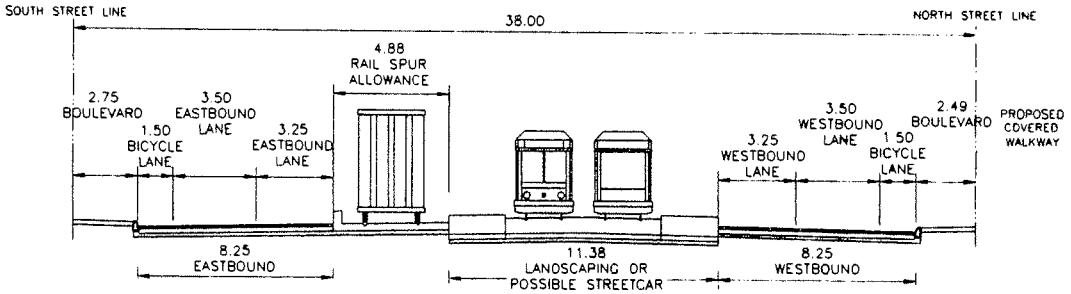


40.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND ON-STREET PARKING

BA GROUP Transportation Consultants

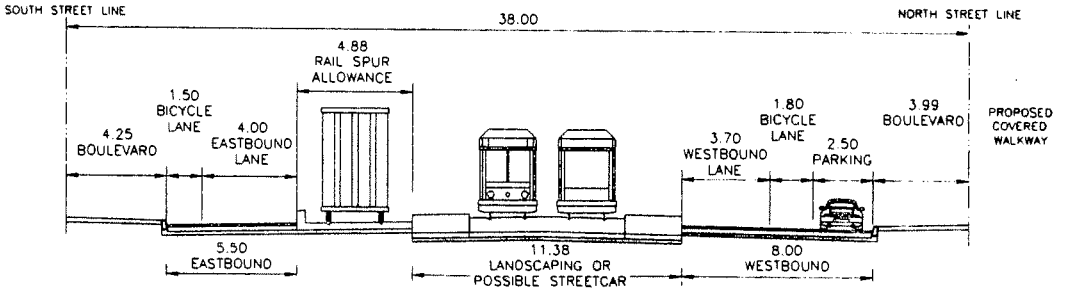
Queens Quay East - Proposed Cross Sections

OPTION Ci



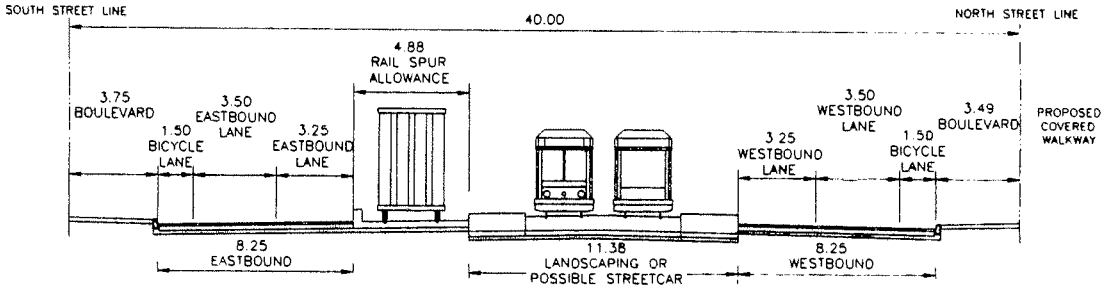
38.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Cii



38.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

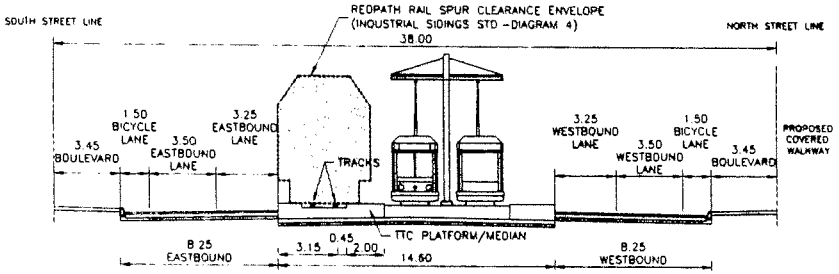
OPTION D



40.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

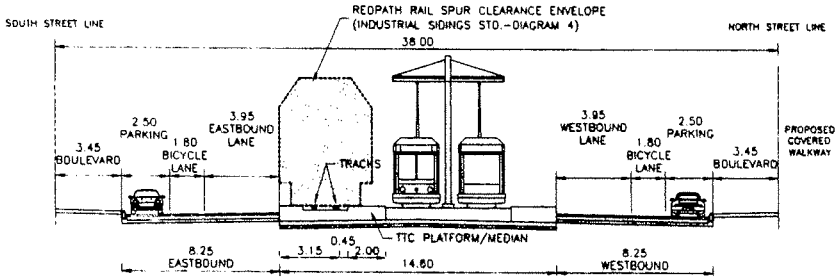
Queens Quay East - Additional Agency Cross Section Options

OPTION Ei



38.0m RIGHT OF WAY WITH TWO TRAFFIC LANES IN EACH DIRECTION AND NO ON-STREET PARKING

OPTION Eii



38.0m RIGHT OF WAY WITH ONE TRAFFIC LANE IN EACH DIRECTION AND ON-STREET PARKING

QUEENS QUAY EAST - REDPATH RAIL SPUR ADDITIONAL AGENCY OPTIONS

EVALUATION CRITERIA	ALTERNATIVE DESIGN	OPTION Ei: 36.0 Metre ROW, Four Travel Lanes, No Parking	OPTION Eii: 36.0 Metre ROW, Two Travel Lanes, With Parking
TRANSPORTATION SERVICE	ROAD SAFETY	●	●
	TRAVEL DIRECTIONS: 1. ABILITY TO SUPPORT TRAFFIC NEEDS OF EAST BAYFRONT PRIORITY	●	●
	2. ABILITY TO SUPPORT POTENTIAL TRAFFIC NEEDS OF WATERFRONT WIDE DEVELOPMENT	●	●
	3. IMPACTS TO TRAFFIC OPERATIONS	●	●
	TRANSIT OPERATIONS: 1. ABILITY TO ACCOMMODATE SHOREHAM TRANSIT	●	●
	2. IMPACTS TO TRANSIT OPERATIONS	✲	✲
	FACILITATION OF GOODS MOVEMENT	●	●
	SUPPORT POLICE AND EMERGENCY SERVICE OPERATIONS	●	●
	SERVICE TO BICYCLISTS	●	●
	SERVICE TO PEDESTRIANS	✲	✲
	IMPACTS ON CROSS-SECTIONAL ELEMENT WIDTHS AND FACILITIES	●	●
NATURAL ENVIRONMENT	TERRESTRIAL HABITAT	●	●
	AQUATIC HABITAT	●	●
	AIR QUALITY	●	●
	NOISE AND VIBRATION	●	●
	LANDSCAPE PROVISIONS	●	●
SOCIO-ECONOMIC ENVIRONMENT	BUSINESSES	●	●
	IMPACTS TO PROPERTY	●	●
OPPORTUNITY FOR REVITALIZATION	ABILITY TO SUPPORT THE DEVELOPMENT OBJECTIVES OF THE PRECINCT PLAN	●	●
	ABILITY TO MEET THE URBAN DESIGN OBJECTIVES OF THE PRECINCT PLAN	●	●
	ABILITY TO SUPPORT WATERFRONT WIDE REVITALISATION	●	●
COST EFFECTIVENESS	CAPITAL COST OF IMPROVEMENTS (excluding private property costs)	●	●
	MAINTENANCE COSTS	●	●
COMPOSITE RATING		●	●
PRELIMINARY RECOMMENDED CROSS-SECTION ALTERNATIVE			

LEGEND
● GOOD
● NEUTRAL
✲ POOR
Y BY DESIGN

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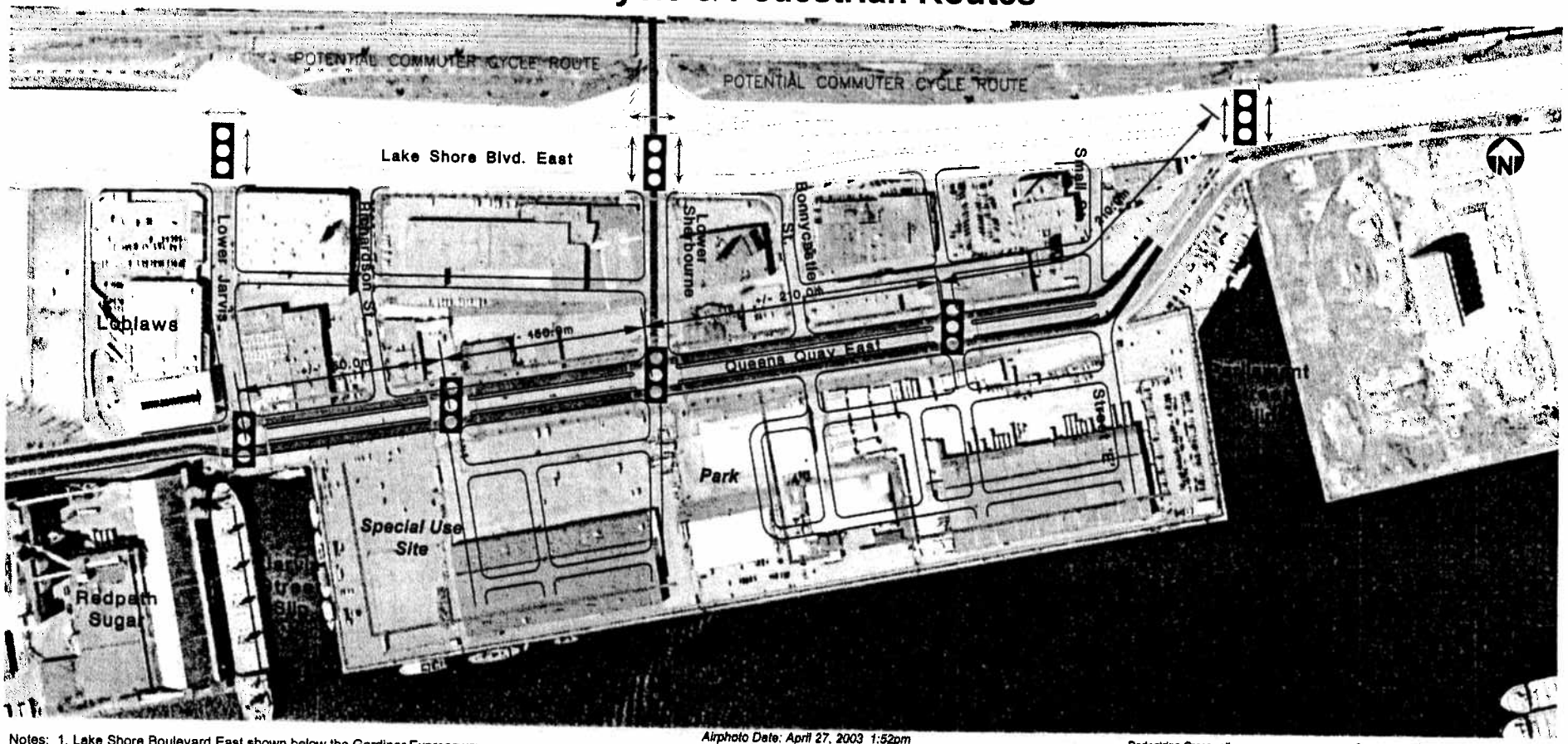
East Bayfront Precinct - Future Bicycle & Pedestrian Routes



Notes: 1. Lake Shore Boulevard East shown below the Gardiner Expressway.

Airphoto Date: April 27, 2003 1:52pm

Pedestrian Crosswalk at Traffic Signal

Proposed/existing Traffic Signal

Streets with On-street Bicycle Lanes

Martin Goodman Trail & Major Multi-use Pathway

Minor Multi-use Pathway

Covered, Weather Protected Pedestrian Linkages

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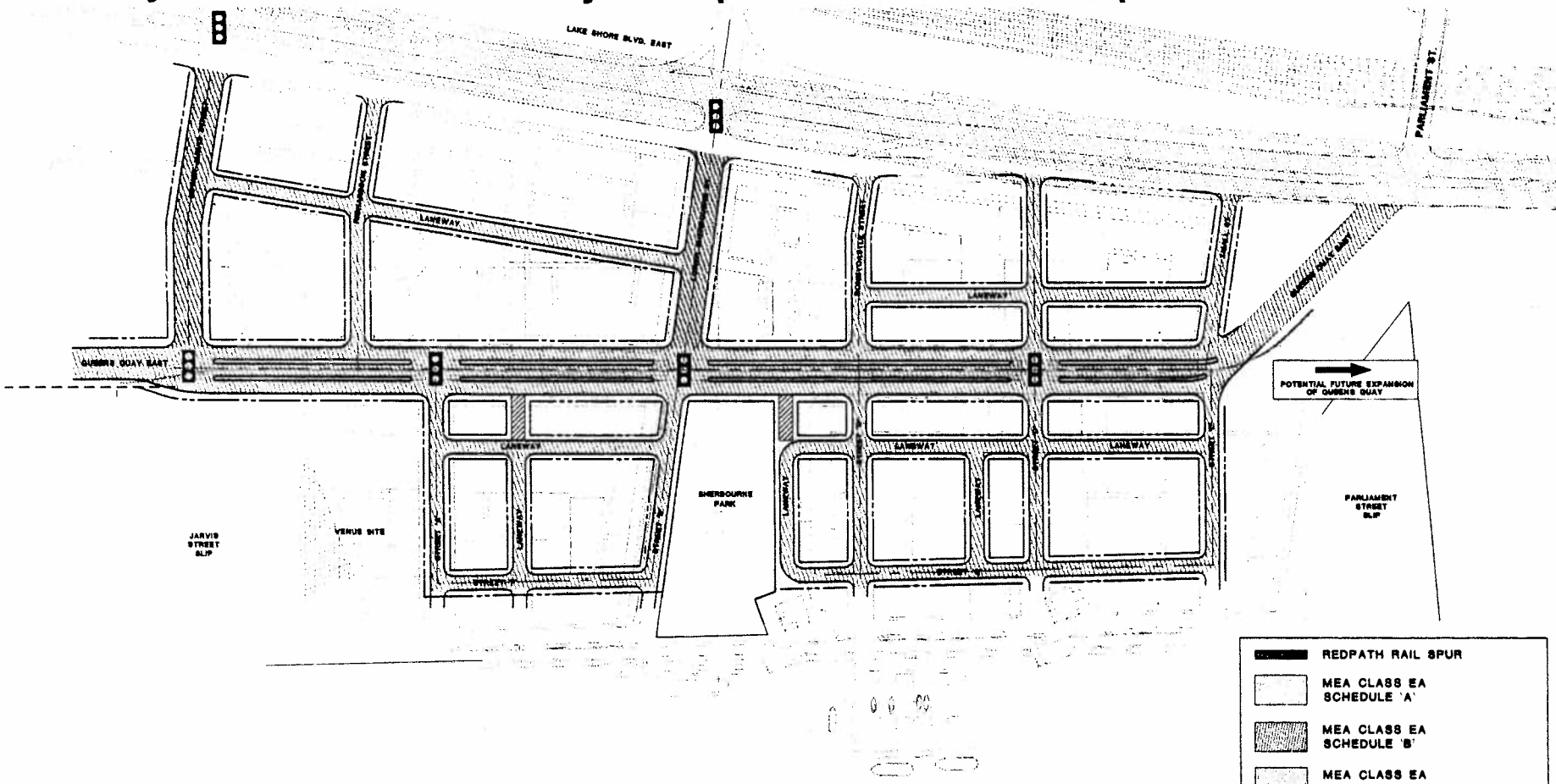
East Bayfront Precinct - Summary of Proposed Infrastructure Improvements



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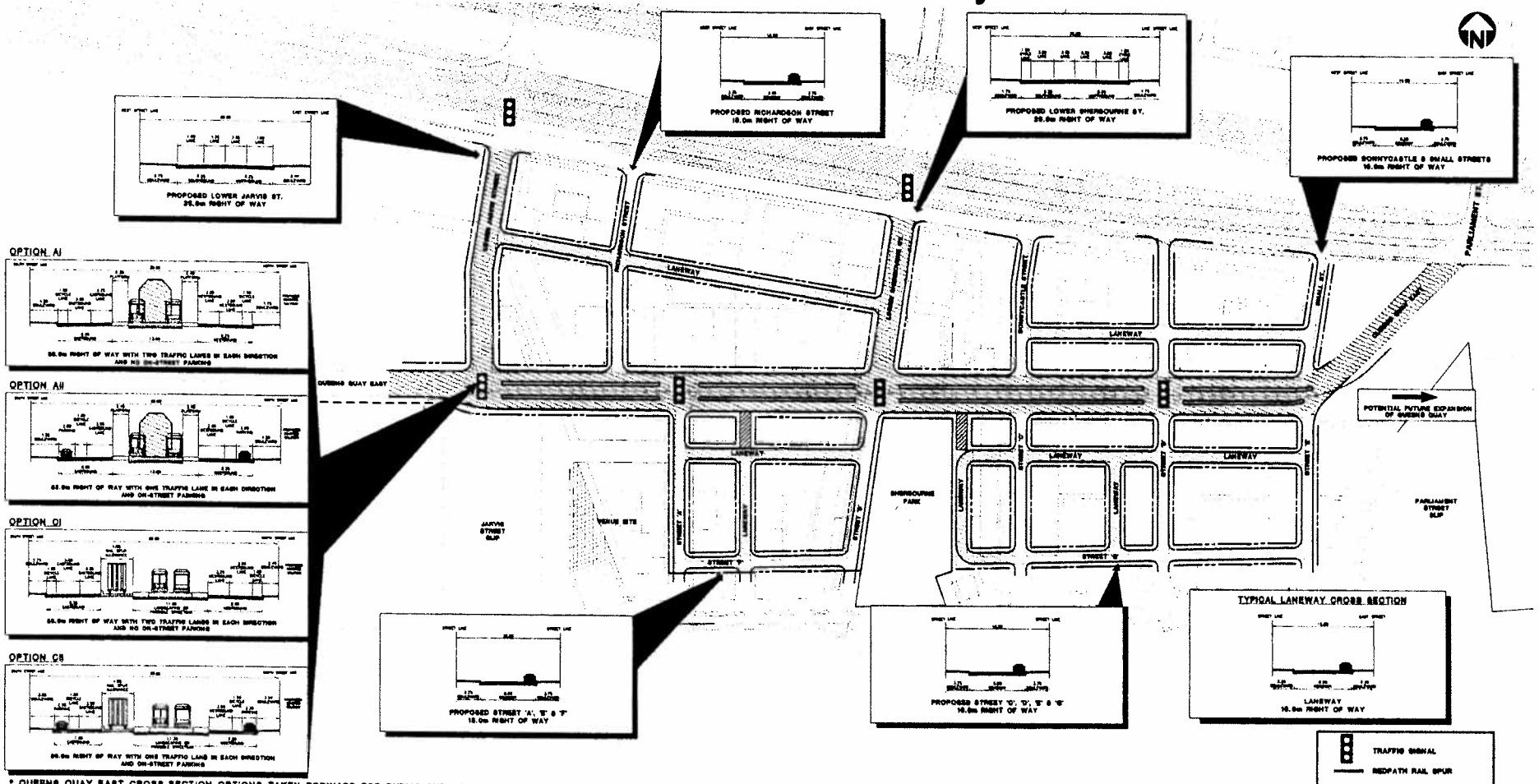
East Bayfront Precinct - Proposed Cross Section Summary



* QUEENS QUAY EAST CROSS-SECTION OPTIONS TAKEN FORWARD FOR PUBLIC AND AGENCY CONSULTATION.

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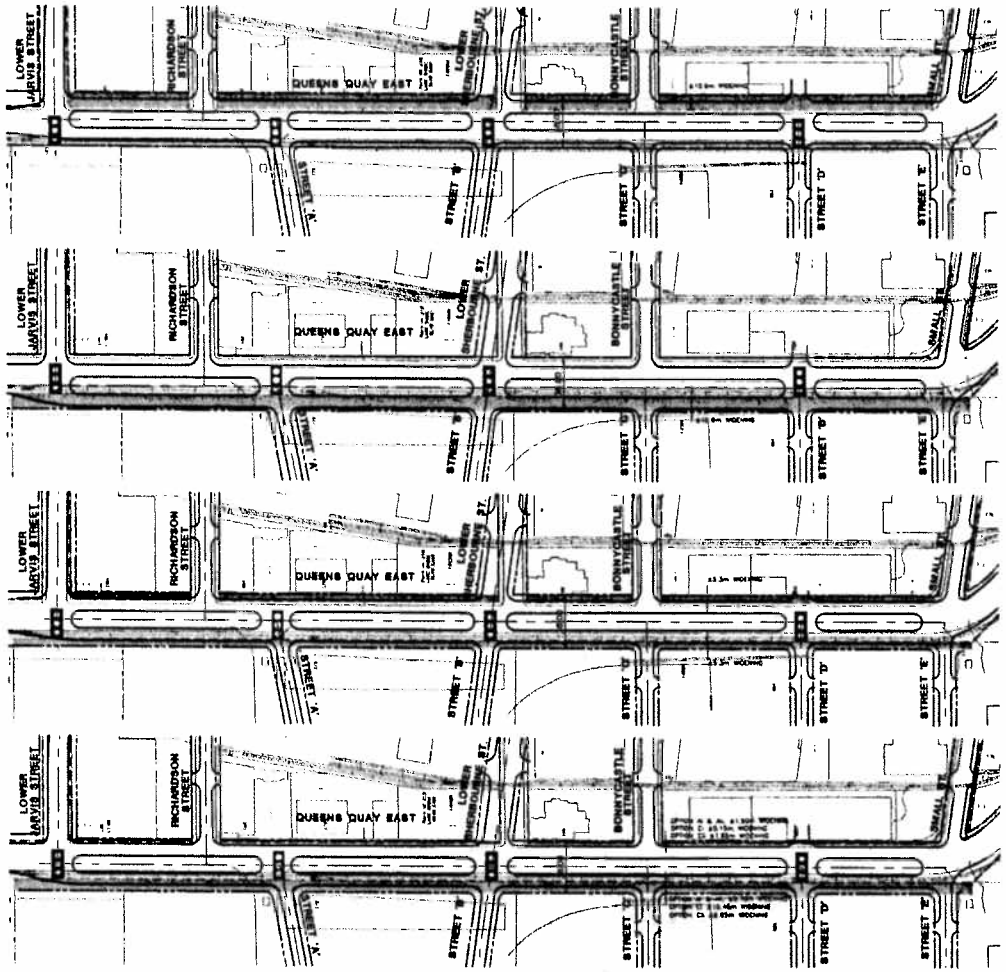
Queens Quay East - Widening Alternatives (38.0 Metre ROW)



DESIGN ALTERNATIVE '1'
- WIDEN NORTH SIDE

DESIGN ALTERNATIVE '2'
- WIDEN SOUTH SIDE ONLY

DESIGN ALTERNATIVE '3'
- WIDEN NORTH & SOUTH SIDES SYMMETRICALLY

DESIGN ALTERNATIVE '4'
- WIDEN NORTH & SOUTH SIDES
HOLDING EXISTING NORTH CURB LINE
(PROPERTY ON NORTH SIDE TAKEN AS DEVELOPMENT OCCURS

NOTE: WIDENING DIMENSIONS MEASURED JUST WEST OF SMALL STREET

- - - - EXISTING PROPERTY LINE
—··— PROPOSED PROPERTY LINE
▬ ROAD WIDENING

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Queens Quay East - Widening Alternatives
Preliminary Evaluation

		QUEENS QUAY EAST ALTERNATE WIDENING DESIGNS			
		ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
		North Side Widening	South Side Widening	North & South Side Widening (Symmetrical widening)	North & South Side Widening (Holding north curbline)
SOCIO-ECONOMIC ENVIRONMENT	BUSINESS OPERATIONS 1. Requirement to relocate businesses				
	2. Impact to parking areas				
	3. Impact to site access				
	IMPACTS TO PROPERTY (Property Taking) 1. Public property				
	2. Private property				
COST EFFECTIVENESS	CAPITAL COST (Including private property costs)				
	MAINTENANCE COSTS				
OPPORTUNITY FOR REVITALIZATION	ABILITY TO SUPPORT THE DEVELOPMENT OBJECTIVES OF THE PRECINCT PLAN				
COMPOSITE RATING					
PRELIMINARY RECOMMENDED ROAD WIDENING ALTERNATIVE(S)					

Existing ROW - approx. 27.4 metres
38.0 metre ROW requires total 10.6 metre widening

LEGEND:
- GOOD
- NEUTRAL
- POOR
- X REJECTED

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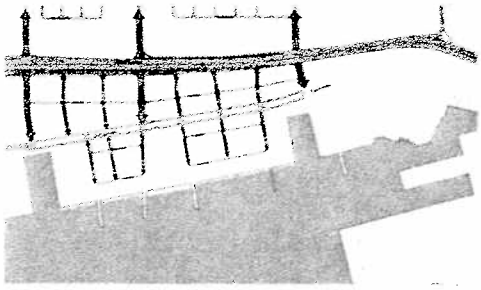
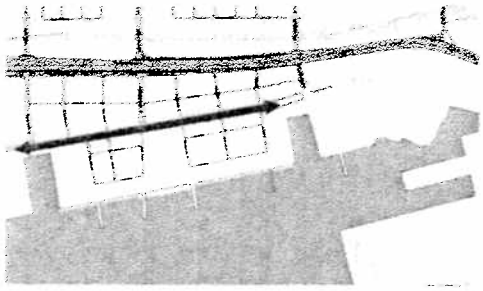
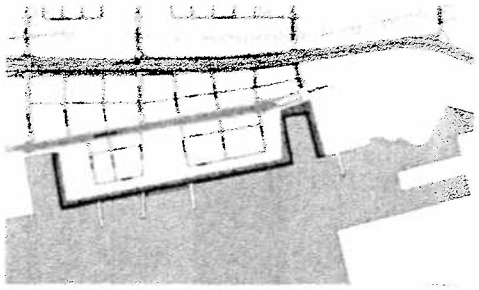


Extend City Grid into East Bayfront

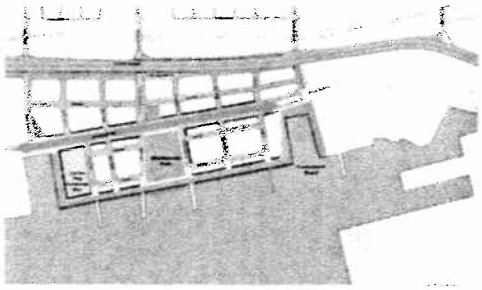


High Capacity Transit Line on Queen's Quay Boulevard

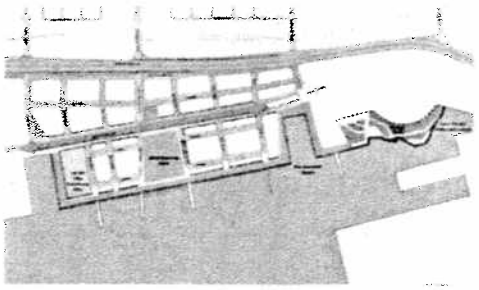


Create a New Water's Edge Promenade

Create Foot of / Special Places on the Water



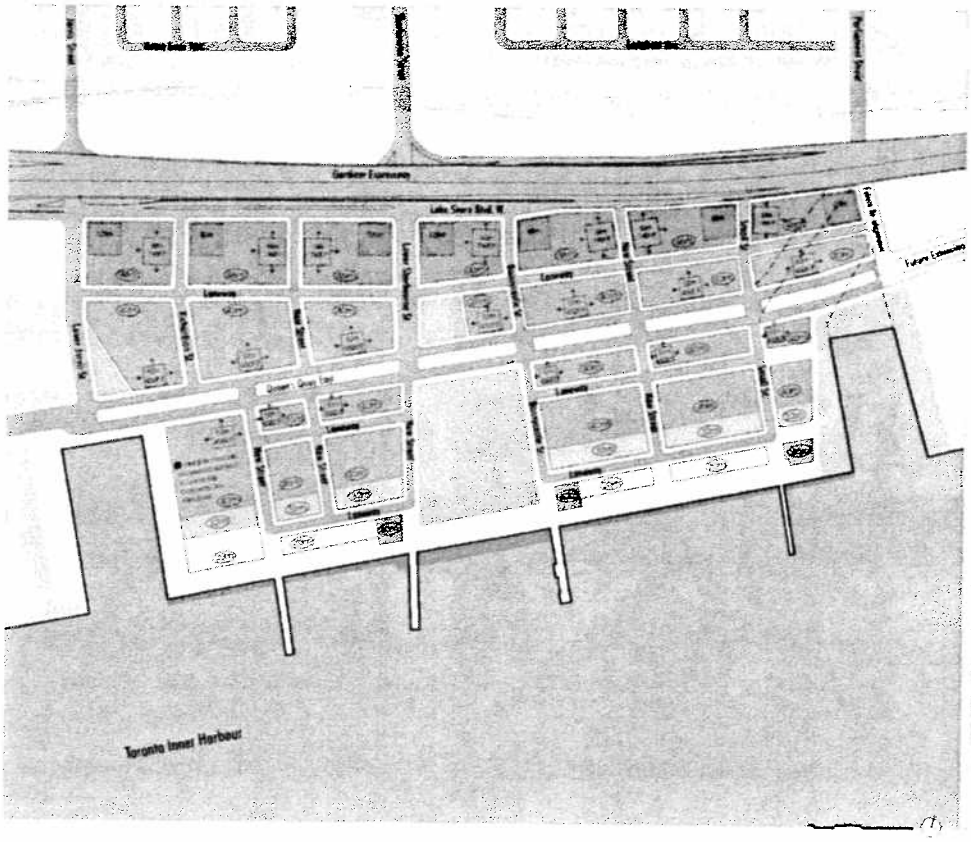
Activate Ground Floor Uses

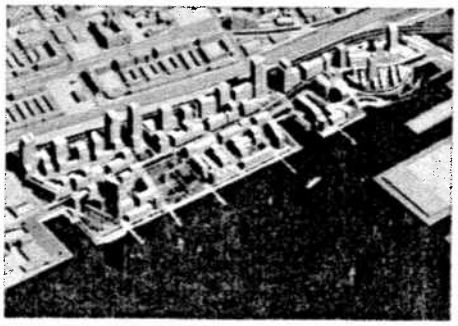


Integrate East of Parliament with Don Mouth Naturalization

EAST BAYFRONT Precinct Plan

TORONTO WATERFRONT





40m MAXIMUM BUILDING HEIGHT

MAXIMUM BUILDING HEIGHT AND MAXIMUM FLOOR PLATE

80 TO 120m HEIGHT ZONE

46m HEIGHT ZONE

40m HEIGHT ZONE

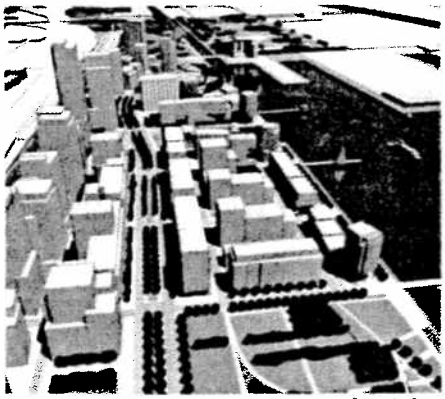
32m HEIGHT ZONE

20m HEIGHT ZONE

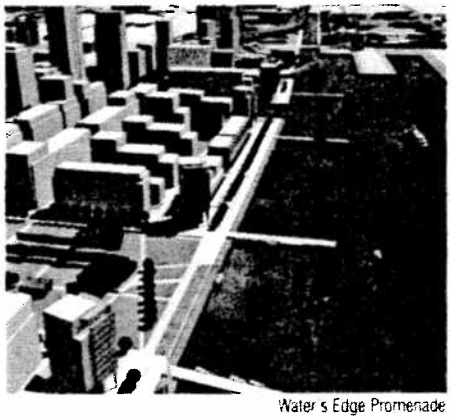
Building Heights Plan

EAST BAYFRONT Precinct Plan

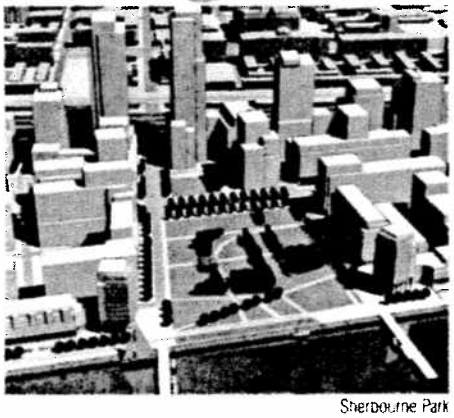
TORONTO WATERFRONT
REVITALIZATION CORPORATION



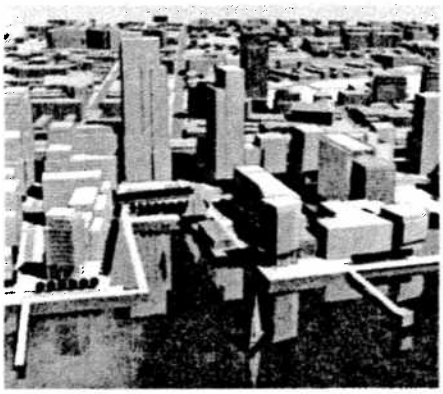
Queen's Quay



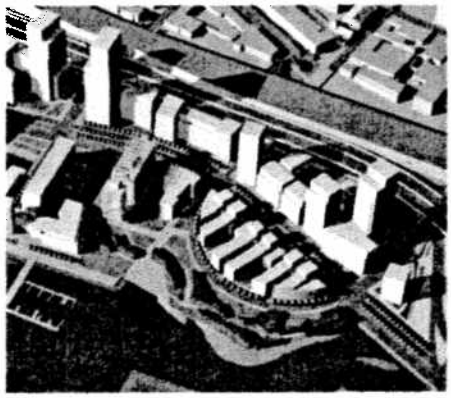
Water's Edge Promenade



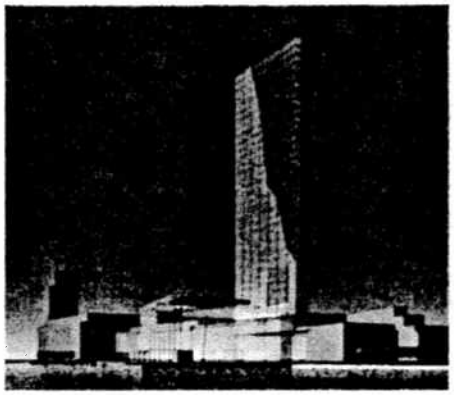
Sherbourne Park



Parliament Basin



Trinity Park

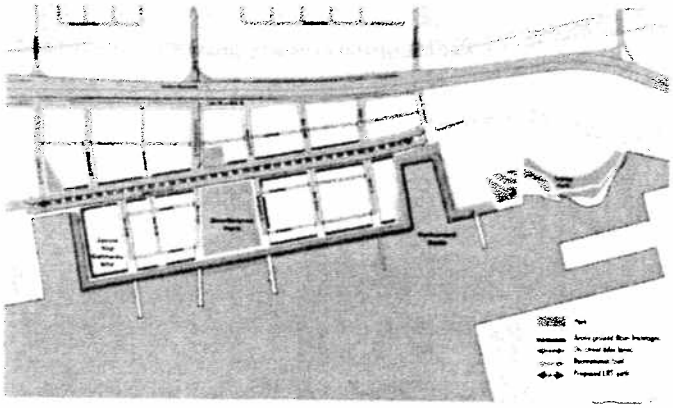


Special Use Site

EAST BAYFRONT Precinct Plan

TORONTO WATERFRONT
REVITALIZATION CORPORATION

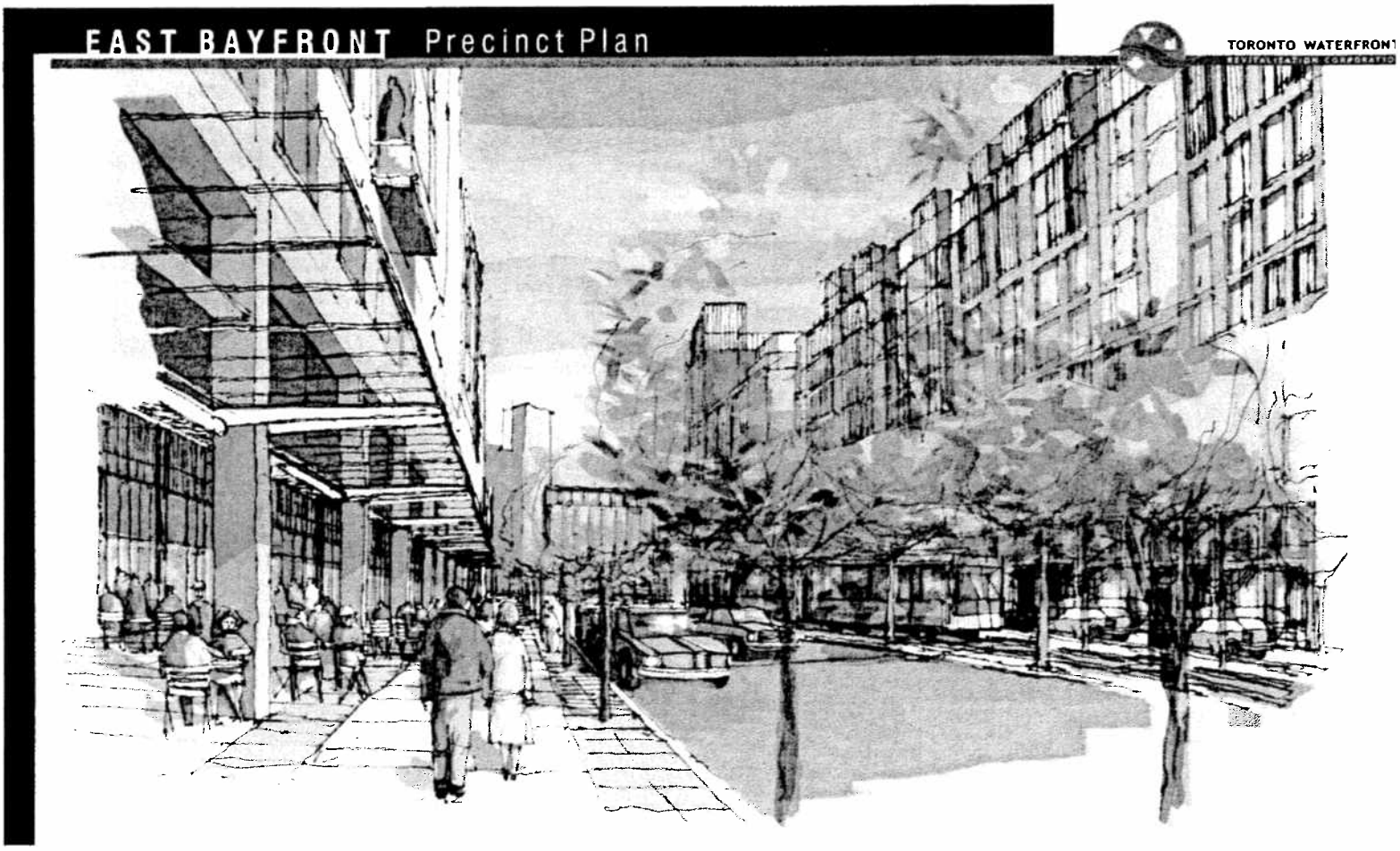
Parcel Plan



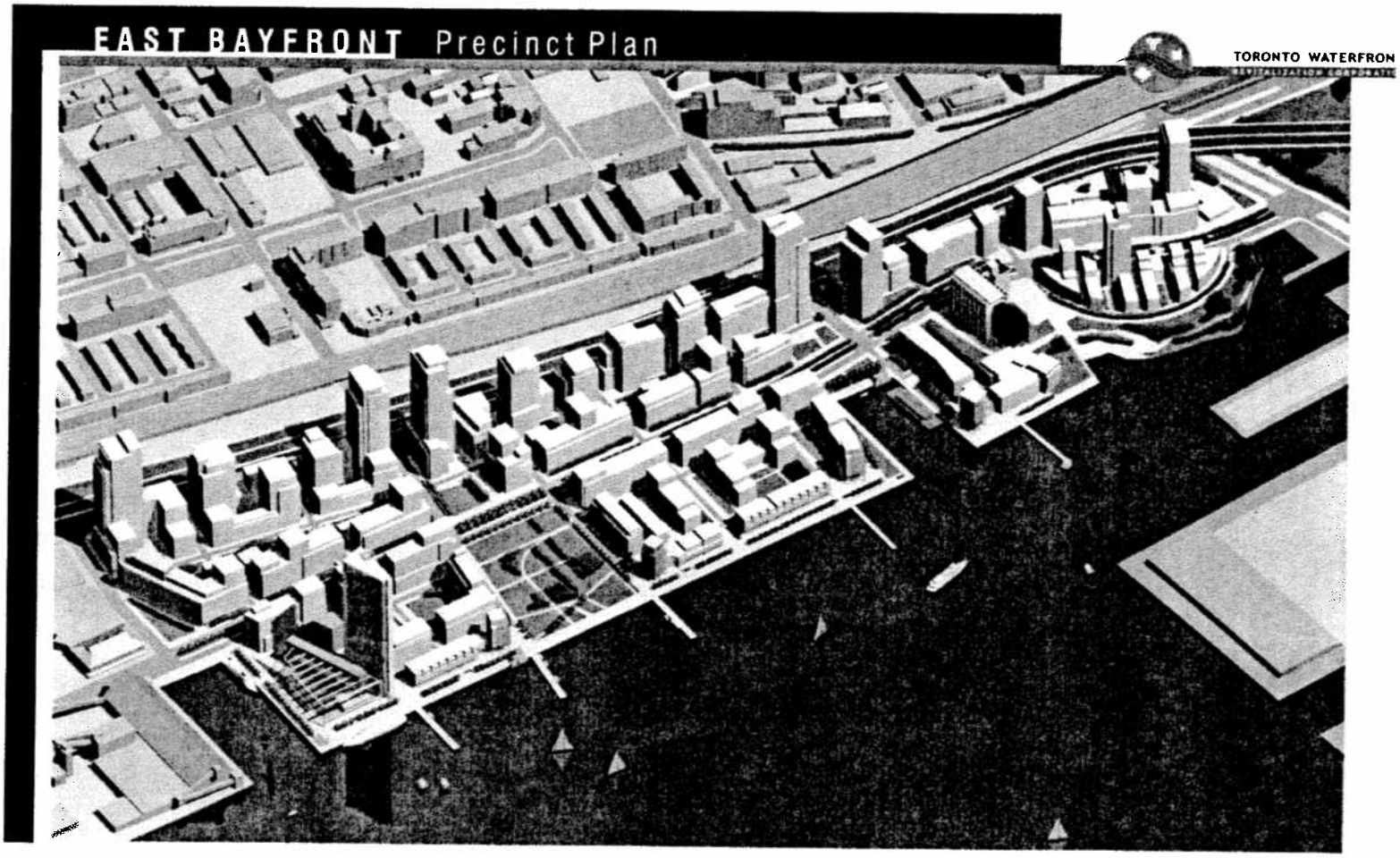
Principles Plan

EAST BAYFRONT Precinct Plan

TORONTO WATERFRONT
REVITALIZATION CORPORATION



Rendering of Queen's Quay Boulevard



Vision of East Bayfront

EAST BAYFRONT Precinct Plan

TORONTO WATERFRONT
REVITALIZATION CORPORATION

Rendering of Water's Edge Promenade