



Don Mouth Naturalization And Port Lands Flood Protection Project

Revised Terms of Reference

June 2006



**TORONTO WATERFRONT
REVITALIZATION CORPORATION**

**TORONTO AND REGION
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1. Introduction

Toronto and Region Conservation (TRCA) is proceeding with the Don Mouth Naturalization and Port Lands Flood Protection Project (DMNP) in cooperation with the Toronto Waterfront Revitalization Corporation (TWRC). Ultimately this project will develop a preferred alternative that will transform the existing mouth of the Don River including the Keating Channel, into a healthier, more naturalized river outlet to the lake, while at the same time, removing the risk of flooding to 230 hectares of urban land to the east and south of the river. This project is included in TWRC's current 10 year business plan to renew and revitalize Toronto's waterfront and is funded by the three levels of government (federal, provincial and the City of Toronto).

This project is subject to the requirements of the Ontario *Environmental Assessment Act (EA Act)* as an Individual Environmental Assessment (EA). This document is the Terms of Reference (ToR) which is the first step of an Individual EA. It sets out TRCA's work plan for preparing the EA and carrying out the required public consultation. However, should new issues arise during the EA, this ToR does not preclude their investigation at the discretion of TRCA, if the issues are within the mandate of the project. This ToR includes:

- Background information
- Purpose of the proposed undertaking
- Project goal and objectives
- Framework for the EA and approvals requirements
- Description and rationale for the proposed undertaking
- Description of the alternatives to be considered and how they will be evaluated
- A general description of the environment that may be potentially affected by the project
- Consultation plan for the EA
- Framework for monitoring

The public, agencies, utilities, interest groups, and landowners have been consulted throughout the development of the ToR and will continue to be consulted during the preparation of the EA. All activities carried out during the EA will be documented in the EA Report.

This project is also subject to the requirements of the *Canadian Environmental Assessment Act (CEAA)*.

2. Proponent

In 2001, the TRCA was identified by the three levels of government as the eligible recipient for funding to naturalize the mouth of the Don River (Don Mouth) and provide flood protection for the entire 440 hectare floodplain surrounding the lower Don River and Keating Channel. This work is being undertaken

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as two separate projects; the first to remove the risk of flooding to 230 ha of land and to naturalize the Don Mouth (the subject of this EA process), and the second, the Lower Don River West Remedial Flood Protection Project Class EA, to remove the remaining 210 ha of land from risk of flooding. This second EA has already been completed, with construction anticipated to begin in Spring 2006.

The three levels of government created the TWRC to fund, coordinate, and oversee the revitalization of the Toronto Waterfront, including this project, which was one of the original four priority projects. As such, TWRC has been identified as a proponent for this project as it relates to environmental assessment legislation. TRCA has been retained under agreement by TWRC to deliver this project. TRCA plans to work co-operatively with the three levels of government through appropriate departments and agencies to ensure this project is coordinated with the many other activities required to revitalize the waterfront.

3. Purpose of the Proposed Undertaking

The purpose of the undertaking is to make an ecologically functional river mouth, remove flood risk, and provide opportunities to revitalize the Port Lands area of Toronto's waterfront. These are referred to as the three thrusts of the project. The purpose of the undertaking will be described in more detail in the EA. The following documents are referenced throughout the following sections as background to the problem and opportunity assessment.

Key documents providing background information:

Bringing Back the Don, Task Force to Bring Back the Don, 1991

Central Waterfront Secondary Plan, City of Toronto, 2003

Forty Steps to a New Don, Don Watershed Task Force, 1994

Lower Don River West Remedial Flood Protection Class EA, Toronto and Region Conservation Authority, 2005

Keating Channel EA Study, Metropolitan Toronto and Region Conservation Authority, 1983

Toronto Waterfront Revitalization Task Force Report, 2000

Unlocking the Port Lands: Directions for the Future, City of Toronto, 1999

Waterfront Scan & Environmental Improvement Strategy Study, City of Toronto, 2003

Sustainability Framework, Toronto Waterfront Revitalization Corporation, 2005

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3.1 Problem Assessment

The configuration of the existing Don Mouth was engineered primarily for the purposes of achieving transportation efficiency and to create additional land for port and other urban uses. This has resulted in the current condition with lands vulnerable to flooding, a serious reduction in ecological function of the river mouth, and an area that is neither aesthetically pleasing nor available for public use and enjoyment. However, the Don Mouth area is currently used for river management including dredging and debris removal and some areas are thus restricted for public safety. Thus, the problems to be addressed by the project are the lack of ecological function at the river mouth, vulnerability to flood risk, and the derelict nature of this area of the Port Lands.

3.1.1 Ecologically Dysfunctional River Mouth

Naturalization of the Don Mouth is not a new idea, but rather embraces the concept initiated by the Task Force to Bring Back the Don in 1991. In 1991 the Task Force in their document *Bringing Back the Don* examined several concepts for restoring some of the river mouth functions lost when the river was straightened and Ashbridges Bay marsh filled in between the late 1800's and the early 1900's to create the Port Lands. Their objectives for improving the Don Mouth included enhancement of the river mouth, creation of aquatic habitat, improvement of terrestrial habitats, encouraging appropriate uses of the valley, improving access to the valley and co-ordination of planning policy for the valley. This plan, while groundbreaking at the time, lacked an in-depth technical evaluation of the options and did not consider property limitations.

The report and the groundswell of public interest behind the lower Don soon led to the formation of the Don Watershed Regeneration Task Force, later to become the Don Watershed Regeneration Council. Their report, *Forty Steps to a New Don* (Don Watershed Task Force 1994) continued this call for naturalization of the Don Mouth, as did ensuing report cards which serve as a call to action (Don Watershed Regeneration Council 1997, 2000 and 2003).

Since that time, a number of others have embraced this idea of a naturalized Don Mouth and incorporated the opportunity into planning activities for the Central Waterfront, the West Don Lands, and the Port Lands enscorning this notion firmly into plans for the waterfront (*Central Waterfront Secondary Plan*, City of Toronto, 2003). The naturalization of the Don Mouth with associated flood protection is considered one of four priority projects for the TWRC in the first five-year plan.

Other efforts are ongoing within the Don watershed to improve the quality of water entering the river (*Wet Weather Flow Management Master Plan*, City of Toronto, 2003; *Don Watershed Plan*, TRCA in progress), reduce the quantity of water entering the river during storm events, improve aquatic and terrestrial habitats, protect source water resources, and provide linkages throughout the watershed that will be necessary to support a new river mouth.

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3.1.2 Flood Risk Vulnerability

Flood protection for the lower Don River is a key component of Toronto's waterfront revitalization. The Don River was identified in 1980 by TRCA as the number one priority location requiring flood protection within TRCA's jurisdiction. This ranking was based upon an assessment of the extent of area flooded under the Regulatory Flood, and the risk to life and property that it represented. The ***Keating Channel EA Study*** (1983) identified three different Spill Zones for the Lower Don River (**see Figure 3-1**). The Keating Channel EA assessed the need for and consequences of dredging the Keating Channel. The study concluded that to avoid an additional increase in flood risk to the surrounding areas of the Lower Don River, annual maintenance dredging and disposal activities were necessary to offset sediment infilling of the Keating Channel. This would also serve to reduce the volume of contaminated sediment in the channel. The Keating Channel EA still governs dredging activities in the channel and disposal of the dredged material. However, some areas are still at risk of flooding despite dredging Keating Channel on a regular basis. These zones are: Spill Zone 1 – the Port Lands, Spill Zone 2 – east of the Don River and north of Lakeshore Boulevard, and Spill Zone 3 – the lands west of the Don River. The Lower Don River West Remedial Flood Protection Project and its associated EA address the area of Spill Zone 3. The DMNP addresses the alleviation of flood risk for Spill Zones 1 and 2.

Computer models have been used to define the extent of the area of land that is anticipated to be flooded if a storm the size of Hurricane Hazel (the Regulatory Flood) were to occur over the Don watershed. In the area of the Don Mouth (south of the CN Kingston Subdivision rail bridge), the Regulatory Floodplain would cover approximately 230 hectares (ha) of land in the Port Lands, south and east of the Don River, and an area east of the Don River north of Lakeshore Boulevard. Factors that influence the extent of flooding within this area and that need to be taken into account include:

- Several low-lying structures (road and rail) crossing the Don River that impede higher flows;
- An absence of a confining valley around the Don River allows for extensive flooding;
- A ninety degree corner where the Don River enters the Keating Channel resulting in increased flood water levels overflowing the southeast wall of the Keating Channel;
- A wide range of water levels in Lake Ontario (across seasons and years);
- Heavy sediment deposition in the Keating Channel that increases flood risk if not managed;
- and
- Ice jams during the winter and spring, and debris jams throughout the year, which could exacerbate flooding to adjacent areas.

All of these issues must be managed if the flood risk is to be managed and eliminated.

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3.1.3 Derelict Waterfront

The Port Lands area of the Toronto Waterfront has a long history of industrial and port use and includes extensive areas of underused and vacant lands left behind by past industrial, shipping and railway uses. These past uses have left a legacy of problems and issues, such as contaminated land, that have rendered the area undesirable from a development perspective. The ***Toronto Waterfront Revitalization Task Force Report*** (Fung Report) was released in March 2000 and outlined a plan to revitalize the Toronto waterfront. For the Central Waterfront and the Port Lands in particular, this plan focussed on the opportunity created by large areas of mostly public-owned, underused or vacant land adjacent to the city core and intermodal transportation and highway links and endowed with a location between the central core, Lake Ontario, and existing parks and natural areas. The Central Waterfront Secondary Plan has set the direction and created the planning context for the revitalization efforts. This project needs to recognize these issues and opportunities and contribute to the revitalization of the Port Lands.

3.2 Opportunity Assessment

3.2.1 A Naturalized River Mouth

The naturalization of the river mouth is yet another step toward revitalizing and enhancing the quality and function of the Don River from its headwaters to its mouth. It represents an opportunity to naturalize the area of the Don River valley as it connects to Lake Ontario and upstream reaches, and create an area that is welcoming and aesthetically pleasing to the public while improving natural river mouth functions.

The naturalization of the Don Mouth will provide opportunities to establish a floodplain within the lower reaches and Don Mouth which has the opportunity to, over the long-term:

- Improve aquatic and terrestrial ecological functions and provide enhanced linkages to upstream habitats;
- Address sediment deposition, debris and ice jams;
- Accommodate changes in precipitation, water flow, and Lake Ontario water levels resulting from climate change;
- Enhance recreation opportunities and local aesthetics;
- Provide natural habitat, pedestrian and bicycle trail linkages between Lake Ontario and the Don watershed;
- Manage significant sources of soil and groundwater pollution from lands adjacent to the Keating Channel; and
- Enhance the low flow habitat conditions within the Don Narrows while not increasing flood risk elsewhere. The Don Narrows extends from Riverdale Park to the north side of the CN Railway and refers to the river channel in this area.

Regulatory Flood Spill Zones for the Lower Don River



Figure 3-1



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3.2.2 Flood Protection

The Flood Protection Area is the area currently at risk during the Regulatory Flood for which flood protection is being sought. The Flood Protection Area encompasses lands in Spill Zones 1 and 2 as defined by TRCA. The Spill Zones were defined based on the extent of area flooded under the Regulatory Flood and the risk to life and property that this flooding represents. The DMNP is an opportunity to alleviate the flood risk over the 230 ha area in Spill Zones 1 and 2 south and east of the Don Mouth without exacerbating flood risk elsewhere.

4. EA Framework

Two separate EA approvals are required to implement a preferred design for the DMNP. The first EA process will meet the provincial EA requirements through an Individual EA, as defined in the *EA Act*. The second EA process will address federal concerns using an Environmental Screening process as defined by the *CEAA*. The development of both reports will be coordinated to streamline the process and ensure that all requirements for both levels of government are addressed.

4.1 The Ontario *EA Act*

The project will be conducted in two stages. Stage one involves the development and approval of the Individual EA ToR and carrying out the preliminary baseline studies for the impact assessment area. The purpose of the ToR is to describe how the EA will be carried out and to seek public and agency comment before proceeding. The submission and approval of this ToR document will complete Stage one. Stage two will involve the preparation and submission for approval of the Individual EA in accordance of the EA ToR.

The Keating Channel EA (1983) applies to current dredging activities in the channel and sediment disposal. Any requirement for changes to this existing EA will need to be reviewed in light of the preferred alternative selected for the DMNP.

TRCA plans to proceed with this ToR in a manner set out in section 6(2)(a) of the *EA Act*. The EA will be prepared in accordance with the requirements of subsection 6.1(2) of the *EA Act* as set out below. TRCA will, when prepared and publicly reviewed, submit the EA for review and approval by the Minister containing the following:

- Purpose of the undertaking;
- Description of the undertaking;
- Rationale for the undertaking;

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- Description of the environment potentially affected directly or indirectly;
- Description and statement of rationale and assessment of “alternatives to” and “alternative methods”;
- Effects that will be caused or might reasonably be expected to be caused to the environment by the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking;
- Description of mitigation;
- Advantages and disadvantages of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking;
- Consultation during the EA;
- A monitoring plan; and
- Any maps or documents as required under the EAA.

Other EA approvals, likely pursuant to the Municipal Class EA may be required for changes to infrastructure that will be required to accommodate this project. Other provincial approvals which may be required to implement the preferred undertaking include those pursuant to the: *Ontario Water Resources Act*, *Planning Act*, *Lakes and Rivers Improvement Act*, and Ontario Regulation 153/04 (Records of Site Condition Regulation) under the *Environmental Protection Act*. All other approvals required for the DMNP to proceed will be outlined in the EA. This project will comply with or be consistent with provincial and federal legislation which applies to the project.

4.2 The Canadian Environmental Assessment Act

Stage two activities of the project will also include the preparation and approval of the *CEAA* Environmental Screening Report. Under the *CEAA*, federal authorities are required to determine whether projects that they are considering supporting are likely to cause significant negative environmental effects despite efforts to minimize these effects. It is anticipated that federal funding for this project will be provided through the Treasury Board of Canada Secretariat (TBS). Thus, this project will trigger an Environmental Screening with TBS acting as the lead Responsible Authority (RA) and the Canadian Environmental Assessment Agency acting to coordinate federal inputs. A number of other federal authorities may participate as RAs or as Expert Agencies due to:

- Anticipated changes in fish habitat (Fisheries and Oceans Canada).
- The implementation of flood protection works and floodway construction along the Don River that may impact existing infrastructure such as pipelines and railroads (National Energy Board and/or the Canada Transportation Agency).
- The possible relocation or decommissioning of Port Authority Activities during the implementation of naturalization activities (Toronto Port Authority).
- The possible impacts on migratory birds, species at risk, air quality, water levels and flows, surface water quality, and toxins management (Environment Canada).

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- The effects on the project due to climate change and connectivity between the project and the initiatives of the Toronto and Region Remedial Action Plan (Environment Canada).
- Anticipated changes to navigation on the Don River (Transport Canada).
- The potential realignment of the river would require authorization under the *Canada Marine Act* Regulations (Toronto Port Authority).

Other expert federal departments may be identified which will provide advice through the *CEAA* process. The Canadian Environmental Assessment Agency will initiate a coordinated review under the Federal Coordination Regulations during which time federal involvement will be further clarified.

Under *CEAA* the following information needs to be provided in a screening

- A description of the existing environment;
- Any change that the project may cause in the environment including: land, water, air, organic and inorganic matter, living organisms, and the interaction of natural systems;
- Any effects that the project may cause to a listed wildlife species, its critical habitat or residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*;
- The effects of a project-related environmental change on: health and socio-economic conditions; physical and cultural heritage; the current use of lands and resources for traditional purposes by aboriginal persons; and any structure, site or thing that is of historical, archaeological, palaeontological or architectural significance;
- Any such project change or effect occurring both within or outside Canada;
- All environmental effects that may result from the various phases of the project (construction, operation, modification, abandonment, and decommissioning);
- The environmental effects of accidents and malfunctions;
- The effects of the environment on the project (including effects due to climate change);
- The cumulative environmental effects of this project that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- The likelihood of significant adverse environmental effects;
- The need for and requirements of a follow-up program;
- Comments from the public obtained in accordance with *CEAA*;
- Any measures to be taken that would mitigate identified environmental effects; and
- Any other matter that the responsible authority deems to be necessary including those required for a comprehensive study, mediation or panel.

4.3 Coordinated EA Process

There are two aspects with respect to EA coordination to be considered for the DMNP. First, with respect to this project the requirements of the provincial and federal EA legislation need to be coordinated to

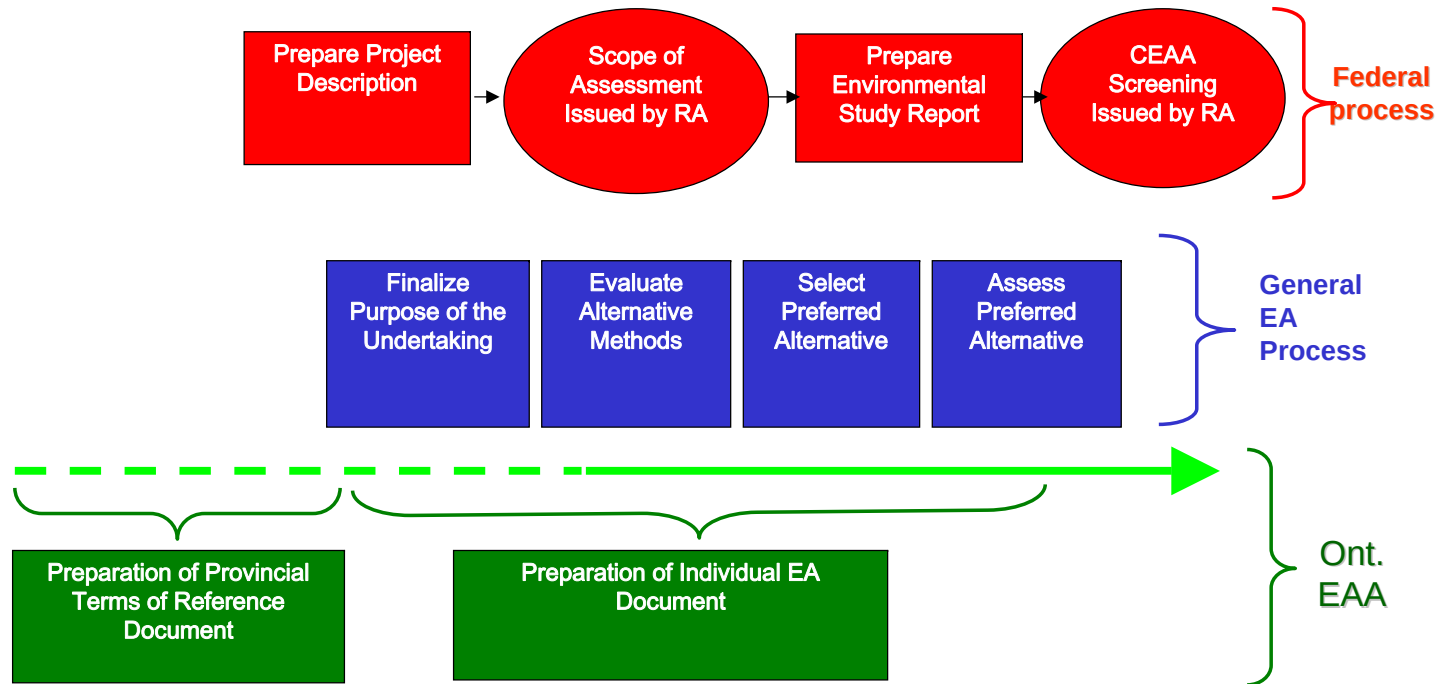
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minimize overlap. Second, this EA must be coordinated with other project EAs being undertaken in or having influence on the Toronto waterfront area.

The TRCA intends to work in a coordinated way with provincial and federal governments to fulfill both sets of EA requirements. It is recognized that ongoing dialogue on the information requirements of both levels of government is required throughout the EA process as more is learned about the specifics of the undertaking. The intent is to create one body of work pertaining to alternative identification, analysis and evaluation, and effects assessment that meets all of the information needs of both the federal and provincial governments. To the extent practical, federal/provincial information requirements regarding potential factors to be assessed in the context of this study have been integrated. Project findings will be documented in formats agreed to by relevant agencies and appropriate for distribution and review. The Canadian Environmental Assessment Agency provides “Advice to Proponents at the Terms of Reference Stage for a Coordinated Federal/Provincial Environmental Assessment Process”; which is included in the Consultation Report. **Figure 4-1** illustrates the coordinated EA process.

As a result of the activities of the TWRC and others, there are numerous EAs currently on-going throughout the Port Lands specifically and the waterfront in general. The intent is for the DMNP EA to coordinate with and inform these other EAs. This list includes the existing Keating Channel EA, the Lower Don River West (LDRW) Remedial Flood Protection Class EA, the West Don Lands Master Plan EA, the Queen’s Quay extension EA, Lakeshore/Cherry Street EA's, GO Transit Lakeshore East Corridor Rail Expansion Study and East Train Storage Planning EA, and the TTC transit EA’s for the West Don Lands, East Bayfront and Port Lands. The DMNP also intends to coordinate with and inform other planning initiatives that will impact this EA such as Commissioner’s Park, Toronto Film Studios’ Filmport Project, and the Port Lands Implementation Strategy.

Coordinated EA Process



Coordinated EA Process

Figure 4-1



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5. Description and Rationale for the Proposed Undertaking

5.1 Project Goal and Objectives

As discussed in Section 3.1, the need to naturalize the Don Mouth has been well documented and recognized in planning documents for the revitalized Toronto waterfront. The DMNP has been recognized as one of the four priority projects for the TWRC in its effort to revitalize the waterfront and as such has been incorporated in all of the revitalization planning to date. The development of the project goal and objectives has drawn on the history of revitalization efforts for the Don River and recent planning efforts and public consultation with respect to the planning and revitalization of Toronto's waterfront. In addition, public consultation specifically focussed on the project goal and objective has been carried out as part of the development of this ToR.

Since 1997, through other efforts to revitalize the Don River watershed and the Toronto waterfront the need and desire for a naturalized Don Mouth has been reiterated and discussed. The need to remove flood risk in the Port Lands and South Riverdale areas was identified in the early 1980's and it has become apparent that the naturalization of the Don Mouth and the removal of flood risk in the Port Lands are integrated projects. Over time the desire for this project has evolved into conceptual ideas of what a naturalized Don Mouth should be. Various stakeholders have different images of what a naturalized Don Mouth should include. This varies from a pristine wetland, to community gardens, to recreational space, and to waterside cafes and shops. In order to manage expectations of what the DMNP should be and do both in the context of the Don River watershed and a revitalized Toronto waterfront, the project goal and objectives have been developed in consultation with stakeholders to guide the development and evaluation of alternative concepts for this multi-faceted project. The goal and objectives will be utilized during the EA to further describe the undertaking.

The **goal** is a statement of the overriding purpose of the DMNP. The project **objectives** are statements of what the project is trying to achieve once implemented.

The **goal** of the DMNP is to establish and sustain the form, features, and functions of a natural river mouth within the context of a revitalized City environment while providing flood protection up to the Regulatory Flood.

The **objectives** are to:

1. Naturalize and rehabilitate the mouth of the Don River utilizing an ecosystem based approach
2. Provide flood protection for Spill Zones 1 and 2

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3. Maintain the provision for navigation and existing flood protection through sediment, debris and ice management
4. Integrate existing infrastructure functions that could not be reasonably moved or removed (including road, rails, utilities, trails, and power)
5. Encourage additional compatible recreation, cultural heritage opportunities and public/handicap accessibility
6. Contribute to the revitalization and sustainability of the waterfront and coordinate with and inform other planning and development efforts and associated certain and foreseeable infrastructure
7. Design and implement this project in a manner consistent with TWRC's Sustainability Framework and applicable provincial legislation.

The **first objective** considers the naturalization of the Don Mouth and Lower Don River. The naturalization of the Don Mouth will not only improve the aquatic and terrestrial habitat conditions at the mouth of the river, but will provide for the creation of a more natural form of river mouth which will over the long term do the following:

- Improve aquatic and terrestrial habitat;
- Improve linkages between habitats;
- Enhance biodiversity of aquatic and terrestrial species;
- Accommodate future changes in the environment;
- Enhance, to the extent possible, the low flow habitat conditions within the Don Narrows, (the Don Narrows extends from Riverdale Park to the north side of the CN Railway); and
- Address the public's risk of exposure to West Nile Virus.

The **first objective** recognizes that there are existing natural areas within the Port Lands, such as Environmentally Sensitive Area (ESA) 130, Cherry Beach, and Tommy Thompson Park; and other proposed land uses, such as Commissioner's Park, the Don Greenway and Lake Ontario Park which will have a naturalized component. The DMNP should link with these projects and provide complementary habitats for desired species.

The **second objective** is that all options must effectively address flooding issues in the Port Lands and not exacerbate flooding in other areas, while meeting the first objective. The principle areas of concern for flooding are Spill Zone 1 – the Port Lands and Spill Zone 2 – east of the Don River and north of Lakeshore Boulevard. As noted in Section 3.1, the removal of flood risk protects a number of people and businesses in already established communities and will remove the need to provide individual flood protection in all future development in the Port Lands area.

The **third objective** requires the management of sediment, debris and ice to ensure that the project supports required navigation, natural function, and existing or future flood protection works within the

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Lower Don River. Sediment and debris may be managed through project design to a certain degree however, it is recognized that some form of active management such as dredging and debris removal will be necessary given the significant quantities of sediment and debris that are delivered to the Don Mouth. In addition, the project must address the effects of future hydrologic changes as a consequence of climate change. These river management activities have costs associated with them that must be considered.

The **fourth objective** recognizes that the DMNP exists within a complex City environment. The river itself is crossed with a variety of existing infrastructure including surface roads, a highway, high voltage transmission lines, a Port Authority works yard, trails, rail lines, and various buried utilities. As the Port Lands area is being revitalized there is infrastructure that is being planned to service new development. The project must integrate with all existing and proposed infrastructure that could not be reasonably moved or removed.

The **fifth objective** recognizes that the project can encourage and contribute to the development of compatible recreation, cultural, and heritage opportunities as well as provide for public and handicap accessibility to the Don Mouth. Recreation opportunities include walking and cycling trails and water based recreation including recreational boating and fishing. In particular, the project should improve pedestrian and bicycle trail linkages between Lake Ontario and the Don watershed. There are some opportunities to include appreciation of the industrial heritage of the area in the project. The DMNP will also improve local aesthetics.

The **sixth objective** recognizes that there has been 10 to 15 years of planning for the revitalization of the Toronto waterfront and the DMNP is only one project in an array of many projects going forward. The ongoing and historic planning has sought to recognize the needs of multiple stakeholders including, but not necessarily limited to, the following: businesses, residential communities, recreational users (land and water), environmental interest groups, the Port Authority, Toronto Economic Development Corporation (TEDCO), and private land owners. Many of the needs of these groups are conflicting and must be balanced within the limited Port Lands area. The public has been consulted on all of the planning for the Waterfront and Port Lands. Extensive consultation among the various stakeholders resulted in the Central Waterfront Secondary Plan, which expresses the City's vision on the future of the Port Lands. In addition, it is the regulatory document that dictates future land use in the area. The DMNP must coordinate with other planning and development efforts for the revitalization and sustainability of the waterfront, including the Toronto and Region Remedial Action Plan, and associated foreseeable infrastructure in order to ensure that the best outcome is achieved for all projects.

The **seventh objective** addresses the sustainability of the project and its compliance with applicable provincial and federal legislation. The TWRC has developed a Sustainability Framework which seeks to ensure that sustainability principles are integrated into all facets of waterfront revitalization management, operations and decision-making. The Sustainability Framework identifies concrete short, medium and long-term actions that will lead to remediated brownfields, reduced energy consumption, the construction

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of green buildings, improved air and water quality, expanded public transit and diverse, vibrant downtown communities. The framework also addresses long term operating and maintenance costs to ensure that the projects are economically sustainable.

5.2 Study Areas

Two specific study areas have been defined for this project. The **Project Study Area** is the area available for the development of naturalization and flood protection alternatives. The **Impact Assessment Study Area** is a broader area in which direct and indirect effects of the DMNP construction and operation may be felt. Both study areas will be confirmed during the EA.

The **Project Study Area** consists of two parts: the Don Mouth from the railway bridge to the harbour/lake and lands adjacent to the Lower Don River, and the Don Narrows from the railway bridge north to Riverdale Park. Within the Don Narrows, only improvements within the river channel are to be considered. The **Project Study Area (Figure 5-1)** is the area in which project components will be constructed and operated and the area in which we are proposing alternatives. Therefore, it is in this area that the majority of the direct effects will occur.

The **Project Study Area** is constrained by fixed infrastructure such as roads and rail lines, the result of the Lower Don River West Remedial Flood Protection Project, and opportunities for reuse of the land as identified by other planning studies and initiatives. The lands east of Parliament Street and south of Lakeshore Blvd., commonly known as the “Home Depot lands”, and the small quay at the entrance to the Keating Channel have been included to ensure that there is sufficient area to look at options for the Don Mouth. A 300 metre wide corridor immediately west of and parallel to the Don Roadway, which includes the area for the proposed Don Greenway, connects the Keating Channel to the Ship Channel to address previously identified alignments for the Don River. As the consideration of alternatives and environmental effects proceeds during the EA and as opportunities are identified to cooperate with other planning initiatives, adjustments may be made to the Study Area. Some typical activities within the project area required to undertake this project likely resulting in effects include: excavation of soil and sediment, construction of wetland and new river mouth, management of contaminated soil, temporary closure of navigation, road and trail access, loss of existing habitat and planting to create new habitats.

The **Impact Assessment Study Area (Figure 5-2)** encompasses the entire Inner Harbour, Outer Harbour, Toronto Islands, Ashbridges Bay, Tommy Thompson Park and central waterfront areas. This study area includes the near shore waters of Lake Ontario that may be affected by the project and existing operations and infrastructure such as rail lines, rail yards, road networks, utilities, port operations and other existing and proposed uses that might be affected by the DMNP or affect the design and operation of the DMNP. It reflects a broader area that may be affected directly, indirectly and cumulatively by construction and operation of project components particularly with respect to the extent of a sediment plume, recreational linkages, property values, connectivity with other area planning, and wildlife linkages. This study area will be defined in greater detail in the EA once the alternatives and their effects are being assessed.

Project Study Area

Legend

-  Discharge Points
-  Start of River Mouth
-  Do Nothing Alignment

Figure 5-1

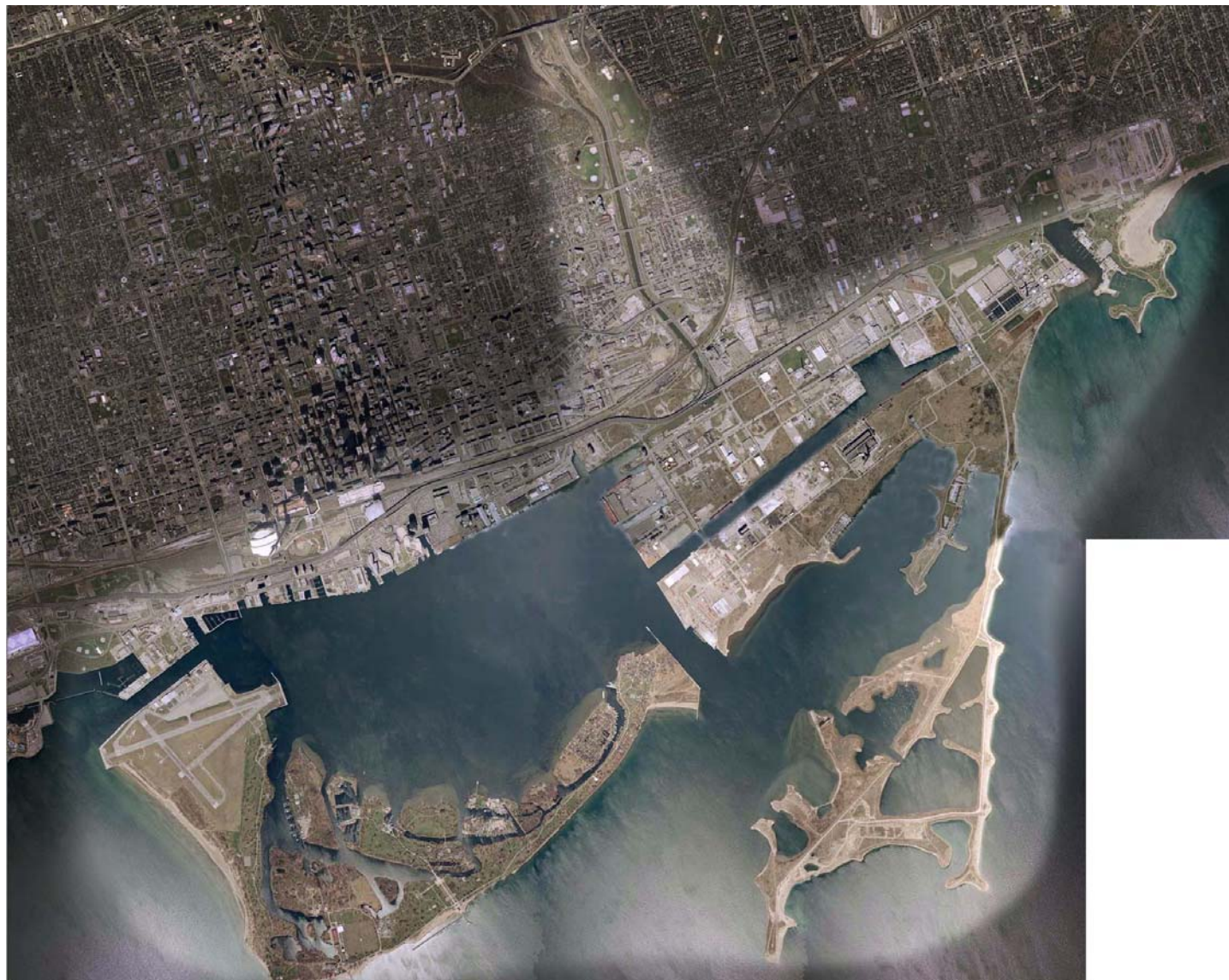


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Impact Assessment Study Area

Figure 5-2



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5.3 Temporal Boundaries

The temporal boundaries for the project which will be used as the basis for the effects assessment are as follows:

- **Detailed Design, Permit Approvals, Land Acquisition, and Construction/Implementation** – 2 to 5 years (target start date 2008)
- **Establishment** – defined as the timeframe for monitoring and adaptive management of the naturalization project (approximately the first 15 years after construction)
- **Post-Establishment Monitoring** – timeframe for monitoring and operational management (sediment, ice and debris) to identify further intervention if naturalized system cannot manage on its own (onwards from the establishment phase)

5.4 Description and Rationale for Undertaking

The description and rationale for the preferred undertaking will be developed and provided in the EA as required under the EA Act. It will relate to the achievement of the project goal and objectives and reflect the advantages and disadvantages of the alternatives.

6. Description, Evaluation and Rationale for “Alternatives to” the Undertaking

The *EA Act* requires the identification and evaluation of “alternatives to” the undertaking or functionally different ways of solving the identified problem or opportunity including the consideration of the “do nothing” alternative. In this case the “do nothing” alternative is being used as a base case to assess the reasonable range of alternatives available for study. As noted previously, this project is being evaluated to naturalize the Don River mouth, provide for flood protection and revitalization of the Waterfront. In a traditional EA context, the “alternatives to” for a project of this kind would have been do nothing or implement the project. Given the critical role of the discharge point in the nature of the proposed study and its objectives, the only reasonable set of “alternatives to” can be defined around alternative discharge points for the river to Lake Ontario as reflected by the general area in which the Don Mouth may be located. These discharge points represent different locations in which a river mouth may be constructed. The discharge points also represent functionally different ways to solve the problem or opportunity in that they each provide a different range of opportunities for naturalization of the river mouth, flood protection and revitalization of the waterfront. As such, for the purpose of this EA the TRCA considers these to be “alternatives to”. The discharge points identified for consideration at the EA stage are representative of

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those put forward in the past. They have been refined and additional discharge points have been considered based on public comment received during the preparation of the ToR. A background report, ***(Rationale for the Consideration of Alternative Discharge Points*** Gartner Lee/SENES, 2006), **Appendix A** of the ToR, provides detailed information and documents the rationale for consideration of the discharge points suggested by the public. Those discharge points or “alternatives to” with the greatest potential to meet the project goal and objectives were identified to commence the consideration of “alternatives” during the EA stage. The rationale for the proposed alternative discharge points shall also be documented in the EA. All alternatives consider in-channel modifications between the rail bridge and the southern limit of Riverdale Park; these modifications are common to all alternatives.

The following alternative discharge points or “alternatives to” have been identified as those with the greatest potential to meet the project goal and objectives and thus will be the primary alternative discharge points considered during the EA stage:

- i. Do nothing (for EA comparison purposes only)
- ii. Discharge to the Inner Harbour
- iii. Discharge through the Port Lands to the Ship Channel
- iv. Two discharge points (primary and regional flood overflow) to the Inner Harbour and discharge through the Port Lands to the Ship Channel

In order to describe the discharge points or alternative Don Mouth locations in detail there is a need to develop the potential conceptual designs for the Don Mouth. The discharge points are the basis for and will be developed into “alternative methods” which will then be evaluated to determine a preferred undertaking (as defined in Section 7). Thus, comparing “alternative methods” and selecting a preferred undertaking also results in the selection of a preferred “alternative to”.

Other potential alternative discharge points with lower potential, previously identified in Appendix A, will only be considered further during the EA if a reasonable range of “alternative methods” cannot be identified utilizing the alternatives indicated above. Should other discharge points be identified during the EA, they will be considered by TRCA if they are considered reasonable and if they have good potential to meet project objectives.

7. Description, Evaluation and Rationale for “Alternative Methods” of Carrying Out the Undertaking

“Alternative methods” or potential concept designs are different ways of doing the same activity or, in other words, functionally similar ways of implementing or designing the river mouth or discharge points described above.

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Different conceptual designs will be identified by layering different forms and features required to create the functions of a natural river mouth for each discharge point being considered in the EA. The identification of different conceptual designs gives prime consideration to the characteristics of the river and the ability to fulfill the naturalization and flood protection objectives in the context of the river conditions. Other project objectives will be addressed as subsequent refinements or layers applied to the conceptual designs or “alternative methods”.

Scenarios for the naturalization of the Don River mouth could be endlessly diverse. All scenarios are a combination of river mouth forms and features to create river mouth functions. **Forms** refer to the shape, size, and physical setting (in terms of soils, physiography, subsurface geology, topography, river channel width, and water depth). **Features** refer to components, both organic and inorganic, that are characteristic of a natural area (e.g. species of wildlife, plants and vegetation communities, etc.). **Functions** are processes, products or services that are created by combining forms and features (e.g. wildlife habitat, sediment storage, flood conveyance). The upstream reaches of the river and the watershed, the shoreline uses, and the lake also influence the river mouth and its functions. Some desirable river mouth functions are:

- a) Sediment storage/transport
- b) Linkages with upstream/downstream
- c) Flood conveyance
- d) Aquatic/terrestrial habitat (reproduction, nursery, feeding, refuge)
- e) Nutrient/energy storage and export
- f) Biomass export (forage fish, sport fish, birds)
- g) Debris capture

The identification and evaluation of the different conceptual designs or “alternative methods” will be carried out in a five-step process illustrated and described in **Figure 7-1**. This process can be thought of as layering of information to develop a comprehensive design. As the identification and evaluation progresses the level of detail in the data used will also increase. The layers of information and where they fit in the five step process is as follows:

Step 1 Develop Long List - Identify forms and features which combine to deliver individual functions that meet the Naturalization and Flood Protection Objectives for the project.

The starting point for the development of different conceptual designs is an understanding of the characteristics of the river and what the river is carrying. This includes the:

- volume of water,
- flow rate during normal conditions and flood conditions and frequency up to and including the regional storm events,

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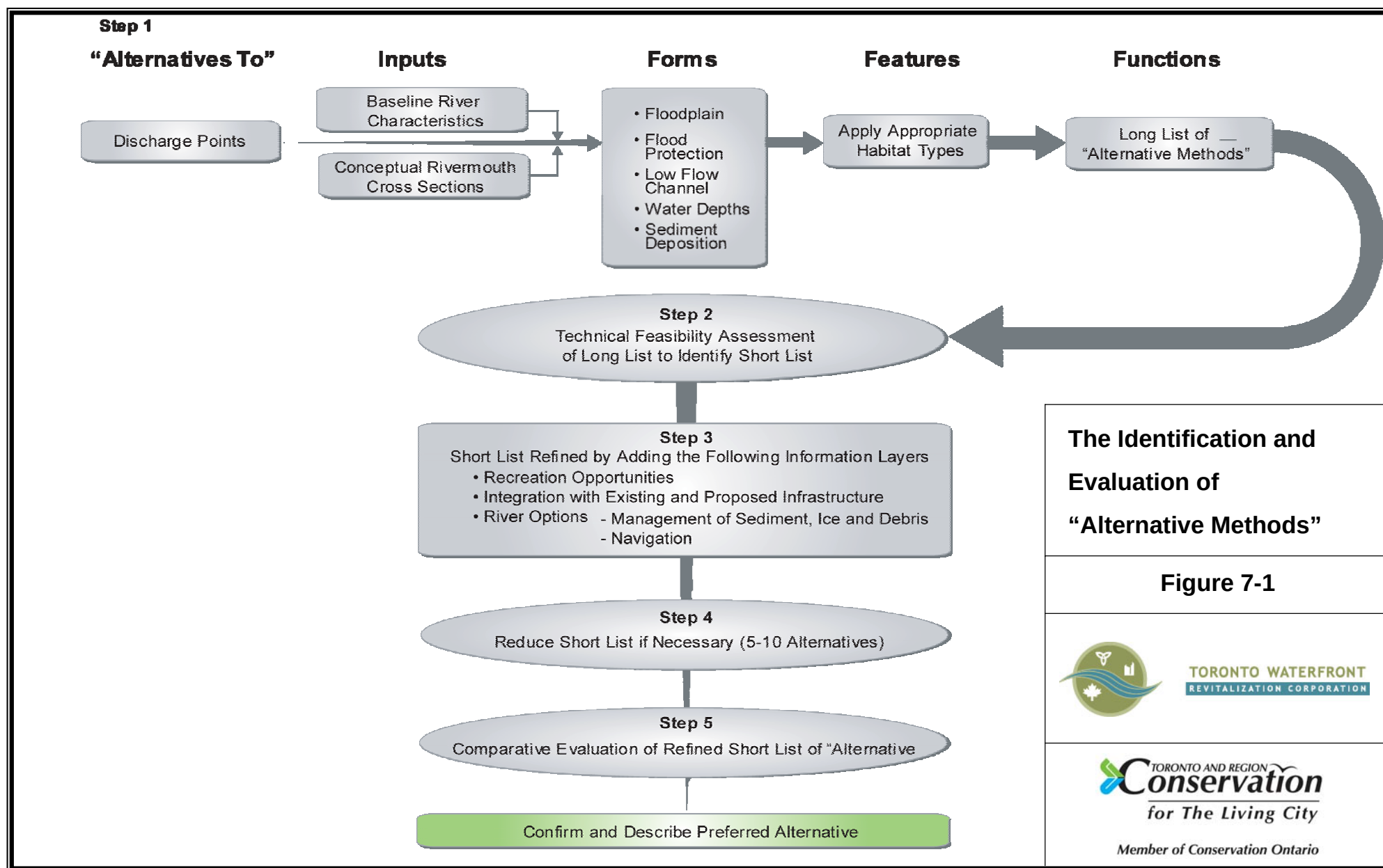
- water quality, and
- sediment quantity.

These river characteristics are the basis or first layer on which the different conceptual designs are created. These river characteristics are expected to change over time in response to changes in the watershed and changes to the environment, such as climate change. Section 8.1 provides additional information on existing river characteristics for the Lower Don River. **Appendix B** contains a table which outlines the work to be undertaken during the EA to provide a comprehensive understanding of the environment potentially affected by the DMNP and meet the data requirements for impact prediction.

Once river characteristics are established forms and features must be identified which can work with the river characteristics to create river mouth functions.

Given the diversity of river mouth forms and features, “reference sites” for river mouth and near shore river environments in the Great Lakes Basin south of the Canadian Shield will be identified to provide inspiration for naturalizing the Don Mouth. These reference sites will represent broadly defined assemblages of forms and features which create functioning river mouths.

Information obtained from the reference sites in combination with knowledge of the characteristics of the Don Mouth will allow for the identification of generic river mouth concepts, in the form of cross-sections, (forms) and habitats (features) appropriate for our consideration.



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The first task will be to identify a footprint for the river mouth for each alternative discharge point under consideration. This will provide the length and width of the river mouth. The three generic river mouth cross-sections or conceptual forms will then be applied to the river mouth footprint.

The baseline river characteristics: water quality, quantity (e.g., return periods ranging up to the regional flood), gradient options and lake level fluctuation will be applied to these footprint specific cross-sections to determine water levels and flood protection or grading requirements. These tasks will conclude with the development of discharge point specific cross-sections that show the widths and depths of channels, water levels for various return storms, location of sediment deposition and maximum flood protection levels. These cross-sections will define the form of each alternative method.

Three generic conceptual forms were identified that could be considered individually throughout the length of the river mouth or in combination with other concepts in different reaches of the river mouth. These cross-sections are referred to as:

1. a created wetland river channel/floodplain with riparian vegetation;
2. a natural river channel/wetland; and
3. a lacustrine environment with associated wetland.

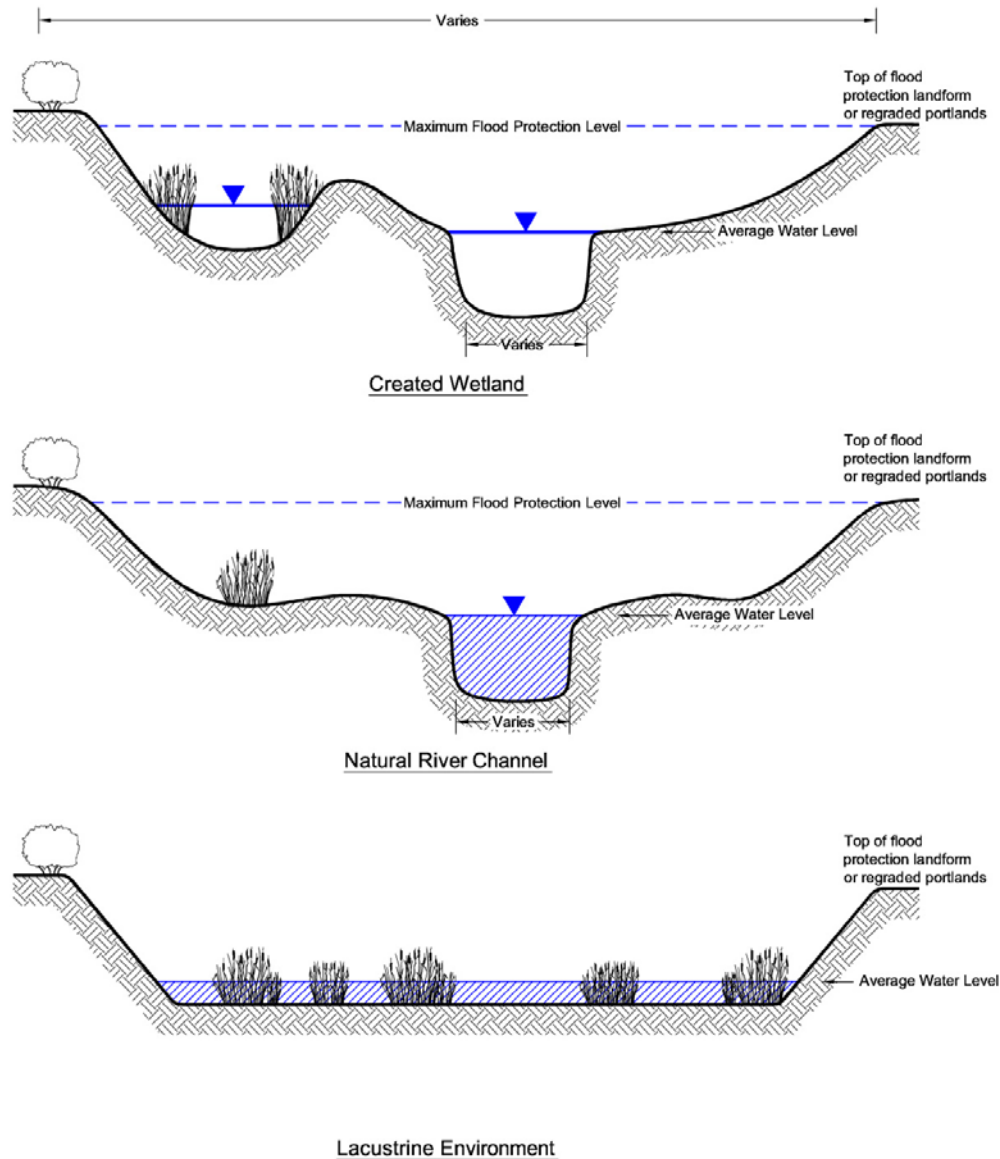
Figure 7-2 shows these cross-sections in graphical form and they are discussed in the next three paragraphs. These cross-sections will be further developed and refined in the EA.

The ***created wetland concept form*** separates the wetland from the main flow of the river much of the time to allow it to thrive without exposure to the degraded water quality of the Don River. This concept also excludes carp and other invasive species, to the extent possible, from the wetland. The created wetland is analogous to creating a dyked wetland.

The ***natural river channel/wetland concept form*** allows the riparian vegetation to be fully exposed and connected to the water and sediment load from the Don River depending on flow and lake level. This concept will allow a small confined delta (i.e. the deposition zone for sediment load from the Don) to form where the river mouth meets the lake. Some sediment will also be deposited in the floodplain zone.

The ***lacustrine environment concept form*** allows the flow to be very diffuse in the channel. The depth of water level will vary significantly based on lake levels. The wetland will be dependent on the average water level (Keating Channel is an extreme example of this concept – too deep for vegetation). The depositional zone will be diffuse throughout the wetland.

Generic Cross-Sections



NOTE: ELEVATION OF CHANNEL BED MAY VARY THROUGH LENGTH OF RIVER BED.

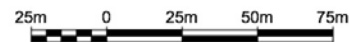


Figure 7-2



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The next task adds appropriate features to the river mouth. The primary features are the habitats. Habitats appropriate to each footprint-specific cross-section will be applied. Habitat types and quantities will be applied such that thresholds for performance related to size needed to support expected or target species of wildlife and the creation of habitat linkages can be met. Adding these features to the previously developed river mouth forms will allow for the development of a number of alternative methods (or ways to implement) a river mouth for each discharge point.

Vegetation communities are the basis for habitats appropriate for application to the river mouth and include: upland forest and/or thicket; treed swamp; thicket swamp; meadow marsh; emergent marsh; and submergent marsh. These habitat features will be applied to the river mouth forms.

The final task will be a description of the varying functions (from a naturalization and flood protection perspective) created by the alternative methods developed. This list of alternative discharge points and their varying individual functions will form the long list of alternative methods.

Step 2 Technical Feasibility Assessment of Long List

This long list of different conceptual designs (“alternative methods”) will be subjected to a technical feasibility assessment to identify the alternatives that have the greatest ability to meet the naturalization and flood protection objectives. This will ensure that the available time and effort for the project is focused on the alternatives with the highest potential to meet the project goal and objectives. The technical feasibility assessment will eliminate from further consideration those conceptual designs or “alternative methods” that do not work technically.

A preliminary list of criteria from which feasibility assessment criteria will be derived is included in **Appendix C**. Feasibility assessment criteria will be developed from this list to address the ability of each alternative to achieve the naturalization and flood protection objectives given the existing and future river characteristics. The ability of each alternative to convey the regional flood and provide flood protection to Spill Zones 1 and 2 will be determined. The alternative methods that remain following this step will form the Short List and will be subject to further evaluation.

Step 3 Refinement of Short List

The remaining short list of conceptual designs or “alternative methods” will be refined or developed in more detail by addressing the other project objectives related to operational management, integration with infrastructure, and recreation and cultural opportunities. The short list of “alternative methods” will:

- a) be refined based on the results of the technical feasibility assessment;
- b) address issues related to operational management;

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- c) address issues related to existing infrastructure replacement, relocation or abandonment;
- d) address opportunities to influence planned infrastructure and uses through other EA's/planning processes underway such that the DMNP is improved to the extent possible;
- e) identify opportunities for recreation; and
- f) identify opportunities to enhance cultural and heritage resources.

Step 4 Reduce Short List (if necessary)

This step will apply only if there are more than 10 “alternative methods” on the short list. Using a set of criteria similar to that used in the next step (Step 5), but at a lesser level of detail, the alternative methods will be compared. Where necessary, mitigative measures to prevent, avoid, or minimize environmental effects will be identified. The number of “alternative methods” remaining should be in the 5-10 range.

Step 5 Short List to Preferred Alternative

Comparative evaluation criteria which address all project objectives and all technical disciplines will be used to evaluate each conceptual design or “alternative method”, ultimately resulting in the selection of the preferred alternative (alternative to and alternative method). For all conceptual designs being evaluated mitigative measures to lessen negative effects or enhance positive benefits will be identified. A formal evaluation method will be used to establish an order of preference between alternatives. The method will use evaluation criteria and indicators to structure information and facilitate the comparison of alternatives against each other. The evaluation criteria and indicators will be developed to reflect project objectives. The public's (including agencies and other stakeholders) valuation of the objectives and criteria will be incorporated into the evaluation. The comparison of alternatives will require the explicit consideration of trade offs thereby keeping more desirable attributes over those less desirable. A discussion of the advantages and disadvantages to the environment of alternatives will be provided based on net effects. A preliminary list of criteria from which evaluation criteria will be derived is included in **Appendix C**.

8. Description of Environment Potentially Affected by the Proposed Undertaking

The purpose of this chapter is to present a brief overview of the environment potentially affected by the proposed undertaking so that the reader has some familiarity with issues to be addressed and the complexity of the environment likely to be affected by the project. All aspects of the environment will be inventoried and described in more detail during the EA. The chapter is divided into four different sections

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which capture different components of the environment. The first section describes the river characteristics which will influence the development of “alternative methods.” This information has been separated from the remaining description of the natural environment such that some emphasis can be given to those aspects of the existing environment that are driving the DMNP. The second section describes the remaining components of the natural environment; geology, soils and groundwater, fish and fish habitat, terrestrial vegetation and wildlife. The third section describes socio-economic components; land use, air quality and noise, archaeology, aboriginal interests, and built heritage. The final section addresses components related to sustainability and cost. The focus is on providing an understanding of the current costs of managing the river mouth and maintaining existing functions.

The following list of documents has been consulted in developing the description of the environment. More documents will be reviewed and referred to in preparing the description of the environment likely to be affected during the EA.

Key background documents:

Bringing Back the Don, Task Force to Bring Back the Don, 1991
Forty Steps to a New Don, Don Watershed Task Force, 1994
Central Waterfront Secondary Plan, City of Toronto, 2003
Draft Port Lands Implementation Strategy, TWRC, in preparation
Wet Weather Flow Management Master Plan, Marshall Macklin Monaghan, 2003
Keating Channel EA Study, Metropolitan Toronto and Region Conservation Authority, 1983
Review of Sediment Conditions in the Lower Don River/Keating Channel and the Inner Harbour, Golder Associates Ltd., 2002
Environmental Audit of the Port Industrial Lands and East Bayfront, 1991
Keating Channel Sediment Quality – Memorandum, CH2M Hill, November 23, 2005
Keating Channel Dredging and Debris Management – Site Walk Materials, Toronto Port Authority, July 26, 2005
Lower Don River West Remedial Flood Protection Class EA, Toronto and Region Conservation Authority, 2005
A History of Flooding in the Metropolitan Toronto and Region Watersheds, Metropolitan Toronto and Region Conservation Authority, Staff Report, 1986.
Don River Hydrology Update, Marshall Macklin Monaghan, 2004.
LDRW EA Aquatic Investigations Report, TRCA, 2004
LDRW EA Terrestrial Natural Heritage Report, TRCA, 2004
LDRW EA Cultural Heritage Study, Archaeological Service Inc., 2004

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8.1 River Characteristics

The Don River is 38 km long and ends at the Keating Channel, where it flows into the Inner Harbour (also known as Toronto Bay), and Lake Ontario. The entire watershed area or drainage basin of the Don River is 360 square kilometres. The headwaters of the Don arise from the Oak Ridges Moraine, but the majority of the river drains through the Peel Plain, a relatively impervious till. The river also crosses the Iroquois Beach, the former shoreline of glacial Lake Iroquois, which is very sandy and results in both recharge and discharge of groundwater.

There are two main branches – the East and West Don, as well as several larger tributaries including German Mills Creek, Wilket Creek and Taylor Massey Creek.

Pre-settlement, the river was sustained by underground aquifers in its headwaters, as well as by rainfall and snowmelt that infiltrated the soils of the region's vast forests. Today, the terrain of the Don's valley and stream corridors still varies considerably, but many streams have been truncated, buried, dammed, rerouted, straightened, and lined with wood, steel, rock, or concrete in the process of building the city and suburbs. Ponds and marshes have been filled and the widespread removal of vegetation and the disturbance and compaction of soils have occurred. These actions have severely altered the character, habitats, and hydrogeologic functioning of the watershed.

The Don River from Riverdale Park downstream to the Keating Channel has been significantly altered as a result of adjacent land uses. The river is relatively straight, lacks grade, and has no natural connectivity to the floodplain. The river in this area is approximately 3.0 km in length, averages 40 m in width and, depending upon lake levels, is approximately 1 m – 2 m in depth.

The Keating Channel is approximately 0.7 km in length, varies between 40 m – 100 m in width and has depths between 2 and 5 m depending upon lake levels and degree of sediment accumulation in the channel. The channel banks consist of vertical steel sheet pile walls.

Flooding

Flows in the Don River have changed significantly since pre-settlement times. The watershed is now over 80% urbanized, and approximately 70% of this area was developed before stormwater management controls were a requirement of development. Discharge in the Don River increases rapidly due to precipitation resulting in turbid, sediment-laden water, erosion of the stream banks, and scouring and deposition, smothering in-stream habitat features.

Through the process of City building, the lower portions of the Don River have undergone straightening, extension and redirection culminating with the development of the Port Lands and the Keating Channel.

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Under normal flow conditions, the influence of water levels from Lake Ontario extends up the river to beyond Gerrard Street. As a consequence, the hydrology of the river is complex and affected by the Lake throughout the study area.

Flooding within the area of the Lower Don River has a written history dating back to the mid-1870s, beginning first with ice jams and late fall flooding. As recently as August of 2005, flooding occurred within this area resulting from a series of severe thunderstorms. While most of the flooding which has occurred over the last few decades has resulted in mainly nuisance type flooding, the area is subject to extensive flooding under the Regulatory Flood.

Guidelines from the Province of Ontario define the Regulatory Flood as the flood that would result from the rainfall from Hurricane Hazel (the maximum historical storm event within the region) centred over the Don watershed. The Regulatory Flood, calculated to be in the range of 1,700 m³/s near the Don Mouth, would result in flood levels which exceed the capacity of the river channel and spill to the extent that the valley allows. The extent of flooding defines the limits of the Regulatory Floodplain.

South of Queen Street, confining valley walls give way to an area of low-lying, largely unconfined lakefill where the historical Don Mouth once existed. Flooding within this area is further influenced by the elevated embankment of CNR's Kingston Subdivision, forcing floodwaters further west and restricting flows under the embankment through existing north-south road underpasses (e.g. Spill Zone 3 (**Figure 3-1**)). Floodwaters also exit east of the Don River under the Kingston Subdivision at the Eastern Avenue underpass. Flood protection works recently approved to be implemented upstream will restrict flood waters from spilling west through Spill Zone 3, but will continue to enter lands south of the Kingston Subdivision through the Eastern Avenue underpass.

South of the Kingston Subdivision, floodwaters under the Regulatory Flood continue to exceed channel capacity, spilling south of the Keating Channel and east of the Don River. These waters combine with flows originating through the Eastern Avenue underpass of the Kingston Subdivision, and merge to form Spill Zones 1 and 2 (**Figure 3-1**).

Immediately north of the Kingston Subdivision, floodwater depths are calculated to be in excess of three metres at the peak flood depth. Given the relatively uniform topography and the widespread extent of flooding south of the Kingston Subdivision, depths are for the most part less than 1.0 m with some areas, primarily associated with the Unilever site and along Lakeshore Boulevard East, exceeding 1.0 m.

Water Quality

The water quality of the Lower Don River has been characterized in studies such as the Don River Watershed Wet Weather Flow Management Master Plan and the Toronto Area Watershed Management Study. The Don River often exceeds the Provincial Water Quality Objectives (PWQO) for many

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substances, especially during wet weather. Contaminants routinely found in wet weather samples include *E.coli* bacteria, heavy metals (e.g. zinc, copper), suspended sediment, nutrients, and seasonally, chlorides and pesticides. The major sources of these pollutants are runoff from roads and residential, industrial and commercial land uses through the storm sewers, the effluent of the North Toronto Sewage Treatment Plant and combined sewer overflows along Taylor/Massey Creek and the Lower Don.

Bacterial concentrations of 6,000 and 50,000 organisms per 100 ml in the Don have been documented in both dry and wet weather, respectively – 60 to 500 times higher than guidelines for recreational swimming.

Suspended sediment may be derived from watershed sources carried to the river, such as from construction sites, from winter de-icing and from instream erosion. The concentration is generally low during the dry periods (no rainfall) but increases greatly during rainstorm events. When the sediment carried in suspension arrives at the lower Don, the velocity changes result in it being dropped out of suspension and deposited on the bed of the river or in the Keating Channel. More information on sediment quality and quantity is provided in the next section.

Given the poor water circulation and the numerous storm sewer outfalls (SSOs) and combined sewer overflows (CSOs) entering the Ship Channel water, sediment and physical habitat conditions are seriously degraded in the Ship Channel compared to the Inner Harbour and Outer Harbour. The current biogeochemical conditions within the Ship Channel will be described as part of the EA.

Sediment Quality and Quantity

The concentration of suspended sediment in the Lower Don River is highly dependent on flow conditions in the river. The concentration is generally low during the dry periods (no rainfall) but increases greatly during rainstorm events. The average concentration of suspended sediment is about 80 mg/l below mean flow ($< 4 \text{ m}^3/\text{s}$) and 500 mg/l above mean flow ($\geq 4 \text{ m}^3/\text{s}$). Low to average flow conditions ($< 4 \text{ m}^3/\text{s}$) that occur more than 80% of the time only transport 10% of the total sediment load, whereas flow conditions that are exceeded approximately 1% of the time carry 35% of the sediment load. The historic high concentration on record is 8,600 mg/l, which was measured on September 11, 1986. The grain size of suspended sediment at the Todmorden gauge ranges from 0.002 mm (coarse clay) to 0.5 mm (medium sand). On average, the composition of suspended sediment is: 20% sand, 60% silt, and 20% clay. The median grain size of suspended sediment is medium silt. Conversely, the majority of sediment deposited in the lower Don River and Keating Channel is sand with a gradation to silty sand as one moves westward along the Keating Channel suggesting that most of the silts and clays continue on into the Inner Harbour. The historical sediment data was collected at an Environment Canada (EC) gauge at Todmorden Mills (Pottery Road at Bayview Avenue).

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Approximately 35,000 m³/year (approximately 59,500 tonnes/year) of sediment is deposited in, and dredged from, the Keating Channel. The sediment must be removed from the channel to prevent increased levels of flooding related to a reduction in the depth of the channel. This sediment is then deposited into the Tommy Thompson Park Containment Cells, as per the Keating Channel EA (1983). Approximately \$500,000 per year is spent dredging sediment from the Keating Channel and disposing of it at Tommy Thompson Park. The Toronto Port Authority funds 1/3 of the cost while the City of Toronto and the TRCA funds the remaining 2/3. Debris is regularly removed from the Keating Channel using two control booms. About 400 tonnes of debris are removed from the Keating Channel annually and the Port Authority funds the entire cost of debris removal. Sediment and debris removal is currently carried out from the Toronto Port Authority marine works yard in the Keating Channel.

8.2 The Natural Environment

Geology, Soils and Groundwater

Geology

The Georgian Bay Formation underlies the port area. The formation consists of blue-grey shale with minor siltstone, sandstone and limestone interbeds. Upward in section, pale grey to cream, fossiliferous limestone and dolostone interbeds become more common. The Georgian Bay Formation is interpreted to represent a shallowing upward, storm-dominated shelf succession.

Outcrops of the Georgian Bay Formation are common along watercourses west of the study area, notably the Humber River, Mimico Creek, Etobicoke Creek and the Credit River. Construction excavations in downtown Toronto commonly intersect and expose this formation. The Georgian Bay Formation is part of a Palaeozoic sequence of Late Ordovician age. The Georgian Bay Formation is underlain by the Blue Mountain Formation. This entire sequence dips (slopes) gently to the south at 5 m per km.

Soils

The majority of the lands that make up the Port Lands were reclaimed by filling Ashbridges Bay between the Don Mouth on the mainland and Fisherman's Island to the south between the late 1800's and early 1900's. Reclamation reportedly proceeded with the use of hydraulically and mechanically moved harbour floor dredge spoils. Numerous different sources of fill, including dredge spoils, excavated native soils from borrow pits and construction sites, construction debris, residual stockpiled materials and so forth were used in the reclamation of the Port Lands. The composition of the fill overburden within the Port Lands may thus vary considerably over short distances. The use of excavated materials from urban construction sites and reported instances of municipal solid and other waste dumping in some sectors of the Port Lands indicates that non-soil inclusions including metal fragments, fireplace ash, clinker, coal,

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timber, brick, asphalt and concrete rubble and glass, as well as soil affected by environmental contaminants from off-site sources, may be present.

The land created by the reclamation scheme under the Toronto Harbour Commission (THC) Waterfront Development Eastern Section Plan in 1912 for the construction of what was then known as the Toronto Harbour Industrial District called for public and commercial wharfage and marketable land for promoting and servicing industrial development; however, heavy industrial usage commenced during the First World War and has predominated to date. The THC continued to construct and operate port facilities including Keating Channel, extensions to the Ship Channel, quays on the East Bay Front including the Queen Elizabeth Docks and ultimately the container terminal at the Eastern Gap, and to fill land, initially for mixed purposes, but ultimately, due to the strategic requirements for industrialization during the First and Second World Wars, for heavy industrial/commercial uses.

Soil and Groundwater Quality

Certain contaminants such as heavy metals are naturally occurring in the environment. Others, such as the petroleum hydrocarbon-related BTEX (benzene, toluene, ethylbenzene and xylenes) parameters are ubiquitous in the urban environment and are found at trace levels in urban and rural settings alike. Other man-made contaminants are less mobile in the environment and are found as a result of deposition in place or short migration paths through soil or groundwater.

Past activities that have contributed to degraded soil and groundwater conditions within the project area include but are not limited to oil refineries, pipelines, coal storage, scrap yards, transportation infrastructure, and shipping. As a result, the presence of contamination is usually determined by comparing the levels of contaminants present in the environment versus a set of standards for comparison. In Ontario, these standards have progressed from the Decommissioning Guidelines (1989) to the Guideline for Use at Contaminated Sites in Ontario (1996) to the current Regulation 153/04 (2004).

The current regulation defines sites according to water potability, depth of cleanup and sensitivity. Given the nature of past and present land uses in the Toronto Port Lands as well as the nature of the material used to fill the former Ashbridges Bay, all fill material, (and in some cases the upper native peat and silts) and groundwater within 30 m of the Don River Banks or the shores of Toronto Harbour would be classified as contaminated when compared to relevant standards.

Fish and Fish Habitat

The Don River from Riverdale Park, downstream to the Keating Channel, has been significantly altered – it was straightened in the late 1800s to early 1900's and as a result is relatively straight with vertical banks typically comprised of sheet pile, and has no natural connectivity to the floodplain. It is flanked on either side by roads and rail lines. Only scattered trees line the banks. The river in this area averages 40

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m in width and, depending upon lake levels, is approximately 1 m – 2 m in depth, with some pools scoured around instream structures. The river from Riverdale Park downstream is low gradient and sediments are typically fine sand.

The Keating Channel varies between 40 m – 100 m in width and has depths between 2 and 5 m depending upon lake levels and degree of sediment accumulation in the channel. Sediments are generally fine sand grading to silt with westward progression. The channel banks consist of vertical sheet pile walls and few overhanging trees. Regular dredging of the channel disturbs the bed and along with turbid water severely limits the potential for submerged aquatic vegetation to take hold.

In general terms, the habitat in the Lower Don and Keating Channel is very simple; lacking complexity in substrate, flow diversity, vegetation or other instream structure.

Only 19 species of fish have been found in the Lower Don, 14 species in the Keating Channel, and 11 in the Inner Harbour turning basin, despite extensive fish sampling efforts by TRCA. This is considerably lower than the 25-27 species typically found in other river mouths along the north shore of Lake Ontario. Over 88% of the fish community collected in the Lower Don was comprised of white sucker, emerald shiner and spottail shiner, all common species with low sensitivity. The remaining fish community included northern pike, carp, Chinook salmon, white bass, gizzard shad, walleye, rainbow smelt and alewife, species which move between the lake and the river. The Keating Channel was dominated by alewife and emerald shiner, species which move between the mouth and the lake. Neither species will reside year round in the mouth.

Sport fish such as pike, walleye and salmon are being found in increasing numbers in the Lower Don over the last few years but habitat conditions are limiting for spawning or rearing of young fish.

Fish community diversity and abundance is depressed in the lower Don River and in particular the Keating Channel as compared to other rivers found along the north shore of Lake Ontario.

Notwithstanding the low species diversity, fish catches suggest that the Don River is capable of supporting a walleye population; water quality and poor habitat conditions are factors that limit the population. The presence of northern pike is likely due to favourable water temperatures, as well as the presence of high populations of forage fish such as white suckers and shiners.

Poor water quality and sediment conditions are also having a negative effect on the benthic community. Benthic invertebrate samples taken in the Don River in 2003 showed that the benthic community is similar in composition and diversity to that found in the highly degraded Keating Channel, although taxa richness is somewhat higher in the Don River than in the Keating Channel (17 species as compared to 12). *Oligochaeta* is dominant of the taxa in the Don River, while *Chironomidae* and *Insecta* are more prevalent in the Keating Channel. The slightly higher taxa richness in the Don River can likely be

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attributed to an absence of dredging. Differences in dissolved oxygen, channel depth, and substrate composition also likely play a role in producing the slightly less degraded habitat conditions for invertebrates in the Lower Don River.

In its current condition, the Don Mouth provides poor aquatic linkages between Lake Ontario and the upper reaches of the river.

Terrestrial Vegetation

Within the Lower Don River area (from Bloor Street to the Keating Channel), approximately 19% of the land is wooded (almost all of which are located along the valley slopes of the Don River, north of Gerrard Street, which coincides with the northern limits of the **Impact Study Area**), 0.7% is wetland, approximately 1% of the area contains successional vegetation and approximately 11% is meadow. The remaining land (68%) is manicured or developed land. From a natural heritage perspective, the areas of manicured land represent potential restoration sites or provide opportunities to direct future development away from natural features. Approximately 41 vegetation communities have been identified in the Lower Don River area, including five vegetation communities of regional concern:

- three remnant oak communities on the “Hogsback” ridge near Castle Frank ranging from forest through woodland to savannah;
- a Duckweed Mixed Shallow Aquatic community resulting from successful restoration at the Riverdale Farm, and
- a Flat-Stemmed Bluegrass - Forb Sand Barren that developed on gravelly fill northwest of the Keating Channel.

In addition, nine other communities are of concern in the urban context. These include upland forests, wetlands, and a riverbank sand bar.

In the Lower Don area, 324 established vascular plant species have been identified, of which 56 are considered species of conservation concern by TRCA either regionally or within the urban context. Eighteen of the 56 are considered to be regionally rare.

These vegetation communities, as well as the flora and fauna in the area are subject to very high pressures resulting from the surrounding urban land uses. Generally, the species located in the lower Don are fairly common.

Wildlife

There are 16 wildlife species that are considered to be species of urban concern by TRCA, including groundhog, beaver, spotted sandpiper, great-crested flycatcher, eastern garter snake, green frog and

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midland painted turtle. All species are expected to decline in the future with redevelopment of urban lands if the naturalization project were not to proceed.

Currently, the natural cover in the Lower Don provides foraging and resting opportunities for thousands of migratory songbirds, but breeding bird diversity is low. Previous studies have identified about 30 different species of birds (including fly-overs) over both spring and fall survey periods from the Keating Channel location. The total number of birds counted was 157. Based on the fieldwork undertaken by the TRCA, there are no known federal species at risk within the study area.

The habitat patches in the Lower Don are important to north-south movement of wildlife because they provide a link between the Leslie Street Spit and the natural areas north of the city. In addition, the Lower Don River, as well as the Keating Channel, represents a link between the Tommy Thompson Park Important Bird Area (IBA) to the south and the continuous Don Valley Corridor to the north.

The migratory and stopover utilization data from the spring shows sharper peaks of diversity and abundance due to the rushed nature of migration than in the fall where there is a more gradual increase in numbers. Point count data from the Lower Don sites reveal that species abundance and diversity are positively correlated to habitat size and density in both spring and fall migration windows.

In its current condition, the Don Mouth provides poor terrestrial linkages between ESA 130 and Tommy Thompson Park at Lake Ontario and the upper reaches of the Don watershed and Oak Ridges Moraine.

8.3 Socio-economic Environment

Land Use

The current land use in the study area is mostly commercial/industrial with a scattering of recreational land uses along the waterfront including a number of marinas and recreational boating clubs, the recently revitalized Cherry Beach, the Docks Entertainment Complex and the Martin Goodman Trail. The project area is currently bisected by rail links to area businesses and industries, the Don Rail Yard (and vehicular access to it), water and sewer utilities, gas pipelines, hydro transmission lines, and roads. It is home to many important uses including the Port of Toronto, Ashbridges Bay Sewage Treatment Plant, Toronto Hydro, the Paper Board Plant, businesses related to the film industry, and City of Toronto recycling facilities. Planned and proposed uses in the area include the Toronto Film Studio Filmport development, and the concrete campus.

The City of Toronto prepared the ***Central Waterfront Secondary Plan*** called ***Making Waves*** which sets out planning policies for the Central Waterfront area including the Port Lands. The City is implementing this plan through the development of Precinct Plans for key revitalization areas and the development of the ***Port Lands Implementation Strategy***. **Figure 8-1** illustrates the land use designations for the Central

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Waterfront area from the Secondary Plan. This plan creates a framework for waterfront planning for the next several years. **Figure 8-2**, from the Draft Port Lands Implementation Strategy (Public Forum #3, July 2005), illustrates the proposed location of roads and other infrastructure. Given the changing landscape of the Central Waterfront both the existing and proposed uses must be given consideration.

Section 3.1 outlines in greater detail the planning that has been undertaken with respect to the revitalization of the waterfront and identifies additional sources of this information. The TWRC continues to work toward Waterfront revitalization through the planning and implementation of many different projects of which the DMNP is one of the four priority projects.

Port Use

The Port of Toronto is a key land use within the Port Lands area. The Toronto Port Authority was established for the purpose of operating the Port of Toronto and has legislated responsibility for all its port activities related to shipping, navigation, transportation of passengers and goods, and the handling and storage of cargo. It owns and operates the Toronto City Centre Airport, the Port of Toronto (consisting of Marine Terminal 51 and Warehouse 52), the Outer Harbour Marina and the Works Department. The Port Authority is responsible for regulating navigation within the harbour, and for providing public works and public services to enhance the safety and efficiency of all commercial and recreational marine and aviation operating within the harbour limits of the Port of Toronto. Bulk shipments of asphalt, salt, aggregates and sugar pass through the port. In 1999, an economic impact study indicated that the Port employs an equivalent of 1500 full time jobs in cargo, tourism and recreation which represents an estimated regional economic impact of \$422 million annually.

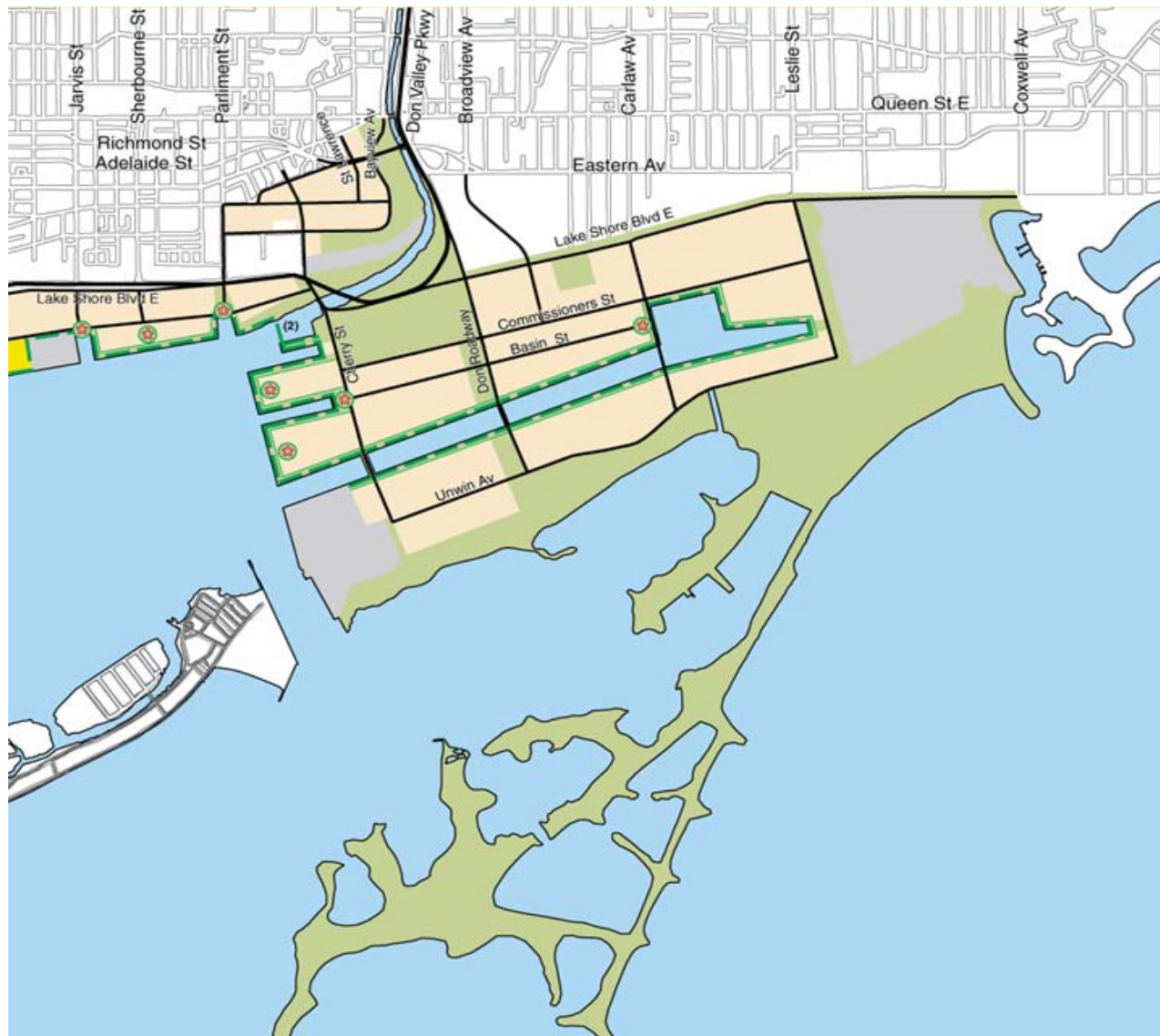
Recreation

There are a number of recreational opportunities within the Port Lands area. Several sailing and recreational boating clubs are located along the shores of the Port Lands. There are approximately 9 sailing clubs and the Toronto Dragon Boat Club located on the Outer Harbour and the Bayside Rowing club accessing the Ship Channel. Additional boating clubs are located in Ashbridges Bay, the Inner Harbour and the Toronto Islands. Almost all of these clubs operate from May to October. The Inner Harbour and nearshore areas of Lake Ontario are heavily used by recreational boaters throughout this operating season.

Extending across the length of the Port Lands, the Martin Goodman Trail is used by walkers, cyclists and rollerbladers. It provides linkages to the waterfront trail and other recreational areas such as Tommy Thompson Park, used for walking, cycling and nature appreciation, and Cherry Beach.

Central Waterfront Secondary Plan

Land Use Plan



MAP INDEX

- PARKS AND OPEN SPACE AREAS (1) (3)
- REGENERATION AREAS (3)
- EXISTING USE AREAS (3)

Figure 8-1



TORONTO WATERFRONT
REVITALIZATION CORPORATION

TORONTO AND REGION
Conservation
for The Living City

Member of Conservation Ontario

Draft Port Lands Implementation Strategy



Figure 8-2



**TORONTO WATERFRONT
REVITALIZATION CORPORATION**

**TORONTO AND REGION
Conservation**
for The Living City

Member of Conservation Ontario

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Air Quality and Noise

The study area includes lands in close proximity to the Gardner Expressway, the Don Valley Parkway, the Don Rail Yard, and several rail lines. Consequently elevated levels of carbon dioxide (CO₂) and total suspended particulate (TSP) can be expected in the study area due to proximity to these major transportation corridors. Other pollutants in the area likely include SO_x (oxides of sulphur) and NO_x (oxides of nitrogen). Similarly, the study area is dominated by the noise and movement of vehicles along the Gardner Expressway, the Don Valley Parkway, and several rail lines, as well as a general urban hum. In general, the study area can perhaps be described as a “Class 1 Area” according to the Ontario Model Municipal Control Noise By-Law, that is, “...an area with an acoustical environment typical of a major population center where the background sound level is dominated by the urban hum”.

Archaeology

The vicinity of the Lower Don River has undergone enormous changes over the past 150 years, since the first European settlement began in earnest in the 1790s. Portions of this area would originally have had a very high potential for Aboriginal sites of the pre-contact and post-contact periods. However, it is the consensus of both previous and current studies that there is little or no potential for such sites to survive owing to the extent of 19th Century and later landscaping and construction impacts. Extensive lake filling and dredging activities were the primary disturbances for 480 Lakeshore Road and the Port Lands.

Past TRCA and TWRC studies determined that the study area for the Don Mouth Naturalization Project has a relatively high inherent archaeological potential for remains relating to the late 18th and 19th Century historic evolution of York, later Toronto. The upper reaches of that part of the river valley area include the locations of early historic wharves and factories.

Currently, two (2) archaeological sites are registered with the Ontario Ministry of Culture. These are the Parliament site of the 1797 to 1824 first and second parliament buildings of Upper Canada; and the Gooderham and Worts Windmill site. Both locations are west of the Lower Don River. Two additional properties with the potential for historical significance were identified by TRCA archaeologists at 605 and 611 King Street East, both of which are located well north of the naturalization project area.

Aboriginal Interests

Although the lands in the study area are not currently used by First Nations for traditional purposes, or otherwise, the area is included as part of a larger land claim (Toronto Purchase) by the Mississaugas of the New Credit First Nation. It is also noteworthy that the Mississaugas of the New Credit were never approached to sign the 1923 Williams Treaty covering areas in Toronto east to the Bay of Quinte because they had relocated in 1847 to lands adjacent to the Six Nations Reserve southeast of Brantford. Since New Credit First Nation was not a signatory to the 1923 Williams Treaty they may still retain Aboriginal title

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and interests in the lands covered by the Williams Treaty. New Credit First Nation and the Ministry of Natural Resources are currently in a joint project to resolve the issues involving the 1923 Williams Treaty.

Built Heritage

The Lower Don Valley has a long history, which dates from the time of the Aboriginal Mississauga peoples and continued through the French and British regimes with extensive documentation and maps dating from the 18th Century onwards. Human use and intervention of the Don River began almost immediately once the lands in the Township were taken up, with infilling, tree removal, farming, and the establishment of mills and industry significantly altering the flow of the Don early in the 19th Century. By the second quarter of the 19th Century, the Don was being used as an open sewer, a practice which continued into the early 20th Century. The late 19th Century saw the land use become almost entirely industrial, and after the extensive flooding which occurred in the second half of the 19th Century that destroyed businesses and bridges, lobbying began for improvements to the Don Valley.

Prior to 2004, there were over sixty-one individual built heritage features located within an area that stretches north from the existing edge of Toronto's Inner Harbour to the Queen Street bridge on the west side of the Don River; the north side of Eastern Avenue on the east side of the river; and from the York Street Slip on the west end, to Ashbridges Bay on the east end. In the intervening time some demolition of structures has occurred. The City of Toronto's current Inventory of Heritage Properties identified a total of 31 designated properties and 21 listed structures or landscapes within this area. Additionally, other properties in the area were considered by the City in 2005 for inclusion in the Inventory. The results of this analysis will be confirmed during the EA stage of the DMNP.

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9. Consultation

9.1 Consultation on the Terms of Reference

Throughout the development of this ToR, the public and relevant agencies have been consulted. Consultation mechanisms have included: public forums, working sessions, the Community Liaison Committee, the Technical Advisory Committee, newsletters, a site walk, website information, and direct one-on-one meetings with agencies, stakeholders, members of the public and First Nations. The public and agencies have provided input which is reflected in the ToR. A full account of consultation activities with respect to the ToR has been included as a Background Document.

9.2 Consultation Plan for the EA

Public and agency consultation are key components of the environmental assessment (EA) process. This section outlines the key components of the consultation plan for the DMNP EA.

9.2.1 Guiding Principles for the Consultation

The principles listed in the table below will guide consultation activities during the EA. As required by the Toronto Waterfront Revitalization Corporation (TWRC)*, these principles are consistent with the TWRC Public Consultation and Participation Strategy, a copy of which can be found on the TWRC website (www.towaterfront.ca).

Accountability:	The TRCA will provide accurate, timely information to the public and demonstrate how it has made use of feedback and advice received.
Clarity:	There will be well-defined objectives for the consultation. The roles and responsibilities of citizens, stakeholders, and partners (in providing input), and the TRCA (for making decisions for which they are accountable) will be clear.
Timeliness:	Consultation will begin as early as possible in the process to allow a greater range of opportunities and issues to emerge and to raise the chances of successful issue resolution and implementation.
Openness and Inclusivity:	Participation will be open to any member of the public or other stakeholder groups that want to be involved. All citizens will have equal rights regarding access to information and participation in the process.
Flexibility:	The consultation process will accommodate the needs of participants taking into account their different areas of expertise, geographic distribution, and availability.
Coordination:	Initiatives to inform, request feedback from and consult citizens regarding this project will be coordinated with other TRCA and TWRC waterfront revitalization consultation activities. This will enhance knowledge management, ensure coherence in decision-making, avoid duplication and reduce the risk of “consultation fatigue” among citizens and stakeholders. Coordination efforts will not reduce the capacity of the TRCA or TWRC to pursue innovation and ensure flexibility.
Evaluation:	The TRCA will evaluate its performance in providing information, conducting consultation and engaging citizens in order to adapt to new requirements and changing conditions for the DMNP project.
Commitment:	There will be leadership and strong commitment from the TRCA and its consultant team to these principles.

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**TWRC's Development Plan & Business Strategy for the Revitalization of Toronto's Waterfront indicates that these principles will be reflected in all of the consultations conducted by the eligible recipients for individual projects. The TRCA is the eligible recipient for the Don Mouth Naturalization and Port Lands Flood Protection project.*

9.2.2 Consultation Objectives

The following objectives will guide consultation activities:

1. To create/increase awareness of the DMNP, including why it is an important part of revitalizing Toronto's waterfront.
2. To meet the consultation requirements for the individual provincial EA and federal screening.
3. To provide opportunities to participate in the consultation process to anyone interested.
4. To provide clear, concise information about the project that is easy for the public to understand.
5. To create opportunities for meaningful two-way exchange of information between the TRCA, their consultants, and consultation participants.
6. To produce accurate and comprehensive reports that capture all feedback and advice received.
7. To thoroughly review and consider all feedback and advice received through the consultation, and demonstrate how that feedback and advice has influenced the project.
8. To provide an opportunity for professionals in the areas of wetland restoration, urban greenspace design, hydraulic engineering, etc. to devise options for design excellence.

9.2.3 Consultation Mechanisms

The following consultation mechanisms will be used to share information with the public and other stakeholders, and to seek their feedback and advice:

- Public forums (involves the review of display boards and opportunities to provide verbal and written feedback) and meetings (involves interactive communication between the project team and the public)
- Site walks
- Community Liaison Committee (CLC)
- Technical Advisory Committee (TAC)
- Project newsletters, flyers, website updates
- Newspaper ads and articles
- Individual meetings, as required
- Specialist design workshop

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9.2.4 Key Stakeholders

Key stakeholders to be targeted through the consultation include representatives from:

- The local and surrounding communities (including the general public, representatives of resident associations, and organizations with recreational, environmental, cultural, heritage, business, and other interests)
- Toronto Waterfront Revitalization Corporation (TWRC)
- Three levels of government (City of Toronto, Province of Ontario, Government of Canada)
- Property owners and leasees within and adjacent to the project study areas
- Toronto Port Authority
- Public transit
- Railways
- Utilities
- First Nations

9.2.5 First Nations

Consultations must be undertaken with those First Nations communities with current or traditional use of the project area. The Mississaugas of New Credit would be the community of interest for this project. As part of the development of the ToR the community was contacted and the Mississaugas have a representative on the CLC. Consultation with the community will continue as part of the EA as required through meetings, presentations, and invitations to other consultation events. Other First Nations groups also receive DMNP materials and their input is being actively sought.

9.2.6 Consultation Focus

The consultation process will be designed to directly inform decision-making at key points in the EA process. At each of these points the public and agencies will have the opportunity to provide their feedback and advice through a number of the consultation mechanisms.

Key decision points in the DMNP EA process are:

1. **PROJECT INITIATION.** Project initiation, including review of EA Terms of Reference
2. **LONG LIST.** Public review and feedback on the proposed long list of “Alternative Methods”, as well as the criteria proposed to evaluate the long list, and the relative importance of the criteria (*Outcome: Long list of “Alternative Methods” that leads to a short list of technically “do-able” “Alternative Methods” that meet the Naturalization and Flood Protection Objectives*)

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3. **SHORT LIST.** Public review and feedback on the proposed short list of “Alternative Methods”, as well as the criteria proposed to evaluate the short list, and the relative importance of the criteria (*Outcome: Understanding of how the short listed “Alternative Methods” meet the remaining Project Objectives*)
4. **PREFERRED.** Selection of preferred alternative (*Outcome: Preferred Alternative*)
5. **DESIGN.** Development/refinement of the project design, including public feedback and advice on design details, mitigation and implementation (*Outcome: Refined project design and implementation plan*)

The following table outlines the key consultation activities anticipated at each of these stages. Note that this approach may be refined in order to enable coordination with consultations underway as part of related projects.

		Key decision-making points in the Don Mouth EA				
		1 Project Initiation	2 Review and feedback on LONG LIST of “Alternative Methods”	3 Review and feedback on SHORT LIST of “Alternative Method s”	4 Selection of PREFERRED Alternative	5 Functional DESIGN and Wrap-up
Consultation Mechanism	Public Forum (PF)	Forum (i)	Forum (ii)	Forum (iii)	Forum (iv)	Forum (v)
	Community Liaison Committee (CLC)	Meeting (i)	Meeting (ii)	Meeting (iii)	Meeting (iv)	Meeting (v)
	Technical Advisory Committee (TAC)	Meeting (i)	Meetings (ii) & (iii)	Meeting (iv)	Meeting (v)	Meeting (vi)
	Site Walk	✓				OPTIONAL
	Project newsletters, flyers, website updates	✓	✓	✓	✓	✓
	Newspaper ads, articles	✓	✓	✓	✓	✓
	Individual stakeholder meetings, as required	✓	✓	✓	✓	✓
	Specialist Design Workshop				↔ ✓ ↔	

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10. Monitoring

The development of a monitoring plan will be an important part of the EA. Monitoring is used to verify expected environmental effects to determine if additional mitigation or impact management measures are required and to ensure the fulfilment of commitments made in the EA and conditions of approval. A monitoring plan will be developed during the DMNP EA which will include the following information:

- The frequency of the proposed monitoring
- Monitoring methods proposed
- Submission procedures for the results of monitoring activities
- List of the proposed commitments and how and when they will be addressed
- Actions to be taken by the TRCA to ensure they are in compliance
- The location of monitoring documents
- Any applicable emergency response plans

The monitoring plan will consider all relevant project phases: planning, detailed design, tendering, construction, establishment and post-establishment. It will also address the Ministry of the Environment's requirement for compliance and effects monitoring. Compliance monitoring is an assessment of whether an undertaking has been designed, constructed, implemented and/or operated in accordance with the commitments in the EA document and the conditions of approval. Effects monitoring consists of activities carried out by the proponent after the approval of the EA to determine the environmental effects of the undertaking.

Appendices

Appendix A

Rationale for the Consideration of Alternative Discharge Points

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1. Introduction

1.1 Role of Report

The *Ontario Environmental Assessment Act* (EA Act) requires the identification and evaluation of “alternatives to” the undertaking or functionally different ways of solving the identified problem or opportunity. This report is an Appendix to the Don Mouth Naturalization Project (DMNP) Terms of Reference (ToR) which documents the rationale for consideration of alternative discharge points for the river identified through the ToR public consultation process. The result of this assessment is a framing of the “alternatives to” to be considered during the EA stage of the project and as such shall also be documented in the EA.

1.2 Overview of Problem/Opportunity to be Addressed

Part of the planning for the revitalization of the Toronto waterfront is the naturalization of the mouth of the Don River. The need for the naturalization of the mouth has been established through the last 10 to 15 years of planning activities. It is a key component of the effort to “bring back the Don River” from a degraded urban river to an ecologically functioning river mouth.

Flood protection for the lower Don River is also a key component of Toronto's waterfront revitalization. TRCA has identified the lower Don River as the number one priority for flood protection as part of a Watershed Planning process in 1980. This ranking was based upon an assessment of the extent of area flooded under the Regulatory Flood, and the risk to life and property that it represents. The DMNP addresses the alleviation of flood risk for Spill Zones 1 and 2.

1.3 Overview of Existing Conditions

In 1999, the City of Toronto issued a call for action in *Our Toronto Waterfront: the Wave of the Future*. This report outlined a high level vision for a transformed waterfront and was a catalyst to bring together the Federal, Provincial and City governments to revitalize Toronto's waterfront.

In 2000, the Toronto Waterfront Revitalization Taskforce was commissioned to provide advice on revitalizing the waterfront to the three levels of government. The Taskforce report, *Our Toronto Waterfront: Gateway to the New Canada*, began to provide detail to the vision which included the creation of new, vibrant waterfront communities and a significant public open space system along the water's edge.

The work of the Taskforce became the foundation for the establishment of the Toronto Waterfront Revitalization Corporation (TWRC) in 2001. The TWRC continues to work toward waterfront revitalization through the planning and implementation of many different projects of which the DMNP is one of four priority projects.

Concurrently, the City of Toronto prepared the Central Waterfront Secondary Plan, *Making Waves*, which sets out planning policies. The City is implementing this plan through the development of Precinct Plans for key revitalization areas and the development of the Port Lands Implementation Strategy. **Figure 1** illustrates the land use designations for the Central Waterfront area from the Secondary Plan. This plan creates a framework for waterfront planning for the next several years. The DMNP needs to recognize this planning framework and be consistent with it. **Figure 2**, from the Draft Port Lands Implementation Strategy (Public Forum #3, July 2005), illustrates the proposed location of roads and other infrastructure. The Draft Port Lands Implementation Strategy is the basis for understanding the scope of infrastructure removal or replacement which may be required for the DMNP. Given the changing landscape of the Central Waterfront both the existing and proposed uses must be given consideration.

2. Identification of Potential “Alternatives To”

For the DMNP project an “alternative to” is defined by the river’s discharge point to the lake. Given the nature of the proposed study and its objectives, the only reasonable set of “alternatives to” can be defined around alternative discharge points for the river to Lake Ontario as reflected by the general area in which the Don Mouth may be located. The alternate river mouth locations have been defined by the river’s potential discharge points to the lake. The discharge points also represent functionally different ways to solve the problem or opportunity in that they each provide a different range of opportunities for naturalization of the river mouth, flood protection and revitalization of the waterfront. As such, for the purpose of this EA they are considered as “alternatives to” by TRCA. The discharge points identified for consideration at the EA stage are representative of those put forward in the past. They have been refined and additional discharge points have been considered based on public comment received during the preparation of the ToR.

The “alternatives to” or discharge points outlined in **Table 2.1** and illustrated in **Figure 3** were initially prepared by the study team and presented to the public for feedback at Public Forum No 1 and subsequent working sessions.

Table 2.1 Rationale for Preliminary Set of Alternative Discharge Points

Alternative Discharge Points	Rationale
Do nothing	• Status quo • Consideration of this alternative is required by the <i>EA Act</i>
River with discharge to the Inner Harbour	• Discharge point contemplated as part of Secondary Plan • Land available and identified in Secondary Plan for naturalization • Maintains discharge of river to Inner Harbour
River with discharge through the Port Lands to the Ship Channel	• Use of planned greenway as potential river mouth • Aligns linear corridor function (for wildlife etc.) of greenway with river mouth function • Changes flow to Inner Harbour
Combination of discharge points to the Inner Harbour and Ship Channel	• Attempt to combine advantages of both alternatives • Splitting of flows may provide better flood protection and increase opportunities for naturalization

The public brought forward a number of other discharge points to consider, namely:

- Discharge to the Outer Harbour at or near the currently proposed alignment of the Don Greenway to create a direct aquatic link between the river and Lake Ontario
- A discharge point to Ashbridges Bay to the east in order to discharge the river direct to Lake Ontario and create potential for development of a delta away from shipping and navigation
- Add a third discharge point to the combination alternative above to create a natural delta

Thus, the list of discharge points or “alternatives to” considered for inclusion in the ToR is listed below. Some of the descriptions of the discharge points have changed as they have become better defined.

1. Do nothing – continuation of discharge through the Keating Channel, continued dredging of sediment and removal of debris, no naturalization of river mouth
2. Discharge to the Inner Harbour – creation of naturalized river mouth in vicinity of 480 Lakeshore and lands north of Villiers Street – this alternative assumes filling in the Keating Channel
3. Discharge through the Port Lands to the Ship Channel – this alternative assumes filling in the Keating Channel
4. Combination of alternatives 2 and 3 – combination of discharge to Inner Harbour, as described above, with discharge through the Port Lands to the Ship Channel as described above this alternative assumes filling in the Keating Channel.
5. Combination of alternatives 2 and 3 with a third discharge point midway between creating a wide delta with alternative 3 – consideration of a third discharge point somewhere within the Port Lands to create a delta function – assumes land between discharge points would not be developed as per waterfront revitalization planning
6. Discharge through the Ship Channel and Lake Ontario Park to discharge to the Outer Harbour - this alternative would require the damming of the western part of the Ship Channel to just east of Cherry Street to facilitate the flow of the river to the Outer Harbour thereby removing access to the remainder of the Ship Channel
7. Discharge through the Port Lands and the Ship Channel to the Outer Harbour through the eastern end of the Outer Harbour – this alternative would require damming the western part of the Ship Channel to facilitate the flow of the river to the Outer Harbour thereby removing access to the remainder of the Ship Channel
8. Eastern Port Lands discharge point (Ashbridges Bay area) – movement of the river and river mouth towards a discharge point in the Ashbridges Bay area – assumes damming and filling in of eastern half of the Ship Channel and Turning Basin

3. Assessment of Potential “Alternatives To”

These eight “alternatives to” or discharge points have been assessed to determine which ones will be the primary alternatives considered in the ToR and evaluated as part of the next stage, the EA stage. The methodology by which it was determined which “alternatives to” would be considered in the EA was based on the highest potential for the “alternative to” to meet the project objectives. Only those alternative discharge points with the greatest potential to meet/achieve these project objectives would be considered during the EA stage. This will provide for the most efficient use of resources available to the project and creates the best potential for a preferred undertaking that achieves the project objectives and moves the project forward in a timely fashion.

In order to carry out this assessment, a number of facility characteristic assumptions have been made which reflect the footprint of each alternative discharge point that would be required if implemented. This information is necessary in determining, at a coarse level of detail, the potential impacts associated with each “alternative to”.

The following facility characteristic assumptions have been used for the assessment of alternatives discharge points:

- Low flow channel width of 20 metres
- Lake levels low-73.5 metres, medium-74.5 metres, high-75.5 metres
- Bed of low flow channel is 72 metres above sea level
- Width of river mouth varies from 300 to 500 metres based on the length of the river mouth
- Sediment will be managed by dredging
- Debris will be managed

This preliminary evaluation of discharge points is based on the existing conditions in the Port Lands area of Toronto, and the planning efforts on-going for the revitalization of the Toronto waterfront. Table 3.1 outlines the criteria used to assess the potential of each discharge point to meet the project objectives.

Table 3.1 Criteria for Preliminary Assessment of Potential Alternative Discharge Points

PROJECT OBJECTIVES	CRITERIA	RATIONALE	RANKING
NATURALIZATION	Total amount of area available for naturalization?	This is the area (in hectares) within the footprint limits of each alternative assuming that all buildings and infrastructure that can be removed have been removed	Alternatives with the largest area available for naturalization are ranked high, with a moderate area available are ranked medium and those with the smallest area available are ranked low.
FLOOD PROTECTION	Ability to remove Spill zones 1 and 2 from the Regulatory Floodplain (flood risk)?	The criterion qualitatively assesses the land required (as part of alternative footprint) to achieve regulatory flood protection	Alternatives which can remove Spill Zones 1 and 2 from the Regulatory Floodplain are ranked high while those that do not are ranked low.
RIVER OPERATION	Ability to provide for the management of debris?	This criterion measures if there are any differences between alternatives with respect to the ability to manage debris.	Alternatives which can manage debris and sediment easily, and do not have the potential to degrade water quality at the discharge location relative to existing water quality are ranked high and those which cannot manage debris and sediment easily and have the potential to degrade water quality at the discharge location relative to existing water quality are ranked low.
	Ability to provide for the management of sediment?	This criterion measures if there are any differences between alternatives with respect to the ability to manage sediment.	
	Ability to improve, maintain or degrade water quality at discharge location relative to existing water quality?	The water flowing out of the river mouth is currently degraded. Should the discharge location change there is the potential for significant (order of magnitude) changes to the water quality at the new discharge point. This criterion measures (qualitatively) the potential to degrade water quality.	
INTEGRATION WITH INFRASTRUCTURE	Ability to integrate with existing and proposed infrastructure (roads, rail, pipelines, transmission lines) that cannot be moved to facilitate DMNP?	This criterion measures the length (in metres) of road lane impacted, area (in square metres) of bridge deck replaced, the length (in metres) of rail impacted, and length (in metres) of other utilities potentially requiring replacement.	Alternatives which minimize the length of infrastructure requiring removal or replacement and minimize the length of dock wall removed and Port use facilities removed are ranked high; those which maximize the length of infrastructure removed or replaced and maximize the length of dock wall removed and number of Port use facilities removed are ranked low.
	Ability to facilitate continued Port activities/commercial shipping?	This criterion measures the length (in metres) of dock wall removed and the number of Port use facilities removed. The ability to provide for a navigable river channel through the mouth will also be considered.	
RECREATION, CULTURE AND HERITAGE OPPORTUNITIES	Potential to remove or restrict existing recreation opportunities (marinas, beaches, water use areas) already operating in the Port Lands?	This criterion measures the number of existing recreation opportunities removed or restricted by an alternative. Recreation opportunities can be water or land based and include walking trails, marinas, driving ranges, etc.	Alternatives which minimize the number of recreational opportunities removed or restricted are ranked high while those that maximize the number of recreational opportunities removed or restricted are ranked low.
COORDINATE WITH OTHER PLANNING EFFORTS	Consistency with the Central Waterfront Secondary Plan?	This criterion measures the consistency of the alternative with the land use designations contained in the Secondary Plan (qualitative judgement)	Alternatives which are consistent with the Central Waterfront Secondary Plan, minimize impact on ESAs, and do not remove land designated for development are ranked high while those which are inconsistent with the Secondary Plan, remove portions of the ESA and render designated land no longer developable are ranked low.
	Ability to maintain designated environmentally sensitive areas (ESA's)?	This criterion measures the potential impact (hectares removed) of each alternative on those areas already designated for their environmental value	
	Area of developable land which will no longer be developable as defined through the Secondary Plan?	This criterion measures the amount (hectares) of developable land, as defined by the Secondary Plan, which will no longer be developable as a result of the implementation of each alternative.	
CONSISTENCY WITH TWRC INTEGRATED SOIL AND GROUNDWATER MANAGEMENT STRATEGY (part of TWRC SUSTAINABILITY FRAMEWORK)	Quantity of contaminated material to be managed	This criterion measures the relative amount (least, moderate and most) of contaminated material to be managed which is a surrogate for the ease of construction and cost.	Alternatives which minimize the quantity and severity of contaminated material to be managed are ranked high while alternatives which maximize the quantity and severity of contaminated material to be managed are ranked low.
	Severity of contamination	This criterion measures the severity (least, moderate and most) of contamination likely to be encountered.	

Table A-1, Criteria Based Assessment, in Appendix A.1 presents the preliminary assessment of potential “alternatives to” against criteria defined to measure the ability of each “alternative to” meet the project objectives. **Tables A-2 and A-3** in the same appendix provides some of the data on which the assessment is based. The text which follows provides more detail with respect to how each potential alternative discharge point meets or does not meet project objectives. **Figures 4 through 10** illustrate each alternative and the areas and existing conditions potentially affected.

Alternative 1: Do Nothing - This alternative is ranked low for two key project objectives naturalization and flood protection. There is no potential for naturalization of the mouth of the Don River. Flood zones 1 and 2 remain susceptible to flooding during a regional storm event. The alternative is only ranked medium with respect to coordination with other planning efforts as it is inconsistent with the Secondary Plan but will not affect any developable land. The Don River mouth remaining “as is” is inconsistent with the 10 to 15 years of planning for the revitalization of the Toronto Waterfront. For the objectives for which this alternative is ranked high the high rank reflects a lack of impact rather than a benefit accruing as a result of the project. The alternative is preferred for these objectives because river operations are unaffected, there is no need to integrate with infrastructure, no existing recreation opportunities are removed or restricted, and there is no contaminated material to be managed. ***Thus, this alternative has very low potential to meet key project objectives and as such should not be considered further in the EA. However, the EA Act requires the assessment of the ‘Do Nothing’ alternative throughout the EA for comparison purposes therefore this alternative will be carried forward.***

Alternative 2: Discharge to the Inner Harbour – This alternative is ranked high or medium for all project objectives. Disadvantages associated with this alternative relate to the quantity and severity of contaminated material requiring management which is related to the large area available for naturalization, and the amount of infrastructure to be removed/replaced. This alternative has the potential to remove the Works Depot, the Keating Channel Pub, Essroc Canada and a small park on Villiers at the Don Roadway. However, the advantages of this alternative relate to the area available for naturalization (41.2 hectares), flood protection, no effect on existing recreation opportunities except for a small parkette, and that it is consistent with other planning efforts. ***Therefore, this alternative has good potential to achieve all project objectives and should be considered further in the EA.***

Alternative 3: Discharge through the Port Lands to the Ship Channel – This alternative is ranked high for all project objectives except the naturalization objective. This alternative removes Spill Zones 1 and 2 from the Regulatory Floodplain, facilitates river operations, involves a relatively low amount of infrastructure removal and replacement, has low impact on the port, does not affect existing recreation opportunities except for a small parkette, and is consistent with other planning efforts. However, some existing uses; Abitibi, United Rental, NRI, TRU, Harbour Remediation and Transfer, CP Express, Coopers Iron and the small park at Villiers at the Don Roadway may be removed. It is ranked low for naturalization because of the relatively low amount of land available for naturalization (23.6 hectares versus 41 for the next smallest alternative versus 110 hectares for the largest alternative). There may be additional lands available for naturalization if areas around the Keating Channel are not developable

which could offset this disadvantage. ***Thus, this alternative has good potential to meet the project objectives and as such should be considered further in the EA.***

Alternative 4: Combination of alternatives 2 and 3 - may include primary discharge to the Inner Harbour and secondary discharge to the Ship Channel or primary discharge to the Ship Channel and secondary discharge to the Inner Harbour. For all project objectives this alternative is ranked high or medium. The alternative provides for the splitting of flows which may facilitate flood protection and increase opportunities for naturalization (56.4 hectares versus 41.2 hectares for alternative 2 and 23.6 hectares for alternative 3). It is an attempt to combine advantages of both alternatives. The discharge point to the Inner Harbour was contemplated as part of Secondary Plan and the land is available and identified in Secondary Plan for naturalization while use of the Don Greenway as potential river mouth aligns linear corridor function (for wildlife) with river mouth function. While some existing uses; e.g. Abitibi, United Rental, NRI, TRU, Harbour Remediation and Transfer, CP Express, Coopers Iron, the Works Depot, the Keating Channel Pub, and Essroc Canada may be removed little developable land is removed (12.75 hectares). The small park at Villers at the Don Roadway may be removed but no other existing recreation opportunities are removed or restricted. ***Thus, this alternative has good potential to meet the project objectives and as such should be considered further in the EA.***

Alternative 5: Combination of alternatives 2 and 3 with a third discharge into the lake creating a wide delta - The alternative is ranked high for the naturalization, flood protection and river operation objectives, low for recreation and consistency with other planning efforts, and medium for the remaining objectives. While this alternative has some advantages with respect to river operations, particularly the management of sediment, these advantages are offset by significant disadvantages related to the removal of Port facilities (2316 metres of dock wall removed), the removal of recreation opportunities associated with the Docks, the inconsistency with the Secondary Plan and the removal of 40.76 hectares of developable land. The alternative removes the following existing uses: Docks Entertainment Centre, Cherry Flea Market, Lafarge, Abitibi, NRI, TRU, Harbour Remediation and Transfer, CP Express, Coopers Iron, the Works Depot, Keating Channel Pub, Essroc Canada, Hurricane Canvas, Neil Pride Sails, Amalgamated Transit Union, and United Rental. This alternative has the potential to make 480 Lakeshore and the other lands set aside for the DMNP available for development which may offset some of the loss of developable land. However, the alternative still has several disadvantages associated with the other project objectives. ***Thus, this alternative has low potential to meet the project objectives and as such should not be considered further in the EA.***

Alternative 6: Discharge through the Port Lands and the Ship Channel to the Outer Harbour - This alternative is ranked high for flood protection and naturalization and low for the remaining project objectives. Only modest gains in naturalization are offset by the significant impacts this alternative will create for water quality at Cherry Beach, the removal of 5.16 hectares of ESA 130, and the removal of Port activities from the Ship Channel. This alternative may disrupt swimming at Cherry Beach as it will carry degraded water from the river and the combined sewer outfall (CSO) in the Ship Channel to the Outer Harbour increasing the frequency of closure for Cherry Beach. As a result of damming the Ship Channel, 4588 metres of dock wall will be removed from the Port. Thus, industries which currently rely on the Ship Channel may be affected. The alternative is inconsistent with the Secondary Plan, removes

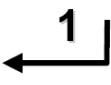
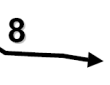
21.8 hectares of developable land, and removes the following existing uses: Abitibi, United Rental, NRI, TRU, Harbour Remediation and Transfer, CP Express, Coopers Iron, Priestly Demolition, Acme Environmental, the parkette, Cargill De-icing, and Strata Aggregates. ***Thus, this alternative has low potential to meet the project objectives and as such should not be considered further in the EA.***

Alternative 7: Discharge through Port Lands to eastern end of Outer Harbour – This alternative is ranked low for all project objectives except naturalization and flood protection. While this alternative has good potential to create naturalization as a result of its large footprint (67.1 hectares), this naturalization is created at the cost of the loss of a portion of ESA 130 (3.32 hectares), the loss of a significant amount of developable land (41.21 hectares), loss of the eastern half of the Ship Channel and Turning Basin, and significant removals and replacements of infrastructure including the replacement of three roadways with causeways across the naturalized area and river channel. This alternative will disrupt swimming at Cherry Beach as it will carry degraded water from the river and the combined sewer outfall (CSO) in the Ship Channel to the Outer Harbour increasing the frequency of closure for Cherry Beach. As a result of damming the Ship Channel, 3593 metres of dock wall will be removed from the Port. Thus, industries which currently rely on the Ship Channel may be affected. This alternative would also result in the removal of the following existing uses: CP Express, Coopers Iron, the parkette, Unique Ice Rink, McAshphalt Industries, East-West Services, Creative Solutions, BFC Traffic Tech, Cliffside Utilities Inc, Chai Kosher Poultry, AJ's Self Storage, City of Toronto Blue Box Recycling, Cascades Boxboard, the Hearn Generating Station, the proposed Portlands Energy Centre and the proposed Toronto Film Studio. ***Thus, this alternative has low potential to meet the key project objectives and as such should not be considered further in the EA.***

Alternative 8: Eastern Port Lands discharge point (Ashbridges Bay area) - This alternative is ranked low for all project objectives except naturalization and flood protection. While this alternative has the greatest potential to create a large naturalized area as a result of its large footprint (110 hectares), this naturalization is created at the loss of a significant portion of ESA 130 (30.08 hectares), the loss of a significant amount of developable land (45.17 hectares), the loss of the use of the eastern half of the Ship Channel and Turning Basin, and significant removals and replacements of infrastructure including the replacement of three roadways with causeways across the naturalized area and river channel. This alternative would also result in the removal of the following existing uses: CP Express, Coopers Iron, the parkette, Unique Ice Rink, McAshphalt Industries, East-West Services, Creative Solutions, Chai Kosher Poultry, AJ's Self Storage, City of Toronto Blue Box Recycling, Cascades Boxboard, Bayside Rowing Club, Eastern Marine, Starchoice, allotment gardens and Telesat, and the proposed Toronto Film Studio. ***Thus, this alternative has low potential to meet the key project objectives and as such should not be considered further in the EA.***

Table 3.2 summarizes the assessment of “alternatives to” by listing each alternative’s potential to achieve each project objective.

**Table 3.2 Summary Assessment of Potential Alternative Discharge Points or “Alternatives To”
Against Project Objectives**

PROJECT OBJECTIVES								
Naturalization	Low	Medium	Low	High	High	High	High	High
Flood Protection	Low	High	High	High	High	High	High	High
River Operation	High	High	High	High	High	Low	Low	Low
Integration with Infrastructure	High	Medium	High	Medium	Medium	Low	Low	Low
Recreation, Culture and Heritage Opportunities	High	High	High	High	Low	Low	Low	Low
Coordinate with Other Planning Efforts	Medium	High	High	High	Low	Low	Low	Low
Consistency with TWRC Integrated Soil and Groundwater Management Strategy (part of TWRC Sustainability Framework)	High	Medium	High	Medium	Low	Medium	Medium	Low
	CONSIDER FOR INCLUSION	CONSIDER FOR INCLUSION	CONSIDER FOR INCLUSION	CONSIDER FOR INCLUSION	EXCLUDE FROM CONSIDERATION	EXCLUDE FROM CONSIDERATION	EXCLUDE FROM CONSIDERATION	EXCLUDE FROM CONSIDERATION

Therefore, the following “alternatives to” have been identified as those with the greatest potential to meet the project objectives. These alternatives provide a reasonable range of alternative discharge points or “alternatives to” and therefore are recommended as the primary alternatives to start the development of alternative methods during the EA:

- i. Do Nothing (required by the *EA Act* for EA comparison purposes only)
- ii. Discharge to the Inner Harbour
- iii. Discharge through the Port Lands to the Ship Channel
- iv. Two discharge points (primary and regional flood overflow) to the Inner Harbour and through the Port Lands to the Ship Channel

The rationale for the consideration of alternatives will be documented in the EA, however the remaining medium and low potential alternatives should not be considered further during the EA unless the primary discharge point do not provide for a reasonable range of alternative methods.

Figures

Central Waterfront Secondary Plan

Land Use Plan

MAP INDEX

-  PARKS AND OPEN SPACE AREAS (1) (3)
-  REGENERATION AREAS (3)
-  EXISTING USE AREAS (3)

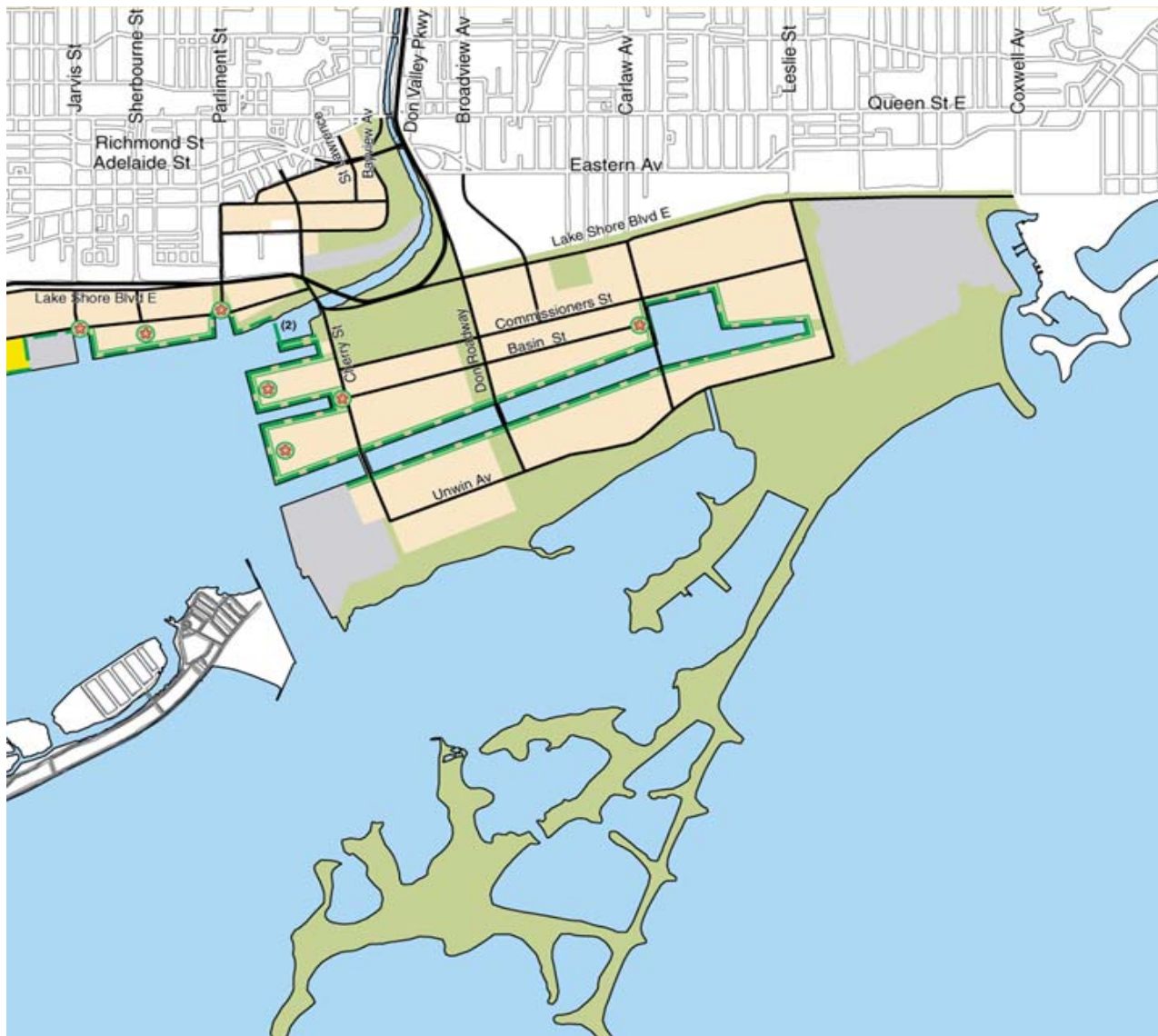
Figure 1



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Port Lands Implementation Strategy

Structure Plan



Figure 2



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Alternatives To as presented at Public Forum #1



1. Do Nothing

2. River/Estuary
with discharge to
the Inner Harbour

3. River/Estuary
with discharge
through the Port
Lands

4. Combination of
Discharge Point
(Primary and
Regional flood
Overflow)

Figure 3



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Alternative 2

Legend

-  Environmentally Sensitive Areas
-  Alternative Footprint
-  Discharge Points

Infrastructure

-  Rail Replacement
-  Road Removal
-  Bridge/Causway Replacement
-  Road Replacement
-  Existing Uses
-  Commissioners Park

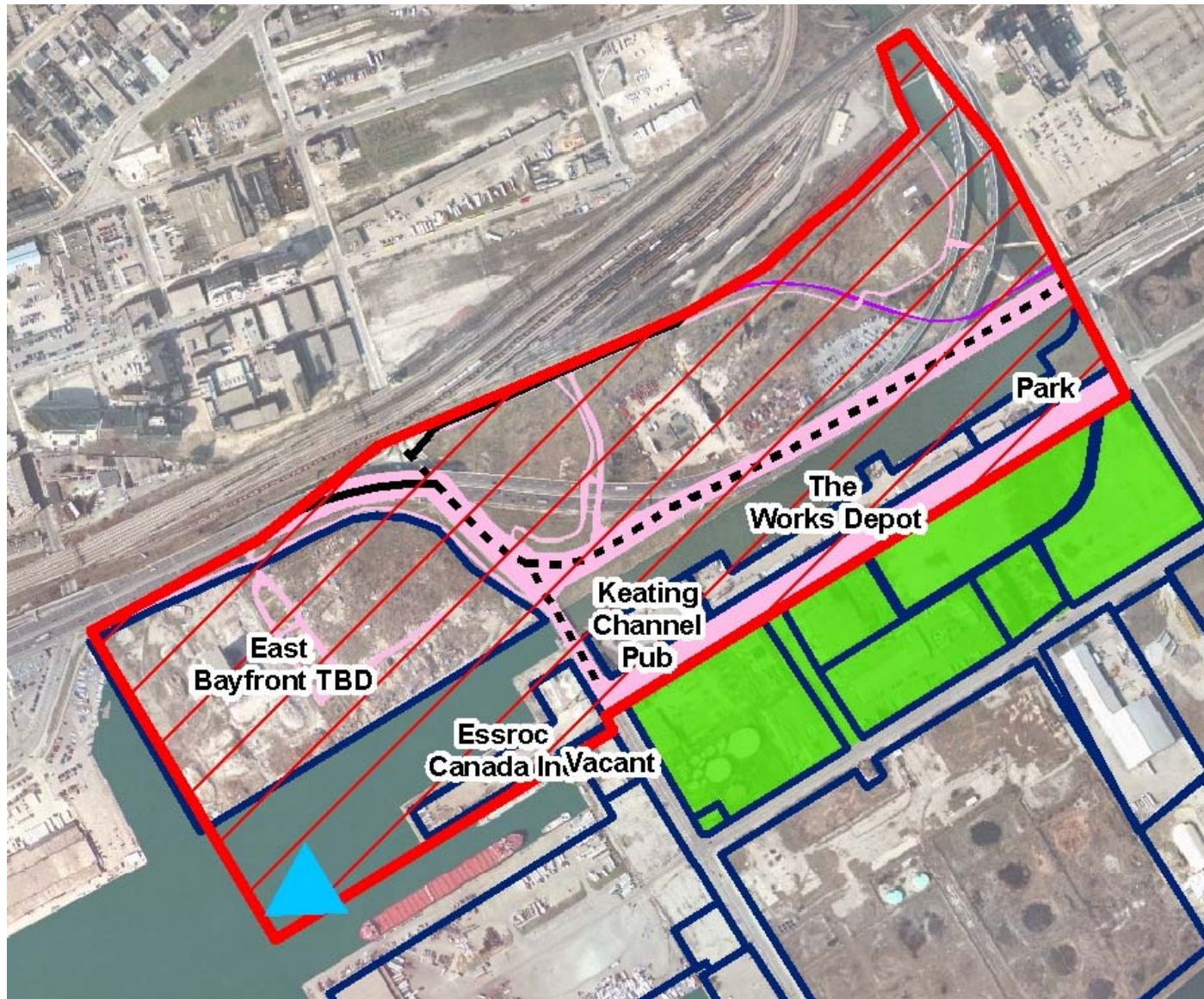


Figure 4



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Alternative 3

Legend

-  Environmentally Sensitive Area
-  Alternative Footprint
-  Discharge Points

Infrastructure

-  Rail Replacement
-  Road Removal
-  Bridge/Causway Replacement
-  Existing Uses
-  Commissioners Park

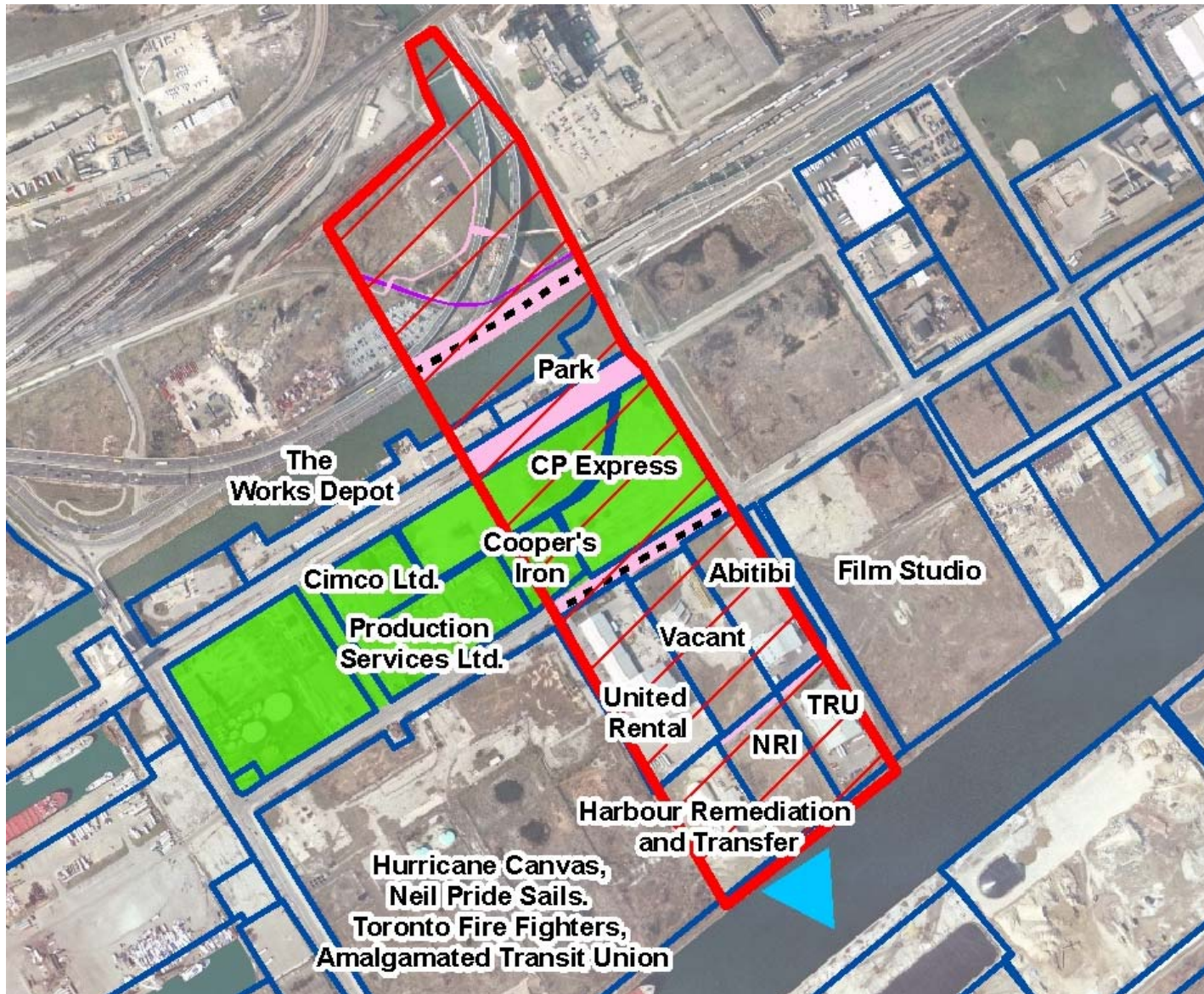


Figure 5



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Alternative 4

Legend

-  Environmentally Sensitive Area
-  Alternative Footprint
-  Discharge Points
- Infrastructure**
 -  Rail Replacement
 -  Road Removal
 -  Bridge/Causway Replacement
 -  Road Replacement
 -  Existing Uses
 -  Commissioners Park

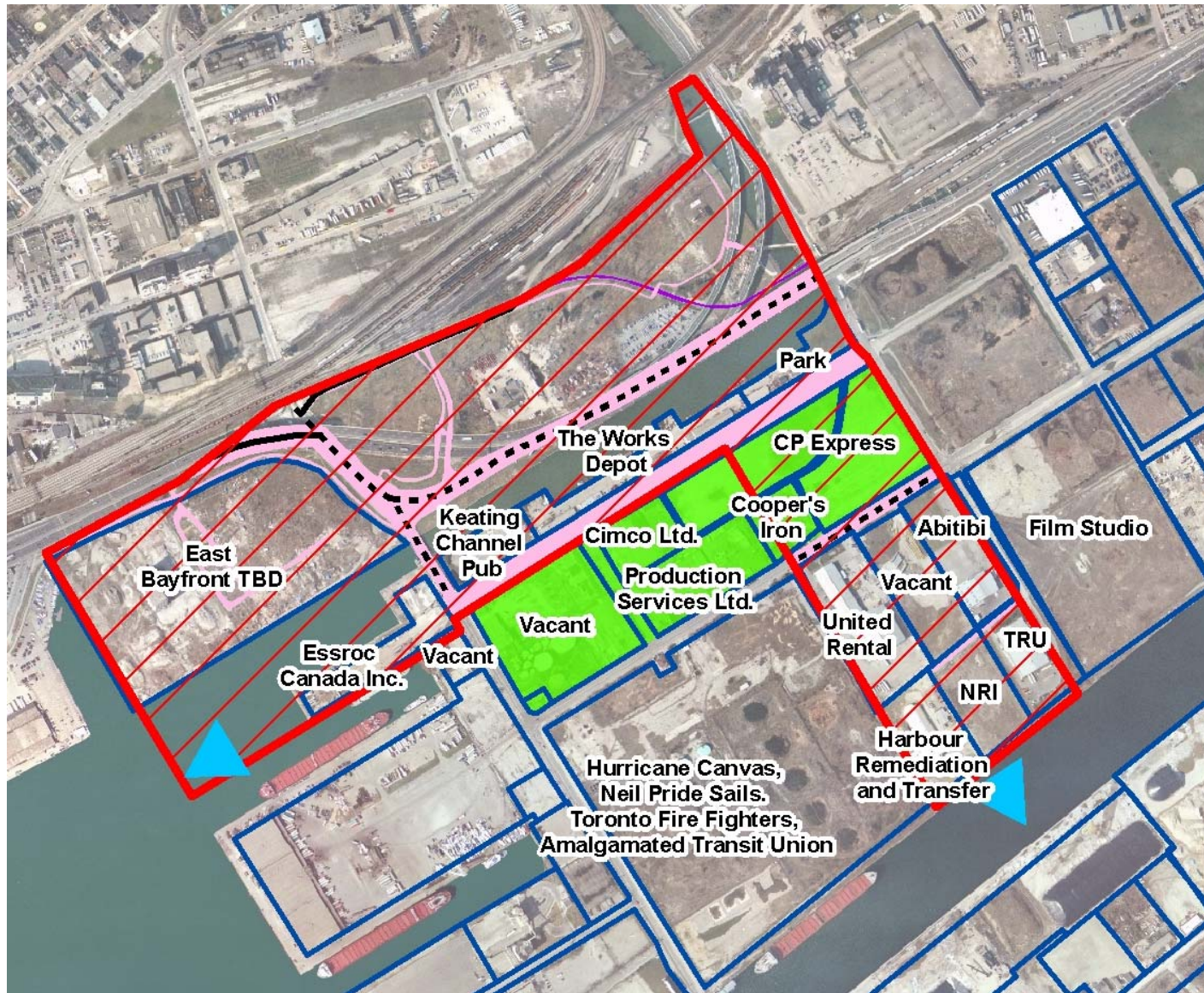


Figure 6



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Alternative 5

Legend

-  Environmentally Sensitive Area
-  Alternative Footprint
-  Discharge Points
- Infrastructure**
 -  Rail Replacement
 -  Road Removal
 -  Bridge/Causway Replacement
 -  Existing Uses
 -  Commissioners Park

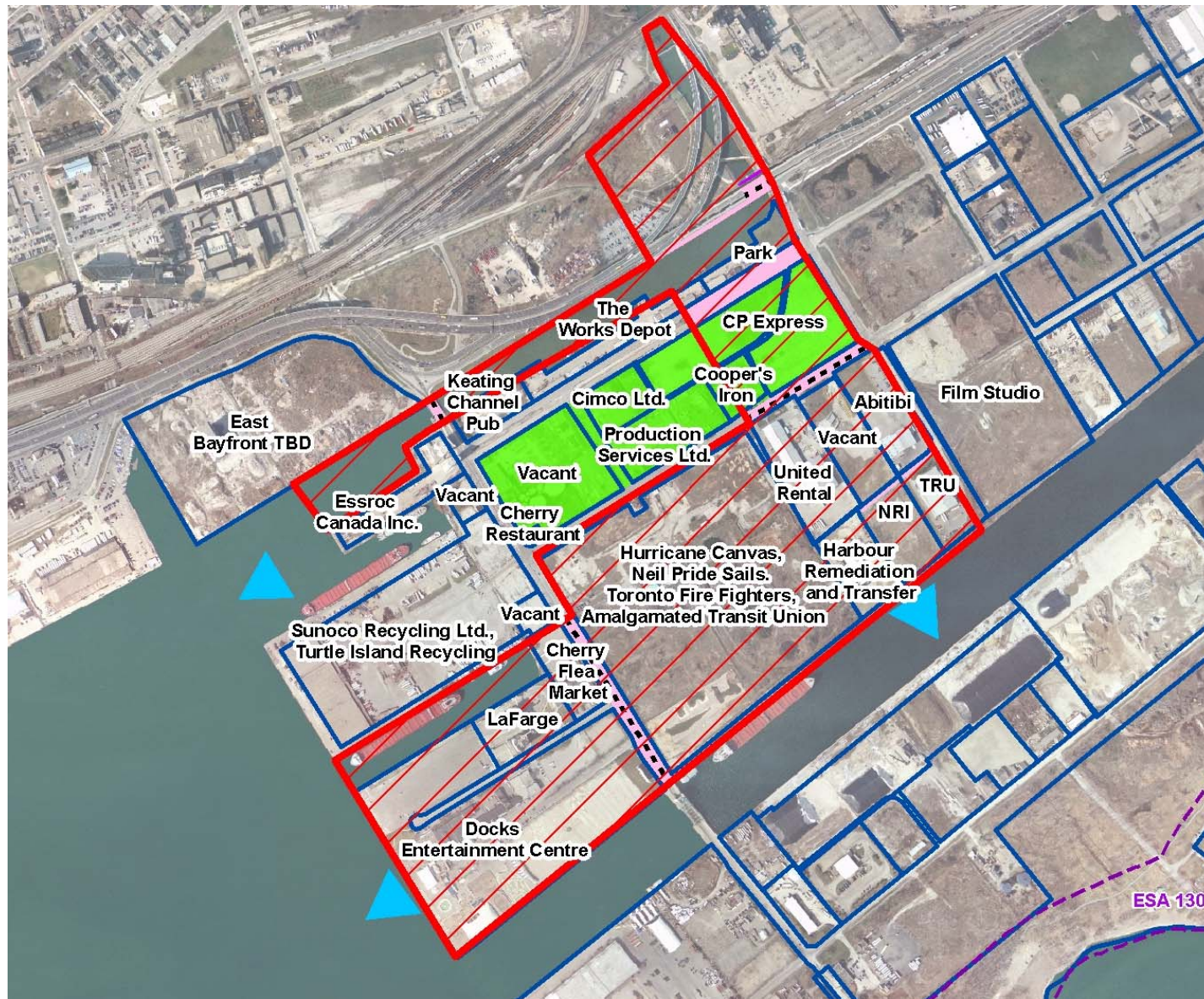


Figure 7



Alternative 6

Legend

-  Environmentally Sensitive Area
-  Alternative Footprint
-  Discharge Points
- Infrastructure**
 -  Rail Replacement
 -  Road Removal
 -  Bridge/Causway Replacement
 -  Existing Uses
 -  Commisioners Park

Figure 8



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Alternative 7

Legend

-  Environmentally Sensitive Area
-  Alternative Footprint
-  Discharge Points
- Infrastructure**
 -  Rail Replacement
 -  Road Removal
 -  Bridge/Causway Replacement
 -  Existing Uses
 -  Commisioners Park

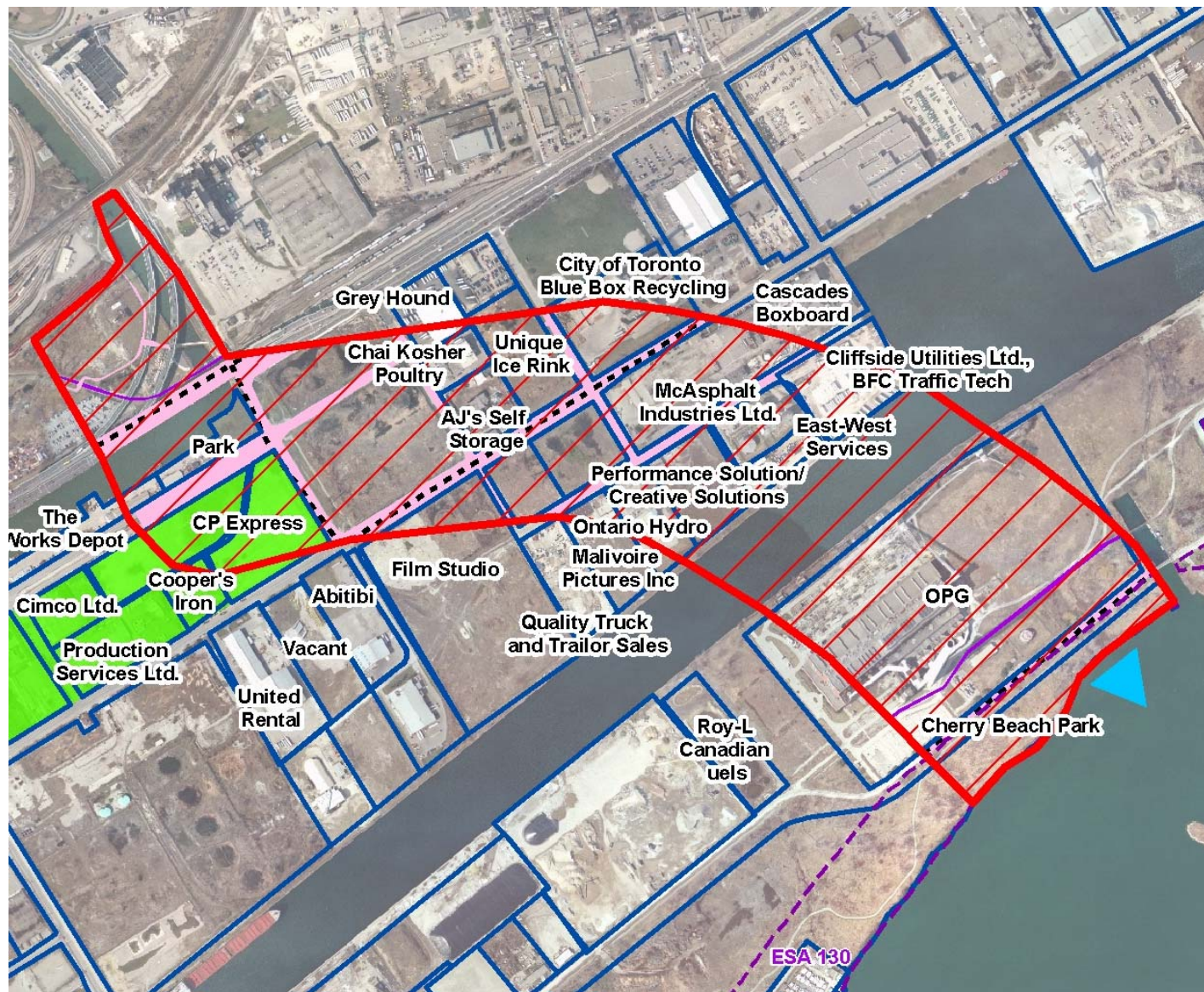


Figure 9



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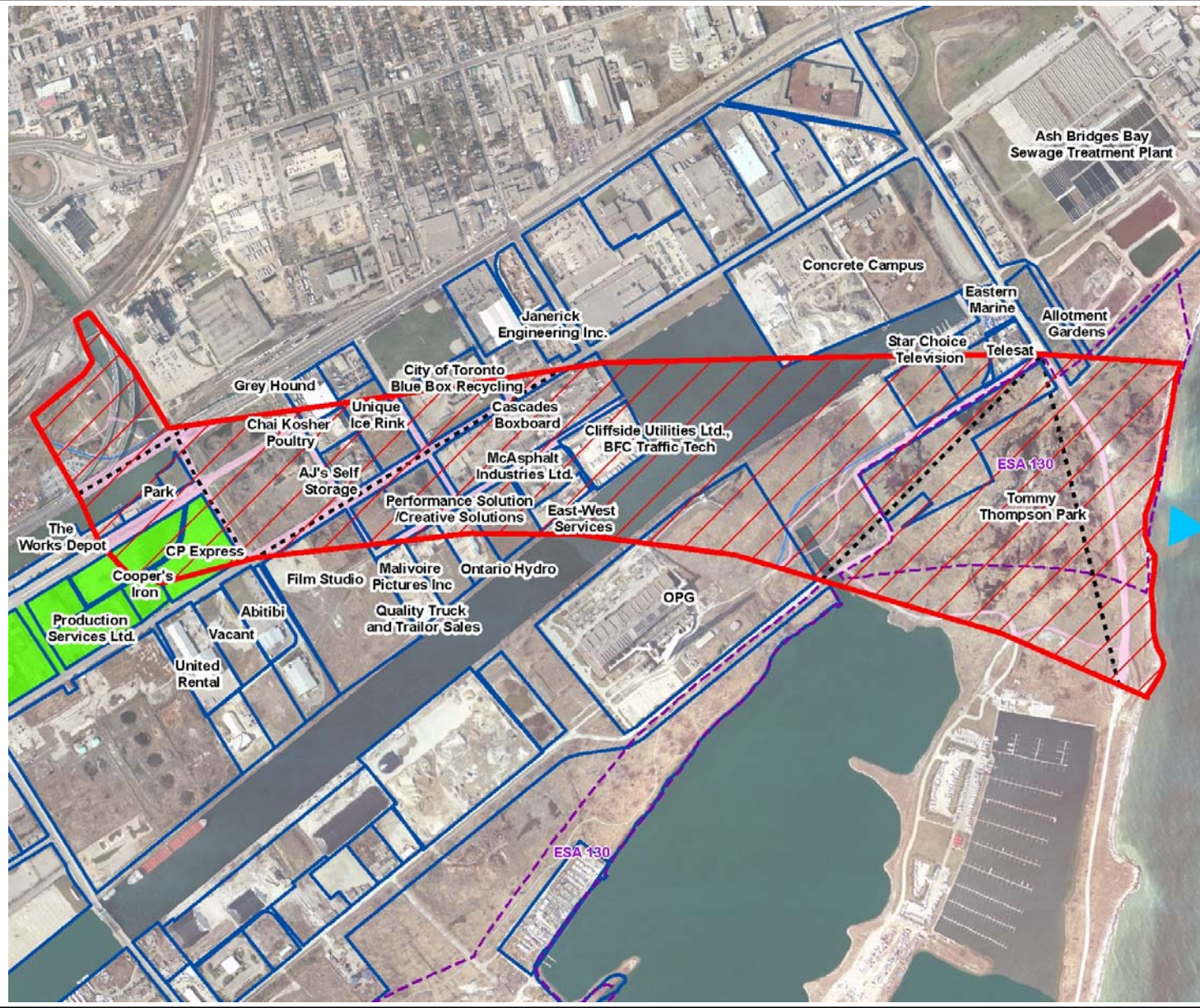
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Alternative 8

Legend

-  Environmentally Sensitive Area
-  Alternative #8
-  Discharge Points
- Infrastructure**
 -  Rail Replacement
 -  Road Removal
 -  Bridge/Causway Replacement
 -  Existing Uses
 -  Commissioners Park

Figure 10



Appendix A.1

Evaluation Tables

Table A-1 Criteria Based Assessment

PROJECT OBJECTIVES	CRITERIA	Alternative 1 Do Nothing	Alternative 2 Discharge to Inner Harbour	Alternative 3 Discharge to Ship Channel	Alternative 4 Discharge to Inner Harbour and Ship Channel	Alternative 5 Three discharge points to Inner Harbour and Ship Channel	Alternative 6 Discharge to Outer Harbour	Alternative7 Discharge through Port Lands to eastern end of Outer Harbour	Alternative 8 Discharge to Ashbridges Bay
NATURALIZATION	Total amount of area available for naturalization.	0 hectares Low rank	41.2 hectares Medium rank	23.6 hectares Low rank	56.4 hectares High rank	59.6 hectares High rank	47.8 hectares High rank	67.1 hectares High rank	110 hectares High rank
FLOOD PROTECTION	Ability to remove Spill zones 1 and 2 from the Regulatory Floodplain (flood risk)?	No ability to remove Spill zones 1 and 2 from Regulatory Floodplain. Low rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required.. High rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required . High rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required. High rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required High rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required High rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required High rank	Alternative able to remove Spill zones 1 and 2 from Regulatory Floodplain Some flood protection landforms required High rank
RIVER OPERATION	Ability to provide for the management of debris?	Debris would continue to be managed by TTP	Debris would be managed	Debris would be managed	Debris would be managed	Debris would be managed	Debris would be managed	Debris would be managed	Debris would be managed
	Ability to provide for the management of sediment?	Sediment would continue to be managed by TPA	Sediment would likely end up at the lake however, there is flexibility to let it fall out elsewhere	Sediment would likely end up in new river channel and ship channel however, there is flexibility to let it fall out elsewhere	Sediment would likely end up at the lake or ship channel however, there is flexibility to let it fall out elsewhere	Sediment would be managed by the creation of a large delta.	Sediment would need to managed upstream of discharge point necessitating access by dredge barge.	Sediment would need to managed upstream of discharge point necessitating access by dredge barge.	Sediment would need to managed upstream of discharge point necessitating access by dredge barge.
	Ability to improve, maintain or degrade water quality at discharge location relative to existing water quality	Existing discharge point will not change therefore there is no potential to degrade or improve water quality	Existing discharge point will not change therefore there is no potential to degrade water quality	Discharge point will change to Ship Channel which already has degraded water quality and little or no natural features therefore, no potential to degrade water quality	Partial discharge to Ship Channel which already has degraded water quality and little or no natural features therefore, no potential to degrade water quality	Partial discharge to Ship Channel which already has degraded water quality and little or no natural features therefore, no potential to degrade water quality	Discharge of river and CSO outfall from Turning Basin to Outer Harbour where water quality is generally good therefore, alternative would degrade water quality in the Outer Harbour and particularly for Cherry Beach	Discharge of river and CSO outfall from Turning Basin to Outer Harbour where water quality is generally good therefore, alternative would degrade water quality in the Outer Harbour and particularly for Cherry Beach	Discharge of river and CSO outfall from Turning Basin to Ashbridges Bay where there are existing water quality problems which will potentially be made worse
	SUMMARY	High rank	High rank	High rank	High rank	High rank	Low rank	Low rank	Low rank
INTEGRATION WITH INFRASTRUCTURE	Ability to integrate with existing and proposed infrastructure (roads, rail, pipelines, transmission lines) that cannot be moved to facilitate DMNP?	No infrastructure removed or replaced Potential effect is low	Removed or replaced approximately 22330 linear metres of infrastructure and 31000 square metres of bridge work Potential effect is medium	Removed or replaced approximately 12550 linear metres of infrastructure and 12350 square metres of bridge work Potential effect is low	Removed or replaced approximately 28990 linear metres of infrastructure and 32340 square metres of bridge work Potential effect is medium	Removed or replaced approximately 14315 linear metres of infrastructure and 11140 square metres of bridge work Potential effect is low	Removed or replaced approximately 14955 linear metres of infrastructure and 23500 square metres of bridge work Potential effect is medium	Removed or replaced approximately 30615 linear metres of infrastructure and 34800 square metres of bridge work Potential effect is high	Removed or replaced approximately 36774 linear metres of infrastructure and 34000 square metres of bridge work Potential effect is high
	Ability to facilitate continued Port activities/commercial shipping?	No dock wall removed and no Port facilities removed or affected. Potential effect is low	185.5 metres of dock wall removed and no Port facilities removed or affected. Potential effect is low	300 metres of dock wall removed and no Port facilities removed or affected Potential effect is low	485.5 metres of dock wall removed and no Port facilities removed or affected Potential effect is low	2316 metres of dock wall removed and no Port facilities removed or affected Potential effect is high	4588 metres of dock wall removed and access to the Ship Channel and Turning Basin will be removed since Ship Channel will be dammed just east of Cherry Street Potential effect is high	3593 metres of dock wall removed and access to the Ship Channel and Turning Basin will be removed since Ship Channel will be dammed just east of Cherry Street Potential effect is high	2868 metres of dock wall removed and Ship Channel and Turning Basin will be removed since Ship Channel will be dammed at the Hearn Generating Station Potential effect is high
	SUMMARY	High rank	Medium rank	High rank	Medium rank	Medium rank	Low rank	Low rank	Low rank

Table A-1 Criteria Based Assessment

PROJECT OBJECTIVES	CRITERIA	Alternative 1 Do Nothing	Alternative 2 Discharge to Inner Harbour	Alternative 3 Discharge to Ship Channel	Alternative 4 Discharge to Inner Harbour and Ship Channel	Alternative 5 Three discharge points to Inner Harbour and Ship Channel	Alternative 6 Discharge to Outer Harbour	Alternative7 Discharge through Port Lands to eastern end of Outer Harbour	Alternative 8 Discharge to Ashbridges Bay
RECREATION, CULTURE AND HERITAGE OPPORTUNITIES	Ability to remove or restrict existing recreation opportunities (marinas, water use areas) already operating in the Port Lands?	No existing recreation facilities or opportunities removed or restricted. High rank	No existing recreation facilities or opportunities removed or restricted. High rank	No existing recreation facilities or opportunities removed or restricted. High rank	No existing recreation facilities or opportunities removed or restricted. High rank	Alternative will remove or restrict recreational facilities associated with the Docks Low rank	Alternative may close Cherry Beach to recreational swimming due to e. coli contamination. Marinas on north shore of Outer Harbour may be affected and will require new access road, and recreational boating within the Ship Channel may be affected Low rank	Alternative may close Cherry Beach to recreational swimming due to e. coli contamination. Marinas in Outer Harbour may be affected and recreational boating within the Ship Channel may be affected Low rank	Alternative may create larger water quality and sedimentation problem in Ashbridges Bay affecting the marinas and boating organizations located there, Bayside Rowing Club and associated recreational boating within the Ship Channel will be displaced. Low rank
COORDINATE WITH OTHER PLANNING EFFORTS	Consistency with the Central Waterfront Secondary Plan?	Inconsistent - secondary plan assumes a naturalized river mouth in a different location	Consistent - alternative approximates that which was assumed for secondary plan	Consistent - use of planned greenway as potential river mouth aligns linear corridor function with river mouth function	Consistent - alternative approximates that which was assumed for secondary plan and use of planned greenway as potential river mouth aligns linear corridor function with river mouth function	Inconsistent - alternative is not consistent with secondary plan.	Inconsistent - alternative is not consistent with secondary plan.	Inconsistent - alternative is not consistent with secondary plan.	Inconsistent - alternative is not consistent with secondary plan.
	Ability to maintain designated environmentally sensitive areas (ESAs, fish spawning areas)?	No area removed from ESA 130	No area removed from ESA 130	No area removed from ESA 130	No area removed from ESA 130	No area removed from ESA 130	5.16 hectares removed from ESA 130	3.32 hectares removed from ESA 130	30.08 hectares removed from ESA 130
	Area of developable land which will no longer be developable as defined through Secondary Plan.	No change to area of developable land	5.54 hectares of developable land is no longer developable	7.20 hectares of developable land is no longer developable	12.75 hectares of developable land is no longer developable	40.76 hectares of developable land is no longer developable	21.8 hectares of developable land is no longer developable	41.2 hectares of developable land is no longer developable	45.17 hectares of developable land is no longer developable
	SUMMARY	Medium rank	High rank	High rank	High rank	Low rank	Low rank	Low rank	Low rank
CONSISTENCY WITH TWRC INTEGRATED SOIL AND GROUND WATER MANAGEMENT STRATEGY (SUSTAINABILITY FRAMEWORK)	Quantity of contaminated material to be managed	No material to be managed	Moderate quantity of contaminated material to be managed	Least quantity of contaminated material to be managed	Moderate quantity of contaminated material to be managed	Most quantity of contaminated material to be managed	Moderate quantity of contaminated material to be managed	Most quantity of contaminated material to be managed	Most quantity of contaminated material to be managed
	Severity of contamination	None	Most severe contamination	Least severe contamination	Most severe contamination	Most severe contamination	Moderately severe contamination	Moderately severe contamination	Most severe contamination
	SUMMARY	High rank	Medium rank	High rank	Medium rank	Low rank	Medium rank	Medium rank	Low rank

Table A-2 Data for Criteria Assessment

Alternatives	Footprint Size (ha)	Existing Uses Removed	Infrastructure	Length of Dock Wall Removed (m)	Port Function Removed	Area of ESA 130 Removed (ha)	Area of Developable Land Removed (ha)	Area of Soil to be Managed (ha)
2	41.2	• Park • The Works Depot • Keating Channel Pub • Essroc Canada • Vacant Land (Public/Private)		185.5	None	-----	5.54	31.63
3	23.6	• Abitibi • United Rental • NRI • TRU • Harbour Remediation and Transfer • CP Express • Coopers Iron • Park		300	None	-----	7.20	21.09
4	56.4	• Abitibi • United Rental • NRI • TRU • Harbour Remediation and Transfer • CP Express • Coopers Iron • Park • The Works Depot • Keating Channel Pub • Essroc Canada • Vacant Land (Public/Private)		485.5	None	-----	12.75	46.80
5	59.6	• Docks Entertainment Centre • Cherry Flea Market • Lafarge • Abitibi • United Rental • NRI • TRU • Harbour Remediation and Transfer • CP Express • Coopers Iron • Park • The Works Depot • Keating Channel Pub • Essroc Canada • Hurricane Canvas • Neil Pride Sails • Toronto Firefighters • Amalgamated Transit Union		2316	None	-----	40.76	50.86

Table A-2 Data for Criteria Assessment

Alternatives	Footprint Size (ha)	Existing Uses Removed	Infrastructure	Length of Dock Wall Removed (m)	Port Function Removed	Area of ESA 130 Removed (ha)	Area of Developable Land Removed (ha)	Area of Soil to be Managed (ha)
6	47.8	• Abitibi • United Rental • NRI • TRU • Harbour Remediation and Transfer • CP Express • Coopers Iron • Park • Cargill De-icing • Strata Aggregates • ESA #130 • Cheery Beach • Priestly Demolition • Acme Environmental		4588	• Removal of Ship Channel, Turning Basin • Removal of Cheery Beach	5.16	21.8	42.17
7	67.1	• Film Studio • CP Express • Coopers Iron • Park • Unique Ice Rink • McAshphalt Industries • East-West Services • Creative Solutions • Chai Kosher Poultry • AJ's Self Storage • City of Toronto Blue Box Recycling • Cascades Boxboard • BFC Traffic Tech • Cliffside Utilities Inc. • OPG • Port Lands Energy Centre • ESA #130		3593	• Removal of Ship Channel, Turning Basin • Removal of Cheery Beach	3.32	41.2	58.8
8	110	• Film Studio • CP Express • Coopers Iron • Park • Unique Ice Rink • McAshphalt Industries • East-West Services • Creative Solutions • Chai Kosher Poultry • AJ's Self Storage • City of Toronto Blue Box Recycling • Cascades Boxboard • Rowing Club • Telesat • Starchoice • Tommy Thompson Park • Eastern Marine • Allotment Gardens • ESA #130		2868	• Removal of Ship Channel, Turning Basin	30.08	45.17	98.12

Table A-3 Data (Infrastructure)

Alternative	2	3	4	5	6	7	8
Roads(m)	10755	4960	13380	4220	7440	14070	18400
Bridges -New (m²)	31000	12350	32340	11140	23500	34800	34000
Railway (m)	400	295	660	50	720	705	710
Ex. Trunk Services (m)	5815	3575	7465	5480	3625	6910	7900
H.E.P.C. 115Kv Con (m)	100	100	100	100	100	940	940
T.H.E.S Conduit (m)	2850	1165	3360	1200	1070	1885	2460
Hydro Towers	0	0	0	0	0	4	4
Powerlines (m)	0	0	0	0	0	470	470
Gas (m)	950	605	1190	865	630	1600	1600
Bell (m)	790	460	1185	830	200	650	905
Oil (m)	670	1390	1650	1570	1170	3385	3385

Appendix B

EA Workplan

Appendix B - Environmental Assessment Work Plan DRAFT – To be Refined During Environmental Assessment

ENVIRONMENTAL COMPONENT	SUBCOMPONENT	DATA GAPS	ISSUES	DATA COLLECTION METHODS	METHODS FOR PREDICTION OF EFFECTS	RELEVANT GUIDELINES, REGULATIONS AND POLICIES
NATURAL ENVIRONMENT	Aquatic habitat	▪ None – TRCA staff have been actively sampling this area for several years to develop baseline conditions ▪ May require additional sampling activities for aquatic habitat and community assemblages in the Ship Channel	▪ Future relocation of the river mouth could effect the existing habitat and fish usage/or migration ▪ Existing aquatic community is the foundation for the future community	▪ Standard protocols for sampling were used and will be used in future sampling efforts	▪ Prediction of effects to be based on comparison of existing to proposed conditions and on the ability to meet targets.	▪ TRCA Valley and Stream Guidelines ▪ Lakes and Rivers Improvement Act
	Terrestrial vegetation	▪ None - baseline environmental work has been completed by TRCA staff in the study area	▪ Future relocation of the river mouth will effect existing vegetation communities, although minor in extent and nature ▪ There is an existing ESA at the base of Tommy Thompson Park	▪ Ecological land classification ▪ Previous species inventory studies in Portlands, Tommy Thompson Park, Toronto Islands area	▪ Prediction of effects to be based on comparison of existing to proposed conditions and on the ability to meet targets.	▪ TRCA Valley and Stream Guidelines
	Wildlife	▪ None – baseline environmental work has been completed by TRCA staff in the study area	▪ Future relocation of the river mouth could effect the existing habitat and ability to support local wildlife species use or movement through the area ▪ Existing wildlife community in the area is the foundation for the future community	▪ Standard protocols for wildlife inventory ▪ Previous species inventory data for impact study area (tommy Thompson park, Toronto islands	▪ Prediction of effects to be based on comparison of existing to proposed conditions and on the ability to meet targets.	▪ TRCA Valley and Stream Guidelines
RIVER CHARACTERISTICS	Sediment	▪ Future sediment loads – we have some estimates	▪ Future sediment loads could alter the nature of the evaluation ▪ Where will the sediment from the river be deposited ▪ Influence of sedimentation on flood flows ▪ How the sediment is dredged and how frequently ▪ Impact of dredging on vegetation ▪ Impact of sediment on vegetation that is part of naturalization ▪ Sediment load to the harbour/bay ▪ Cost of dredging and disposal of contaminated sediment	▪ None required	▪ 3D model of hydrodynamics and sediment transport	▪ MOE Guideline B-1-3 Protection and Management of Aquatic Sediment Quality in Ontario ▪ MOE Guideline B-6-1 Evaluating Construction Activities Impacting on Water Resources Part III – A Handbook for Dredging and Dredged Material Disposal in Ontario, Legislation, Policies, Sediment Classification and Disposal Options
	Hydraulics	▪ Awaiting HECRAS files from Don West for adopted with/without landform solution ▪ Awaiting any new topographic information ▪ Awaiting bathymetric/topographic grid from DHM model	▪ Flood protection under the regional flood ▪ Impact of more frequent flooding on vegetation (riparian, created, lacustrine) ▪ Frequency of overtopping of structures (roads, bridges)	▪ HEC RAS Model	▪ 3D model of hydrodynamics and sediment transport ▪ HEC RAS Model	▪ Lakes and Rivers Improvement Act
	Hydrology	▪ None	▪ Impacts, during low flow on aquatic and terrestrial species ▪ Impacts, during frequent flows on sediment transport, erosion ▪ Impacts, during high flows on flooding (Spill Zones 1 and 2)	▪ HSPF and VISUAL OTTHYMO	▪ HSPF and VISUAL OTTHYMO	▪ Lakes and Rivers Improvement Act
	Geomorphology	▪ Substrate composition ▪ Longitudinal profile ▪ Cross-sectional configuration ▪ Bathymetry ▪ Bank composition ▪ Historic channel position and configuration	▪ Is flow reversal at work within the Don Narrows section ▪ What is the existing morphology - what opportunities exist to improve channel form and function ▪ What are important channel functions ▪ How can sediment transport be enhanced through channel form ▪ What aquatic and terrestrial improvements can be promoted by the channel	▪ Substrate compostion to obtain from Baird ▪ Longitudinal and cross-sectional profiles through survey in boat – or from bathymetry ▪ Review historic records of channel form	▪ Geomorphic and hydraulic analytical models ▪ Airphoto analysis	▪ Lakes and Rivers Improvement Act

ENVIRONMENTAL COMPONENT	SUBCOMPONENT	DATA GAPS	ISSUES	DATA COLLECTION METHODS	METHODS FOR PREDICTION OF EFFECTS	RELEVANT GUIDELINES, REGULATIONS AND POLICIES
	Water Quality	None	- Load of bacteria, nutrients and contaminants to the harbour/bay - Aesthetics - Impact on aquatic species - Impact on terrestrial species - Impact on recreational activities (body contact recreation) - Change due to proposed infrastructure works - Change due to climate	- Provincial Monitoring Water Quality Network - HSPF Model	3D model of hydrodynamics and sediment transport - Provincial Monitoring Water Quality Network - HSPF Model	- Lakes and Rivers Improvement Act - Provincial Water Quality Objectives - CCME Guidelines for Freshwater Aquatic Life
	Debris	None	- Operational Costs - Impact on aquatic species - Impact on terrestrial species - Impact on recreational activities (body contact recreation)	N/A	Prediction of effects to be based on comparison of existing to proposed conditions.	
SOCIO-ECONOMIC ENVIRONMENT	Visual	Photo record of existing views	Visual impact in terms of preservation of views and vistas and quality of the visual environment	Characterization of views and vistas and assessment of changes in the visual environment	Assessment of loss of visual connectivity and views. Visual intrusion and obstruction. Changes in quality of views and visual character of the landscape	
	Recreation	Trail use statistics for local trail network	Loss of recreational opportunities, disconnection of existing trail network, creation of new recreational opportunities	Inventory of existing trail network and recreational facilities	Evaluation of connectivity and function of trail system and evaluation of post-development recreational opportunities	
	Land use	Precinct plans for Port Lands	Assessment of land use change	Review plans as they are prepared		- Provincial Policy Statement - City of Toronto Official Plan - Central Waterfront Secondary Plan - East Bayfront Precinct Plan - Ports Lands Implementation Strategy - Current and proposed development applications
	Infrastructure	None	- Impact on existing infrastructure - Impact on future planned infrastructure	N/A	HEC RAS Model	
	Cultural heritage	General cultural heritage inventory will be completed	- Assessment of potential to disrupt resources - Identify recommendations from the City of Toronto re: built heritage and cultural heritage landscapes - Selected important heritage sites will be preserved for public education including the broader interpretation of the cultural heritage of the area	Review of information at Ministry of Culture and City of Toronto	- Compare location of known and potential resources to location of excavations and removals - Impacts from all alterations and associated works to be considered	- Ontario Heritage Act - O.Reg. 9/06 - Criteria for Determining Cultural Heritage Value or Interest - O.Reg. 10/06 - Criteria for Determining Cultural Heritage Value or Interest of Provincial Significance
	Archaeology	Detailed Stage 1 archaeological assessment will be completed	- Assessment of potential to disrupt resources - Identify recommendations from the City of Toronto re: archaeological resources - Selected important resources will be preserved for public education including the broader interpretation of the cultural heritage of the area	Review of information at Ministry of Culture and City of Toronto	- Compare location of known and potential resources to location of excavations - Impacts from all alterations and associated works to be considered - All lands where there is planned soil disturbance or alternation will undergo archaeological assessment	
	Air quality	None	Assessment of air quality impacts created by construction activities		Dust	- O Reg. 419/05 - O Reg. 337
	Noise and vibration	Existing noise levels in project area	- Assessment of noise and vibration impacts created by construction activities - Railway noise/vibration impacts on habitat and recreation - Highway noise/vibration impacts on habitat and recreation	Review past studies for adjacent areas	General discussion of potential noise effects associated with construction activities	- Noise Assessment Criteria in Land Use Planning - Publication LU-131 - Ministry Publication NPC-115 - Noise Control Guideline for Class Environmental Assessment Undertakings

ENVIRONMENTAL COMPONENT	SUBCOMPONENT	DATA GAPS	ISSUES	DATA COLLECTION METHODS	METHODS FOR PREDICTION OF EFFECTS	RELEVANT GUIDELINES, REGULATIONS AND POLICIES
	Public health	- Management approach and degree of contamination - West Nile Virus	- Assessment of public health risk associated with management of contaminated soils and groundwater - Assessment of risk for increased threat of West Nile Virus - Hazard Assessment of interaction between wildlife/recreation and transportation infrastructure	Review input with respect to how soil and groundwater contamination will be managed and levels of contamination		
SUSTAINABILITY AND COST	Soil and ground water contamination	Soil and groundwater contaminant data on public lands north of Keating Channel (i.e. 480 Lakeshore Blvd. East)	Heavy oil, metals (including leachate toxic soil for lead), floating non-aqueous phase liquids (LNAPL)	TWRC has retained Golder Associates to conduct a Phase II Environmental Site Assessment (ESA)	The study team will review the results of Golder's ESA to evaluate the extent of soil and groundwater contamination	O.Reg. 153/04
		ii) Soil and groundwater contaminant data on private lands north of Keating Channel and all lands south of Keating Channel	Various impacts on a property by property basis, including heavy metals, polycyclic aromatic hydrocarbons (PAHs), PCBs, petroleum hydrocarbons and the potential presence of LNAPLs and leachate toxic soils	Obtain historical ESA reports completed on the properties. There are some private properties where the study team is unaware of any ESA reports that have been conducted; on other private properties, permission to utilize existing data would have to be obtained.	The study team will review the available ESA reports to evaluate the extent of soil and groundwater contamination that was identified at the time of reporting. Historic results would be compared to the current MOE Standards for parkland use [all fill material (i.e. non-native soil) would be assumed to exceed the MOE "Sensitive Site" Standards which apply within 30m of the a water body such as the proposed river channel, and would therefore not be evaluated.	
	Cost – capital and operating	None	N/A	N/A	N/A	

Appendix C

Impact Assessment Criteria

Appendix C – Preliminary List of Criteria

(to be modified after consultation with stakeholders during the EA Phase)

The purpose of the following table is to present a preliminary list of criteria that will be refined and modified for the technical feasibility assessment of the long list of “alternative methods” and the comparative evaluation of the short list of “alternative methods.” The criteria will be refined and modified based on consultation with project stakeholders and further input from study team members. For each criterion indicators will be developed which reflect the measurement of effects on both existing conditions and the conditions that will be created as a result of and in order to achieve a revitalized waterfront.

Objective	Component	Criteria
1. Naturalization	1.1 Sediment	1.1.1 Potential for change in aquatic and terrestrial habitat as a result of proposed sediment management techniques
	1.2 Hydraulics and Hydrology	1.2.1 Potential for negative and/or beneficial effect on hydraulics and hydrology (flow rate)
		1.2.2 Potential for overall hydraulic change resulting from anticipated changes in climate
	1.3 Geomorphology	1.3.1 Potential for natural river channel form
		1.3.2 Potential for change in channel bed and bank morphology over time
	1.4 Water Quality	1.4.1 Potential for negative and/or beneficial effect on water quality in river or lake
	1.5 Aquatic Species and Habitat (lake and river)	1.5.1 Potential for negative and/or beneficial effect on species of federal, provincial and local concern, and on their critical habitat
		1.5.2 Potential for loss and/or improvement to aquatic habitat function, linkages and populations (including diversity and productivity)
		1.5.3 Potential for effects/improvements to fish habitat, passage and fish populations (may reflect specific indicator for invasive species)
		1.5.4 Potential to develop targeted species assemblages
		1.5.5 Potential for overall species/habitat change resulting from anticipated changes in climate
	1.6 Groundwater and Soil Contamination Characterization	1.6.1 Potential for effect on naturalization from contaminated soils and groundwater
		1.6.2 Potential for effect of naturalization on contaminated soils and groundwater
		1.6.3 Area of contaminated soils to be managed for naturalization activities
	1.7 Terrestrial Species and Habitat	1.7.1 Potential to develop targeted species assemblages (flora and fauna) and communities
		1.7.2 Potential for negative and/or beneficial effect on species/communities of federal, provincial and local concern and on their critical habitat
		1.7.3 Potential for loss and/or improvement to terrestrial wildlife habitat function, linkages and populations (including diversity and productivity)
	1.8 Cultural Heritage and Archaeology	1.8.1 Potential for effect from construction of naturalized area on current and traditional uses of lands by Aboriginal peoples
		1.8.2 Potential for effect from construction of naturalized area on archaeological resources
		1.8.3 Potential for effect from construction of naturalized area on built heritage resources
	1.9 Sustainability	1.9.1 Potential for self-sustaining resilient/adaptable aquatic and terrestrial communities
		1.9.2 Effect of human actions (management of river, recreation, adjacent land use, etc.) on naturalization
		1.9.3 Resiliency to effects of climate change

Appendix C – Preliminary List of Criteria

(to be modified after consultation with stakeholders during the EA Phase)

Objective	Component	Criteria
2. Flood Protection	2.1 Sediment	2.1.1 Potential for change in sediment transport and deposition in the floodplain
		2.1.2 Potential to increase in-stream erosion
	2.2 Hydraulics and Hydrology	2.2.1 Potential for effects on storm water flow/drainage regime
		2.2.2 Potential to remove flood risk
		2.2.3 Potential to impact flooding conditions elsewhere
	2.3 Geomorphology	2.3.1 Potential for flooding to change channel morphology
	2.4 Water Quality	2.4.1 Potential for adverse effect/improvement on surface water quality due to release of contaminants during flooding
	2.5 Groundwater and Soil Contamination Characterization	2.5.1 Area of contaminated soils to be managed for flood protection activities
	2.6 Socio-economics	2.6.1 Potential for adverse effect/improvement on the existing local community due to change in flood risk
		2.6.2 Potential for loss of developable land as a result of flood protection works
		2.6.3 Potential for adverse effect/improvement on planned and proposed land uses
		2.6.4 Potential for economic benefits/losses as a result of project implementation
	2.7 Rail, Road and Utilities Infrastructure	2.7.1 Potential for adverse effect/improvement on the local infrastructure due to change in flood risk
		2.7.2 Potential for intermittent flooding of infrastructure
		2.7.3 Potential for adverse effect/improvement on planned and proposed infrastructure due to change in flood risk
	2.8 Cultural Heritage and Archaeology	2.8.1 Potential for effect from construction of flood protection works on current and traditional uses of lands by Aboriginal peoples
		2.8.2 Potential for effect from construction of flood protection works on archaeological resources
		2.8.3 Potential for effect from construction of flood protection works on built heritage resources
	2.9 Sustainability	2.9.1 Potential for sustainable (including an adaptive management approach) flood protection measures
		2.9.2 Ability to accommodate potential changes in extreme precipitation and water flows resulting from climate change
	2.10 Cost	2.10.1 Cost to implement the flood protection alternatives
		2.10.2 Annual operations and maintenance costs
3. Operational Management	3.1 Sediment	3.1.1 Potential for change in sediment transport and deposition
		3.1.2 Potential to manage sediment without impact on naturalized area
	3.2 Hydraulics and Hydrology	3.2.1 Potential for effects on storm water flow/drainage regime
	3.3 Water Quality	3.3.1 Potential for adverse effect/improvement on surface water quality due to sediment management

Appendix C – Preliminary List of Criteria

(to be modified after consultation with stakeholders during the EA Phase)

Objective	Component	Criteria
	3.4 <i>Debris</i>	3.4.1 Potential for adverse effect of debris management on naturalization
	3.5 <i>Groundwater and Soil Contamination Characterization</i>	3.5.1 Potential for adverse effect/improvement on surface water quality due to release of contaminants
	3.6 <i>Socio-economics</i>	3.6.1 Potential for adverse effects/improvement to existing and proposed recreational opportunities as a result of operational management activities
	3.7 <i>Rail, Road and Utilities Infrastructure</i>	3.7.1 Effect on existing and proposed infrastructure operation and maintenance from operational management
		3.7.2 Potential for navigation of river mouth
		3.7.3 Potential for adverse effects/ improvements to Port operations
	3.8 <i>Cost</i>	3.8.1 Effect on annual operation and maintenance costs
4. Integration with Infrastructure	4.1 <i>Sediment</i>	4.1.1 Effect of modified sediment transport and deposition patterns on existing and planned future infrastructure
	4.2 <i>Hydraulics and Hydrology</i>	4.2.1 Potential for effects on storm water flow/drainage regime
	4.3 <i>Socio-economics</i>	4.3.1 Potential for nuisance effects (noise, dust, accessibility) on local community due to infrastructure modification/ relocation
		4.3.2 Potential for adverse effects/improvements to recreational opportunities as a result of infrastructure modification/relocation
	4.4 <i>Rail, Road and Utilities Infrastructure</i>	4.4.1 Potential for changes to existing, planned and proposed roads
		4.4.2 Potential for changes to existing rail lines or yards
		4.4.3 Potential for changes to existing, planned and proposed underground utilities
		4.4.4 Potential for changes to existing above ground utilities
	4.5 <i>Sustainability</i>	4.5.1 Potential for infrastructure modification/ relocation to support sustainability goals
	4.6 <i>Cost</i>	4.6.1 Potential costs due to infrastructure modification/ relocation
5. Recreational and Cultural Opportunities	5.1 <i>Hydraulics and Hydrology</i>	5.1.1 Effects of microclimate change due to West Nile Virus transmission.
	5.2 <i>Aquatic and Terrestrial Habitat</i>	5.2.1 Effects of microclimate change due to West Nile Virus transmission.
	5.3 <i>Water Quality</i>	5.3.1 Potential for adverse effect/improvement on surface water quality due to release sediment and debris
	5.4 <i>Groundwater and Soil Contamination Characterization</i>	5.4.1 Potential for adverse effect/improvement on surface water quality due to release of contaminants from groundwater and soils
	5.5 <i>Air Quality</i>	5.5.1 Potential for air emissions (dust) to affect recreational users
		5.5.2 Potential for change in local microclimate as a result of the alternative

Appendix C – Preliminary List of Criteria

(to be modified after consultation with stakeholders during the EA Phase)

Objective	Component	Criteria
	5.6 <i>Noise and Vibration</i>	5.6.1 Potential for noise effects
		5.6.2 Potential for vibration effects
	5.7 <i>Public Health</i>	5.7.1 Effects of aquatic habitat on West Nile Virus transmission
		5.7.2 Potential to enhance / impair initiatives aimed at reducing the transmission of West Nile Virus
		5.7.3 Potential impacts on public safety due to proximity to traffic/wildlife
	5.8 <i>Socio-economics</i>	5.8.1 Potential for change in landscape or views
		5.8.2 Opportunity to enhance/degrade existing and proposed pedestrian/cycling linkages
		5.8.3 Potential for marine based recreation opportunities
		5.8.4 Potential to create recreational linkages with adjacent / nearby parks and open spaces
	5.8 <i>Rail, Road and Utilities Infrastructure</i>	5.9.1 Potential for infrastructure modification/relocation to enhance/impact recreational and cultural opportunities
6. Coordination with Other Planning Efforts	5.10 <i>Cultural Heritage and Archaeology</i>	5.10.1 Potential to create cultural opportunities around archaeological resources
		5.10.2 Potential to create cultural opportunities around built heritage resources
	5.11 <i>Sustainability</i>	5.11.1 Potential for recreational and cultural opportunities to support TWRC sustainability goals
	6.1 <i>Groundwater and Soil Contamination Characterization</i>	6.1.1 Potential to enhance / impair other groundwater, soil contamination characterization, and remediation efforts
	6.2 <i>Socio-economics</i>	6.2.1 Potential to facilitate and integrate with planned and proposed land use change
		6.2.2 Potential for change in property values/ownership
		6.2.3 Potential for removal of, or changes to, existing land use
		6.2.4 Potential for disruption effects on the existing surrounding community
		6.2.5 Potential for disruption effects on the planned and proposed surrounding community
		6.2.6 Opportunity for visual integration with future development plans for the area
7. Consistency with TWRC Sustainability Framework	7.1 <i>Groundwater and Soil Contamination</i>	7.1.1 Consistency with TWRC Integrated Soil and Groundwater Management Strategy
		7.1.2 Ability to manage contaminated soils and groundwater
		7.1.3 Constraints imposed by existing soil and groundwater contamination
		7.1.4 Consistency with applicable provincial legislation (e.g., Reg 153)
	7.2 <i>Socio-economics</i>	7.2.1 Potential to create bike paths and pedestrian linkages with and between waterfront areas and the rest of the city