

**PRE-DESIGN REPORT / ENVIRONMENTAL STUDY REPORT
PORT CREDIT HARBOUR WEST PARKS**



OCTOBER 2013

**PORT CREDIT HARBOUR WEST PARKS
PRE-DESIGN REPORT / ENVIRONMENTAL STUDY REPORT**

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EXECUTIVE SUMMARY

Introduction

This Pre-Design Report / Environmental Study Report documents the Municipal Class Environmental Assessment (Class EA) process and findings of the pre-design study. It includes project background and planning process, technical field investigation findings on the existing park conditions, consultation process and comments, opportunities and challenges for future park improvements, identification and evaluation of park area alternatives, preferred alternatives, Large Block Concept Plan, and project implementation.

The Study includes three parks located on the west bank of the Credit River in the City of Mississauga: Port Credit Memorial Park (West) located north of Lakeshore Road West, Marina Park and J.C. Saddington Park located south of Lakeshore Road West. The Rivergate easement, also included in the study area, is a ribbon of riverfront property that connects Marina Park to J.C. Saddington Park, which the City leases from the Credit Valley Conservation (CVC).

The Port Credit Harbour park system boasts the City's most diverse and popular water related uses and is one of Mississauga's most widely used recreational and tourism destinations. The three parks on the western side of the Credit River and the Rivergate easement play a significant role in delivering the waterfront experience that visitors anticipate and provide great opportunities for passive and active recreation, boating, fishing and enjoyment of the City's lake and river's edges.

The *Waterfront Parks Strategy (2008)* (WPS) set in place priorities for undertaking urban park redevelopment and established a series of objectives, program requirements and concept master plans for each of the Port Credit Harbour West Parks. In meeting the requirements of the Class EA process, this Pre-Design Report / Environmental Study Report has advanced the objectives of the WPS through detailed technical field investigations of the shoreline, natural environment and servicing infrastructure. This Study refined the three WPS park concept plans into the Large Block Concept Plan and determined how best to improve the interconnections between the parks, including the Rivergate easement.

Municipal infrastructure projects, including shoreline improvements to the Port Credit Harbour West Parks, require approval under the *Environmental Assessment Act* (EA Act). To obtain EA Act approval, municipalities must follow the process documented in the Class EA (October 2000, as amended in 2007 and 2011).

This Study completed the comprehensive assessment and evaluation of alternatives for the Port Credit Harbour West Parks that will direct future park redevelopment. When considering the alternatives, it was important to have a clear set of actions to consider, or the "evaluation criteria." The criteria, designed to address the natural environment, socio-economic and cultural environment, and technical and cost implications, were used in the evaluation of infrastructure improvement alternatives for each park and the Rivergate easement. The opportunities and challenges, as well as the impacts (both negative and positive) for each alternative were considered. Based on this information, the relative preference for each alternative was established by criteria group. The final preferred alternative was chosen for each park and the Rivergate easement based on the overall criteria group preferences.

Natural Environment

The areas encompassing the Port Credit Harbour West Parks have had their natural landscapes significantly altered by human activities and urban development. As a result, the presence of native flora and fauna has been significantly reduced. A review of readily available background information sources

and field investigations (tree inventory, botanical surveys, spring and fall migrations assessment, breeding bird and amphibian surveys, fish habitat reconnaissance, wildlife habitat surveys, Species At Risk screening and Ecological Land Classification) were undertaken to identify natural environment conditions and characterize terrestrial and aquatic habitat within the Port Credit Harbour West Parks. Opportunities and challenges were identified based on field work findings and an assessment of meaningful natural environment improvements that could be incorporated into the Large Block Concept Plan.

Shoreline Conditions

Shoreplan Engineering assessed the site's natural hazards associated with Lake Ontario. The Natural Hazards Policies (3.1) of the *Provincial Policy Statement* defines three potential natural hazards along the shores of the Great Lakes: Erosion Hazards, Flooding Hazards, and Dynamic Beach Hazards. CVC enacted *Ontario Regulation 160/06* to control development within the Lake Ontario shoreline hazard lands within their jurisdiction. Shoreplan (2005) defined the limits of CVC's regulated area on a reach-by-reach basis. Those limits, defined for the purpose of initial plan review, encompass the current project shoreline lakeward of Lakeshore Road West. The portion of the project site north of Lakeshore Road West is considered to be subject to processes associated with the Credit River, not Lake Ontario.

A detailed reach-by-reach assessment was undertaken of all the shorelines with recommendations for repair, replacement or ongoing maintenance of the associated structures. The assessment addressed erosion hazards and flooding hazards as well as overtopping of existing structures during severe storm events.

Servicing Infrastructure Assessment

The review of the existing servicing infrastructure focused on the Port Credit Harbour West Parks, as well as the adjacent boundary roads and municipal rights-of-way, including Mississauga Road South, Lake Street, Front Street South, Front Street North and Lakeshore Road West. As part of this review, infrastructure information was collected on these adjacent streets and other streets within the study area. The protection of existing stormwater outfalls will be required when shoreline structures are reconstructed.

Consultation

A comprehensive consultation was carried out for this study in accordance with the Class EA. External agencies, key stakeholders, the general public and First Nations were provided multiple opportunities to engage and participate in the development of the Port Credit Harbour West Parks Pre-Design Report / Environmental Study Report. All public notification requirements were met.

The study area has strong ties and history of the Mississaugas' settlements and occupation of the land. The City initiated the engagement with the Six Nations of the Grand River and Mississaugas of the New Credit First Nation, but no comments on the Study have been received. There is also a very active community in Port Credit who are passionate about their village and in particular the waterfront. The community was engaged through two Public Information Centres (PICs), as well as a meeting with key stakeholders who actively use the waterfront.

Agency consultations with the Ministry of Environment and Credit Valley Conservation were held on multiple occasions to ensure continuous involvement and opportunities for feedback during the development and evaluation of the alternatives for each of the three parks and the Rivergate easement. Issues raised through the consultation process informed the identification of the main problem under

investigation for each park and the Rivergate easement. They also provided a greater understanding of the opportunities and challenges for ecological restoration. Key issues were addressed as part of the planning and Class EA process.

Evaluation of Alternatives

The Class EA requires consideration of alternatives and the traceable documentation of decisions to support preferred infrastructure. This Study compared different ways to improve the Port Credit Harbour West Parks to accomplish the vision set out in the WPS. Evaluation criteria were established to compare and evaluate the alternatives based on the potential for positive or negative impact in the following four categories or criteria groups: natural environment; socio-economic and cultural environment; technical; and cost.

Port Credit Memorial Park (West) Shoreline

Four shoreline alternatives were considered for Port Credit Memorial Park (West): do nothing, upgrade to a natural shoreline, upgrade to a hard shoreline and a combination of both natural and hard shore features. The “combination” alternative is the preferred solution for the Port Credit Memorial Park (West) shoreline as it provides the best opportunity to enhance the park for a variety of users and programmatic functions. It also provides a balanced approach of hard and soft shoreline treatments to meet both the technical requirements for slope stabilization and the naturalization objectives that provide improved quality and diversity of terrestrial and aquatic habitat.

Port Credit Park (West) Pedestrian Connection

Port Credit Memorial Park (West) is located directly north of Marina Park but is separated by Lakeshore Road West with no direct and continuous linkage between the two parks. There is an indirect crossing west of the park at a traffic light at the intersection of John Street and Lakeshore Road West. The WPS identified an opportunity for a better link between the two parks to improve the movement and connectivity between the parks, as well as to increase pedestrian safety. Four alternatives were evaluated (do nothing, at grade, underpass and overpass), and the “underpass” alternative was selected as the preferred because this alternative with a moderate construction cost provides a significant improvement to pedestrian safety, programming and operation of the park system.

Marina Park Shoreline

The shoreline at the north end of Marina Park is currently protected by a steel sheet pile wall which provides a moderate to high level of protection from flooding. At the south end of Marina Park, the shoreline protection consists of a range of measures in varying states of disrepair, providing low to no protection from flooding. The WPS identified many improvement opportunities for this park, including shoreline protection that promotes fish habitat, pedestrian access to the river and measures to minimize conflicts between boat launching fishing activities and programmed civic uses. Three alternatives were evaluated (do nothing, do nothing at north end and flood proof south end, and flood proof north and south ends), and flood proofing and associated shoreline improvements for both the north and south ends is the preferred long-term alternative for Marina Park as it reduces flood risk and allows for year-round usability including improved connectivity between J.C. Saddington Park and Port Credit Memorial Park (West).

Marina Park Non-Motorized Boat Launch

The current boat launch located in Marina Park is shared between motorized and non-motorized boat users which creates potential conflicts for boaters when the ramps are busy. For the purposes of this

Study, the boat launch ramps for motorized boats will remain in their existing location at the north section of the park. The WPS indicates that access to the water for boating is an essential component of a connected waterfront system. Four alternatives were evaluated (do nothing, Marina Park, Port Credit Memorial Park (West), and Hacienda Bay), and providing a new, separate non-motorized boat launch dock in Marina Park is preferred overall as it reduces potential on-land conflicts between motorized and non-motorized boats while still maintaining easy access to parking amenities for boaters.

Rivergate Easement Pedestrian Connection

Currently, there is no direct and continuous linkage between Marina Park and J.C. Saddington Park along the water's edge, which limits park circulation and impairs connectivity. The WPS indicates that a waterside walkway connection is to be considered to connect J.C. Saddington Park and Marina Park. Two alternatives were evaluated for the Rivergate easement pedestrian connection: do nothing and shoreline connection. The technical studies, including a geotechnical report, prepared for this Study, determined that an elevated fixed walkway is an appropriate design for this location and it was therefore identified as the alternative to be evaluated.

The "shoreline connection" alternative is the preferred over a widened sidewalk along Front Street South and it is the most preferred alternative from both a natural environment and socio-economic environment perspectives. It provides opportunities to improve fish habitat by increasing areas of naturalization, and it creates a continuous connection along the water's edge. Despite the high cost, the overall long term benefit of the "shoreline connection" alternative is considered to be greater than the "do nothing" alternative.

Hacienda Bay Shoreline

Hacienda Bay, located in J.C. Saddington Park, does not have direct and safe access to the water's edge for the public, and the existing shoreline provides only a moderate level of shoreline protection. The WPS recommended this area be considered for a potential wetland restoration. Three alternatives were being considered for this park area: do nothing, cobble beach and a coastal wetland.

The "cobble beach" alternative is the most preferred alternative for Hacienda Bay when assessing across all criteria groups. Although not the most preferred alternative from a natural environment perspective, a cobble beach still provides moderate improvements to the existing natural environment conditions. The "cobble beach" alternative is more resilient and cost effective than the wetland alternative.

J.C Saddington Park Shoreline

The shoreline at J.C. Saddington Park consists of stacked and rough random stone which is prone to overtopping and limits pedestrian access to the water's edge. The WPS identified many improvement opportunities for this park, but specific to the shoreline improvements it noted that alternative stabilization techniques need to be considered in the future to allow better access to the water. Three alternatives were evaluated: do nothing, improve existing and cobble beach.

Constructing a cobble beach at J.C. Saddington Park was selected as the preferred alternative as it provides the greatest opportunity to improve the safety, enjoyment and access to the water's edge. It also has wildlife habitat and naturalization advantages over the other alternatives.

J.C. Saddington Park Pond

The pond located in J.C. Saddington Park is an asset to the park. The existing pond provides limited ecosystem functions and has high maintenance requirements. The WPS identified many improvement opportunities for the pond, including enhancements for multi-season uses, stabilization of the edges, and native planting to improve aesthetic and habitat improvement opportunities. Three alternatives were evaluated for J.C. Saddington Park Pond: do nothing, naturalized and urban/concrete.

The “naturalized” pond alternative is the overall preferred alternative as it provides the most opportunities for habitat creation and naturalization and requires the least maintenance. The significant benefit of a naturalized area within an urban park outweighs the socio-economic and cultural environment advantages of the “urban” water feature alternative associated with greater program flexibility.

Large Block Concept Plan

The basis for the Large Block Concept Plan comes from the WPS conceptual master plans and recommendations for Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park, as well as the Rivergate easement pedestrian connection. Through the Class EA process, the technical investigations and public consultations informed the establishment of the preferred alternatives for the redevelopment of the Port Credit Harbour West Parks shoreline and associated infrastructure. The Large Block Concept Plan supports the WPS vision for the park system along the west edge of the Credit River and Lake Ontario.

Port Credit Harbour West Parks Redevelopment

A description of all the proposed improvements for the redevelopment of the Port Credit Harbour West Parks is provided for each of the parks and the Rivergate easement. Sample cross-sections of shoreline improvements are included in this Study, but it is noted that detailed cross-sections will need to be prepared during detailed design for all Port Credit Harbour West Parks improvements. Construction of the shoreline works will likely be scheduled in the fall to minimize impacts to park users, charter boats and other boaters, and to respect the warm water fisheries timing windows for Credit River, which restrict in-water works in April, May and June.

Overall, the proposed shoreline improvements will reduce the potential for flooding and erosion and will have minimal impacts on the natural environment. Although shoreline construction may have some short-term impacts on fish habitat, the inclusion of vegetated areas along Port Credit Memorial Park (West) and cobble beach sections in Hacienda Bay and J.C. Saddington Park will provide improved shoreline fish habitat over the long-term. Naturalization of riparian areas will improve habitat for breeding birds, migrating birds and local wildlife diversity (e.g., butterflies). The naturalization of J.C. Saddington Pond will also improve habitat for waterfowl, possibly amphibians and invertebrates. Construction has the potential to disturb existing riparian vegetation surrounding the pond in the short-term, but careful construction planning and staging can reduce this impact and the new habitat created will increase overall diversity of the pond for the long-term.

Next Steps and Additional Approvals

A Phase I Environmental Site Assessment (ESA) was undertaken for Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park, as a due diligence measure prior to the park redevelopment. Phase II ESA was recommended for all three parks and has already been completed for Port Credit Memorial Park (West) and Marina Park. No further investigations are required for Port Credit Memorial

Park (West), and it was recommended that a soil delineation program be undertaken for Marina Park prior to a risk assessment. A Phase II ESA is still required for J.C. Saddington Park.

The next step in the redevelopment process of the Port Credit Harbour West Parks is to resolve the proposed improvements from the Large Block Concept Plan through detailed design. The detailed design should incorporate any opportunities to improve terrestrial and aquatic habitat, and sustainable design elements, as appropriate for the site conditions. Studies confirming the existing servicing infrastructure and detailed above and below water inspections will be required, along with other approvals by various City departments and agreements with adjacent landowners. Once the detailed design is complete, the following additional approvals are required prior to the construction.

Navigable Waters Protection Act – Approval under the Navigable Waters Protection Act protects the public right to boat freely on the waterways in Canada. Approval is required for any structure to be placed in any navigable waters. The Navigation Protection Act is expected to come into effect in spring 2014 which will replace the Navigable Waters Protection Act and may change some of the requirements.

Fisheries Act – Section 35 (1) of the Fisheries Act states that “No person shall carry on any work, undertaking or activity that results in the harmful alteration or disruption, or the destruction, of fish habitat”. Fisheries and Oceans Canada has a Level II agreement with the Credit Valley Conservation (CVC). Under this agreement, CVC is responsible for reviewing projects to identify any impact to fish and fish habitat and working with proponents to identify mitigation measures.

Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 161/06) – Proposed shoreline works along the Credit River and Lake Ontario are regulated by the Credit Valley Conservation in order to prevent flooding and erosion. Approval will be required for any and all works proposed within the lands regulated pursuant to Ontario Regulation 161/06.

Public Lands Act – Public Lands Act (PLA) may be also required. The approval is provided under a Work Permit issued by the Ministry of Natural Resources. Lake and river bottoms are owned by the province and MNR administers these lands under PLA.

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1.0 INTRODUCTION

During the past decade, the City of Mississauga has facilitated many successful water-edge enhancements both along the river and on the lake edge in Port Credit. The Port Credit Harbour park system boasts the City's most diverse and popular water related uses and is one of Mississauga's most widely used recreational and tourism destinations. The three parks on the western side of Credit River (Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park) and the Rivergate easement play a significant role in delivering the experience that visitors anticipate and provide great opportunities for passive and active recreation, boating, fishing, and interaction and enjoyment of the City's water edge.

The *Waterfront Parks Strategy (2008)* (WPS) set in place priorities for undertaking urban park redevelopment and established a series of objectives, program requirements and concept master plans for each of the Port Credit Harbour West Parks. In meeting the requirements of the Municipal Class Environmental Assessment Process (EA), this Pre-Design Report / Environmental Study Report has advanced the objectives of the WPS through detailed technical field investigations of the shoreline, natural heritage and service infrastructure, and development of a large block concept plan for the three parks, as well as Rivergate easement and the interconnections between the sites.

This Pre-Design Report / Environmental Study Report was established to document the Municipal Class EA process and findings of the pre-design study. It includes sections on: project background and planning process, technical field investigation findings on the existing park conditions, consultation process and comments, opportunities and challenges for future park improvements, identification and evaluation of park area alternatives, preferred alternatives, large block concept plan, and project implementation.

2.0 PROJECT BACKGROUND

This section provides a summary of Port Credit's history as cited in the *Old Port Credit Village Heritage Conservation District Plan (2004)* and the *Heritage Conservation Feasibility Study of Old Port Credit Village Stage 1 Report (2003)*, as well as *Waterfront Parks Strategy (2008)*.

2.1. History of the Community and Port Credit Harbour West Parks

Port Credit has a long history of human use that predates the village survey of 1835. There is archaeological evidence that suggests that both Iroquoian and Algonkian-speaking peoples were attracted to the Credit River Valley thousands of years ago. A group of Ojibwa, known as the Mississaugas, left the north shore of Lake Ontario and settled around the mouth of the Credit River in the early 1700s. French and British fur traders were known to have exchanged goods with the Mississaugas during the 18th Century, and had even established a trading post and the Government Inn on the east bank of the river. Over a century later, the Mississaugas resettled upriver in 1826 and the Credit Harbour Company was established in 1834. This significant community investment represented the beginning formation of the Port Credit Village and harbour. The grid pattern established by the government in the early to mid-1800s is still evident today. In 1847, the Mississaugas were plagued by disease and relocated to the New Credit Reserve near Brantford, Ontario.

Port Credit went through major commercial expansion and economic growth between 1848 and 1855, which ended abruptly with a significant fire referred to as “the great fire of 1855”. As a result of the fire, the west end of the harbour and the construction activities of the Grand Trunk and Great Western railways were destroyed, and commerce was diverted from the Village. The stonehooking trade, which involved large vessels raising shale from the bottom of Lake Ontario, kept the port operational late into the 19th Century. Port Credit's economy was also revived with the addition of the St. Lawrence Starch Company and Port Credit Brickyard, and in 1914 it was formally incorporated as a Village. Port Credit underwent infrastructure improvements in the early 20th Century, acquiring Town status in 1961. It was amalgamated into the City of Mississauga in 1974.

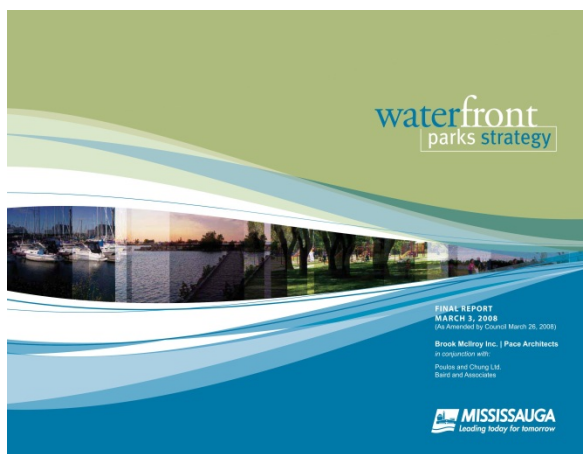


Figure 1: Changes to the Port Credit Waterfront Shoreline (Heritage Conservation Feasibility Study, 2003)

The iconic lighthouse in Port Credit was constructed in 1991 as a reminder of Port Credit's marine heritage. It houses Front Street Pumping Station (Peel Region) and is the location of the Port Credit Business Improvement Association (BIA). The original lighthouse out in the harbour, constructed in 1863, was destroyed by fire in 1936.

Old Port Credit Village was designated as a Heritage Conservation District in 2004. Both Marina Park and J.C. Saddington Park are situated within this Heritage Conservation District. Marina Park has had a long record of human use from Native fishing in canoes, to wharves and warehouses that were in operation prior to the great fire, and more recently for recreational boating. J.C. Saddington Park, primarily a lake-filled area (see **Figure 1**), was redeveloped to a contemporary design in the 1970s providing lakefront access and recreational opportunities. It is considered a good example of park planning in Canada from the 1970s. This modernization period in town planning also presented the village with the Rivergate apartment building that is the only high-rise structure on the west side of the river south of Lakeshore Road.

2.2. Mississauga Waterfront Parks Strategy (2008)



The Waterfront Parks Strategy (2008) (WPS) is a long term plan to manage future development of the City's waterfront parks. Better integration and connectivity of waterfront parks, improved connections to the City at-large, the introduction of more sustainable elements and promotion of stronger relationships between the parks and the existing natural systems were presented as the key strategic goals of the WPS.

Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park were selected as priority parks to help alleviate environmental, operational and recreational impacts on other well-used waterfront parks. For each of the three parks, the WPS identified opportunities and constraints, provided recommendations on park activities, uses and park elements in the form of concept master plans. The WPS also recommended further investigation on creating a walkway connection along the shoreline between Marina Park and J.C. Saddington Park via the Rivergate easement.

The Pre-Design Report / Environmental Study Report was the next step in the refinement of the WPS concept master plans through technical detailed investigations for Port Credit Memorial Park (West), Marina Park, J.C. Saddington Park and the Rivergate easement.

3.0 PROJECT PLANNING PROCESS

3.1. Objectives

The WPS identifies the Port Credit area as the Urban Waterfront Centre of the City of Mississauga. Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park are three of seven parks included in the Urban Waterfront Centre. The three parks and the Rivergate easement (see **Section 4.0**) are linked together along the western bank of the Credit River harbour. This Pre Design / Environmental Study Report establishes an opportunities and challenges framework that will guide the potential park redevelopment in the future. The report is a comprehensive assessment and evaluation of alternative solutions for rehabilitation and naturalization of the shoreline, including potential new connections to surrounding municipal infrastructure. The park redevelopment opportunities are presented as a Large Block Concept Plan in **Section 7.0**, and the infrastructure improvements can be found in **Section 8.0**.

In order to achieve this Study's objectives and to support the principles established in the WPS, the following criteria were established:

1. Provide for a balance between the natural heritage and recreational uses of the parks.
2. Explore opportunities to protect, restore, and enhance the natural heritage features of the parks.
3. Understand the coastal and fluvial processes and their impact on the shoreline.
4. Understand climate change and the potential impact on the shoreline and littoral zone.
5. Create opportunities for the promotion of fish habitat including the consideration of a coastal wetland in Hacienda Bay.
6. Identify alternative shoreline treatments and recommend a preferred solution.
7. Understand the environmental effects of the preferred solution and propose mitigation measures.
8. Strengthen the linkages between the natural areas along the west side of the harbour.
9. Provide opportunities for both motorized and non-motorized boat access.
10. Provide pedestrian access to and along the water's edge.
11. Provide pedestrian connections between Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park (including the Rivergate easement).
12. Provide an existing site services assessment with potential connection locations including preliminary costing.
13. Obtain approval for the Pre-Design Report / Environmental Study Report and preferred solution from the Ministry of the Environment and any other agencies as required.

3.2. Municipal Class Environmental Assessment

Municipal infrastructure projects (including shoreline improvements to the Port Credit Harbour West Parks) require approval under the *Environmental Assessment Act* (EA Act). To obtain EA Act approval, municipalities must follow the process documented in the Municipal Class Environmental Assessment (Class EA) (October 2000, as amended in 2007 and 2011).

The Class EA is a key part of the planning process for municipal infrastructure projects and places an emphasis on:

- Providing traceable and easy to understand decision-making;
- Involving the public; and
- Considering alternatives.

The Class EA process consists of five phases, illustrated in **Figure 2**.

All projects under the Class EA process are categorized into four Schedules based on the nature of the project and the potential magnitude of environmental impact. A description of each Schedule is provided below. The Schedule a project falls under is confirmed at the completion of Phase 2. The project schedule determines which phases of the Class EA process must be completed.

Schedule A: Generally includes normal or emergency operation and maintenance activities. The environmental effects of these activities are usually minimal and therefore, these projects are pre-approved.

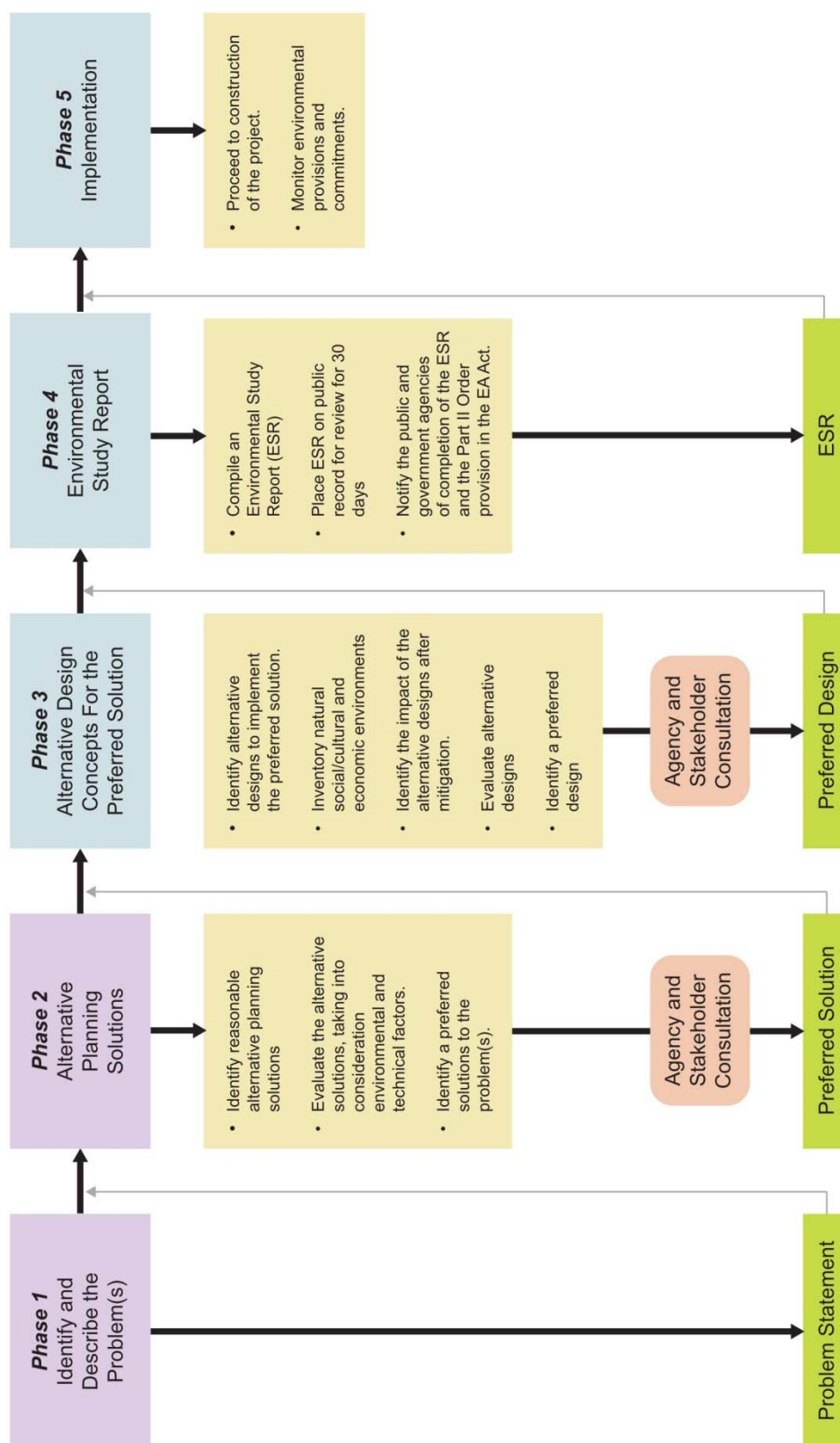
Schedule A+: These projects are pre-approved; however, the public is to be advised prior to project implementation. The manner in which the public is advised is to be determined by the proponent.

Schedule B: Generally includes improvements and minor expansions to existing facilities. There is the potential for some adverse environmental impacts. Schedule B projects must complete phases 1 and 2 of the Class EA process including consultation with those who may be affected.

Schedule C: Generally includes the construction of new facilities and major expansions to existing facilities. These projects proceed through all phases of the environmental assessment planning process outlined in the Class EA.

The Port Credit Harbour West Parks Class EA covers a number of individual projects. Each individual project's Class EA schedule and status has been identified and documented in this Study (refer to **Table 15** in **Section 8.0**).

Figure 2: Municipal Class Environmental Assessment Process



3.3. Methodology and Evaluation Criteria

This study involved a comprehensive assessment and evaluation of alternatives for the Port Credit Harbour West Parks that will guide future park redevelopment. When considering an alternative, it was important to have a clear set of actions to consider, or the “evaluation criteria.” A set of criteria was established early in this project to allow for public and agency feedback before applying them in an evaluation. The criteria, as shown below in **Table 1**, were designed to address the natural environment, socio-economic and cultural environment, technical and cost implications, and were used in the evaluation of infrastructure improvement alternatives for each park and the Rivergate easement. The opportunities and challenges, as well as the impacts (both negative and positive) for each alternative were considered. Based on this information, the relative preference for each alternative was established by criteria group. The final preferred alternative was chosen for each park and the Rivergate easement based on the overall criteria group preferences. The identification and evaluation of alternatives for each park is discussed in **Section 6.0**.

Table 1: Evaluation Criteria

Port Credit Harbour West Parks Criteria for Evaluation Options	
Criteria Groups	Evaluation Criteria
Natural Environment	<ul style="list-style-type: none"> Opportunity to improve fish habitat Opportunity to increase areas of naturalization Potential for impact to aquatic or terrestrial habitat during construction Potential for impact to water quality Potential for impact to species at risk
Socio-Economic and Cultural Environment	<ul style="list-style-type: none"> Potential for disruption during construction and operation Opportunity to enhance park/waterfront enjoyment Opportunity to improve safety Opportunity to improve economic benefits to the community
Technical	<ul style="list-style-type: none"> Level of protection provided from wave conditions Design life / Maintenance requirements Potential for contamination issues Operational flexibility Potential impact on utilities Constructability
Cost	Relative cost differences (including capital, property, operational and maintenance)

3.4. Municipal Class Environmental Assessment Project Revisions

It is important to note that it may be necessary to revise Class EA projects due to the environmental implications of changes to the project or due to a delay in implementation. Class EAs generally require review after 10 years of the planning and design process and current environmental settings, to ensure the project and the mitigation measures are still valid given the current planning context.

For *Schedule B* projects, a review is required if:

- (i) significant modifications to the project occur from what was presented to the public during the screening process, or
- (ii) a period of 10 years lapses from the filing of the Notice of Completion of the Environmental Study Report (ESR) to the proposed commencement of construction. The review shall be documented in the project file, and a Revised Notice of Completion shall be issued to all potentially affected members of the public and review agencies. A period of 30 calendar days shall be provided for review and response by the public.

For *Schedule C* projects, a review is required if a period of 10 years lapses from:

- (i) the filing of the Notice of Completion of the ESR, or
- (ii) The Ministry of Environment's denial of a Part II Order request(s), to the proposed commencement of construction. The review shall be recorded in an addendum to the ESR, and a Notice of Filing of Addendum shall be issued.

4.0 EXISTING CONDITIONS

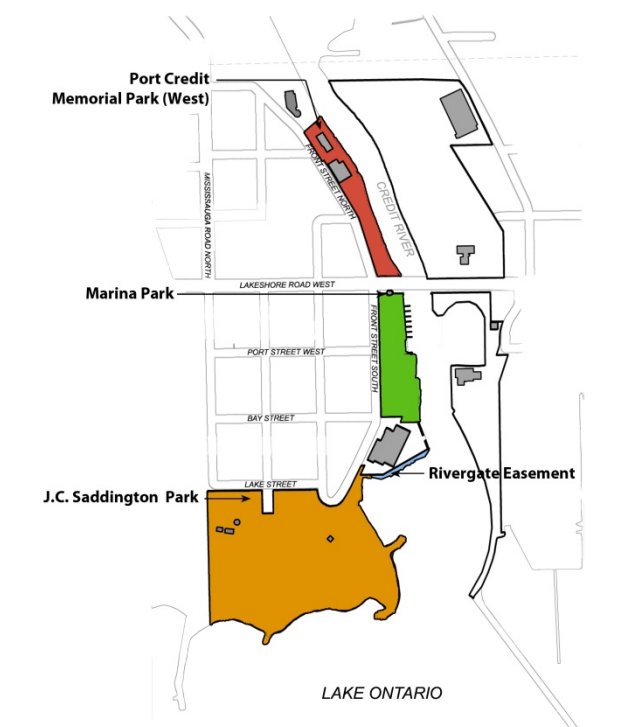


Figure 3: Port Credit Harbour West Parks

provides recreational opportunities along the multi-use trails, the Waterfront Trail and other park attractions.

The study site includes three parks located on the west bank of the Credit River: Port Credit Memorial Park (West) located north of Lakeshore Road, Marina Park and J.C. Saddington Park located south of Lakeshore Road (see **Figure 3**). The Rivergate easement is a ribbon of riverfront property that connects Marina Park to JC Saddington Park. The City leases the easement from the Credit Valley Conservation and is also included in the study area. This section of the report provides context on the existing conditions within the study area and the policies that will guide redevelopment of the Port Credit Harbour West Parks. This information is provided in the following subsections: Planning Context; Socio-Economic Existing Conditions; Natural Environment Existing Conditions; Shoreline and Wave Existing Conditions and Infrastructure Existing Conditions.

4.1. Planning Context

A review of the City of Mississauga Official Plan and other plans provides the planning framework, vision and objectives for the development and enhancement of the Port Credit Harbour West Parks.

4.1.1. Mississauga Official Plan

The City of Mississauga has a new Official Plan (dated 2011) which was partially approved by the Ontario Municipal Board in November 2012 and is in effect, save for the parts that are still under appeal. The Mississauga Official Plan consists of a principal document and a series of local area

Port Credit, with an approximate population of 12,000, is one of the most well-preserved villages in the City of Mississauga. It is a vibrant mixed-use lakefront community with mainly commercial uses along Lakeshore Road that attracts tourists and locals with its shops and restaurants. The residential areas have a mix of single-detached, multi unit and apartments on both east and west sides of the Credit River and along Lake Ontario. The community is well connected to the regional transit system, including GO Transit and will benefit from future construction of the Hurontario Light Rapid Transit (LRT) and Port Credit GO Mobility Hub.

Port Credit is also very popular for large festivals and events, such as the Mississauga Waterfront Festival, Port Credit Blues and Jazz Festival, the Great Ontario Salmon Derby, Port Credit In-Water Boat Show and more recently the Mississauga Marathon. The waterfront area provides public access for recreational and commercial activities for both motorized and non-motorized boats. It is a great attraction for residents and visitors alike and

plans. There are some instances where the policies and schedules of the principal document do not address all circumstances particular to Port Credit. In these cases, the Port Credit Local Area Plan (referenced in **Section 5.1.3** below) elaborates on or provides exceptions to the policies or schedules of the principal document. The Port Credit Harbour West Parks are designated as Public Open Space and Greenbelt (see **Figure 5**). In addition, portions of the parks are identified within Natural Hazard Lands as these parks are located along the Lake Ontario shoreline. Key relevant policies in the Mississauga Official Plan are discussed below.

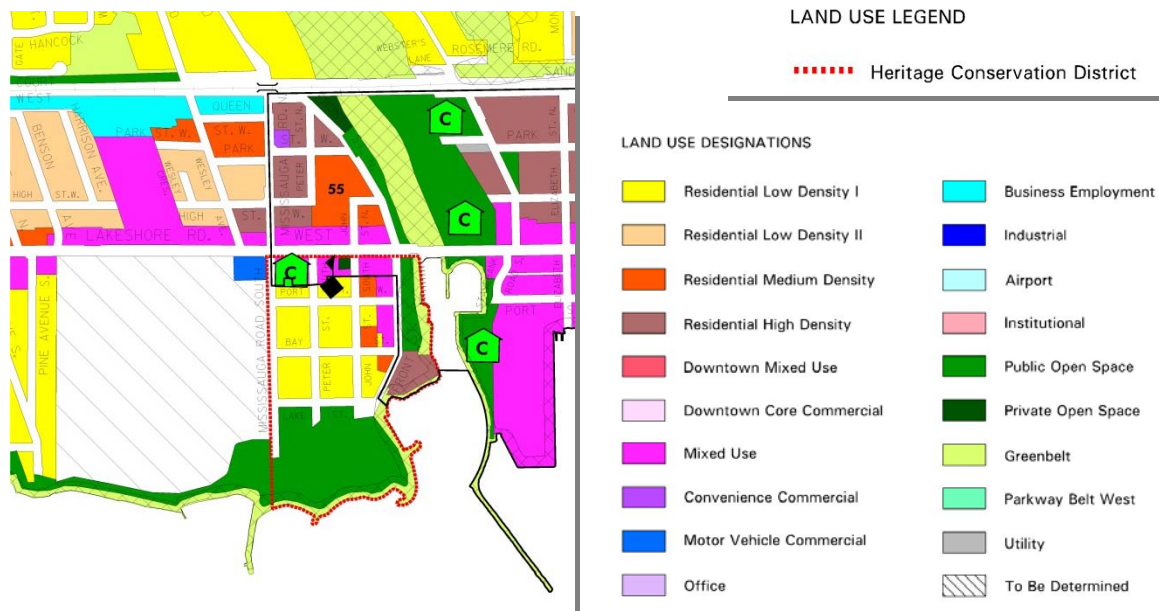


Figure 4: Schedule 10 Land Use Designations, Sept. 2011, Mississauga Official Plan (City of Mississauga)

4.1.1.1. Open Space

The Green System (*Schedule 1a*) is comprised of the natural areas system, parks and open space and natural hazard lands. Under **Section 11.2.4** the Open Space network consists of two designations: Public Open Space and Private Open Space. Among the permitted uses within the Public Open Space designation are conservation, recreational facility, stormwater retention and storm quality pond and accessory uses.

Under **Section 6.3.3** of the Official Plan, the Parks and Open Spaces network within the Green System is further defined. Public Open Space (which pertains to Port Credit Harbour West Parks) includes: City parks and trails, public golf courses, public

cemeteries, stormwater management facilities, conservation, recreation and urban agriculture.

Under **Section 6.3.3.3** “Public parkland will be designed to allow access for a variety of complementary activities through interconnections of pathways, a multi-use recreational trail and the public parkland network; and to provide a safe and accessible environment through development of clear sight-lines, openness and visible entrances that can be achieved by maximizing street frontages where possible”.

Policy 6.3.3.19 of the Official Plan “recognizes the Lake Ontario Waterfront as a vibrant area of lake-dependent and lake-enhanced activities, with natural habitat areas protected, enhanced and restored and heritage resources incorporated”. Through land acquisition, capital works and the review of proposals, the City of Mississauga will endeavour to ensure this vision is realized.

4.1.1.2. Greenbelt

Under **Section 11.2.3** of the Official Plan, “Lands designated as Greenbelt are generally associated with natural hazards and/or natural areas where development is restricted to protect people and property from damage and to provide for the protection, enhancement and restoration of the natural area system”. Permitted uses within areas designated as greenbelt include parkland, passive recreational activity and accessory uses, among other uses (**Section 11.2.3.2**).

4.1.1.3. Natural Hazard Lands

As stated under **Section 6.3.2** of the Official Plan “ Natural Hazard Lands are generally unsafe and development and site alteration will generally not be permitted due to the naturally occurring processes of erosion and flooding associated with river and stream corridors and the Lake Ontario shoreline”. These lands are associated with valley lands, floodplains, watercourse corridors and the Lake Ontario shoreline and will be designated Greenbelt.

Policy 6.3.2.4.1 states that “Where modifications to the existing Lake Ontario shoreline occur they should contribute to its restoration, the healthy functioning of coastal processes, and include opportunities for the creation and enhancement of aquatic and other wildlife habitat, where appropriate.”

Policy 6.3.2.4.2 states that “Development and site alterations along the Lake Ontario shoreline will be evaluated in the context of their potential impact on the overall physical and ecological functions occurring within the defined shoreline or watershed management area”.

In addition, **Policy 6.3.2.4.3** indicates that “Mississauga will encourage that the health and integrity of the Lake Ontario shoreline be protected, enhanced and, where possible, restored through development. Any mitigative measures to address natural hazard associated with the Lake Ontario shoreline will protect and enhance ecological functions”.

Development and site alternation will not be permitted within Hazardous Lands adjacent to the Lake Ontario shoreline which are impacted by flooding hazards, erosion hazards

and/or dynamic beach hazards unless it meets the requirements of the appropriate conservation authority and the policies of the City.

4.1.1.4. Lake Ontario Waterfront

The City of Mississauga has an extensive Lake Ontario waterfront, which measures approximately 22 kilometres and is a part of the Green System and is a major public destination. There are twenty-two waterfront parks in Mississauga, including the Port Credit Harbour West Parks. **Section 7.6.2** of the Official Plan indicates that development “*in waterfront communities should have regard for the Mississauga Waterfront Parks Strategy*”.

Under **Policy 7.6.2.2** the Official Plan states “*Port Credit harbour will be the focus for tourism and economic development on the waterfront. The function and image of Port Credit as a centre for commercial activity and tourism will be enhanced and promoted. In addition, planning studies will consider the entire waterfront and identify other tourism and economic development opportunities.*”

Policy 7.6.2.5 the Official Plan states “*Public Open Space and development adjacent to the Lake Ontario Waterfront Trail should be designed to enhance the trail user’s experience of Lake Ontario and by creating a varied, visually stimulating, comfortable and human-scaled edge to the waterfront trail*”.

4.1.1.5. Heritage Conservation Districts

Under **Section 7.4.3** of the Official Plan, Heritage Conservation Districts will be designated by the City as being of unique character to be conserved through a designation by-law pursuant to the *Ontario Heritage Act* and the following criteria:

- a. most of the structures or heritage elements, in a grouping, that have a unique character and reflect some aspect of the heritage of the community or are of historic, architectural, natural, or cultural significance; or
- b) an environment that should be preserved because of its cultural heritage or scenic significance.

A *Heritage Conservation District Plan* was developed in 2004 for Old Port Credit Village, and includes Marina Park and J.C. Saddington Park.

4.1.2. The Port Credit Local Area Plan

Over the last five years, the City has undertaken a number of studies aimed at better defining the future of Port Credit. This work began with the District Policies Review Public Engagement Process. Through this process the City worked with the communities of Port Credit and Lakeview to establish a future vision and direction for these two important waterfront planning districts. A *Directions Report (2008)* documented the culmination of this work and was the foundation for the development of the *Port Credit Local Area Plan (draft January 2012)*, one of a series of local area plans under the new Mississauga Official Plan. This area plan provides policies for the lands within Port Credit area and includes lands identified as Community Nodes and Neighbourhood Character Areas. Port Credit Memorial Park (West) and Marina Park are within the Community

Node and J.C. Saddington Park is within the Neighbourhood Character Area. The guiding principles for the Port Credit Local Area Plan are:

- 5.1. *Protect and enhance the urban village character recognizing heritage resources, the main street environment, compatibility in scale and design, mixture of uses and creating focal points and landmarks.*
- 5.2. *Support Port Credit as a distinct waterfront community with public access to the shoreline, protected views and vistas to Lake Ontario, the Credit River and active waterfront uses.*
- 5.3. *Enhance the public realm by promoting and protecting the pedestrian, cyclist and transit environment, creating well connected and balanced parks and open spaces and reinforcing high quality built form.*
- 5.4. *Support the preservation, restoration and enhancement of the natural environment.*
- 5.5. *Balance growth with existing character by directing intensification to the Community Node, along Lakeshore Road (east and west), brownfield sites and away from stable neighbourhoods. Intensification and development will respect the experience, identity and character of the surrounding context and vision.*
- 5.6. *Promote a healthy and complete community providing a range of opportunities to access transportation, housing, employment, the environment, recreation, education and community and cultural infrastructure that can assist in meeting the day-to-day needs of residents.*

Key policies in the Local Area Plan related to the Port Credit Harbour West Parks are as follows:

- 7.1.2 *Within the waterfront parks system, the protection, preservation and restoration of existing natural systems will be prioritized and balanced to direct and guide the planning of existing and future waterfront activities.*
- 7.1.3 *Opportunities to enhance and restore the Credit River as a biologically productive and diverse ecosystem are encouraged.*
- 7.2.1 *Mature trees are recognized as providing important environmental benefits and contributing to the character of Port Credit. Improvements to the urban forest are encouraged.*
- 7.3.2 *Development will strive to minimize the impact on the environment and incorporate sustainable development practices in accordance with the City's Green Development Strategy.*
- 8.3.3 *Creative enterprises that support the economy and create a lively area year round are encouraged to locate in the Community Node.*
- 8.4.1 *The character will reflect the Vision of an urban waterfront village. City initiative, including investment in lighting, public art, transportation features, streetscape improvements, parks planning, will contribute to the Vision.*
- 8.5.1 *Mississauga supports the continuation and improvement of water dependant activities such as marinas, facilities in support of recreational boating and sport*

fishing and uses that benefit from being near the shoreline, parks and the Waterfront Trail.

8.5.2 *Uses in proximity to the waterfront will provide for public access, where appropriate. Through land acquisition, capital works and the review of proposals, Mississauga will endeavour to ensure this Vision is realized.*

8.5.3 *The Mississauga waterfront parks are a significant element of the Port Credit character. Planning for the waterfront system will be guided by the Waterfront Parks Strategy, 2008.*

10.2.4.4 *For the portion of the Harbour Mixed Use Precinct, on the south side of Lakeshore Road West, between Front Street South and the Credit River, the Old Port Credit Village Heritage Conservation District Plan applies.*

Additionally, the draft Local Area Plan identifies Marina Park as Special Site 31, located at the southeast corner of Lakeshore Road West and Front Street South. A “Special Site” is one that merits special attention and is subject to additional policies. Marina Park is to be developed as an integral component of the Port Credit Harbour and Historical Village in terms of complementary uses and design while recognizing its potential to establish a vibrant river and village edge.

The Special Site policies identify additional uses such as community infrastructure and marina that will be permitted in the park in addition to the uses allowed under the Public Open Space and Greenbelt designations, subject to, among other matters, the approval of Credit Valley Conservation¹. In addition, the following policies will also apply:



5.31. d *Prior to any development, the City will prepare a Master Plan to address the future use and layout of Marina Park. The Master Plan should be prepared in consultation with the public, and should address, among other matters, the future layout of the site, archaeological assessment, historical interpretation opportunities, and the feasibility of a river trail; and ,*

5.31.e *when the Master Plan has been prepared and approved by City Council, the “holding” designation in the Zoning By-law may be removed.*

¹ Section 5.31.a is under appeal at the OMB. Section 4.27.6.35.a (Mississauga Plan 2003) is in effect.



Figure 5: Inspiration Port Credit Study Area Boundaries (City of Mississauga)

4.1.3. Inspiration Port Credit

In 2012 the City launched Inspiration Port Credit to create a Comprehensive Strategic Master Plan for the Imperial Oil Lands (IOL) and provide a peer review of the master plan currently under development for the Port Credit Harbour Marina site (owned by the Canada Lands Company Limited - CLC). The Master Plan will translate and refine the Local Area Plan vision for Port Credit as an urban waterfront village, while balancing the needs of the owners of the sites with the needs and goals of the community (see **Figure 5**). Inspiration Port Credit is about envisioning a bright, new future for the waterfront in two specific areas while embracing the important history and achievements of Port Credit.

The Comprehensive Strategic Master Plan for Inspiration Port Credit will be completed in 2013.

4.1.4. Old Port Credit Village Heritage Conservation District Plan, 2004

The Old Port Credit Village Heritage Conservation District Plan serves to guide the physical change over time so it contributes to, and does not detract from, the district's historical character. The area to which the plan applies is identical to the area designated as a heritage conservation district by **By-law No. 0272-2004** (see **Figure 6**). The goal of the plan is to conserve and enhance the historical character of Old Port Credit Village.

Key sections and policies related to the Port Credit Harbour West Parks are as follows:

2.2.1.3 Marina Park and J.C. Saddington Park will continue to provide public access to the water.

Section 2.2.7 of the Plan titled "Public Lands" has four objectives, which include:

- a) *To maintain the existing street grid, and enhance boulevards where and when possible;*
- b) *To open the long views on Mississauga Road South to Lake Ontario and on Port Street West and on Bay Street to the Credit River;*

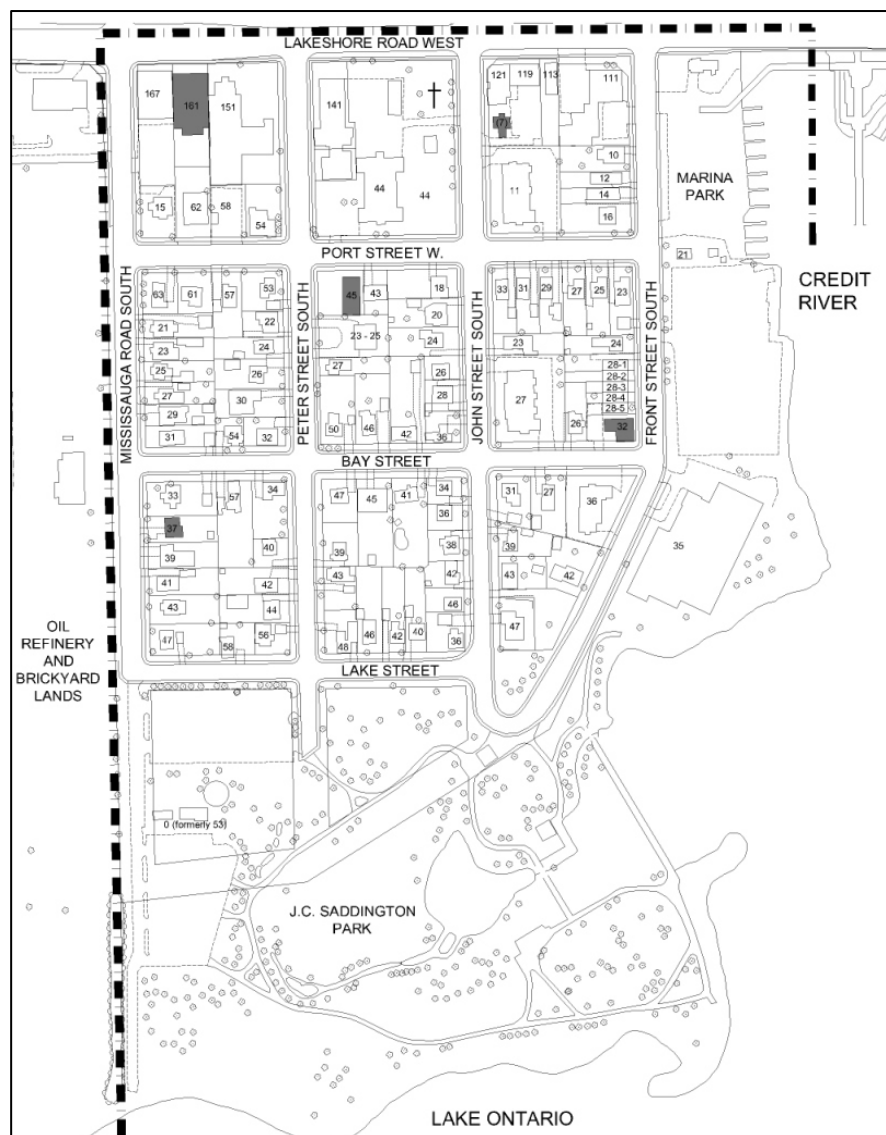


Figure 6: Heritage Conservation District Planning Area
(Old Port Credit Village Heritage Conservation District Plan, 2004)

- c) To maintain J.C. Saddington Park and the public access it provides to Lake Ontario; and
- d) To enhance public access to the Credit River in any development of Marina Park.

Key policies from Section 2.2.7 that relate to the parks include:

- 2.2.7.4 J.C. Saddington Park will remain a City park for passive recreational activities primarily.
- 2.2.7.5 Any plan for the alteration of the landscape design of J.C. Saddington Park will have regard for the park's original design principles as described in the plan's landscape conservation guidelines (Section 7.0).

- 2.2.7.6 *The public will be consulted on any master plan for the alteration of J.C. Saddington Park.*
- 2.2.7.7 *The City will consider adapting one of the buildings at the former waterworks pumping station in J.C. Saddington Park for a seasonal or year-round use.*
- 2.2.7.8 *Marina Park will be developed as an integral part of both Port Credit harbour and the Old Port Credit Village Heritage Conservation District.*
- 2.2.7.9 *The City will prepare a master plan for Marina Park prior to any development, and the plan will address the following: see **Section 4.1.2** on Special Site 31.*

4.1.5. Waterfront Parks Strategy 2008

The Mississauga Waterfront Parks Strategy (WPS) is a long-term plan to manage the future of the City's Waterfront Parks. Key strategic goals of the strategy include:

- Better integration and connectivity of waterfront parks;
- Improved connections to the city-at-large;
- Introduction of more sustainable elements into the parks; and,
- Promotion of stronger relationships between the parks and the existing natural systems.

The goal of the Strategy is to:

1. *Guide future park planning/design and land-use decisions;*
2. *Promote a triple bottom line approach in park design which considers environmental, social and economic sustainability;*
3. *Plan for future park expansions;*
4. *Identify key park elements which will contribute to year-round enjoyment and greater continuity;*
5. *Inform budgetary decisions;*
6. *Set park development priorities;*
7. *Preserve and enhance existing natural systems; and*
8. *Provide recommendations for future work.*

Waterfront Parks Strategy

Vision Statement

Embrace the spirit of the lake and the river at the point where land and water unites.

Identify the place where the natural and urban environments connect with locations for rest and relaxation for all.

Educate with the knowledge gained from experiencing the Waterfront Parks and demonstrate how to lead by example.

Connect the physical, natural, cultural and emotional elements of the parks to the community, the environment and to the passage of time.

Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park were identified as priority parks, and the Rivergate easement connection is a recommended pedestrian linkage in the WPS. The strategy developed concept designs for these parks as a starting point for future detailed design. Information on the WPS concepts is included in the next session, **Section 4.2**, of this Study under the description of each of the parks.

4.1.6. Natural Heritage & Urban Forest Strategy

The City of Mississauga initiated a *Natural Heritage & Urban Forest Strategy (2012)* in April 2012 and is expected to be completed by December 2013. The purpose of this project is to develop a strategy to guide City programs and activities for the protection, enhancement, restoration and expansion of natural areas and the urban forest across Mississauga.

Although there are no natural areas or urban forest identified within the Port Credit Harbour West Parks in the Official Plan *Schedule 3* Natural System, the areas along the Lake Ontario shoreline are identified as Natural Hazard. In addition, lands located adjacent to the Credit River, north of Lake Shore Road West, are identified as Natural Areas. Consequently, the recommendations and implementation tools from the Natural Heritage & Urban Forest Strategy may affect the Port Credit Harbour West Parks.

4.1.7. Lake Ontario Integrated Shoreline Strategy

The Lake Ontario Integrated Shoreline Strategy (LOISS) is an ongoing study established by Credit Valley Conservation (CVC), along with a steering committee of municipal and agency partners to analyze the current conditions along the Lake Ontario shoreline. The purpose of LOISS is to provide clear guidance on the steps needed to be taken by the local, regional, and provincial government and local community to protect and enhance the shoreline ecosystem for the future, while also meeting and improving the existing needs of the natural environment. The study will include a specific focus on opportunities for the protection and restoration of natural ecosystems along the shoreline. LOISS will further inform updates of the WPS as well as specific future parkland redevelopment projects.

The LOISS study area encompasses the Port Credit Harbour West Parks. LOISS provides an important regional context for many of the goals, objectives and policies of the Port Credit Local Area Plan; as well, the City of Mississauga Official Plan and the WPS are similar to the goals and objectives of LOISS.

4.1.8. Port Credit Harbour West Parks Environmental Site Assessment

Concurrent with this study process, the City of Mississauga engaged the services of Franz Environmental to conduct Environmental Site Assessments (ESAs) in accordance with O. Reg. 153/04 (as amended) for Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park. These reports were undertaken as a due diligence measure prior to the park redevelopment. Phase I Reports identified potential areas of environmental concern and recommended that Phase II ESAs be carried out for all three parks. A Phase II Report for Port Credit Memorial Park (West) was completed in 2013 and no further investigation is required. A Phase II Report for Marina Park, completed in 2013, recommended a soil delineation program be undertaken to investigate hydrocarbon impacted soil volumes. Once the extent of the contamination is identified, remedial/management options can be identified through a risk assessment in 2013. A Phase II ESA will be undertaken for J.C. Saddington Park at a later date.

4.2. Socio-Economic Conditions

The socio-economic conditions are based on on-site investigations and the findings from the WPS as discussed below.

4.2.1. Port Credit Memorial Park (West)

Port Credit Memorial Park (West), zoned Open Space (OS2) and Greenbelt (G1), is approximately 1 hectare (2.47 acres) in size and spans along approximately 327 metres (1,073 feet) of shoreline. The park is fairly narrow, is used relatively passively throughout the year and is a key viewing area for activities on the river, such as regattas, rowing and boating. The Mississauga Canoe and Don River Rowing Clubs lease facilities at the north end of the park and use the site adjacent to the buildings for boat storage and kayaking, canoeing and rowing functions.

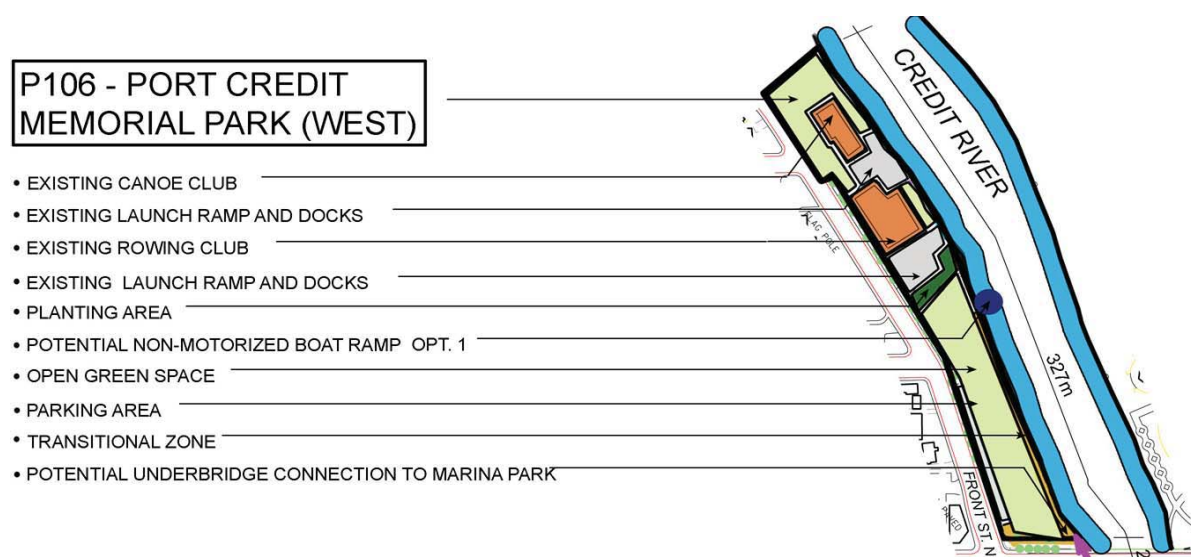


Figure 7: Port Credit Memorial Park (West) Concept (City of Mississauga)

The park also features a carved totem pole donated in 1967 in honour of the Centennial, and large mature trees provide shade to park users.

The WPS recommended specific park activities and use, park elements and shoreline treatments to be considered in the improvement of Port Credit Memorial Park (West) as illustrated in **Figure 7**, including:

- Improvement of entire river edge, new design can provide for needed park facilities such as water's edge seating and pedestrian access.
- New shoreline treatment should absorb wake and be accessible to non-motorized water-craft such as canoes and kayaks.
- Shoreline should be redeveloped with a combination of vegetated slope and armour stone to promote fish habitat and waterfowl management.
- River edge improvements can provide locations for education elements.
- Topography well suited to viewing the river.
- Small watercraft launching facility for public use.
- Narrow site, should be better connected to Marina Park.
- Under-bridge connection to Marina Park may be possible, requires further study.

- At-grade crossing on Lakeshore Road West should be examined, potentially not feasible due to sightline issues.
- Healthy mature trees on site that should be preserved.
- Incorporation of the goose management plan.
- Existing parking off Front Street North can remain with minor improvements.

4.2.2. Marina Park

Marina Park, zoned Open Space (H-OS2-09) and Greenbelt (H-G1-11), is approximately 1.27 hectares (3.13 acres) in size and spans along approximately 264 metres (866 feet) of shoreline. The northern boundary of Marina Park is anchored by the lighthouse containing the Region of Peel's Front Street Pumping Station, as well as offices for the Port Credit BIA. Charter boats occupy several docks at the north end of the site, and public boat launch ramps for both motorized and non-motorized boats are located immediately south of these docks. The south end of Marina Park is currently a fenced, gravel parking lot.

Marina Park is located within the Old Port Credit Village Heritage Conservation District. Aboriginal settlement on the site dates back thousands of years and archaeological work completed to date has identified several areas of archaeological interest in the park. The site's use has evolved from industrial in mid-19th century to a popular recreational area for swimming in the 1930s and 1940s. The park is now mainly used for recreational boating and public riverfront access. Fishing is an important activity that takes place in this park and it is the location of the very popular Salmon Derby. This park draws visitors to its charter boat facilities.

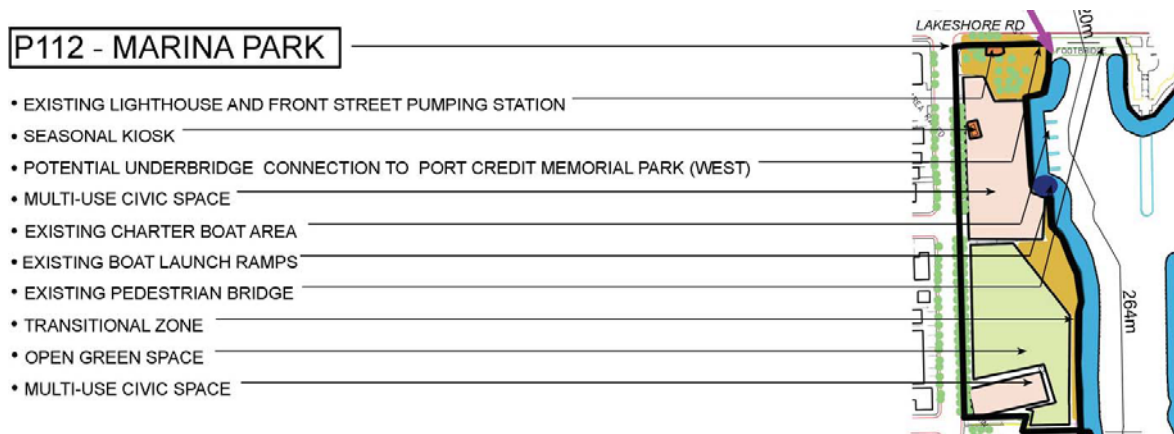


Figure 8: Marina Park Concept (City of Mississauga)

Marina Park does not have any dedicated recreational greenspace, but it does have a direct connection to the Waterfront Trail that links to the east side of the Port Credit River shoreline.

The WPS recommended specific park activities and use, park elements and shoreline treatments to be considered in the improvement of Marina Park as illustrated in **Figure 8**, including:

- Shoreline should be redeveloped with necessary repairs to the existing sheet pile wall and shoreline protection that will promote fish habitat and pedestrian access to the water's edge.
- Views to the river need to be preserved; views along Port Street and Bay Street to Credit River reinforce the original street pattern and historic layout of the site.

- Long history of human use on the site (native history, warehouses, stonehooking, swimming, recreational boating, public riverfront access) should inspire interpretation elements.
- Fishing is an important activity that takes place in this park and should be provided with a dedicated location to try and limit potential conflicts with boaters.
- A connection should be created to Port Credit Memorial Park (West) and J.C. Saddington Park along the shoreline.
- Almost the entire site is within the Flood Hazard Limit and may be limited in regards to the addition of structures; further study will be required to determine the feasibility of permanent structures on the site.

While the WPS recommended that the boat launch ramps be removed from Marina Park, for the purposes of this study, the Class EA is assuming that they will remain in the park for the foreseeable future (or until another suitable location is determined).

4.2.3. Rivergate Easement

The Rivergate easement is located immediately south of Marina Park (north of J.C. Saddington Park) and is adjacent to the Rivergate apartment building that was built in the 1970s. The City leases a six-metre wide easement around the river side perimeter of this property from the Credit Valley Conservation. The easement includes approximately 193 metres (633 feet) of the shoreline, of which the northeast section extends over the Credit River, and the southern portion extends over the shoreline and borders with J.C. Saddington Park. The Rivergate apartment building's underground parking garage encroaches into various sections of the easement.

The area is not publicly accessible and is heavily vegetated along the shore.

The WPS proposed that the Rivergate easement may provide a river's edge walkway connection between Marina Park and J.C. Saddington Park as illustrated in **Figure 9**.

4.2.4. J.C. Saddington Park

J.C. Saddington Park, zoned for Open Space (OS2) and Greenbelt (G1), is approximately 10 ha (25 acres) in size and spans across approximately 810 metres (2,658 feet) of shoreline. The park was reconstructed in the 1970s primarily as a lake-fill site. The park is well used and has family-oriented activity areas, including children's play facilities, picnic areas, a pond and public washrooms. The park is also used for shore fishing and the pond is frequently used for operating model-boats. It is connected to the Waterfront Trail, local multi-trail networks and offers great views and proximity to Lake Ontario.

J.C. Saddington Park is located within the Old Port Credit Village Heritage Conservation District. The Heritage Conservation Feasibility Study of the Old Port Credit Village (2003) determined that any plan for the alteration of the park should have regard for the original design principles. The shoreline prior to the lake infill has unique heritage value, as well as the filling stages of the park between the 1950s and 1960s. The park also features buildings with historic value.

The WPS recommended specific park activities and uses, park elements and shoreline treatments to be considered in the improvement of J.C. Saddington Park as illustrated in **Figure 9**, including:

- Shoreline should be re-engineered to control erosion and promote fish habitat as well as pedestrian access to the water's edge and be considered for coastal wetland restoration in Hacienda Bay.
- Protect the natural features and processes of the Credit River and Lake Ontario.
- Possible location for small, non-motorized watercraft launching facilities in Hacienda Bay – requires further study.
- Opportunity for a connection to Marina Park via an on-land walkway along the shoreline – require further study of Rivergate easement.
- Adaptive re-use of existing washroom and heritage buildings, potential formation of outdoor square.

The water lots are owned by the Ministry of Natural Resources and leased to Credit Valley Conservation (CVC) which owns the remainder of the park lands, with the exception of the Right-Of-Way owned by the City. The CVC in turn leases the parklands to the City of Mississauga.

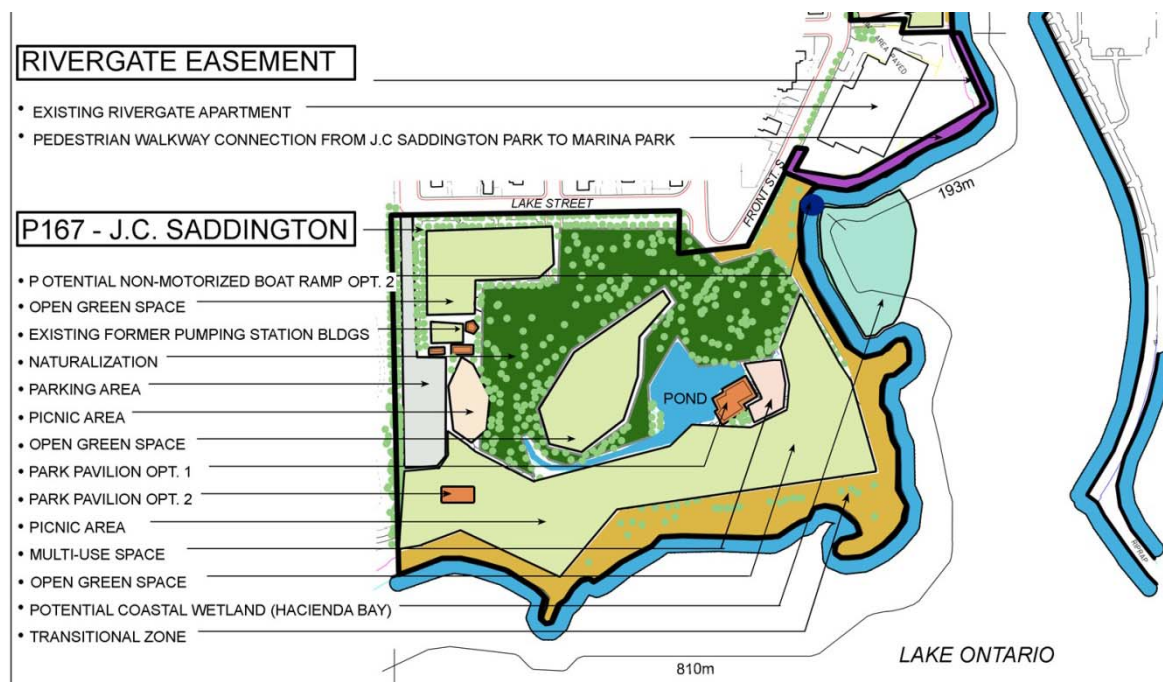


Figure 9: J.C. Saddington Park and Rivergate Easement Concepts (City of Mississauga)

4.3. Natural Environment Conditions

The areas encompassing the Port Credit Harbour West Parks have had their natural landscapes significantly altered by human activities and urban development. As a result, the presence of native flora and fauna in both their terrestrial and aquatic form and functions has been significantly reduced. These areas have been disconnected from surrounding natural heritage linkages.

4.3.1. Background Review

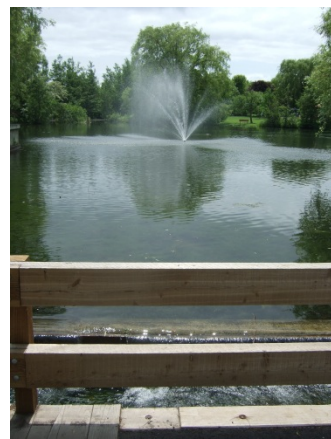
A review of readily available background information sources was undertaken to identify natural features associated with Port Credit Harbour West Parks, including on-line sources (Official Plans, Land Information Ontario, Natural Heritage Information Centre Database and Species at Risk in Ontario list). For a full list of reviewed documents, refer to the reference list in **Appendix 1**.

This information was used to identify natural features and characterize terrestrial and aquatic habitat within the Port Credit Harbour West Parks, however, the review of the background materials available revealed that secondary source information for the project location is limited and generally confined to J.C. Saddington Park.

4.3.1.1. J.C. Saddington Park / Ecological Land Classification

This park was established during the 1960s as a wave erosion control measure using lakefill to transform the site into the current land base for J.C. Saddington Park. Ecological Land Classification (ELC) of the Lake Ontario shoreline was completed in 2009 (CVC 2009a) which includes J.C. Saddington Park. The following communities were identified:

- **Urban Parkland** – This ELC ecosite is the dominant community within J.C. Saddington Park consisting of manicured lawns and sporadically planted trees. Some of these species include Cottonwood (*Populus deltoides*), White Cedar (*Thuja occidentalis*), Silver Maple (*Acer saccharinum*), Weeping Willow (*Salix alba 'pendula'*), Colorado Spruce (*Picea pungens*) and Norway Maple (*Acer platanoides*).
- **Hardened Shoreline** – All shoreline areas associated with J.C. Saddington Park have been hardened with medium to large armour stone minimizing potential shoreline vegetation.
- **Open Aquatic** – Located in the centre of the park, this ecosite represents an open water feature associated with a small, low flow stream that outlets into the mouth of the Credit River. Weeping Willow and Red-osier Dogwood (*Cornus sericea*) provide dominant shoreline cover. Other species associated with this area include Field Mint (*Mentha arvensis*), Spotted Jewelweed (*Impatiens capensis*), White Cedar, Speckled Alder (*Alnus incana*), Grass-leaved Goldrenrod (*Euthamia graminifolia*) and White Poplar (*Populus alba*). Areas of this open water community are showing signs of naturalization; however, much of the area is dominated by ornamental plantings. Limited habitat/feeding areas for waterfowl may be



provided for species such as Mallard (*Anas platyrhynchos*) and Canada Goose (*Branta canadensis*).

Open space within the park consists of manicured lawns, a paved pathway system and planted trees. There are no natural habitats present.

4.3.1.2. *Wildlife*

The City of Mississauga's Natural Areas Survey, which includes surveys for breeding birds, amphibians and vegetation, does not cover the areas of the Port Credit Harbour West Parks. Therefore, no data specific to wildlife in the project area is available. Surveys completed by Dillon to provide flora and fauna data specific to the Port Credit Memorial Park (West), Rivergate easement, Marina Park and J.C. Saddington Park are discussed below in **Section 4.3.2**.

4.3.1.3. *Butterflies*

Migrant Butterflies and Arthropod Surveys were completed in the fall of 2009 at J.C. Saddington Park (CVC 2009b). All species observed were common except for Monarch (*Danaus plexippus*) which is discussed below in **Section 4.3.3**.



4.3.1.4. *Birds*

Winter Bird Surveys were completed in 2008 – 2009 throughout J.C. Saddington Park (CVC 2009c). Large numbers of waterfowl were observed, representing 62.3% of all bird sightings. All species are considered common except for a single Horned Grebe (*Podiceps auritus*) which is discussed below in **Section 4.3.3**. Old nests observed within the park include American Goldfinch (*Carduelis tristis*) and Baltimore Oriole (*Icterus galbula*). It is assumed that these nests were built in the 2008 breeding season.

The mouth of the Credit River has been identified as part of the Globally Significant West End of Lake Ontario Important Bird Area (ON022) which extends from Port Credit to the mouth of the Niagara River. This area is defined by the impressive congregations of waterfowl which have gathered annually since 1990, primarily in late winter and early spring. Flocks of mainly diving ducks can number in the thousands, sometimes tens of thousands (Birdlife International 2012).



4.3.1.5. Fisheries

Aquatic habitat within the study area can be characterized as nearshore habitat type. Subcategories of this habitat include open coast, embayment and wetland and river mouth. These features were outlined in Appendix G of the LOISS Background Review and Data Gap Analysis Report (Clayton 2011). The Lake Ontario shoreline along J.C. Saddington Park can be described as open coast. These areas are defined as unprotected shorelines that are directly subjected to the thermal conditions, wave action, sediment transport and other functions of the main part of Lake Ontario. Fish communities within these areas are generally transitory with less diversity and productivity than other areas. Substrates within these areas are generally sand, rip-rap or cobbles with beach, armour stone or other retaining walls characterizing shoreline types.

The Credit River at Lake Ontario can be described as river mouth habitat. This habitat is a mixing zone where a flowing river mixes with the static water of Lake Ontario. Substrates found here are generally finer sands and silts that have been carried as bedload by the river and deposited into the delta. Habitat alteration, periodic dredging and the presence of Carp have contributed to the absence of aquatic vegetation beyond very tolerant species.

Fish species captured in the open coast area of Lake Ontario and river mouth of the Credit River are outlined below in **Table 2**.

Table 2: Fish Species Captured in the Area of the Port Credit Harbour West Parks

Common Name	Scientific Name	Information Source ^{1,2}	Provincial SRank ³
Bowfin	<i>Amia calva</i>	DFO, CVC	S4
Alewife	<i>Alosa pseudoharengus</i>	DFO, CVC	SNA
Longnose Gar	<i>Lepisosteus osseus</i>	CVC	S4
Gizzard Shad	<i>Dorosoma cepedianum</i>	DFO, CVC	S4
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	DFO, CVC	SNA
Rainbow Trout	<i>Oncorhynchus mykiss</i>	DFO, CVC	SNA
Brown Trout	<i>Salmo trutta</i>	DFO, CVC	SNA
Rainbow Smelt	<i>Osmerus mordax</i>	DFO, CVC	S5
Northern Pike	<i>Esox lucius</i>	DFO	S5
White Sucker	<i>Catostomus commersoni</i>	DFO, CVC	S5
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	DFO, CVC	S5
Greater Redhorse	<i>Moxostoma valenciennesi</i>	DFO	S3

Common Name	Scientific Name	Information Source ^{1,2}	Provincial SRank ³
Common Carp	<i>Cyprinus carpio</i>	DFO, CVC	SNA
Emerald Shiner	<i>Notropis atherinoides</i>	DFO, CVC	S5
Common Shiner	<i>Luxilus cornutus</i>	DFO, CVC	S5
Spottail Shiner	<i>Notropis hudsonius</i>	DFO, CVC	S5
Bluntnose Minnow	<i>Pimephales notatus</i>	DFO, CVC	S5
Brown Bullhead	<i>Ameiurus nebulosus</i>	DFO, CVC	S5
Rock Bass	<i>Ambloplites rupestris</i>	DFO, CVC	S5
Pumpkinseed	<i>Lepomis gibbosus</i>	DFO, CVC	S5
Smallmouth Bass	<i>Micropterus dolomieu</i>	DFO, CVC	S5
Largemouth Bass	<i>Micropterus salmoides</i>	DFO	S5
Black Crappie	<i>Pomoxis nigromaculatus</i>	DFO, CVC	S4
Yellow Perch	<i>Perca flavescens</i>	DFO, CVC	S5
Walleye	<i>Sander vitreus vitreus</i>	DFO	S5
Round Goby	<i>Neogobius melanostomus</i>	DFO, CVC	SNA
Freshwater Drum	<i>Aplodinotus grunniens</i>	DFO, CVC	S5
Lake Chub	<i>Couesius plumbeus</i>	CVC	S5
Fathead Minnow	<i>Pimephales promelas</i>	CVC	S5
Longnose Dace	<i>Rhinichthys cataractae</i>	CVC	S5
Longnose Sucker	<i>Catostomus catostomus</i>	CVC	S5
Logperch	<i>Percina caprodes</i>	CVC	S5

¹Fisheries and Oceans Canada (DFO) fish data received for PCC1 – PCC9 for May 29, 1990 and October 6, 2008 sampling.

²Credit Valley Conservation fish collection records provided in Appendix G of the LOISS Report.

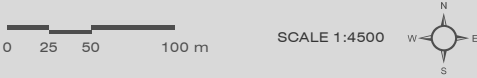
³S3 – *Vulnerable*; S4 – *Apparently Secure*; S5 – *Secure*; SNA – *Not Applicable*.



**PORT CREDIT HARBOUR
WEST PARKS**

ECOLOGICAL LAND CLASSIFICATION
FIGURE #10

- HS - Hardened Shoreline
- OAO - Open Aquatic
- UP - Urban Parkland
- HR - Hedgerow



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR
GOOGLE EARTH PRO

MAP CREATED BY: SFG
MAP CHECKED BY: LK
MAP PROJECTION: NAD 1983 UTM Zone 17N

File Location: I:\GIS\125881 - Port Credit\Mapping\
Figure 11 Ecological Land Classification.mxd



PROJECT: 125881
STATUS: FINAL
DATE: 08/28/12



PORT CREDIT HARBOUR WEST PARKS

SURVEY LOCATIONS FIGURE #11

Amphibian Breeding Survey

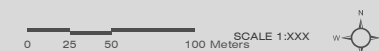
- Amphibian Breeding Surveys

Breeding Bird Survey

- Walking Transect

Spring and Fall Bird Migration Assessment

- ① Point Count
- Boundary of Observed/Heard Calling Song Birds that were Recorded
- Approximate Field of Vision



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR
GOOGLE EARTH PRO

MAP CREATED BY: SFQ
MAP CHECKED BY: LK
MAP PROJECTION: NAD 1983 UTM Zone 17N

File Location: I:\GIS\125881 - Port Credit\Mapping\
Figure 12 Survey Locations.mxd



PROJECT: 125881
STATUS: FINAL
DATE: 08/27/12

4.3.2. Field Investigations

The methodology for the identification of the natural environmental conditions consisted for many field investigations, as discussed below.

4.3.2.1. Ecological Land Classification

During field investigations, vegetation was characterized using the Ecological Land Classification System (ELC) for Southern Ontario (Lee et al. 1998). Where present, vegetation community boundaries were determined through the review of aerial photography, and then further refined through on-site field studies. Field studies involved identifying the dominant species for each vegetation cover type based on visual estimates of species abundances. The ELC system methodology recommends that a vegetation community be a minimum of 0.5 hectares in size before it is defined. For vegetation patches smaller than 0.5 hectares, a generic descriptive label (e.g., Urban Parkland), consistent with its land use or dominant vegetation was given to the area.



Vegetation communities have been mapped on aerial to graphically represent the specific spatial pattern in the vegetation cover according to species composition, physiognomy, and physical site characteristics (see **Figure 10**).

No natural vegetation communities occur within the Port Credit Harbour West Parks. Rather, vegetation is part of an urban park landscape that contains vegetation that is primarily manicured (e.g., single/multiple trees or shrubs surrounded by cut grass) or hedgerows (e.g., unmaintained opportunistic tree growth). In a few locations of J.C. Saddington Park the edge of the hardened shoreline has been left uncut and provides some additional wildlife cover and plant diversity. Similarly, areas of the Rivergate easement hardened shoreline have thick tree and shrub vegetation that provides cover and greater plant diversity. The riparian vegetation surrounding the open aquatic area of J.C. Saddington Park, while manicured, does provide some diversity and wildlife cover. The hedgerow surrounding the south and east perimeter of Marina Park contains opportunistic tree growth which has not been maintained and provides limited wildlife cover.



4.3.2.2. Tree Inventory

An inventory of all trees greater than 100 mm diameter-at-breast-height (dbh) present within J.C. Saddington Park, Rivergate easement, Marina Park and Port Credit Memorial Park (West) was completed in spring 2012. During this inventory each tree was tagged with a unique identifier and an assessment of the tree's condition was recorded. Each

tree along with its unique identifier was surveyed by J.D. Barnes and the criteria used to define each tree were presented as in Good, Fair and Poor condition (see **Appendix 2**).

A total of 665 trees were tagged within the project location and most trees are 30 to 40 years old. Dominant species include Manitoba Maple (*Acer negundo*), Ash species (*Fraxinus spp.*), Eastern White Cedar and Norway Maple. A complete list of trees tagged, their location coordinates and an assessment of their condition can be found in **Appendix 2**.



4.3.2.3. Botanical Surveys

A three-season vascular plant survey was completed between April and October 2012. The botanical survey found that plant diversity was low given the manicured nature of the Port Credit Harbour West Parks. Areas of the hardened shoreline fronting onto Lake Ontario, and riparian areas surrounding the open aquatic area and Rivergate easement, contained the greatest diversity of plants. In total, 105 vascular plants were observed within the project location. The majority of plants were non-native, with only 48% of the species observed being native. This high degree of non-native species reflects the manicured state of the park and the surrounding urban land uses. All plants observed are considered *Secure* or *Apparently Secure* in Ontario. A complete list of species observed within the Port Credit Harbour West Parks can be found in **Appendix 2**.

4.3.2.4. Spring and Fall Migration Assessment

Bird migration assessments were completed in April and October 2012 at five point counts (see **Figure 11**). This assessment focused primarily on waterfowl species using the Lake Ontario and Credit River for staging. However, all birds heard or observed were documented. For point counts 1 to 3, observed waterfowl species were recorded under two distance markers:

- Within 250 metres from shore; and
- 250 metres plus from shore.

Species were recorded at both distances to better document the spring waterfowl concentration along the shores of the Credit River and Lake Ontario.

For point count 4, observed waterfowl species were recorded within the J.C. Saddington Park pond. For point count 5, observed waterfowl species within the mouth of the Credit River were recorded.

Breeding Bird

A single breeding bird survey, which followed methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (OBBA 2001), was conducted in June 2012 between dawn and five hours after sunrise. An assessment of the project location was undertaken to determine the abundance and diversity of the breeding bird community within or directly adjacent to this area. Breeding behaviour generally includes, but is not limited to, males singing, nest building, egg incubation, territorial defense, carrying food and feeding

their young. Walking transects were used throughout the project location as shown in **Figure 11**.

A single breeding bird survey was conducted on June 14, 2012 as part of this Study. Weather during the survey was documented as a temperature of 20°C; approximate cloud cover of 0%, a slight southeast breeze and unlimited visibility. A total of 29 species of birds were observed during breeding bird surveys (see **Appendix 2**). Breeding bird surveys revealed breeding evidence (mainly singing males) for multiple passerine species within the Port Credit Harbour West Parks. Most common species encountered showing breeding evidence included American Robin *Turdus migratorius* (67), Canada Goose *Branta canadensis* (55), European Starling *Sturnus vulgaris* (60), Mallard Anas platyrhynchos (41) and Red-winged Blackbird *Agelaius phoeniceus* (29). These species were typically scattered throughout the Port Credit Harbour West Parks with exception of mallards which were concentrated around the edge of the central pond in J.C. Saddington Park. Other passerine species were encountered in low numbers. Most waterbirds (e.g., gulls, terns, herons, etc.) were observed over the lake flying by and did not show any sign of breeding in any of the Port Credit Harbour West Parks.

The greatest diversity and density of birds was associated with J.C Saddington Park. Species were observed using all portions of the park. The central pond tended to attract Barn Swallows, mallards and some small numbers of Ring-billed Gulls.

Although not identified during breeding bird surveys, an incidental observation during fish reconnaissance field work revealed a Mute Swan (*Cygnus olor*) nesting within cattails along the Credit River Shoreline near the Don Rowing Club.

The majority of species observed are considered *Secure* or *Apparently Secure* (S5 and S4) in Ontario with the exception of Barn Swallow (*Hirundo rustica*) which is considered *Threatened* under the provincial *Endangered Species Act, 2007* and the Caspian Tern which is considered *Vulnerable* (S3). Barn Swallow is further discussed below in **Section 4.3.3**.

Amphibian Surveys

Amphibian monitoring followed the Marsh Monitoring Program protocol (Bird Studies Canada 1994). Three different surveys at four survey locations (see **Figure 11**) were conducted between May and July 2012, with at least two weeks between each survey. Surveys began at least one half hour after sunset during evenings with a minimum night temperature of 5°C, 10°C, and 17°C for each of the three respective surveys.

Each amphibian survey involved standing at a predetermined station (i.e., a candidate amphibian breeding habitat) and listening for amphibian calls. The calling activity of individuals estimated to be within 100 metres of the observation point were documented. All individuals beyond 100 metres were recorded as outside of the count circle and calling activity was not recorded. Calling activity was ranked using one of the following three abundance code categories:

Code 1: Calls not simultaneous, number of individuals can be accurately counted;

Code 2: Some calls simultaneous, number of individuals can reliably be estimated; and,

Code 3: Calls continuous and overlapping, number of individuals cannot be estimated (i.e., chorus).

In areas where appropriate habitat existed, aquatic habitat was examined using non-intrusive methods (visual) for egg masses and amphibian larvae.

The first amphibian survey was conducted on April 30, 2012. Air temperature was 6°C with 100% cloud cover, a Beaufort Wind Scale Number of 2 and light rain. No species were observed or heard in areas of potential habitat. The second amphibian survey was conducted on May 23, 2012. Air temperature was 19°C with 0% cloud cover and a Beaufort Wind Scale Number of 2. A single American Toad (*Bufo americanus*) was heard calling at the central pond within J.C. Saddington Park. Two other individual American Toads were heard outside the station within Port Credit Memorial Park (West). The third amphibian survey was conducted on July 4, 2012. Air temperature was 31°C with 0% cloud cover and a Beaufort Wind Scale Number of 2. No species were observed or heard in areas of potential habitat.

No amphibians, larvae or eggs were observed during visual surveys. Based on the guidelines determined by the Ministry of Natural Resources Significant Wildlife Habitat Technical Guide (2000) and Draft Eco-Region Criteria (2012), the project location does not provide significant Amphibian Breeding Habitat.

Fisheries

Fisheries reconnaissance field work was completed to build upon general habitat descriptions and fish species listed in background resources. This field work was used to document shoreline treatments, natural and artificial cover structures, observations of aquatic plants/substrates visible from shore and incidental shore-based observations of fish utilization. Observed habitats were divided into sections based on shoreline treatments along Lake Ontario and the Credit River (see **Figure 12**).

Fish habitat reconnaissance was completed on April 12, 2012 from accessible areas along the Credit River mouth and Lake Ontario shoreline. The results of the existing conditions, challenges and potential enhancement opportunities are outlined in **Table 3**. According to the background fish sampling records provided by DFO and CVC, a wide range of fish species utilize the mouth of the Credit River and offshore areas of Lake Ontario near the project area. All species observed are considered *Secure*, *Apparently Secure* or *Not Applicable* (non-native) in Ontario except for Greater Redhorse which is considered *Vulnerable*. These surveys represent a species presence in the general project location area and are not indicative of specific habitat utilization of the discussed features.

Wildlife Habitat Surveys

Using the information collected during flora and fauna surveys, terrestrial and aquatic environments within the project location were assessed for potential wildlife habitat using criteria outlined in the Ontario Ministry of Natural Resources (MNR) Wildlife Habitat Technical Guide (NHTG) ((MNR 2000). Two potential habitats were identified:

- Waterfowl Stopover and Staging Area (Aquatic); and
- Amphibian Breeding Habitat.

Field work for wildlife and wildlife habitat included spring and fall Waterfowl Stopover and Staging Area assessments, breeding bird surveys and amphibian surveys. Based on faunal surveys along with other field work such as ELC, the occurrence of wildlife habitat was evaluated. Generally, it was concluded that wildlife habitat in the Port Credit Harbour West Parks is limited due to the absence of contiguous natural vegetation cover and small size of manicured vegetation patches. However, certain areas of the Port Credit Harbour West Parks do currently attract wildlife such as birds, insects and urban mammals (e.g., squirrels, etc.) more so than others. These include the open aquatic area (i.e., central pond) and hardened shoreline of J.C Saddington Park as well as the Rivergate easement. These areas have the attributes for creating a better network of wildlife habitats that could support a more diverse complement of species and perhaps attract additional species to the area over time. Below are descriptions of surveys completed and their results.

Waterfowl Stopover and Staging Area (Aquatic)

A spring migration survey was conducted on March 16, 2012 with temperatures ranging from 8 - 11°C; approximate cloud cover of 50%, a slight southeast breeze and unlimited visibility. An additional survey was conducted on April 19, 2012 with a temperature of 12°C, approximate cloud cover of 40%, a slight southeast breeze and unlimited visibility. Species observed during the spring migration assessment utilized habitat within the mouth of the Credit River, nearshore areas of Lake Ontario and the pond within J.C Saddington Park. Over 1163 individual waterfowl representing 17 species were observed consistently within the mouth of the Credit River and nearshore areas of the Lake Ontario. Smaller concentrations of primarily dabbling ducks and geese were observed using the pond within J.C Saddington Park. A pair of Bufflehead (*Bucephala albeola*) was observed using the J.C. Saddington pond during the spring.



A fall migration survey was conducted on October 1, 2012 with an average temperature of 20°C, approximate cloud cover of 30%, a slight northern wind and unlimited visibility. Species observed during the fall migration assessment utilized the same habitats as the spring surveys. Over 316 individual waterfowl representing 7 species were observed in the Credit River, Lake Ontario and the pond within J.C. Saddington Park. Significantly more waterfowl and species diversity were present in the spring than during fall migration surveys.

These observations are consistent with those reported in CVC's Winter Bird Survey. The majority of species observed are considered *Secure* or *Apparently Secure* (S5 and S4) in Ontario with the exception of Canvasback, which is considered *Critically Imperiled* for breeding (S1B, S4N), Long-tailed Duck which is considered *Vulnerable* (S3B), Red-necked Grebe which is considered *Vulnerable* (S3B, S4N) and Great Black-backed Gull considered *Imperiled* (S2B). An individual Horned Grebe was also observed which is considered *Special Concern* under the provincial *Endangered Species Act, 2007*. This species is further discussed below in **Section 4.3.3**. Additional non-waterfowl species were observed during spring and fall migration surveys. One of these species, Black-crowned Night Heron is also considered *Vulnerable* (S3B, S3N).

Based on the guidelines determined by the Ministry of *Natural Resources Significant Wildlife Habitat Technical Guide* (2000) and *Draft Eco-Region Criteria* (2012), J.C. Saddington Park is adjacent to a significant spring and fall Waterfowl Stopover and Staging Area associated with Lake Ontario.

4.3.3. Species at Risk

A species at risk screening was completed for the Port Credit Harbour West Parks using the Natural Heritage Information Centre's (NHIC's) Biodiversity Explorer and Department of Fisheries and Ocean's Canada (DFO)/Conservation Ontario's Aquatic Species at Risk Mapping 2012, in addition to the background resources discussed within this report. Based on this information and discussions with the MNR, a determination of the potential for species at risk to occur in the Port Credit Harbour West Parks was determined.

Monarchs were observed in J.C. Saddington Park during butterfly surveys in 2009, completed as part of other projects. Minimal habitat (e.g., single isolated food plants) occurs within the Port Credit Harbour West Parks. This species has the potential to occur in minimal numbers within the Port Credit Harbour West Parks. This species is listed as *Special Concern* but does not have protection under the prohibitions of the *ESA*, 2007.

During field investigations, two species at risk were observed and they include:

- Horned Grebe, listed as *Special Concern* provincially; and
- Barn Swallow, listed as *Threatened* provincially.

A single migrating Horned Grebe was observed during spring surveys in the mouth of the Credit River. Similar to Monarchs, this species has no formal protection under the *ESA*, 2007. Multiple Barn Swallows were observed foraging in flight within J.C. Saddington Park, primarily concentrated around the central pond. A few individuals were observed flying through and feeding within Marina Park and Port Credit Memorial Park (West). Individuals observed were followed to determine if they were nesting within areas of the Port Credit Harbour West Parks. No breeding behaviour or nesting locations were observed.

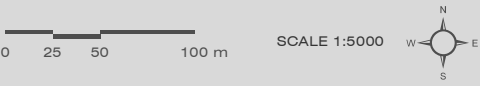
4.3.4. Opportunities and Challenges

Based on field work findings and an assessment of meaningful natural environment improvements that could be incorporated into Port Credit Harbour West Parks, the following opportunities and challenges, as summarized in **Table 4**, were identified for each park and the Rivergate easement.



**PORT CREDIT HARBOUR
WEST PARKS**

FISHERIES RECONNAISSANCE
FIGURE #12



MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR
GOOGLE EARTH PRO

MAP CREATED BY: SFG
MAP CHECKED BY: LK
MAP PROJECTION: NAD 1983 UTM Zone 17N

File Location: I:\GIS\125881 - Port Credit\Mapping\
Figure 13 Fisheries Reconnaissance.mxd



PROJECT: 125881
STATUS: FINAL
DATE: 08/27/12

Table 3: Fish Habitat Existing Conditions, Challenges and Potential Enhancement Opportunities

Section	Location	General Notes	Shoreline Treatment	Cover Structures	Substrate	Challenges	Potential Enhancement Opportunities
1	Lake Ontario shoreline west of Credit River mouth	Water depth in nearshore area approximately 0.5 to 1.0 metres. Wind exposure and wave action. Water very clear. Potential for rearing habitat, juvenile cover and feeding habitat.	Hardened shoreline consisting of large boulders extending from the tree line approximately 4 metres into the lake. At the easterly end, a shallow bay has been created by a rock groyne at the mouth of the Credit River.	Boulders.	Boulders, sand. Brown algae observed on rocks.	Disturbance to fish and fish habitat along the shorelines.	Enhance existing cover with riparian vegetation. Add habitat complexity with softer shoreline treatments where appropriate, such as a cobble beach area between groynes and headlands. In all cases native, non-invasive vegetation will be used in restoration efforts.
2	West side mouth of the Credit River	Water depth approximately 3 metres off the extended boulder pier. Water was turbid due to mixing with the river. Migratory channel between lake and riverine habitat.	Hardened shoreline consisting of large boulders extending out from the mouth of the Credit River.	Boulders.	Boulders, Sand. Brown algae observed on rocks.	Disturbance to fish and fish habitat along the shorelines.	Riparian shading improvements.
3	Downstream Shoreline of Hacienda Bay along J.C. Saddington Park downstream of channel outlet	Sand deposits formed by groyne extension into the river. Approximately 1 metre depth along boardwalk armour stone.	Boardwalk supported by armour stone protection with no transition or sloping into the river.	None.	Sand and silt. No aquatic vegetation observed.	Disturbance to fish and fish habitat along the shorelines.	Softening of the shoreline with riparian vegetation enhancement. Addition of gravel deposits and structure in sheltered area to promote spawning habitat for centrarchids such as Largemouth Bass and Rock Bass.

Section	Location	General Notes	Shoreline Treatment	Cover Structures	Substrate	Challenges	Potential Enhancement Opportunities
4a	Channel flowing from pump station sewer to pond within J.C. Saddington Park	Shaded section of shallow watercourse passing under a pedestrian pathway to mouth of pond.	Concrete channel upstream approximately 1 – 2 metres in width.	Overhanging vegetation, macrophytes and detritus.	Silt, detritus, woody debris.	Cost of naturalization; Expansion of naturalization into areas currently used for recreation; Public may have other uses envisioned for the central pond area; and The area of J.C Saddington Park is built on landfill material. The disturbance of landfill material may preclude extensive naturalization of the central pond	Remove barriers, create pond-riffle transitions through natural channel design, and improve substrate and vegetation. Remove woody debris. Increase water depth in open water area.
4b	Pond within J.C. Saddington Park	Open water area with fountain feature. Ducks observed.	Retaining wall on the southern side of the pond.	Overhanging riparian vegetation.	Concrete liner, detritus, sparse cobble, silt.		Remove fountain and naturalize pond by removing concrete and barriers to provide greater depths and habitat for fish.
4c	Concrete channel	Raised concrete ledge barriers and concrete dam along channel preventing fish migration from downstream naturalized reach.	Concrete channel.	Overhanging shrubs.	Detritus, silt.		Remove concrete to naturalize the system and allow fish passage from the Credit River into the system. Improve substrate and vegetation.
4d	Naturalized channel at confluence with the Credit River	Approximate width of 1 – 2.5 metres with a bankfull width of 10 metres. Water depth was approximately 0.02 - 0.05 metres. Natural step within channel creates barrier to fish migration.	None.	Woody debris, cobble.	Cobble, gravel, sand and organic debris.		Remove woody debris and natural step barrier to allow fish passage into proposed upstream naturalized system.

Section	Location	General Notes	Shoreline Treatment	Cover Structures	Substrate	Challenges	Potential Enhancement Opportunities
5	Hacienda Bay	Embayment filled with woody debris. Shoreline lined with trees.	Hardened shoreline consisting of large boulders along tree line.	Woody debris cover and sporadic boulders.	Sand, organic debris, some boulders.	Physical constraints for this concept include the effects of wave erosion, cost of engineering an appropriate wave break; and The control of invasive species	Riparian vegetation and cover enhancement. Coastal wetland could create refuge habitat for fish. Creation of cobble beach would increase habitat for fish and invertebrates.
6	Shoreline between J.C. Saddington Park and Marina Park	Wind exposure and wave action. Dense riparian tree cover. Sewer outfall into river. Debris and garbage (tires) along shoreline. Coarse, rocky substrates may be used for refuge/cover. Highly eroded area downstream of boat launch and fenced lot.	Hardened shoreline consisting of large boulders with gradual sloping into the Credit River. High erosion along upstream edge of this reach beneath gabion baskets/sediment blankets.	Boulders.	Boulders, cobble, sand and concrete rubble.	Vegetation occurs along the slope of the existing shoreline. This vegetation is likely to be disturbed during construction of a boardwalk structure.	Future boardwalk feature, if proposed, could provide additional cover for fish. The extent of shoreline works will be minimized to the extent possible. Opportunities to create fish habitat (e.g., L.U.N.K.E.R.S) will be incorporated where possible.

Section	Location	General Notes	Shoreline Treatment	Cover Structures	Substrate	Challenges	Potential Enhancement Opportunities
7	Marina Park and fenced lot to the south	Highly eroded area downstream of boat launch fenced lot. Fish may seek cover under docks.	Hardened shoreline consisting of large boulders downstream of boat launch. Gabion baskets along fenced lot shoreline. Disturbed concrete/brick shoreline at boat launch extending into river bed.	Docks for boat launch.	Brick, boulders.	Areas of the Port Credit Memorial Park west are built on landfill material. The disturbance of landfill material may preclude extensive shoreline improvements	Limited opportunities for enhancement due to marina function.
8	Credit River adjacent to Port Credit Memorial Park West	Mowed grass with boxed planters for shrubs within the park. Approximately 1 metre depth along river bank. Limited cover provided by hardened shoreline. Minimal shade provided by riparian trees.	Uniform bank protection consisting of large concrete slabs.	Limited cover from concrete slabs.	Sand beyond concrete slabs.	Disturbance to fish and fish habitat along the shorelines.	Removal of concrete slabs and softening shoreline with vegetated slopes and mixed substrate sizes.
9	Don Rowing Club and Mississauga Canoe Club	Shallow shoreline with gabion baskets. Vegetated shoreline along Don Rowing Club dock (Observed Swan nesting). Some cover provided by docks.	Gabion baskets along shoreline. Loading ramps and docks.	Docks.	Sand, cobble.	Disturbance to fish and fish habitat along the shorelines.	Addition of vegetated pockets to select gabion baskets. Where an alternative to gabion baskets is possible, material chosen will help improve aquatic and terrestrial habitat possible in the immediate area.

Table 4: Port Credit Harbour West Parks Natural Environment Opportunities and Challenges

Park	Description	Opportunities	Challenges
Port Credit Memorial Park	Port Credit Memorial Park is approximately 1 hectare in size with roughly 327 metres of shoreline. The park is fairly narrow and consists of manicured grass, gardens and large concrete slabs protecting the shoreline at the water's edge.	<p>Re-establishment of naturally sloped and vegetated riparian areas.</p> <p>River-run stone to be used as shoreline reinforcement in place of concrete, if possible. If necessary for stabilization, natural cut rip-rap stone may be used.</p> <p>River edge improvements can provide locations for fish habitat and education elements.</p> <p>Goose management plan to deter presence from the park.</p> <p>Additional planting of natural shrubs and trees to recreate a green corridor through the river valley.</p> <p>Where possible and based on space available, consider incorporating small stormwater management wetlands near stormwater outfalls in the park to increase opportunities for wetland plant and animal species and improve water quality (could be developed in conjunction with other shoreline treatments).</p>	<p>Present public use of the area may result in public opposition to naturalization efforts.</p> <p>Healthy mature trees are present within the park that should be preserved.</p> <p>Disturbance to fish and fish habitat along the shorelines.</p>
Marina Park	Marina Park is approximately 1.27 hectares and spans along approximately 264 metres of shoreline. The shoreline is comprised of a series of docks and boat ramps. Vegetation in this area is sparse and confined to remnant scrub vegetation.	Creating a natural corridor or linkage between the Rivergate easement and the Credit River valley system by expanding existing natural vegetation.	<p>Charter boat facilities within this park require docking and prevent shoreline naturalization.</p> <p>Parking required for boat launch decreases space available for naturalization.</p> <p>Areas of the Port Credit Memorial Park West are built on landfill material; the disturbance of landfill material may preclude extensive shoreline improvements.</p>

Park	Description	Opportunities	Challenges
Rivergate Easement	The Rivergate Easement is a 6-metre wide swath around the perimeter of the Rivergate apartment building, which connects Marina Park and J.C. Saddington Park. The easement includes approximately 193 metres of shoreline comprised of a mixture of mature tree species, shrubs and manicured grass. The shoreline is hardened with large cement fill and/or large limestone rock.	<p>Creation of additional fish habitat enhancement during the design of the boardwalk (e.g., L.U.N.K.E.R.S).</p> <p>Provide additional diversity of tree and shrub vegetation along the riparian areas.</p>	Vegetation occurs along the slope of the existing shoreline and is likely to be disturbed during construction of a boardwalk structure.
J.C. Saddington Park	J.C. Saddington Park is approximately 10 hectares in size and spans across 810 metres of shoreline. A large component of the interior of the park is recreational uses with manicured grass and mature trees providing shade. The waterfront is primarily hardened with large limestone rocks with some limited riparian vegetation.	<p>Largest park being evaluated as part of this study, therefore it provides the best opportunity for improving wildlife habitat and species diversity.</p> <p>Establishing a variety of native vegetation along the shoreline for the purpose of softening the edge and creating a buffer from recreational activities.</p> <p>Maintain a contiguous shoreline vegetation to facilitate a functional corridor (east/west and north).</p> <p>Altering the topography and shoreline structure (e.g., cobble beach, etc.) to achieve additional potential for incorporating plants and wildlife habitat diversity.</p> <p>Reduce ground maintenance (e.g., lawn cutting) during the late spring and summer months in fringe areas.</p> <p>Implement a management plan and vegetation treatments to reduce geese presence.</p> <p>Incorporate natural vegetation into parking areas.</p>	<p>Possible public opposition to a decrease in open space or reduced views to Lake Ontario.</p> <p>Disturbance to fish and fish habitat along the shorelines.</p> <p>Areas of J.C Saddington Park are built on landfill material (the disturbance of landfill material may preclude extensive shoreline improvements).</p>

Park	Description	Opportunities	Challenges
J.C. Saddington Park - Hacienda Bay	Hacienda Bay represents a small embayment along the west side of the Credit River along the shore of J.C. Saddington Park just prior to the confluence with Lake Ontario. This embayment is somewhat sheltered from Lake Ontario wave action and is relatively shallow. The riparian area of the embayment is composed of rocky shores with minimal vegetation.	<p>Has the potential to be re-naturalized as a wetland and likely subject to some engineering improvements.</p> <p>Along the perimeter of this wetland additional riparian habitat could be accommodated in place of the existing hardened edge.</p> <p>Potential for creation of cobble beach which would increase habitat for fish and invertebrates.</p>	<p>Physical constraints for this concept include the effects of wave erosion, cost of engineering an appropriate wave break.</p> <p>The control of invasive species such as Purple Loosestrife (<i>Lythrum salicaria</i>), Common Carp (<i>Cyprinus carpio</i>) and many other invasive species.</p>
J.C. Saddington Park - Central Pond and Watercourse Feature	<p>The central portion of J.C. Saddington Park contains a central pond approximately 0.25 metres deep with a cement bottom. A low flow concrete channel guides water to a short reach of stream which outlets into the mouth of the Credit River. Weeping Willow and Red-Osier Dogwood provide dominant shoreline cover. Areas of the central pond show signs of naturalization; however, much of the area is dominated by ornamental plantings.</p> <p>The central pond is fed by an out flow pump.</p>	<p>Likely represents one of the best opportunities to improve wildlife habitat and diversity in the Port Credit Harbour West Parks. Establishment of native invertebrates, amphibians and other species that would thrive in this type of habitat.</p> <p>Removal of concrete substrate and replace with a natural material subject to appropriate studies confirming this will not risk exposing possible contaminants underneath the concrete liner.</p> <p>Increase the size of riparian vegetation surrounding the central pond and watercourse feature. In all cases native, non-invasive vegetation will be used in restoration efforts.</p> <p>Remove the constructed feature channelizing flow through a confined concrete channel and replace with a naturalized stream bed.</p> <p>Remove barriers to fish, create pond-riffle transitions through natural channel design, and improve substrate and vegetation.</p> <p>Increase water depth in open water depth.</p>	<p>Cost of naturalization.</p> <p>Expansion of naturalization into areas currently used for recreation.</p> <p>Public may have other uses envisioned for the central pond area.</p> <p>The area of J.C. Saddington Park is built on landfill material (the disturbance of landfill material may preclude extensive naturalization of the central pond).</p>

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4.4. Shoreline and Wave Conditions

As part of the Port Credit Harbour West Parks project, Shoreplan has assessed the site's natural hazards associated with Lake Ontario. The Natural Hazards Policies (3.1) of the Provincial Policy Statement (PPS) defines three potential natural hazards along the shores of the Great Lakes: Erosion Hazards, Flooding Hazards, and Dynamic Beach Hazards. Ministry of Natural Resources (MNR) prepared Technical Guides that describe general methods for assessing the hazard limits and the standards that must be met in overcoming the hazards.

Credit Valley Conservation (CVC) enacted Ontario Regulation 160/06 to control development within the Lake Ontario shoreline hazard lands within their jurisdiction. Shoreplan (2005) defined the limits of CVC's regulated area on a reach-by-reach basis. Those limits, defined for the purpose of initial plan review, encompass the current project shoreline lakeward of Lakeshore Road West. The portion of the project site north of Lakeshore Road West is considered to be subject to processes associated with the Credit River, not Lake Ontario.

4.4.1. Existing Shoreline Conditions

The following sections identify the conditions of the existing shorelines by park area with an overall shoreline conditions summary provided in **Table 5**.

4.4.1.1. Port Credit Memorial Park (West)

Port Credit Memorial Park (West) shoreline extends from the south side of the Royal Canadian Legion property to the north side of Lakeshore Road West.

The shoreline in front of Mississauga Canoe Club is approximately 65 metres long and is protected with a gabion basket wall. The gabion basket retaining wall and launch ramp were constructed in the early 1990s. The wall has two exposed rows at the north end of the property with a top elevation of 77.0 metres and steps up to three exposed rows at the south end of the shoreline with at-top elevation of 78.0 metres. A fourth buried row is visible along the shore at the south end of the wall. A concrete launch ramp is at the north end of the property. The gabion basket retaining wall extends along the bank adjacent to the launch ramp. The gabion baskets are galvanized steel that are filled with 100 to 150-millimetre diameter stone. The existing grade behind the wall varies from level with the wall to approximate elevation of 77.5 metres behind the wall at the south end. The area behind the wall is paved for vehicular access to the boat storage in the building.

Two shore-parallel docks are moored in front of the wall. The docks appear to be anchored to the gabion basket wall. A timber has been secured along the top of the bottom buried row of gabion baskets. The southern dock is anchored to the timber. Small diameter rock is found along the toe of the wall and into the nearshore.



A2: Docks and Gabion Wall in front of Mississauga Canoe Club

The wall appears to be in good condition at the north end of the site. The bottom row of gabion baskets appears to be bulging at the south end of the wall where the dock is connected to the timber attached to the baskets. Otherwise, the south end of the wall appears to be in good condition. Photos A1 to A3 in **Appendix 3** show views of the gabion basket wall and launch ramp at the Mississauga Canoe Club.

There is a launch ramp at the south end of Mississauga Canoe Club. The launch ramp is about 6 metres wide and constructed of interlocking brick which extends down to the shoreline. There is small-diameter stone in the nearshore at the toe of the launch ramp. A removable ramp connecting the shore to the floating dock is resting on the launch ramp. Photo A4 in **Appendix 3** shows the launch ramp. The launch ramp appears to be in good condition.

Approximately 27 metres of shoreline south of the launch ramp in front of Don Rowing Club is protected with a riprap revetment. The riprap is approximately 150 to 200-millimetre diameter stone. The crest elevation of the riprap is approximately 76.25 metres and the toe is 75.0 metres. The revetment has a slope of 2H:1V. Vegetation is growing over the bank. The area behind the revetment is paved for vehicular access. There is silt and small diameter stone in front of the revetment. Photo A5 in **Appendix 3** shows a view of the revetment looking south toward the lake.

Approximately 15 metres of natural unprotected bank continues further south. The bank is steep and showing signs of erosion. The area behind the natural bank is paved. A launch ramp is located at the south end of the natural shore. The ramp consists of concrete slabs. A removable ramp is resting on the launch ramp to provide access to a shore parallel floating dock. Photos A6 and A7 in **Appendix 3** show views of this shoreline.



A6: Access Ramp and Dock in front of Don Rowing Club

The active park area is south of the Don Rowing Club with approximately 200 metres of shoreline along the Credit River. The shoreline is protected with concrete slabs. The concrete slabs are approximately 0.6 metres wide and 1.0 metres long and 0.2 metres thick. There are four rows of slabs above the shoreline. The row of concrete slabs at the shoreline has a curb which runs along the landside edge. Additional concrete slabs are scattered in the river along the shoreline. Photos A8 to A10 in **Appendix 3** show the shore protection along the park. The top of the concrete slabs is approximately 76.0 metres. The toe elevation of the concrete slabs varies along the shoreline but is on average approximately 74.5 metres. The condition of the slabs varies along the shoreline. For the most part the slabs at the shoreline are broken or cracked. The slabs are shifted and uneven. The upper slabs are in better condition; however, some are broken and cracked as well. Heavy vegetation is growing along the bank behind the slabs. At several locations along the bank, access paths have been cut through the bush and the concrete blocks stacked to provide stepped access to the shore.

There are three storm sewer outlets located along the park shoreline. Two are aligned with the John Street North road allowance and one is north of the Lakeshore Road West bridge. The culverts are approximately 0.6 metres in diameter. Two of the outlets have a concrete headwall with steel grates. One of the outlets is missing the head wall and grate. Photos A11 to A13 in **Appendix 3** show the culverts.

4.4.1.2. Port Credit Memorial Park (West) and Marina Park Connection

The connection between Port Credit Memorial Park (West) and Marina Park extends from the storm sewer outlet on the north side of the Lakeshore Road West bridge to the steel sheet pile wall on the north side of the pedestrian footbridge. The shoreline on the north side of the Lakeshore Road West bridge abutment is protected with gabion baskets and concrete slabs. There are two rows of concrete slabs along the shoreline with a top elevation of approximately 75.25 metres. The



A14: Gabion Wall and Lakeshore Road Bridge

The gabion baskets are positioned along the back of the concrete slabs. The top elevation of the gabion basket varies from 76.0 metres at the north end to 76.8 metres at the bridge abutment. The baskets are galvanized steel filled with 100 to 150-millimetre diameter stone. The gabion baskets appear to be in good condition. They have an uneven crest which is likely due to shifting of the concrete slabs on which they are founded. Photos A14 and A15 in **Appendix 3** show the gabion basket retaining wall.

The concrete slabs along the shoreline continue a short distance under the bridge and in front of the abutment it is protected with armour stone. The armour stone/concrete slab protection is approximately 3 to 4 metres wide and extends from the concrete bridge abutment into the river. The armour stone/concrete slabs have a top elevation of approximately 75.3 metres. Grout has been placed between the stones. Photo A16 in **Appendix 3** shows a view under the bridge looking north. Overall the armour stone/concrete protection appears to be in good condition.

The armour stone/concrete slab protection continues for 6 m south of the Lakeshore Road West bridge abutment. The bank is protected with a gabion basket retaining wall. The wall has one row of gabion baskets with a top elevation of approximately 76.0 metres. The baskets are in poorer condition than those on the north side. They are bulging and one of the baskets is broken and missing stone. Photo A17 in **Appendix 3** shows the shore protection south of the Lakeshore Road West bridge. There is a concrete headwall for a storm sewer outlet at the south end of the gabion baskets. The outlet is approximately 0.6 metre diameter and has a steel cover. The headwall is cracked. Photo A18 in **Appendix 3** shows the storm sewer outlet.

The shoreline between the Lakeshore Road West bridge and the pedestrian bridge is protected with a steel sheet pile wall. The steel sheet pile is an L section. The steel is approximately 6 millimetres thick. The tops of the piles are capped with a 0.2 metre wide

steel pile cap. A W200 beam is welded on the river side of the wall approximately 0.5 metres below the top of the wall. Twenty-five-millimetre diameter tie rods are visible along the face of the wall. The elevation of top of the wall is approximately 76.0 metres. The grade behind the wall varies from 0.3 to 0.6 metres below the top of the wall. The river bed is at elevation of 74.0 metres along the toe of the wall. The wall is not leaning and appears to be in good condition. There are a few perforations in the steel where the piles are exposed above ground. The piles appear to be in good condition around the water line.

Armour stone has been placed along the toe of the wall under the pedestrian bridge. The crest of the armour stone in front of the wall varies but is at elevation 75.5 metres adjacent to the wall. The section of the wall behind the armour stone is leaning toward land. It appears to have been hit or damaged. Photo A19 in **Appendix 3** shows a view of the wall under the pedestrian bridge.

4.4.1.3. Marina Park

Marina Park extends along approximately 230 meters of shoreline of the Credit River south of Lakeshore Road West. The park contains two distinct parts. The north part which extends approximately 120 meters south of Lakeshore Road includes an existing boat launch ramps. A paved parking lot extends from the shore to Front Street South. Landscape features are incorporated into the parking area along Front Street. The south part of the park, which is approximately 110 meters long, is a gravel area and is used for overflow parking when required.

The shoreline south of the pedestrian bridge along Marina Park is protected with a steel sheet pile wall. The steel sheet piles have an Algoma section similar to the walls on the east side of the river. The pile is approximately 10 millimetres thick. A square hollow section is welded to the front face of the wall approximately 0.5 metres below the top of the wall. Tie rods are not visible along the wall. The top elevation of the wall is 76.0 metres. The ground behind the wall is approximately 0.2 metres below the top of the wall. The river bottom along the toe of the wall at the time of the topographic survey was 73.75 metres. The steel sheet pile wall appears to be in good condition. The wall is not leaning and no areas of significant rust were noted during the above water review. Photos A20 to A22 in **Appendix 3** show views of the steel sheet pile wall.



A20: Steel Sheet Pile Wall in Marina Park



A25: Shore along South Part of Marina Park

Seven finger docks extend into the river from the steel sheet pile wall. These timber finger docks are supported on steel tube piles. The first pile is located approximately 1.5 metres from the face of the wall. The docks appear to be functional. Photo A20 in **Appendix 3** shows a view of the timber finger docks.

A pressure treated timber retaining wall at the south end of the steel sheet pile wall is perpendicular to the shore and extends back to along the Marina Park launch ramp. The wall appears to be in good condition. Photo A22 in **Appendix 3** shows a view of the timber retaining wall.

A 25-metre wide launch ramp is located at the south end of the north part of Marina Park. The launch ramp has two bays with floating docks dividing the bays and another along the south side. The top of the launch ramp is at elevation 75.5 metres. The ramp slopes at approximately 8H:1V into the water. The ramp is cast-in-place concrete above elevation 75.0 metres. Below elevation 75.0 metres, the ramp is pre-cast concrete block. The toe of the ramp is approximately at elevation 74.0 metres. Photo A23 in **Appendix 3** shows a view of the launch ramp. There are no significant cracks in the cast-in-place concrete slab. The pre-cast concrete blocks appear to be in good condition. They have an uneven surface at the south side near a storm sewer outlet adjacent to the ramp. The bank along the sides of the storm sewer outlet is protected with a concrete block mat. The concrete mat extends from the storm sewer head wall to the toe of the launch ramp.

The shoreline south of the launch ramps jogs out into the river. The north side of the shoreline and 13 metres along the west side of the river are protected with 1 metre diameter vertical tube piles with concrete blocks spanning across the piles. There is one row of blocks along the north shore and two rows along the west shore. Photo A24 in **Appendix 3** shows the shoreline at the north end of the structure near the launch ramp. The top elevation of the second row of concrete blocks is approximately 75.5 metres. The ground behind the piles slopes from 75.0 metres to an elevation of 75.6 metres. Further south along the shore for approximately 60 metres there are the remnants of a timber crib with stone fill. The remaining crib and stone fill have a top elevation of approximately 75.0 metres. The area behind the crib gently slopes back to an elevation of 76.0 metres. Photos A25 and A26 in **Appendix 3** show views of the timber crib shoreline. The vertical tube piles with concrete blocks continue south of the timber crib. It extends approximately 30 metres along the shore. The concrete blocks are uneven. The top elevation of the blocks is approximately 76.8 metres. The ground behind the wall is at the top of the bottom row of the blocks on the piles which is at elevation 76.0 metres. Photo A27 in **Appendix 3** shows a view of the shore. Further south to the end of Marina Park the shoreline is protected with randomly placed armour stone and concrete rubble.

4.4.1.4. Rivergate Easement

The shoreline along the Rivergate easement is approximately 200 metres long and extends from the south side of Marina Park to where it turns back towards Front Street south of the apartment building. The shoreline is protected with armour stone and concrete rubble. The armour stone ranges in size from 1 to 8 tonnes. Concrete rubble is mixed in with the armour stone. The crest elevation of the armour varies but is on average 77.0 metres. Rip rap sized material is present along the back of the structure and geotextile is visible in a section where the structure has failed. There are voids between the stones. The overall slope of the stone/rubble varies between 2H:1V and

3H:1V along the shoreline. The slope of the protection is flatter at the point where the shoreline turns back into Hacienda Bay. There is a 4-metre wide area behind the armour stone. The bank behind this area rises to an elevation of approximately 79.0 metres. Debris is mixed in with the stone and rubble and there is other evidence of overtopping along the structure. Photos A28 to A29 in **Appendix 3** show the shoreline along the Rivergate easement. Overall the shore protection along Rivergate easement appears functional at the current water level. During periods of high water and river flow, the structure may be unstable. There is a 15-metre long section of shoreline at the north end of the Rivergate apartment building property where it appears that the bank became unstable and slipped into the river. The steep soil bank is exposed with remnants of geotextile along the bank and riprap scattered at the waterline. There is some concrete rubble along the shoreline. Photo A29 in **Appendix 3** shows the section of shoreline that has failed.



A28: Armour Stone/Rubble Revetment along Rivergate Easement

4.4.1.5. Hacienda Bay

Hacienda Bay is the bay located south of Rivergate apartment building and north of the northernmost groyne in J.C. Saddington Park. A description of the north shore of Hacienda Bay is provided in Rivergate easement section above. A small fillet beach has formed where the shoreline orientation turns. The beach is approximately 35 metres long and 15 metres wide at its widest point with a crest elevation of 76.0 metres. There is silt/sand in the nearshore and organic material such as tree branches, wood chips and bark on the beach. The beach collects debris. Along the back of the beach the bank is protected with armour stone and concrete rubble. The bank has a crest elevation of 79.0 metres. There are mature trees and dense brush along the bank making the beach inaccessible. Photo A30 in **Appendix 3** shows a view of the beach.



A30: Shore Along Rivergate Easement at J.C. Saddington Park

A small armour stone groyne at the south end of the beach extends out. The elevation of the top of the groyne is approximately 77.0 metres. Photo A30 in **Appendix 3** shows the groyne at the south end of the beach. A creek on the south side of the groyne outlets into Hacienda Bay. The creek flows through J.C. Saddington Park. A timber pedestrian bridge crosses the creek into J.C. Saddington Park. The bridge is supported on two concrete abutments with armour stone on the river side.

Along the west side of the bay within J.C. Saddington Park is a stacked armour stone wall approximately 95 metres long. The wall is three stones high. The crest of the wall is at elevation 76.3 metres. The depth of water in front of the wall varies with the deepest sounding being 73.4 metres. A pressure treated timber deck is secured to the top of the wall. The deck elevation is 76.5 metres. A paved pedestrian path runs along the back of the timber deck. Photos A31 to A32 in **Appendix 3** show the armour stone wall and timber deck. Overall, the armour stone wall appears to be in good condition. The timber deck and beams are deteriorated and some of the decking has been replaced.

There is an armour stone groyne at the south end of the wall. The groyne extends out into the river approximately 45 metres. The crest of the groyne is at elevation 77.0 metres and is approximately 2.5 metres wide. The armour stones are stacked along the crest and the bay side and sloped on the exposed lake side. The stones range in size from 2 to 4 tonnes. Photo A33 in **Appendix 3** shows a view of the groyne. The groyne appears to be in good condition.

4.4.1.6. J.C. Saddington Park

The shoreline south of the north groyne is approximately 510 metres long. The shoreline has been divided into three reaches. The first reach is 135 metres long and extends along the west side of the river mouth from the north groyne to the east headland at the mouth of the river. The second reach is approximately 250 metres long and extends west from the east headland to the west headland. The third reach is 125 metres long and extends from the west headland to the west property line. It is our understanding that the shoreline protection within the park was built in the 1970s. The following is a description of the shoreline condition in each reach.



A34: Armour Stone Along J.C. Saddington Park, East Side

There are two sections of shoreline in the first reach, the west shore of the river and the east headland. The shoreline along the west shore of the river is 70 metres long and is protected with an armour stone revetment. The revetment is relatively flat at a slope of 3H:1V. The crest of the revetment is at elevation 76.5 metres. The stone ranges in size from 3 to 6 tonnes. There is a row of armour stone along the back of the revetment with a crest elevation of approximately 77.5 metres. There is a paved path behind the cap stone. The area between the paved path and armour stone has a row of parking curbs and is filled with gravel. The ground is uneven behind the armour stone. The paved path slopes toward the shore at the end of the revetment where the revetment transitions into the headland. There are some voids behind the armour stone at this location. Photo A34 shows a view of the revetment. Overall, the structure appears to be in good condition. There are gaps between the stones and evidence of waves overtopping the structure but the structure appears stable.

The east headland extends out into the lake from the south end of the revetment. The headland is approximately 65 metres long and 6 metres wide. The headland has sloping sides below elevation 76.2 and the crest of the structure is stacked armour stone with a crest elevation of approximately 77.0 metres. The side slopes are approximately 2H:1V. The tip of the headland is flatter, 3H:1V. The lake bottom elevation is approximately 72.0 along the east headland. Photos A35 and A36 in **Appendix 3** show the east and west sides of the headland. Overall, the headland appears to be in good condition. There are gaps between the stones. It appears that the tip of the headland has been reshaped by wave action.

The shoreline in the second reach is protected with armour stone and concrete rubble revetment. The armour stone and concrete rubble appear to be randomly placed. The top elevation of the revetment is approximately 77.0 metres and the lake bottom varies between elevation 73.0 and 72.0. The slope of the revetment varies along the shore and on average is 3H:1V. Photo A37 in **Appendix 3** shows the revetment along this shoreline. There are areas behind the revetment where the ground is lower than the armour stone and riprap has been placed along the back of the revetment to stabilize the bank. It is likely this area has been eroded due to waves overtopping the shore protection. There are large gaps between the stones and debris such as tree branches and logs along the top of the revetment. The bank rises behind the revetment to an elevation of approximately 78.0 metres. There are signs of erosion along the bank.



A37: Rubble Revetment Along J.C. Saddington Park, South Side

The west headland is located at the end of the second reach. It extends approximately 17 metres into the lake. The headland is approximately 2.5 metres wide and the crest lowers from 76.0 metres near the shore to 75.2 metres at the lakeside end. The lake bottom is at elevation 72.0 metres near the headland. The side slopes are approximately 2H:1V. The headland has large gaps in between the armour stone. Riprap size material is visible between the stones. Photo A38 in **Appendix 3** shows the headland. Overall, the headland is functional at the current water levels. It appears that it has been reshaped by wave action.

The third reach is the shoreline between the west headland and the west property line. The shoreline is protected with armour stone and concrete rubble. The crest elevation of the armour varies between 76.5 metres and 77.0 metres. The lake bottom is at elevation 73.0 metres. The structure is flatter with a slope of 3H:1V. The armour stone and rubble is approximately 0.5 to 5 tonnes with the larger size material along the shoreline and the smaller size material along the back of the structure. The bank behind the structure has a crest elevation of 77.0 metres. There are signs of erosion along the bank. Overall, the revetment is functional at the current water level. There is evidence of waves overtopping the structure along the entire length of this reach. Photo A39 in **Appendix 3** shows a typical view of the revetment along this shoreline.



A40: Storm Sewer Outlets at West of J.C. Saddington Park

There are two storm sewer outlets at the west end of the reach. The outlets are 1.0-metre diameter corrugated steel pipe. The top elevation of the pipes is approximately 75.4 metres. The pipes were observed to be half full of debris during one of the site visits. There is a gabion basket retaining wall around the storm sewer outlet. The top elevation of the gabion basket retaining wall is 77.0 metres. Three rows of gabion baskets are visible around the pipes. The lower row is broken open and has lost some of its gabion stone. The second and third rows are still intact but have settled due to the collapse of the lower row of baskets. The gabion baskets extend around either side of the outlet to the shoreline where there is armour stone. Armour stone extends along the shoreline in front of the outlet. It has a top elevation of 76.0 metres and the lake bottom is at elevation 74.0 metres along the toe of the armour stone. The stones are randomly placed and there are gaps between the stones. Photo A40 in **Appendix 3** shows a view of the storm sewer outlet.

The armour stone protection continues west of the storm sewer outlet to the west property line. The top of the armour stone is at elevation 77.0 metres and the lake bottom is at elevation 74.0 metres. The structure is steeper at 2H:1V and extends on to the adjacent property and ends at the armour stone pier. Photo A41 in **Appendix 3** shows the protection at west property line.

Table 5: Port Credit Harbour West Parks Shoreline Conditions Summary

Reach	Shoreline Reach Description/ Location	Shoreline Length (m)	Existing Shoreline Conditions	Lifespan and Structural Integrity	Recommendations
1	Port Credit Memorial Park (West)				
a	Mississauga Canoe Club	75	Natural shore north of north ramp. North launch ramp. Gabion basket wall in the centre part. Interlocking block ramp at south end. Floating docks in front of wall.	Gabion wall constructed in early 1990s. No specific structural problems noted. URL* 10 years or greater for gabion wall.	Riprap revetment north of north launch ramp. North launch ramps maintained. Gabion wall replaced with armour stone wall. South ramp maintained.
b	Don Rowing Club	70	Informal riprap revetment in the north part. Natural bank with eroding scarp in the south part. Pavement above the bank. Ramp with a floating dock in the south part.	Riprap revetment appears informal; no URL* estimated. South part is eroding now; no URL*.	Riprap revetment with armour stone cap. Design to accommodate floating dock.
c	Port Credit Memorial Park	170	Concrete slabs stacked or placed on slope or randomly placed. Notable movement and settlement observed.	Structure is considered informal at this stage, no URL* estimated.	Boulder and armour stone revetment with planting areas and aquatic habitat features. Stepped armour stone revetments to accommodate shore access and fishing.

2 Connection Between Port Credit Memorial Park (West) and Marina Park					
a	Outfall Area North of Bridge	15	Storm sewer outfall incorporated in an informal concrete slab revetment and gabion basket wall.	Outfall functional with URL* greater than 10 year.	Transition ramps to backshore from walkway under the bridge. Stepped armour stone revetment.
b	Under the Bridge	20	Concrete block and grouted stone revetment.	Appears functional with URL* greater than 10 year.	Stepped armour stone revetment with a walkway.
c	Transition South of the Bridge	30	Grouted stone revetment and gabion basket wall in the north part. Steel sheet pile wall in the south with armour stone added along toe. Overflow outlet at junction of the structures.	Appears functional with URL* greater than 10 year.	Transition ramps to backshore from walkway under the bridge. Stepped armour stone revetment.
3 Marina Park					
a	Steel Sheet Pile Wall	65	Steel sheet pile with steel cap. Top at 76.0; river bottom at 73.7 approximately. Fixed docks attached to wall supported on steel piles.	Appears functional. No URL* estimated since no design details are available.	Increase height of wall to 76.5 m with a concrete cap and place fill to approximately the same elevation.
b	Launch Ramp	25	Concrete launch ramps with floating docks. Toe of ramp at 74.0 metres. Pressure treated timber wall along north side of launch ramp.	Appears functional with URL* greater than 10 year at average water levels. Functionality reduced at low water level. Pressure treated timber wall functional with URL* of less than 10 year.	No modifications to ramp proposed. Repair pressure treated timber wall when steel sheet pile wall upgraded.
c	Shore South of Launch Ramp	140 along shore	Various structures including corrugated steel pipe caissons along north shore, timber cribs, timber piles and concrete blocks along east shore.	Corrugated steel pipe caissons appear functional with URL* greater than 10 year. Structures along east shore have no URL*.	Stacked armour stone seawall or stepped armour stone seawall with planting area, and place fill to elevation of 76.5 m or higher. Launch docks for non-motorized boats.

4 Rivergate Easement					
a	Shore along Credit River	75	Armour stone and rubble revetment. Section of revetment along east shore has failed.	Section of shore with failed revetment is at potential risk of significant erosion. Stability of the remainder of east shore protection unknown; no URL* estimated.	Reconstruct armour stone revetment with a pedestrian walkway supported on piles.
b	Shore along Hacienda Bay	100	Armour stone and rubble revetment.	Revetment is functional with estimated URL* of greater than 10 years.	Reconstruct armour stone revetment with a pedestrian walkway supported on piles.
5 Hacienda Bay					
a	Cobble Beach	80	Armour stone revetment along north and south sides. Concrete rubble revetment along west shore. Substantial floating debris collected within the bay.	Revetment is functional with estimated URL* of greater than 10 years Floating debris makes shore access difficult.	Cobble beach anchored with two armour stone groynes.
b	East Shore to Groyne	100	Stacked armour stone seawall. Pressure treated timber boardwalks supported on timber sleepers; outer sleepers supported on brackets pinned into armour stone.	Armour stone seawall is functional with estimated URL* of greater than 10 yrs. Pressure treated timber may require maintenance prior to that but its deterioration is not related to coastal exposure.	Periodic maintenance of seawall as required. Repair or replace pressure treated timber. Boardwalk as required to support park functions.
c	Groyne	40	Armour stone groyne with randomly placed armour stone on east side and stepped armour stone on west side. Small sand beach on west side.	Groyne is functional with estimated URL* of greater than 10 years. Some minor movement and settlement observed.	Periodic maintenance as required.

6 J.C. Saddington Park					
a	East Shore to Southeast Headland	135	Stacked wide armour stone revetment with a wide cap at elevation 76.5 metres. Paved walkway directly behind revetment.	Revetment is functional with estimated URL* of greater than 10 years. Waves overtop revetment at high water levels	Periodic maintenance as required.
b	Southeast Headland to Central Headland	250	Armour stone and concrete rubble revetment with crest elevation of approximately 77.0 metres. Material is randomly placed at approximately 3h:1v slope.	Revetment is functional at low water levels with estimated URL* of greater than 10 years. Waves overtop revetment at high water levels. Erosion observed at various locations along the revetment.	Cobble beach with extended groyne at south side and reinforced north headland.
c	Central Headland to West Boundary	125	Armour stone and concrete rubble revetment with crest elevation of approximately 76.5 to 77.0 metres. Material is randomly placed at approximately 3h:1v slope. Storm sewer outfalls located at south end.	Revetment is functional at low water levels with estimated URL* of greater than 10 years. Waves overtop revetment at high water levels. Erosion observed at various locations along the revetment.	Upgrade revetment with addition of riprap and armour stone in the upper part of the revetment. Carry out routine maintenance on the rest of the structure.

4.4.2. Natural Hazard Assessment

Our assessment of the hazards is consistent with the MNR (2001) Technical Guides prepared to support the natural hazards component of the Provincial Policy Statement (PPS). The PPS defines three natural hazards along the shore of the Great Lakes: erosion hazards, flooding hazards, and dynamic beach hazards. Each of these hazards is discussed separately below.

4.4.2.1. Dynamic Beach Hazard

There is no dynamic beach at this site; therefore, there is no dynamic beach hazard.

4.4.2.2. Erosion Hazard

Shoreplan (2005) applied reach-wide erosion setbacks for the Port Credit area as part of the CVC Lake Ontario shoreline Hazards Study. Three reaches were used to define the portion of the shoreline covered by this current study. The setback calculations were based on the MNR methods for calculating erosion hazard limits on natural shorelines. The erosion hazard limit was calculated as 100 times a default average annual recession rate, plus a stable slope allowance. The stable slope allowance was calculated by applying a default stable slope to a reach-wide average bank or bluff height. The total erosion setback was decreased to account for the presence of functional shoreline protection.

For this study we recalculated the erosion hazard limit using the stable slopes determined during the geotechnical investigation and more accurate estimates of the bank height and toe location. The erosion hazard limit is defined as the sum of an erosion allowance and a stable slope allowance. The erosion allowance is a 30-metre offset calculated as 100 years of erosion at the default average annual erosion rate of 0.3 metres per year. The provincial default value was used as no data exists to calculate a different rate for unprotected shores at this location. The stable slope allowance was calculated using the stable slopes provided from the geotechnical analysis (3H:1V) and the bank height determined from the OLS survey. The limit of the erosion allowance is indicated on **Figure 13**.

It should be noted that this site may be an artificial shoreline and the MNR technical guides do not present a methodology for establishing erosion hazard limits on artificial shorelines. Instead, they note that “due to the unique nature of artificial shorelines, they should be evaluated by means of comprehensive study using accepted engineering principles.” The structures require detailed above and below water inspection by qualified engineers. The purpose of these inspections and detailed study is to ensure that the artificial shoreline will continue to perform over the planning horizon.

The criteria used by MNR (2001) to define the artificial shore type include those shorelines that:

- cannot be classified on the basis of their physiographic characteristics due to human activities and/or alterations to the shoreline;
- involve structural changes that extend inland;

- involve protection works that exist above and below the waterline and extend alongshore for about 1 kilometre;
- have the protection works under public ownership and/or are maintained by a public agency or a significant private concern; and
- have shoreline processes and flood, erosion and dynamic beach hazards which have been significantly altered by the protection work.

Although this study provides the definition and information on artificial shorelines, the artificial shoreline designation is not being applied to the Port Credit Harbour West Parks' shoreline under this study at this time.



Figure 13: Updated Shoreline Hazard Limits

4.4.2.3. Flood Hazard

The PPS defines the flooding hazard limit as the 100-year flood level plus an allowance for wave uprush and other water related hazards. The 100-year flood level is the instantaneous water level with a 1% probability of exceedance and includes wind setup. The technical guides require a 15-metre horizontal offset to be used as the allowance for wave uprush and other water related hazards unless a site-specific detailed analysis is carried out. We carried out a detailed analysis, as described below and shown in **Appendix 3**.

The 100-year flood level is defined as the instantaneous water level with a 1% probability of exceedance. 100-Year flood levels for all of the Canadian shores of the Great Lakes were calculated by MNR (1989). The 100-year flood level for Port Credit is 75.8 metres geodetic.

The MNR (2001) technical guides recommend that wave uprush limits be calculated for the 2% uprush exceedance elevation (the elevation exceeded by 2% of the uprushing waves) associated with a 20-year wave event occurring at the 100-year instantaneous water level. The 20-year return period storm condition was determined by:

- completing a 36-year wave hindcast for deep water conditions offshore of the site;
- determining the 20-year return period deep water wave condition; and
- transferring that deep water wave condition in to the site.

Using a peak-over-threshold extreme value analysis of severe storm events, the 20-year return period deep water wave condition was determined to have a significant wave height of 5.2 metres and a peak wave period of 9.8 seconds. These values represent the upper limit of the 90% confidence interval from the statistical analysis.

This deep water wave condition was transferred in to the site by applying the two-dimensional, spectral, CMS-Wave numerical model, developed by the U.S. Army Corps of Engineers. The nearshore zero-moment wave heights that will cause run-up vary from approximately 3 metres fronting the more exposed portion of J. C. Saddington Park to less than 0.3 metres at the northern end of Marina Park. **Figure 14** is a combined wave height contour and vector plot showing the 20-year wave conditions along the project site.

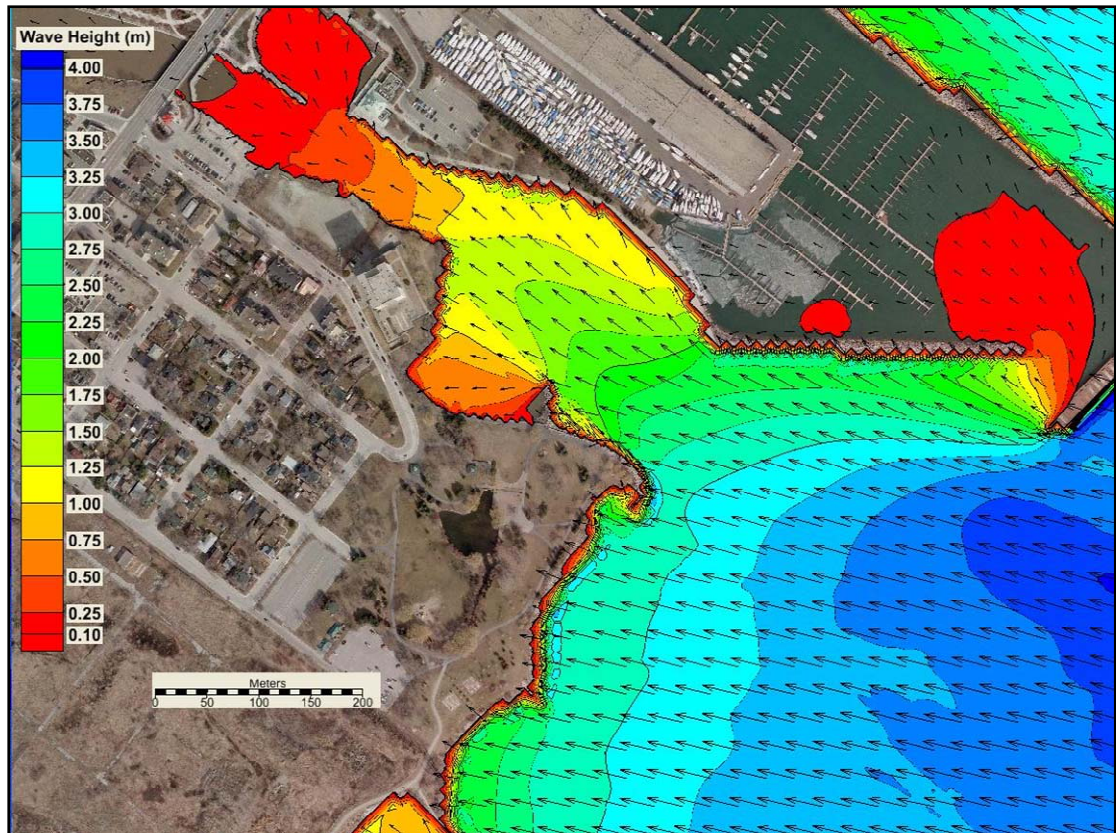


Figure 14: Design Nearshore Wave Conditions for Wave Uprush Analyses

Wave uprush elevations were computed using a program developed for calculating wave uprush elevations and offsets along composite profiles. The program is capable of applying different wave uprush equations, depending upon the shoreline shape and characteristics. For this application we used the Ahrens and McCartney run-up equations for the armour stone and rubble revetments and the Hunt equation for the area around the launch ramp. These run-up equations are described in the appendices to the MNR (2001) technical guides.

Typical cross-sections for each section of shoreline were derived from the detailed survey completed for this project (see **Appendix 5**). The 2% exceedance uprush elevation was calculated for all profiles but one, and the uprush limits between profiles were interpolated giving consideration to the topographic contours. For the section of shoreline with the concrete block wall, south of the launch ramp, we could not calculate an uprush elevation per se, due to the shape of the shoreline wall. Instead, mean overtopping rates were calculated using the plain wall overtopping equations from the Eurotop Overtopping Manual (Pullen et al, 2007). The Eurotop methods are the most recent and comprehensive methods for calculating overtopping on structures and are now frequently used in place of the overtopping methods described in the MNR (2001) technical guides. The predicted mean overtopping volumes were high enough (4 to 6 litres per second per metre length of wall) that it was concluded that the uprush limits behind the wall could be assumed to be in line with the uprush limits for the sections of shoreline on either side of the wall.

Figure 15 shows the location of the typical profiles and the calculated wave uprush limit. **Figure 13** also shows the calculated wave uprush limit together with the erosion hazard limit. That uprush limit corresponds to the flood hazard limit following MNR procedures.



Figure 15: Location of Typical Profiles and Calculated Wave Uprush Limit

4.4.3. Climate Change

Potential changes and conditions impacting the shoreline areas due to climate change were considered. A review of published literature on this topic suggests that the water levels in the Great Lakes system are generally expected to drop. Lake Ontario, due to the regulations imposed on the lake through the International Joint Commission (IJC), is expected to experience the least pronounced changes. Further, the regulatory regime applied by the IJC over the past decades is presently under review. It is considering bringing the regulatory curve closer in line with historic seasonal variations. However, no final decision has been made to date. For this reason, it is not possible to define the expected changes in any detail; however, regardless of what regulatory curve is adopted, the changes in water levels are likely to be minor and without significant impact on the design water levels.

There may be changes in the frequency and possibly severity of storms on the Great Lakes as a result of climate change. Again, no specific information is available in the published literature that allows a quantitative adjustment of design conditions. However, the design should consider the possibility of more frequent severe storms and the possibility of some change in directional distribution of wave energy. For example, anecdotal evidence obtained in discussion with boaters in the Toronto area suggests more frequent easterly winds in the summer periods in recent years. These conditions should be considered in detailed design by testing sensitivity of beach alignments to directional wave distribution and net wave energy direction changes. The design should also consider shore conditions without ice and the impact that potential winter storms may have on the shore with no shore ice present.

4.5. Infrastructure Conditions

The review of the existing infrastructure focused on the Port Credit Harbour West Parks, as well as the adjacent boundary roads and municipal rights-of-way, including Mississauga Road South, Lake Street, Front Street South, Front Street North and Lakeshore Road West. As part of this review, infrastructure information was collected on these adjacent streets and other streets within the study area.

4.5.1. Background Review & Field Investigations

A site visit, a review of available engineering plan and profile drawings provided by the City of Mississauga's Transportation and Works Department, and liaison with the public and private utilities was undertaken to confirm existing infrastructure within the parks, and in the park vicinity.

The existing private and public infrastructure in the parks and adjacent streets consists of both aerial and underground infrastructure and includes:

- Power and street lighting infrastructure (Enersource Mississauga)
- Natural gas (Enbridge Gas)
- Communication Infrastructure (Rogers, Bell Canada)
- Watermains (City of Mississauga)
- Sanitary sewers (City of Mississauga)
- Storm sewers (City of Mississauga)
- Storm outlets to both Lake Ontario and the Credit River (City of Mississauga)

The above noted infrastructure is shown on the servicing plans in **Appendix 4**. The following sections highlight the infrastructure within or immediately adjacent to the Port Credit Harbour West Parks², and a summary of the infrastructure is presented in **Table 6**.

4.5.1.1. Sewers and Watermains

Sewers and watermains are located on all the streets adjacent to the parks. The following details the water and sewer servicing within each park:

- **Port Credit Memorial Park (West)** – There is no water or sewer servicing within this park in reference to mainline infrastructure. The existing clubs are serviced, but infrastructure records provided by the City have not shown any details for the site.
- **Marina Park** - Water is supplied to the fish cleaning station at Marina Park (the infrastructure records provided by the City have not shown any other details for the site). A sanitary Front Street Pump Station is located within Marina Park in the lighthouse immediately south of Lakeshore Road West. This pumping station is an important part of the municipal water/sewer system. Municipal staff was not able to provide reference documents for this pumping station. Known infrastructure connected to this facility is shown on the servicing plans.

² This description of existing infrastructure is based on available municipal records. It is noted that in a number of instances municipal infrastructure has been replaced and plans have not been updated.

- **Rivergate Easement** – There is no water or sewer servicing along the Rivergate easement.
- **J.C. Saddington Park** – Water and sewer servicing is provided to the washroom facilities located in the park. There are two buildings at the west side of the park that are the former raw water pumping station historically used for Port Credit's municipal water supply. Municipal staff was not able to provide reference documents for this pumping station. Known infrastructure connected to this facility is shown on the servicing plans. This pumping station is currently providing water to the J.C. Saddington Park Pond.

A schematic plan of the known existing municipal, public and private utility infrastructure has been summarized on Servicing Plans in **Appendix 4**.

Table 6: Port Credit Harbour West Parks Municipal Infrastructure Summary

Park Area	Sewers and Watermains	Storm Outfalls
Port Credit Memorial Park (West)	No water or sewer servicing in reference to mainline infrastructure.	750 millimetre diameter concrete pipe outlets into the Credit River on the north side of Lakeshore Road West 675 millimetre diameter concrete pipe (may be abandoned) and 1050 millimetre diameter concrete pipe outlet into the Credit River at High Street
Marina Park	Water is supplied to the fish cleaning station. Sanitary Front St. Pump Station located in the Lighthouse.	600 millimetre diameter concrete pipe drains into Credit River opposite Port Street
Rivergate Easement	No water or sewer servicing.	N/A
J.C. Saddington Park	Water and sewer servicing in washroom facilities. Former raw water pumping currently providing water to the pond.	900 millimetre x 750 millimetre (estimated) corrugated steel pipe (appears abandoned) and a 1200 millimetre x 900 millimetre (estimated) corrugated steel pipe outlet into Lake Ontario at the extension of Mississauga Road 900 millimetre x 750 millimetre (estimated) corrugated steel pipe (appears abandoned) is filled with debris, and confirmation is needed that this pipe is no longer active.

4.5.1.2. Storm Outfalls

A number of storm outfalls into Lake Ontario and the Credit River were identified with the Port Credit Harbour West Parks. There is a gap in information related to the storm outfalls that used to outlet to Lake Ontario prior to the filling operations associated with J.C. Saddington Park. Where possible, the outlet connections have been inferred based on a combination of available plans, survey information and site reconnaissance. The storm outfalls that are within the parks are presented in **Table 6** and shown on the servicing plans and photos that are included in **Appendix 4**.

All identified storm outlets have been included on the topographic survey completed as part of this Study (see **Appendix 5**). Any shoreline works proposed as part of the park improvement have the potential to impact some or all of these existing outfalls. The underpass construction will need to incorporate the outfall immediately upstream of the underpass, as well as a small outfall to the south of Lakeshore Road West. All storm outfall pipes in the vicinity of the proposed shoreline works will need to be inspected and condition of these pipes confirmed prior to any shoreline work being constructed.

4.5.1.3. Non-Municipal Infrastructure

For infrastructure not owned by the City of Mississauga (Gas, Communication, and Power), minimal information is available. The plant owners are reluctant to disclose information on their plant and will confirm capacity within their systems once a formal request is made regarding a connection.

4.5.1.4. J.C. Saddington Park Pond

The pond in J.C. Saddington Park is a man-made structure fed from the raw water pumping station. There are two naturalized channels that are fed from the pumping station and convey flows into the J. C. Saddington Park pond. The outlet of this pond is through a concrete channel that drains into a naturalized channel which flows into Hacienda Bay. No existing storm sewer outlets were observed draining into the channel between the pond and Hacienda Bay.

Photos of the J. C. Saddington pond upstream and downstream channels have been included in **Appendix 4**.

Modifications to the J. C. Saddington Park pond may require the reconstruction of the concrete outlet channel. Existing services to the pond, or in the vicinity of the pond, may also be impacted. Further review of the site (inside the park) is needed to confirm the presence, location, size and condition of the existing park infrastructure. Since J. C. Saddington Park was constructed on a closed landfill, environmental soil testing in the areas of any proposed excavation within the footprint of this closed landfill will need to be undertaken and the appropriate management of impacted soils undertaken.

5.0 CONSULTATION

A comprehensive consultation was carried out for this Study following the planning process and in accordance with the Municipal Class Environmental Assessment (Class EA). External agencies, key stakeholders, the general public and First Nations were provided multiple opportunities to engage and participate in the development of the Port Credit Harbour West Parks Pre-Design Report / Environmental Study Report (see **Appendix 6**). All public notification requirements were met.

The Port Credit Harbour West Parks study area has strong ties and history of the Mississaugas' settlements and occupation of the land. The City initiated the engagement with the Six Nations of the Grand River and Mississaugas of the New Credit First Nation, but no comments on the Study have been received. There is also a very active community in Port Credit who are passionate about their village and in particular the waterfront. The community was engaged through two Public Information Centres (PICs), as well as a meeting with key stakeholders who actively use the waterfront. All comment forms and consultation summaries are included in **Appendix 6**.

Agency consultations with the Ministry of Environment and Credit Valley Conservation were held on multiple occasions to ensure continuous involvement and opportunities for feedback during the development and evaluation of the alternatives for each of the three parks and the Rivergate easement. Preliminary comments were also received from the Region of Peel. All of the comments received were addressed and documented (refer to **Appendix 6**).

5.1. Identifying Key Issues

The key issues identified through the consultation process with the organizations active on the Port Credit Harbour West shoreline, the general public and the agencies, as well as the resolution of these issues through the Class EA process are discussed below.

Organizations that are directly active on the Port Credit Harbour West waterfront were consulted as a separate group of stakeholders, and their main concerns were regarding the potential for boat traffic congestion, the need to coordinate the river's use between the motorized and non-motorized boaters, that the waterfront and riverfront remain accessible, Marina Park's facilities and signage be improved, and to recognize the importance of the boat launch and commercial fishing activities in Marina Park (see **Appendix 6**).

The general public attending PIC # 1 had a varied set of comments on the existing conditions, opportunities and challenges for the Port Credit Harbour West Parks. The key issues and comments raised at this PIC included: the importance of waterfront and riverfront accessibility and views, the need for improved park programming and facilities, enhancements to the pond and vegetation, the importance of commercial and recreational fishing activities, and the Rivergate easement walkway impacts (see **Appendix 6**).

The public attending PIC # 2 had clarification questions on the presented materials, but in general had positive feedback and showed support for the large block concept plan and the preferred alternatives. The key issues and comments raised at this PIC included: the need to flood-proof the parks, concern for a decrease in parking areas, importance of diverse park programming including the pond, concern for a decrease in waterfront access for shore fishing, and concern that large vegetation and built structures act as visual barriers (see **Appendix 6**).

In review of the existing conditions summary and PIC materials, along with the preferred alternatives, Credit Valley Conservation (CVC) indicated “*no major concerns with the submission and the proposed options outlined*”. CVC noted the need for softer shoreline treatments that allow for greater habitat diversity and quality, the inclusion of a coastal wetland at Hacienda Bay and a concern with filling within the floodplain (refer to **Appendix 6**).

5.1.1. Addressing the Key Issues

Issues raised through the consultation process were very valuable and had informed the identification of the main problem under investigation for each park and the Rivergate easement. They also provided a greater understanding of the opportunities and challenges. The key issues were addressed as part of the planning and Class EA processes.

The waterfront and riverfront shores, as well as the views leading to the water, are maintained and enhanced in the Port Credit Harbour West Parks through the street-aligned vistas, openings in the riparian vegetation and on the elevated walkways at the Rivergate easement. Detailed design of the parks will address the use of appropriate native plant species selection and placement of vegetation to avoid the creation of visual barriers to the water. Built structures are not envisioned at this time for Marina Park, as illustrated in the Large Block Concept Plan (see **Section 7.0**).

The multi-use civic space, shoreline improvements, flood-proofing and potential re-use of existing buildings present new diverse programming opportunities with improved facilities. The pond will be naturalized while still accommodating a range of uses such as running model boats. Also, the ‘Village Green’ on the west end of J.C. Saddington Park will remain a parking lot until it is no longer in use or necessary due to an increase in public transit use.

Port Credit Harbour West Parks will continue to provide opportunities for recreational fishing as it is an important and popular activity. It is also very evident that the marina supports commercial fishing activities and is an important part of Port Credit’s recent history. The potential for traffic congestion, necessary coordination between the motorized and non-motorized boaters and lack of signage at Marina Park are issues that were resolved through the separation of the motorized and non-motorized boat launch areas, and with improvements to the signage and vehicular circulation of the park. The improved programming and facilities for Marina Park include staging areas for non-motorized boats, designated parking stalls for vehicles with boat trailers and a multi-use civic space for events. Access to the water is improved for park users as well within the Port Credit Harbour West Parks with trails along the shore edge and two fully accessible cobble beaches.

The greater habitat diversity and quality will be addressed during detailed design of the shoreline treatments. A coastal wetland is not the preferred alternative for Hacienda Bay as the geotechnical investigations provided evidence for a challenging and expensive construction given the existing conditions, and a high uncertainty that the coastal wetland would be able to achieve and maintain its ecological integrity. Finally, the construction of an underpass under the Lakeshore Road West bridge will not encroach or require additional fill into the floodplain.

6.0 EVALUATION OF ALTERNATIVES













The Municipal Class Environmental Assessment requires consideration of alternatives and the traceable documentation of decisions to support preferred infrastructure. This section documents the comparison of different ways to improve the Port Credit Harbour West Parks to accomplish the vision set out in the *Waterfront Parks Strategy (2008)* (WPS). As discussed in **Section 3.3**, the evaluation criteria established to compare alternatives are based on the potential for positive or negative impact in the following four categories or criteria groups: natural environment, socio-economic and cultural environment, technical, and construction cost. The preferred alternatives and identification and evaluation of the alternatives for the Port Credit Harbour West Parks are presented by park area in the following sub-sections.

The evaluation of alternatives documents the relative differences and potential impacts of each of the improvement alternatives. **Tables 7 to 14** and the text below summarize the evaluation, and more detailed evaluations for the Port Credit Harbour West Parks can be found in **Appendix 7**.

6.1. Port Credit Memorial Park (West) Shoreline

The existing shoreline of Port Credit Memorial Park (West) consists of concrete slab revetments that are in poor condition and require upgrading to provide better pedestrian access and seating along the riverfront, fish habitat improvements, absorption of the wake, non-motorized water-craft access to the river, education and interpretation area, a variation in planted areas and a new trail connection to Marina Park, as discussed in the WPS.

Table 7: Evaluation of Alternatives for Port Credit Memorial Park (West)

ALTERNATIVES				
	Do Nothing	Natural Shore	Hard Shore	Combination (Natural and Hard Shore)
Natural Environment ³				
Socio-Economic and Cultural Environment				
Technical				
Cost ⁴	N/A	Moderate (\$600,000)	High (\$900,000)	Moderate to High (\$800,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
		

³ The least preferred alternative for the 'natural environment' was updated since last presented at PIC # 2 on October 24th, 2012. The "hard shore" alternative is least preferred as it has minimal contributions to the natural environment.

⁴ The cost for each alternative has been updated since last presented at the October 24th, 2012 Public Information Centre. The final geotechnical report (dated November 30, 2012) identified the slopes as marginally stable; therefore any shoreline work will thus impact the stability, needing deeper stabilization work than originally anticipated.

6.1.1. Alternatives Considered

Four shoreline alternatives were considered for Port Credit Memorial Park (West): do nothing, upgrade to a natural shoreline, upgrade to a hard shoreline and a combination of both natural and hard shore features.

Do Nothing

The “do nothing” alternative leaves the existing concrete slab revetments “as is” with no improvements made to the shoreline.



Natural Shore

The “natural shore” alternative involves the construction of live cribs and live stakes to create a natural shore. Stakes are live woody cuttings of a species that have the ability to root and grow, and over time can provide slope stabilization, improve aesthetics of a shoreline and provide habitat for wildlife. A live crib wall is a box-like, interlocking arrangement of log walls with live vegetation placed between the seams of each layer.



Hard Shore

This shoreline alternative involves the replacement of the current shoreline with a hard shore. There are a number of different types of hard shore including:

- stone revetments - sloping structures extend from the shore into the water to protect the shore from the action of waves
- seawall - a protective vertical or near vertical structure of stone, concrete or steel that protects the shore from the action of waves
- steel sheet piles - interlocking steel piles commonly used to construct a seawall with deep foundations providing protection from the action of waves
- concrete – a structure providing protection as a vertical retaining wall



All types of hard shore treatments stabilize the shore by mostly reflecting the energy of incoming waves and helping to preserve the existing uses of the park and to protect against erosion.

Combination

This shoreline alternative improves the existing shoreline with a “combination” of both natural and hard shoreline elements discussed above.



6.1.2. Preferred Alternative

The “combination” alternative is the preferred solution for the Port Credit Memorial Park (West) shoreline as it provides the best opportunity to enhance the park at a medium to high cost for a variety of users and programmatic functions, and it provides a balanced mix of hard and soft shoreline treatments to meet both the technical requirements for slope stabilization and the naturalization objectives that provide improved quality and diversity of terrestrial and aquatic habitat.

The “do nothing” alternative misses out on the opportunity to improve the shoreline stability and programming, and is clearly least preferred for all criteria groups.

For the remaining alternatives there are no significant disadvantages and all are identified as most preferred or preferred on the basis of the natural environment, socio-cultural environment and technical criteria groups:

- The “natural shore” alternative is most preferred from a natural environment perspective, accommodating many of the WPS park recommendations, but providing the lowest protection from a technical perspective.
- The “hard shore” alternative is most preferred technically but is considered to be poor from a natural environment perspective with limited habitat improvements, and adequate from a socio-cultural perspective as it could accommodate many of the WPS park recommendations.
- The “combination” is most preferred from a socio-cultural perspective as it provides the greatest flexibility for uses and programming. It also provides adequate shoreline protection and does provide areas of enhanced habitat.

From a *Cost* perspective there is relatively modest difference between the alternatives.

The “natural shore” and “combination” alternatives fair equally in preference, however, it was considered reasonable to identify the “combination” alternative as preferred overall because it meets the most WPS recommendations and provides the greatest flexibility to address the many different uses in this park. Its mid-range cost was also considered desirable.

6.2. Port Credit Memorial Park (West) and Marina Park Connection

Port Credit Memorial Park (West) is located directly north of Marina Park but is separated by Lakeshore Road West with no direct and continuous linkage between the two parks. There is an indirect crossing west of the park at a traffic light at the intersection of John Street and Lakeshore Road West. The WPS identified an opportunity for a better link between the two parks to improve the movement and connectivity between the parks, as well as to increase pedestrian safety.

6.2.1. Alternatives Considered

Four alternatives were considered for the Port Credit Memorial Park (West) and Marina Park Connection: do nothing, provide an at-grade connection, construct an underpass connection, and construct an overpass connection.

Table 8: Evaluation of Alternatives for Port Credit Memorial Park (West) Connection

ALTERNATIVES				
	Do Nothing	At Grade	Underpass	Overpass
Natural Environment	●	●	○	⊖
Socio-Economic and Cultural Environment	○	⊖	●	⊖
Technical ⁵	●	⊖	⊖	○
Cost	N/A	Moderate (\$200,000)	Moderate (\$200,000)	Very High (\$4,000,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

Do Nothing

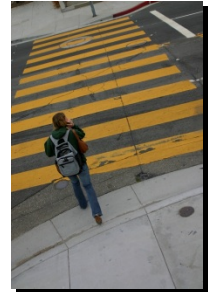
The “do nothing” alternative leaves the connection between Port Credit Memorial Park (West) and Marina Park “as is”, with no improvements made to the current indirect crossing at the traffic lights located at John Street and Lakeshore Road West.



⁵ The cost for the “at grade” alternative has been updated since last presented at the October 24th, 2012 Public Information Centre. A more detailed analysis of the construction requirements to implement this alternative informed this change. The “at grade” alternative preference was also changed from most preferred to preferred after the October 24th, 2012 Public Information Centre reflecting the change in cost.

At Grade

The “at grade” alternative involves improving the connection between Port Credit Memorial Park (West) and Marina Park by constructing an at-grade crosswalk with lights across Lakeshore Road West at Front Street.



Underpass

The “underpass” alternative involves construction of an underpass passage below Lakeshore Bridge connecting Port Credit Memorial Park (West) and Marina Park with concrete access ramps. This underpass would be similar to the existing underpass on the east side of the Credit River.



Overpass

The “overpass” alternative involves constructing an overpass with elevators to access the bridge above Lakeshore Road West, connecting Port Credit Memorial Park (West) and Marina Park.



(Source: City of Burnaby, 2008)

6.2.2. Preferred Alternative

Although the “do nothing” alternative was evaluated as the overall most-favoured alternative for the Port Credit Memorial Park (West) connection, the “underpass” alternative was selected as the preferred as this moderate construction cost provides a significant improvement to the safety, programming and operation of the park system. The advantages of the “underpass” alternative outweigh those associated with the “at grade” alternative, and any potential impacts during construction would be minimized through best management practices.

The specific preferences for each criteria group vary:

- From a *Natural Environment* perspective the “do nothing” and “at grade” alternatives are equally preferred as they have no impacts on the natural environment during construction, but neither alternative contributes to the natural environment.
- From a *Socio-Economic and Cultural Environment* perspective the “underpass” alternative is preferred as it provides the continuous connection between the two parks with minimal disruption and potential impact on park uses and programs during construction and operation.

- From a *Technical* perspective the “do nothing” and “at grade” alternatives are preferred as they have no to limited construction challenges and only moderate maintenance needs.










From a *Cost* perspective, the “at grade” and “underpass” alternatives are preferred as they require a relatively low cost to improve the pedestrian connection.

While there are distinctions in the preferred alternative selections for all criteria groups, the two strongest alternative preferences were “at grade” and “underpass”. The “underpass” alternative was selected as the most preferred overall because it allows for additional socio-economic and cultural improvements to the park area and an uninterrupted pedestrian connection between the parks for the same cost as the “at grade” alternative.

6.3. Marina Park

The shoreline at the north end of Marina Park is protected by a steel sheet pile wall which provides a moderate to high level of protection from flooding, and the south end of Marina Park consists of a mix of shoreline protection measures in varying states of disrepair, providing low to no protection from flooding. The WPS identified many improvement opportunities for this park, including shoreline protection that promotes fish habitat, and pedestrian access to the river, minimizing conflicts between fishing activities and creation of a multi-use civic space. As discussed in **Section 4.2.2**, for the purposes of this Study the boat launch ramps for motorized boats will remain in their existing location at the north section of the park.

Table 9: Evaluation of Alternatives for Marina Park

ALTERNATIVES			
	Do Nothing	Do Nothing at North End and Flood Proof South End	Flood Proof North and South Ends
Natural Environment			
Socio-Economic and Cultural Environment			
Technical			
Cost	N/A	Moderate (\$500,000)	High (\$1,000,000 to \$1,500,000 – not including backshore grading)

LEGEND		
Least Preferred	Preferred	Most Preferred
		

6.3.1. Alternatives Considered

Three alternatives were considered for Marina Park: do nothing, do nothing at the north end of Marina Park and flood proof the south end, and flood proof both the north and south ends of Marina Park.

Do Nothing

The “do nothing” alternative leaves both the north end and south end shorelines “as is”, with no improvements made to the existing shoreline conditions and park programs.

Do Nothing at North End and Flood Proof South End

This alternative leaves the current north end shoreline “as is”, but flood proofs and improves the shoreline at the south end by raising the backshore elevation of the existing topography and providing stone revetment and armour stone along the shore.

Flood Proof North and South Ends

This alternative involves flood proofing and improving the shoreline for both the north and south sections of Marina Park by raising the backshore elevation of the existing topography for both the north and south ends, reconstructing and repairing the existing steel sheet pile wall along the shoreline in the north section of the park, and providing stone revetment and armour stone along the south shoreline.



6.3.2. Preferred Alternative

Flood proofing and associated shoreline improvements for both the north and south ends is the preferred long-term alternative for Marina Park as it allows for year-round usability and opportunity for park enhancement, including improved connectivity between J.C. Saddington Park and the Rivergate easement. It also presents the most protection from the physical environment and provides the most improvements to the natural environment.

The “do nothing” alternative misses out on the opportunity to improve the shoreline stability and programming, and is clearly least preferred for all criteria groups. The “flood proof north and south ends” alternative is preferred in all criteria groups, but cost.

From a *Cost* perspective “do nothing at north and flood proof south end” alternative is preferred because it provides immediate resolution of a failed shoreline infrastructure at a moderate cost. Despite the high cost of the overall preferred alternative, it will eliminate long term maintenance costs associated with the shoreline and the flood proofing provides opportunity to invest in improvements to the park to increase functionality, improve user enjoyment, and create a multi-purpose event space.

6.4. Non-Motorized Boat Launch

The current boat launch located in Marina Park is shared between motorized and non-motorized boats which may create potential conflicts for boaters when the ramps are busy. The WPS indicates that access to the water for boating is an essential component of a connected waterfront system. Providing easy access to the water's edge in various locations throughout the waterfront can help facilitate the accessibility of the park system via water transportation.

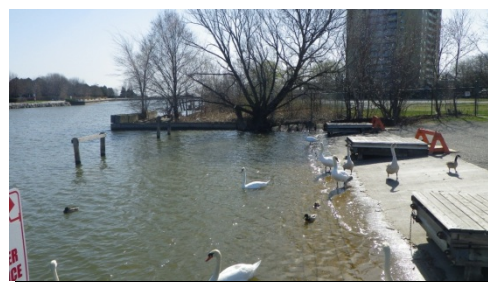
Table 10: Evaluation of Alternatives for the Non-Motorized Boat Launch

ALTERNATIVES				
	Do Nothing	Marina Park	Port Credit Memorial Park (West)	Hacienda Bay
Natural Environment ⁶	○	●	○	○
Socio-Economic and Cultural Environment	○	●	◐	◐
Technical ⁷	◐	●	●	○
Cost	N/A	Low (\$50,000)	Low (\$50,000)	Low ⁸ (\$50,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	◐	●

6.4.1. Alternatives Considered

Four alternatives were considered for the non-motorized boat launch: do nothing, create a separate non-motorized boat launch location in Marina Park, move the non-motorized boat launch to Port Credit Memorial Park (West) and move the non-motorized boat launch to Hacienda Bay in J.C. Saddington Park.



⁶ Upon further technical analysis and evaluation of the "do nothing" alternative was changed from most preferred to least preferred (as presented at the Public Information Centre # 2 on October 24th, 2012).

⁷ The preferred alternatives for the 'technical group' have been updated since last presented at the Public Information Centre # 2 on October 24th, 2012. Both "Marina Park" and "Port Credit Memorial Park (West)" alternatives are preferred from the technical perspective (previously shown as only "Marina Park").

⁸ The cost for the Hacienda Bay alternative may vary as it is dependent on the Hacienda Bay design details.

Do Nothing

The “do nothing” alternative leaves the non-motorized boat launch in its current location in Marina Park. The boat launch continues to be shared between motorized and non-motorized boats.



Marina Park

The “Marina Park” alternative involves creating a separate non-motorized boat launch location in the south end of Marina Park.



Port Credit Memorial Park (West)

The “Port Credit Memorial Park (West)” alternative involves moving the non-motorized boat launch along the shoreline of the Credit River within Port Credit Memorial Park (West).



Hacienda Bay

The “Hacienda Bay” alternative involves moving the non-motorized boat launch to Hacienda Bay in J.C. Saddington Park.

6.4.2. Preferred Alternative

The “Marina Park” alternative is preferred overall as it will reduce potential on-land conflicts between motorized and non-motorized boats while still maintaining the social interactions within Marina Park as well as easy access to parking amenities for boaters.

Marina Park was identified as the preferred location for a separate non-motorized boat launch for all criteria groups.

- From a *Natural Environment* perspective the “do nothing” and “Marina Park” alternatives are both preferred as they have the least amount of impact on the natural environment.
- From a *Socio-Economic and Cultural* perspective the “Marina Park” alternative is preferred as it has the potential to improve on-land conflicts, can provide a convenient access for non-motorized boats and keeps the use of the boat dock in Marina Park.
- From a *Technical* perspective the “do nothing” alternative is most preferred, although “Marina Park” and “Port Credit Memorial Park (West)” are also technically feasible and preferred.

6.5. Rivergate Easement Pedestrian Connection

There is no direct and continuous linkage between Marina Park and J.C. Saddington Park along the water’s edge, which limits park circulation and connectivity. The two parks are currently connected via municipal sidewalks in front of the Rivergate apartment building. The WPS indicates that a proposed waterside walkway connection be considered to connect J.C. Saddington Park and Marina Park. The technical studies, including a geotechnical report,

prepared for this report, determined that an elevated fixed walkway is a more appropriate design for this park location and it was therefore identified as an alternative to be evaluated below.

Table 11: Evaluation of Alternatives for the Rivergate Easement Pedestrian Connection

ALTERNATIVES		
	Do Nothing	Shoreline Connection
Natural Environment	○	●
Socio-Economic and Cultural Environment	○	●
Technical	●	○
Cost	Low (\$150,000)	High (\$2,500,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

6.5.1. Alternatives Considered

Two alternatives were considered for the Rivergate easement pedestrian connection: do nothing and creating a shoreline connection.

Do Nothing

The “do nothing” alternative continues to use the municipal sidewalks to allow for a pedestrian connection between Marina Park and J.C. Saddington Park; however, it allows for improved user enjoyment by better connecting the two parks, as well as appropriate signage.



Shoreline Connection

The “shoreline connection” alternative involves creating a shoreline pedestrian connection between Marina Park and J.C. Saddington Park through the construction of an elevated fixed walkway.



6.5.2. Preferred Alternative

The “shoreline connection” alternative is the preferred solution overall as it the most preferred alternative from both the natural environment and socio-economic environment perspective, providing opportunities to improve fish habitat and increase areas of naturalization, and a more continuous connection along the water’s edge. Despite the high cost, the overall long term benefits of the “shoreline connection” alternative are considered to be greater than the “do nothing” alternative.

The specific preferences for each criteria group vary:










- From a *Natural Environment* perspective the “shoreline connection” alternative is preferred as it has the most opportunities to improve fish habitat and areas of naturalization.
- From a *Socio-Economic and Cultural* perspective the “shoreline connection” alternative is preferred as it improves connectivity and enhances the experience for trail and park users.
- From a *Technical* perspective the “do nothing” alternative is preferred as it does not require protection from the natural environment and is the most straightforward to construct.

From a *Cost* perspective, the “do nothing” alternative is preferred as it demands a lower cost for streetscape enhancements that allow some connectivity improvements.

6.6. J.C. Saddington Park

The shoreline at J.C. Saddington Park consists of stacked and rough random stone which is prone to overtopping and limits the access to the water's edge. The WPS identified many improvement opportunities for this park, but specific to the shoreline improvements it noted that alternative stabilization techniques need to be considered in the future to allow better access to the water.

Table 12: Evaluation of Alternatives for J.C. Saddington Park

ALTERNATIVES			
	Do Nothing	Improve Existing	Cobble Beach
Natural Environment			
Socio-Economic and Cultural Environment			
Technical			
Cost ⁹	Low and Periodic	Moderate (\$550,000)	High (\$1,600,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
		

6.6.1. Alternatives Considered

Three alternatives were considered for J.C. Saddington Park: do nothing, improve existing conditions and the creation of a cobble beach.

Do Nothing

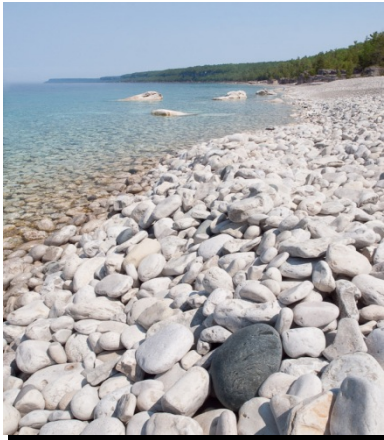
The “do nothing” alternative leaves the existing conditions “as is”, consisting of stacked and rough random placed armour stone.



⁹ The cost for the “cobble beach” alternative has been updated since last presented at the October 24th, 2012 Public Information Centre due to more detailed technical analysis; the construction of this alternative was originally costed at \$3,000,000 and since revised to \$1,600,000.

Improve Existing

The “improve existing” alternative involves additional placement of armour stone or riprap in the upper part of the revetment to provide a better level of protection.



(Source: Terry McDonald, 2010)

Cobble Beach

The “cobble beach” alternative involves the placement of cobble where suitable, and otherwise improving the existing conditions.



6.6.2. Preferred Alternative

Constructing a cobble beach at J.C. Saddington Park was selected as the preferred alternative as it provides the greatest opportunity to improve the safety, enjoyment and access to the water's edge, and has wildlife habitat and naturalization advantages over the other alternatives.

The specific preferences for each criteria group are:

- From a *Natural Environment* perspective, the “cobble beach” alternative is preferred as it provides the greatest opportunities for improvement to the natural environment.
- From a *Socio-Economic and Cultural* perspective, the “cobble beach” alternative is preferred as it will improve the safety and usability of the park's waterfront.
- From a *Technical* perspective, both the “cobble beach” and “improve existing” alternatives are equally preferred.

From a *Cost* perspective, “improve existing” alternative is preferred because it provides improvement to the shoreline structure at a moderate to high cost.

The “cobble beach” alternative is overall ranked as the most preferred for the natural environment and socio-economic and cultural environment criteria groups, and ranked equally with the “improve existing” alternative for the technical criteria. The cost is high for constructing this alternative, but the overall advantages of the preferred alternative support the objectives from the WPS.

6.6.3. Consideration of Alternative Design Concepts (Schedule C Projects)

The preferred solution of a cobble beach requires the construction of an appropriate structure to stabilize or anchor the beach and protect it from wave action. The two standard means of stabilizing or anchoring a cobble beach are:

Groynes - Groynes are shore connected structures that extend out perpendicular to the shore to the toe of the proposed beach.

Headlands - Detached headlands are shore parallel structures separated from the shore.

A review of these stabilization options clearly identified that there were no advantages to a detached headland over groyne extension. A detached headland would need to be more than double the length of the groyne extension. It would also be built in deeper water and thus result in over double the cost of the groyne extension. From the perspective of natural environment, a detached headland has a greater impact due to its footprint. Overall, it was determined that the groyne option is the only reasonable design for anchoring the proposed cobble beach.

For this project it is suggested that the end of the groyne be angled to the south east more directly into the direction of the large easterly waves to minimize wave reflection into the beach. The proposed cobble beach requires a 40-metre long extension to the existing groyne (see **Figure 16**)

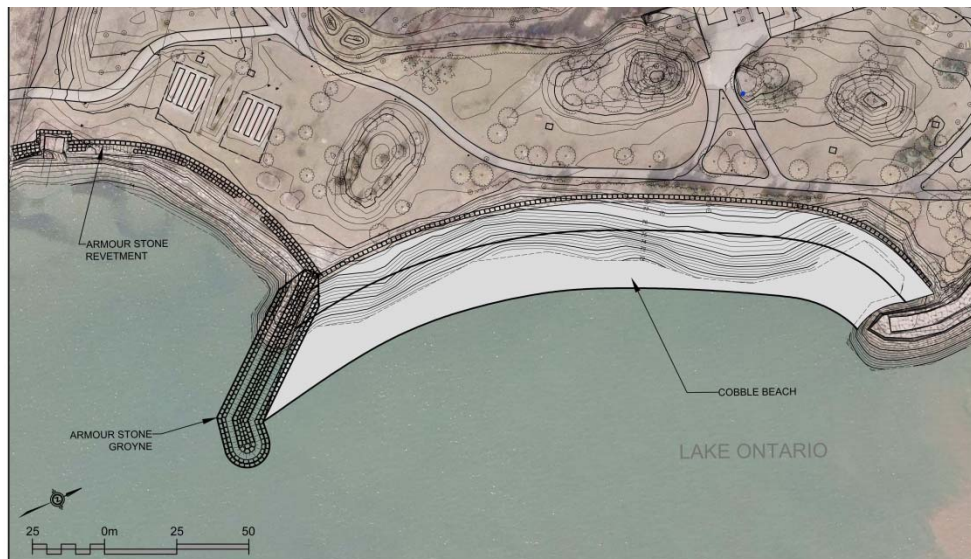


Figure 16: Groyne Option for Cobble Beach, J.C. Saddington Park

6.7. J.C. Saddington Park Pond

The pond located in J.C. Saddington Park is an asset to the park. The design of the existing pond limits ecosystem functions and habitat creation, and it has high maintenance requirements. The WPS identified many improvement opportunities for the pond, including enhancements for additional seasonal uses, stabilization of the edges, planting to improve aesthetic and interpretation opportunities.

Table 13: Evaluation of Alternatives for J.C. Saddington Park Pond

ALTERNATIVES			
	Do Nothing	Naturalized	Urban/Concrete
Natural Environment	○	●	○
Socio-Economic and Cultural Environment	○	⊖	●
Technical	○	⊖	⊖
Cost	N/A	Moderate (\$400,000)	Moderate ¹⁰ (\$400,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

6.7.1. Alternatives Considered

Three alternatives were considered for J.C. Saddington Park pond: do nothing, creating a more natural pond and creating an urban/concrete pond.



Do Nothing

The “do nothing” alternative leaves the existing conditions “as is”, consisting of a concrete liner.

Natural

The “naturalized” alternative involves an alteration of the pond surface and depth to support naturalized environment, and natural vegetation around the pond.

¹⁰ Cost may vary depending on design features of the urban/concrete pond.



(Source: www.melanieotg.ca, 2011)

Urban/Concrete

The “urban/concrete” alternative involves other urban water features (e.g., wading pool, skating, etc.), and adding landscaping around the pond.

6.7.2. Preferred Alternative

The “naturalized” pond alternative is overall the most preferred alternative as it provides the most opportunities for habitat creation and naturalization of the site and the Port Credit Harbour, and requires the least maintenance. The significant benefit of a naturalized area within an urban park is considered to outweigh the socio-economic and cultural environment advantages of the “urban/concrete” pond alternative associated with program flexibility.

The specific preferences for each criteria group are:

- From a *Natural Environment* perspective, the “naturalized” alternative is preferred as it provides the greatest opportunities for creation of aquatic and terrestrial habitats, as well as naturalization around the pond.
- From a *Socio-Economic and Cultural* perspective, the “urban/concrete” alternative is preferred as it provides the most flexibility in programming and seasonal uses.
- From a *Technical* perspective, both the “naturalized” and “urban/concrete” alternatives are equally preferred and constructible.

From a *Cost* perspective both “naturalized” and “urban/concrete” pond alternatives are of relatively equal cost and preference.

The “naturalized” alternative meets the most WPS objectives and provides the most advantages for each criteria group. As such, it was reasonable to identify the “naturalized” alternative as the preferred alternative overall.

6.8. Hacienda Bay

Hacienda Bay, located in J.C. Saddington Park, does not have direct and safe access to the water’s edge for the public, and the existing conditions provide a moderate level of shoreline protection. The WPS noted this area be considered for a potential wetland restoration, and identified that a potential future coastal engineering study could evaluate and develop an alternative for beach access at the northeast corner of J.C. Saddington Park.

Table 14: Evaluation of Alternatives for Hacienda Bay

ALTERNATIVES			
	Do Nothing	Cobble Beach	Coastal Wetland
Natural Environment	○	⊖	●
Socio-Economic and Cultural Environment	○	⊖	⊖
Technical ¹¹	●	●	○
Cost	N/A	Moderate (\$600,000)	High (\$3,000,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

6.8.1. Alternatives Considered

Three alternatives were considered for Hacienda Bay: do nothing, creating a cobble beach and creating a coastal wetland.

Do Nothing

The “do nothing” alternative leaves the existing conditions “as is”, inaccessible to the public with limited protection of the shore from natural processes.

Cobble Beach

The “naturalized” alternative involves an enhancement of the area with a cobble beach.



¹¹ A more detailed technical analysis of the Hacienda Bay alternative altered the evaluation from what was presented at the October 24th, 2012 Public Information Centre: it was identified as a preferred alternative and now changed to least preferred given the technical challenges of its construction.

Coastal Wetland

This alternative involves the development of a coastal wetland that would also require wave protection through construction of a breakwater.

6.8.2. Preferred Alternative

The “cobble beach” alternative is overall the most preferred alternative for Hacienda Bay when assessing across all criteria groups. Although not the most preferred alternative from a natural environment perspective, a cobble beach still provides moderate improvements to the existing natural environment conditions. The “cobble beach” alternative is more easily constructed and meets the objectives to provide public accessibility and improved shoreline protection at a reasonable cost.

The specific preferences for each criteria group are:

- From a *Natural Environment* perspective, the “coastal wetland” alternative is preferred as it provides the greatest opportunities for creation of aquatic and terrestrial habitats, as well as naturalization.
- From a *Socio-Economic and Cultural* perspective, both “cobble beach” and “coastal wetland” alternatives were equally preferred as they provided flexibility in programming and pedestrian connectivity.
- From a *Technical* perspective, both the “cobble beach” and “do nothing” alternatives were preferred as they have no to limited construction challenges.

From a *Cost* perspective the “cobble beach” alternative is preferred as it provides considerable park improvements at the lowest relative price.

The “cobble beach” alternative is the most preferred alternative amongst most criteria groups.

7.0 LARGE BLOCK CONCEPT PLAN

The basis for the Large Block Concept Plan comes from the *Waterfront Parks Strategy's (2008)* (WPS) recommendations and conceptual master plans for Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park, as well as the Rivergate easement connection. The WPS set an inspiring vision for the west side of the Credit River Harbour and noted many improvements to the park conditions, as discussed in **Sections 3.0** and **4.0**.

The WPS recommended that the existing boat launch ramps be removed from Marina Park; however, for the purposes of this Study it was determined that the existing boat launch ramps will remain in the park in the short term. If an alternative location is identified for a public launch area for motorized boats in the future, the existing ramps at Marina Park may be removed at that time.

Through technical analysis findings (see **Section 4.0**), public and stakeholder's comments and concerns, and agency comments (see **Section 5.0**), preferred alternatives were established for the redevelopment of the Port Credit Harbour West Parks shoreline and associated infrastructure as part of the Municipal Class Environmental Assessment process. The preferred alternatives improve the safety and efficiency of the parks and the interconnections between them. This Study informed the refinement and update of the WPS conceptual master plans developed in 2008 into the Large Block Concept Plan, as shown in **Figure 17**.

Large Block Concept Plan

The Large Block Concept Plan does not show locations for interpretative areas and signage, seasonal kiosks, and children's play area and amphitheatre in the Port Credit Harbour West Parks, as they do not require and are not part of the evaluation for this Municipal Class Environmental Assessment, but they are park elements that should be considered in the final detailed design. The implementation of the 'Village Green', the adaptive reuse of the heritage buildings and selection of the preferred location of an all-season park pavilion in J.C. Saddington Park will be determined through detailed design.

The Large Block Concept Plan presents the Port Credit Harbour West Parks as an important park system along the west edge of the Credit River and Lake Ontario. Park users will have continuous connectivity and movement along the water's edge, underneath Lakeshore Road bridge and through the cultural nucleus at Marina Park, while meandering along an elevated Rivergate walkway that looks out into the lake and pausing to celebrate the water's edge along the cobble beaches at J.C. Saddington Park.

7.1. Port Credit Memorial Park (West)

Port Credit Memorial Park (West) will continue as a passive recreation park, with open views to the Credit River and naturalized shore areas that create habitat for fish and other aquatic and terrestrial species. The naturalized shore will also dissipate wave action allowing for calmer water for canoeing and rowing.

The river's edge will be inviting for shore fishing and seating for daily enjoyment of the river, as well as during organized events, such as boating regattas. The park's large trees will continue to provide shade cover for passive activities within the open green space, and the additional street tree planting along Front Street will contribute to a more robust urban forest canopy coverage and provide a visual buffer from the adjacent parking area. The park will also feature low-lying planted areas that are of low maintenance and aid in goose control.

The activities of Mississauga Canoe and Don Rowing Clubs will continue to animate the park's open space and the Credit River itself. The introduction of an asphalt pathway south of the clubs will formalize pedestrian access along the river's edge and lead into an underpass connection to Marina Park, further strengthening the continuous public access to the water's edge in the Port Credit Harbour. The park will also have elements that celebrate the history of the area's first settlers, such as the totem pole along the pathway system.

7.2. Marina Park

Marina Park, in the heart of Port Credit, will remain a central area for fishing activities and tourism, with the charter boat docks and public boat launch ramps, but designed to address circulation, sustainable design measures and additional park programming. A separate public dock location for non-motorized boats at the south end of the park, along with adjacent open space to support boating activities will allow for safer launching of canoes and kayaks into the water. The improved circulation and launching access for motorized boats will minimize vehicular congestion, while providing a clearly delineated direction of movement with pavement markings and signage. Cars with boat trailers will have a designated parking area in the south end of the park that features, where appropriate, sustainable parking lot design elements. This parking lot can be used as a community event space to complement the multi-use civic space at the north end of the park for events such as markets and artisan displays.

The naturalized area at the south end of Marina Park will create habitat for terrestrial species that is unappealing to geese. Seating opportunities with open views to the river will be provided along the water's edge. Marina Park's west edge will also benefit from streetscape improvements, including tree planting, paving and sidewalks, while ensuring open views to the river and other park features. The views will also be enhanced with adjacent street connections that allow pedestrian connectivity and characterize the site's historic layout. A pedestrian trail will travel south along the river's edge and connect to J.C. Saddington Park using the elevated walkway around the Rivergate apartments. Cyclists will follow the existing Waterfront Trail route to J.C. Saddington Park. Opportunities to achieve an off road route for the Waterfront Trail along Front Street will be investigated during detail design.

7.3. Rivergate Easement

The easement around the Rivergate apartments provides an opportunity for an elevated fixed walkway to connect Marina Park and J.C. Saddington Park, while providing open views to the harbour and Lake Ontario. Shoreline works will include shoreline stabilization, fish habitat improvements as well as opportunities for naturalization.

FIGURE 17
PORT CREDIT HARBOUR WEST PARKS
LARGE BLOCK CONCEPT PLAN
JULY 2013

LEGEND

Trail

Multi-Use Trail

Waterfront Trail

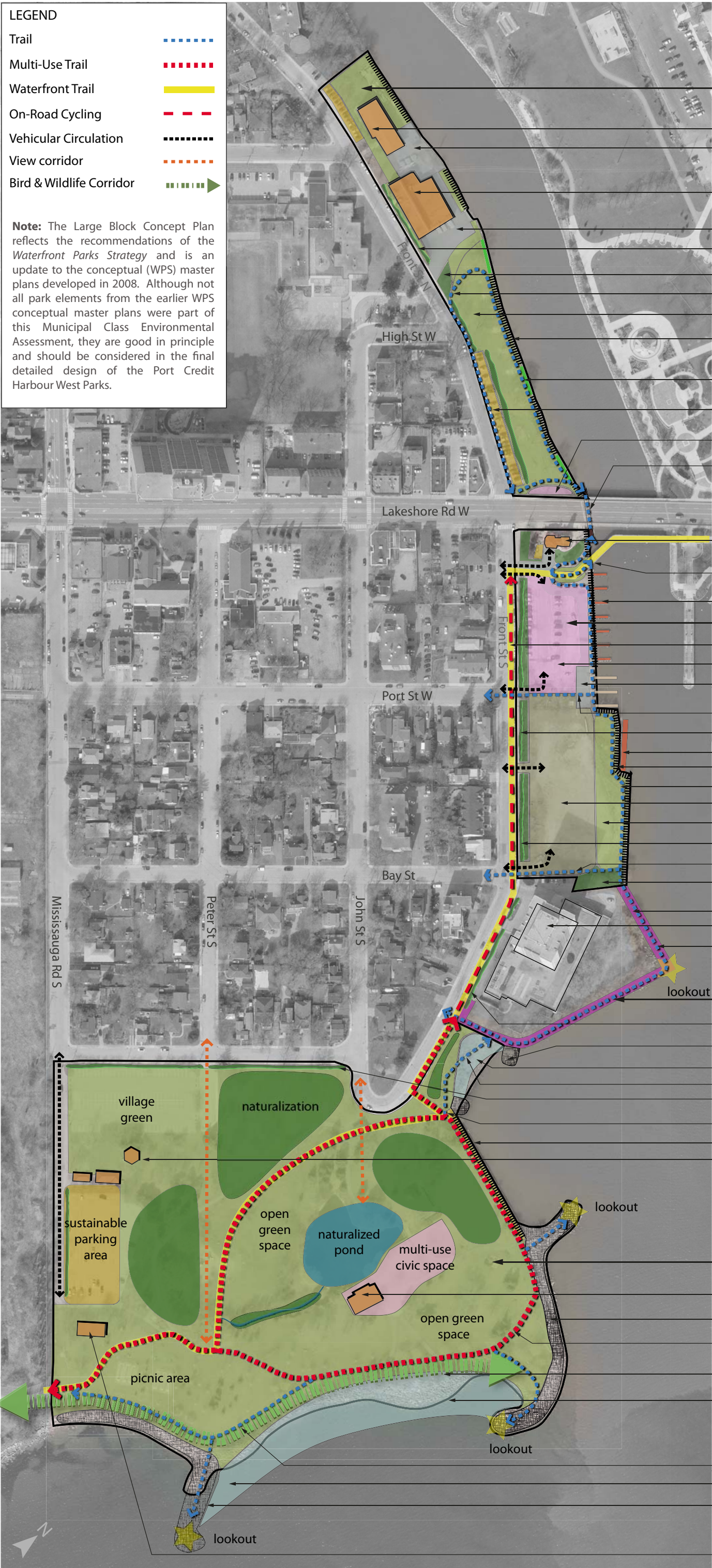
On-Road Cycling

Vehicular Circulation

View corridor

Bird & Wildlife Corridor

Note: The Large Block Concept Plan reflects the recommendations of the *Waterfront Parks Strategy* and is an update to the conceptual (WPS) master plans developed in 2008. Although not all park elements from the earlier WPS conceptual master plans were part of this Municipal Class Environmental Assessment, they are good in principle and should be considered in the final detailed design of the Port Credit Harbour West Parks.



PORT CREDIT MEMORIAL PARK (WEST)

- existing canoe club
- existing launch ramp and docks

- existing rowing club

- existing launch ramp and docks
- street tree planting
- street tree planting
- trail (3.0m wide)
- open green space
- hard shore edge

- natural shore edge

- parking area

- multi-use civic space

- underpass connection between Port Credit Memorial Park (West) and Marina Park

- existing lighthouse and Front Street pumping station
- existing pedestrian bridge

- existing charter boat area

MARINA PARK

- opportunity for off-road trail (detailed design)
- multi-use civic space
- existing motorized boat launch ramps

- pedestrian access
- streetscape improvements
- non-motorized boat launch ramps
- hard shore edge
- pedestrians only
- parking/large event space
- open space to support boating activities
- streetscape improvements
- pedestrian access

- naturalization
- pedestrians only
- existing Rivergate apartment
- pedestrian walkway connection from J.C. Saddington Park to Marina Park

RIVERGATE EASEMENT

- streetscape improvements
- armour stone/rip rap reinforcement
- cobble beach
- boardwalk
- streetscape improvements
- existing boardwalk
- hard shore edge
- existing former pumping station buildings for future adaptive use

J.C. SADDINGTON PARK

- park pavilion option 1
- armour stone/rip rap reinforcement
- multit-use trail (4.5m wide)
- riparian vegetation
- existing shore

- trail
- cobble beach
- groyne extension to maintain beach

- park pavilion option 2

7.4. J.C. Saddington Park

At the northeast section of J.C. Saddington Park, the Rivergate walkway will travel along the edge of Hacienda Bay connecting into the existing trail system. A new cobble beach in Hacienda Bay will provide opportunities for public access to the water's edge, as well as fish habitat.

J.C. Saddington Park will remain as a large open space park catering to family-oriented activities through the different seasons of the year. The centre of the park will be naturalized over time, providing bird and wildlife habitats while also allowing for passive public use of these areas, such as picnicking. Views from the adjacent streets to the lake will be protected and enhanced where possible. Naturalized riparian habitats along the shoreline will provide an important east/west corridor for bird and wildlife movement along Lake Ontario. The park will also feature a naturalized pond with stable naturalized slopes and improved ecological integrity, while also permitting other uses of the pond such as running of model boats in the summer. The park pavilion and multi-use space will be used all year round. Shelter from the wind will be created with planting buffers.

Adjacent to the pond will be an open green space that is flexible for unorganized sports, along with the south east edge of the park which is also available for active play. Designated picnic areas will take advantage of being close to the parking area while offering scenic open views to the lake. J.C. Saddington Park will enhance the public's accessibility and enjoyment of the water's edge with cobblestone beaches along the south end facing Lake Ontario and at Hacienda Bay. In recognition of the importance of shore-fishing, the park will continue to provide areas for fishing related activities along the shoreline and integrate fish habitat provisions with shoreline improvements through detailed design.

The streets framing the park will reflect improvements to the streetscape, including street tree planting and signage. The designated parking area will feature, where appropriate, sustainable green parking lot retrofits. The 'Village Green' on the west end of the park will be phased into construction as the existing parking lot is no longer in use or necessary due to an increase in public transit needs and use.

The trail system will better connect the adjacent neighbourhood to J.C. Saddington Park, have a connection to the Imperial Oil Lands (to the west) and be connected to Marina Park with the future elevated walkway around the Rivergate apartments building. The Waterfront Trail will be the primary multi use trail in the park and will connect with other trails that will bring park users closer to the shoreline. Opportunities for open views of the Credit River and Lake Ontario will be provided throughout the trail system.

8.0 PORT CREDIT HARBOUR WEST PARKS REDEVELOPMENT

This section of the report provides a summary of all potential improvements that are needed to realize the redevelopment of the Port Credit Harbour West Parks as envisioned in the *Waterfront Parks Strategy (2008)* (WPS), and as shown in **Figure 18** and the Large Block Concept Plan (see **Figure 17** in **Section 7**). The implementation, mitigation and capital budgets required for *Schedule B* and *Schedule C* Class EA Projects are also discussed.

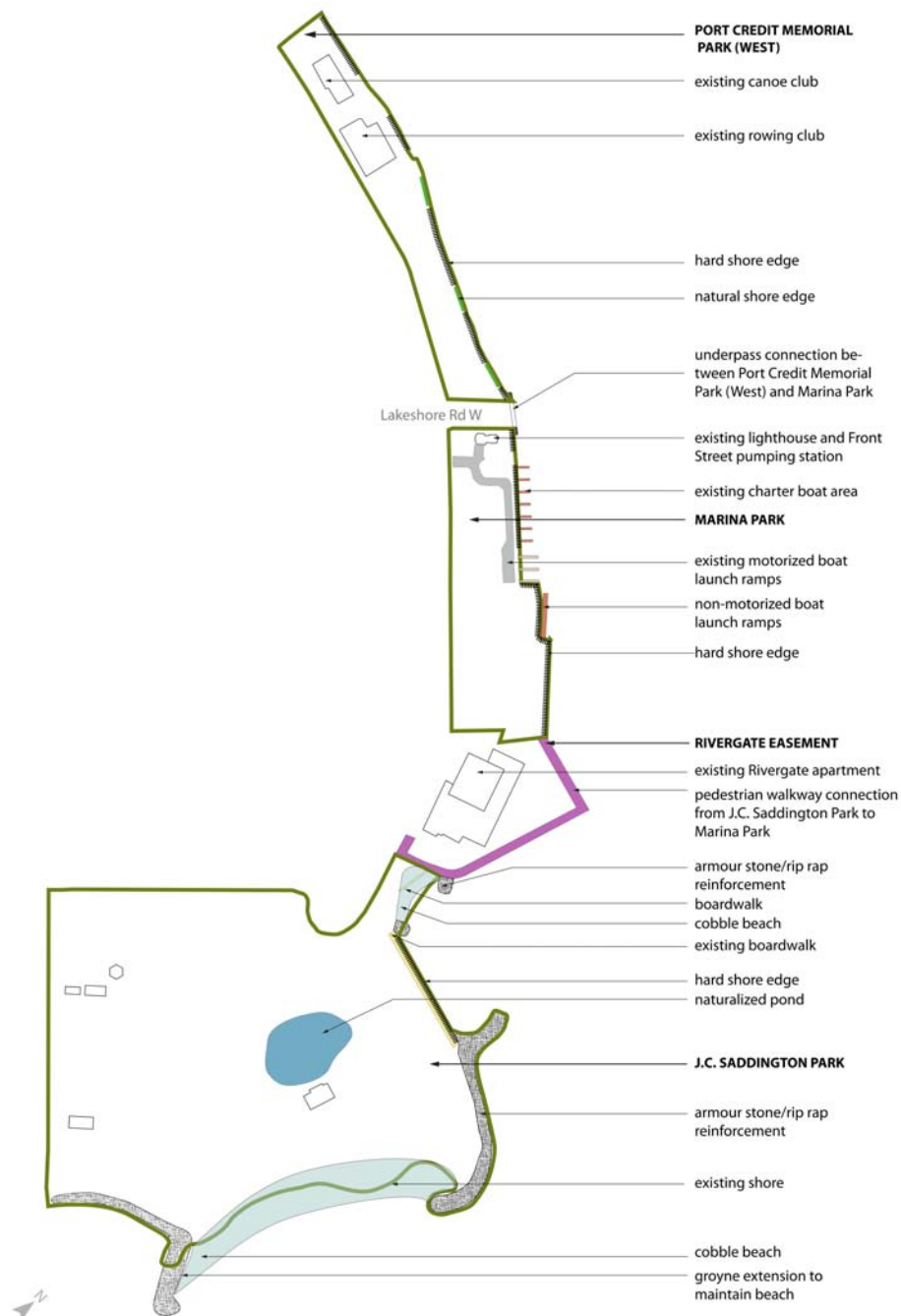


Figure 18: Port Credit Harbour West Parks Infrastructure Improvements

8.1. Infrastructure Improvements

A description of the proposed improvements for the potential redevelopment of the Port Credit Harbour West Parks is provided for each of the parks and the Rivergate easement. Labelled sample cross sections of shoreline improvements are included along with a key plan that denotes the location of the section cut along the water's edge. It is noted that detailed cross sections will be prepared during detailed design for all Port Credit Harbour West Parks improvements, and that construction of the shoreline works will likely be scheduled in the fall to minimize impacts to park users, charter boats and other boaters, and respect the warm water fisheries timing windows for Credit River, which restrict in-water works in April, May and June.

8.2. Port Credit Memorial Park (West)

To achieve the vision for Port Credit Memorial Park (West) as a place to enjoy river activities and explore the area's river history, the following municipal infrastructure improvements are required:

Combination of Hard and Soft Shoreline Treatments

Shoreline Reach Locations:

Mississauga Canoe Club, Don Rowing Club, Port Credit Memorial Park

This will include the placing of a combination of geotextile, rip rap and armour stone/boulders to stabilize the shoreline and reduce erosion. The area in front of the Mississauga Canoe Club and the Don Rowing Club will be designed as a hard shore in keeping with the requirements of these facilities. In some areas planting sections will be incorporated to provide naturalization and increased aquatic habitat. All plantings used will be native to this area of the Credit River. This combination shoreline will also help to minimize wave refraction on the west side of the river which was identified as a concern by those who canoe and row on the river.

The proposed shoreline improvement, including areas of naturalization, is shown in **Figure 18**, and is further illustrated in sample cross sections (refer to the key map, **Figure 19**, and the corresponding cross sections on **Figure 20**).

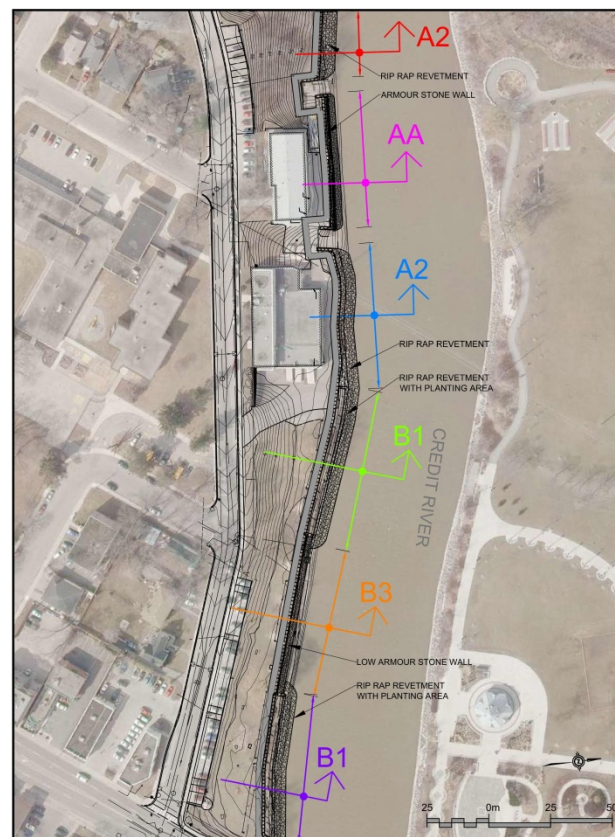


Figure 19: Port Credit Memorial Park (West) Cross Section Key Map

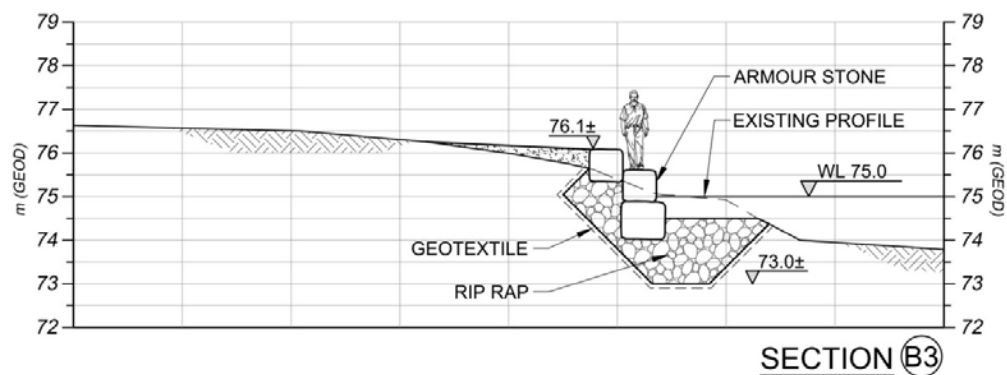
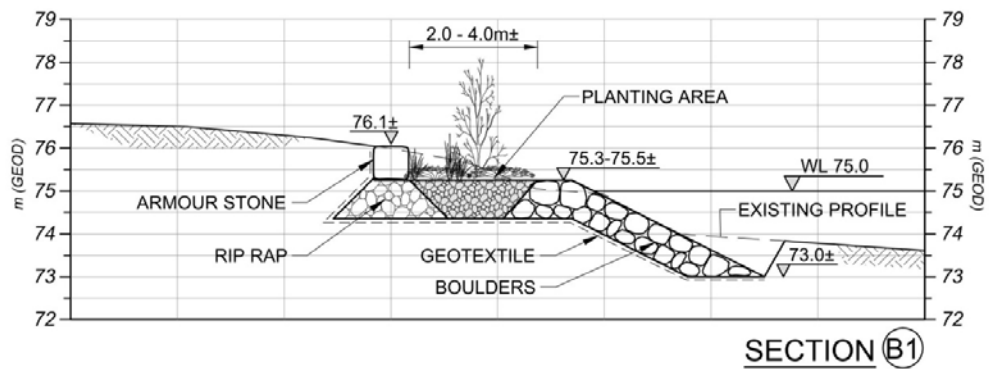
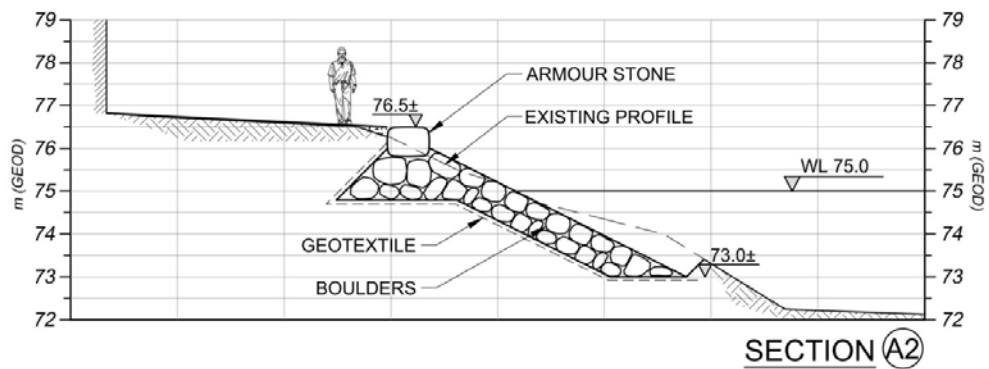
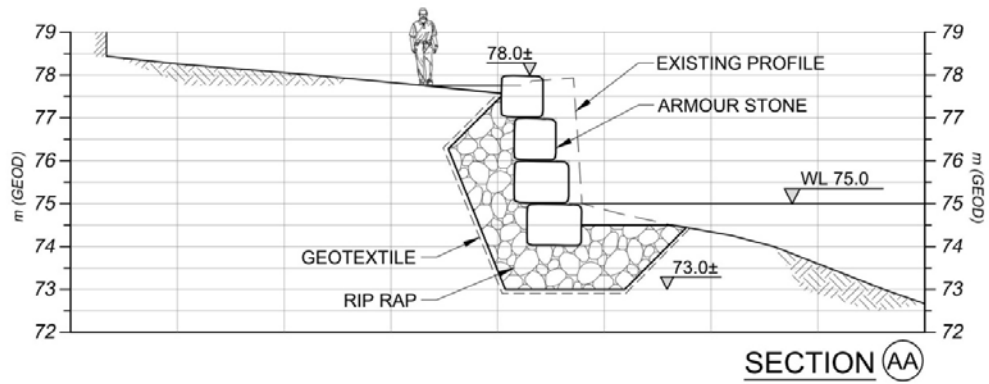


Figure 20: Port Credit Memorial Park (West) Cross Sections

Underpass under Lakeshore Road West on the West Bank of the Credit River

Shoreline Reach Locations: Underpass Connection

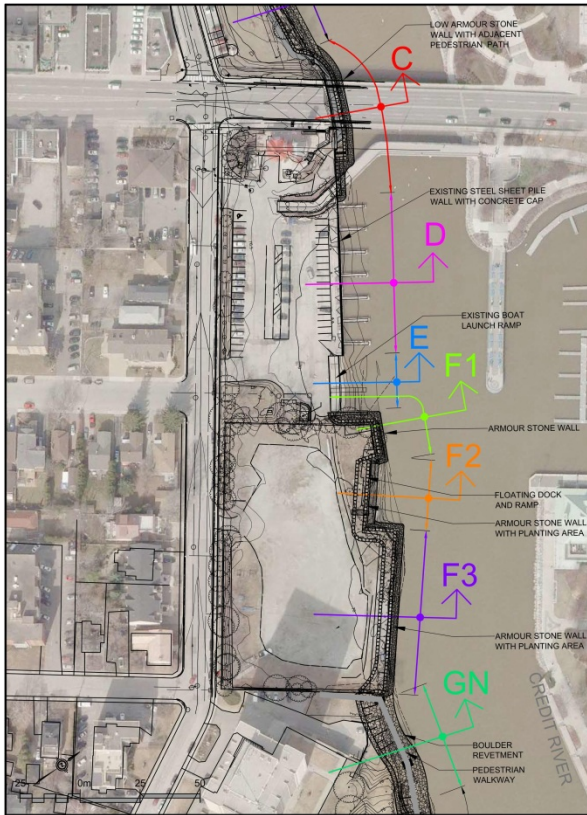


Figure 21: Underpass and Marina Park Cross Section Key Map

The existing profile of the bank of the Credit River will be modified under Lakeshore Road West to accommodate pedestrians. To construct the pedestrian underpass the existing bank material will be excavated to a depth of approximately 72.5 metres GSC and replaced with riprap underlain by geotextile. An armour stone edge will be added to stabilize the infrastructure. No changes to the bridge abutment will be required. The pedestrian walkway will sit at an elevation of approximately 75.5 metres GSC. This is approximately 0.5 m above the average high summer water level and is at about the 1:100 year return period for still water level of Lake Ontario. It is anticipated that during high water levels the walkway may be temporarily flooded, similar to what occurs on the walkway on the east side of the Credit River. The underpass clearance will be approximately 2.5 metres. A cross section (refer to key map, **Figure 21**) of the pedestrian underpass is provided in

Figure 22. Immediately upstream of the underpass is an existing outfall. The underpass construction will need to incorporate this outfall, as well as a small outfall to the south of Lakeshore Road West

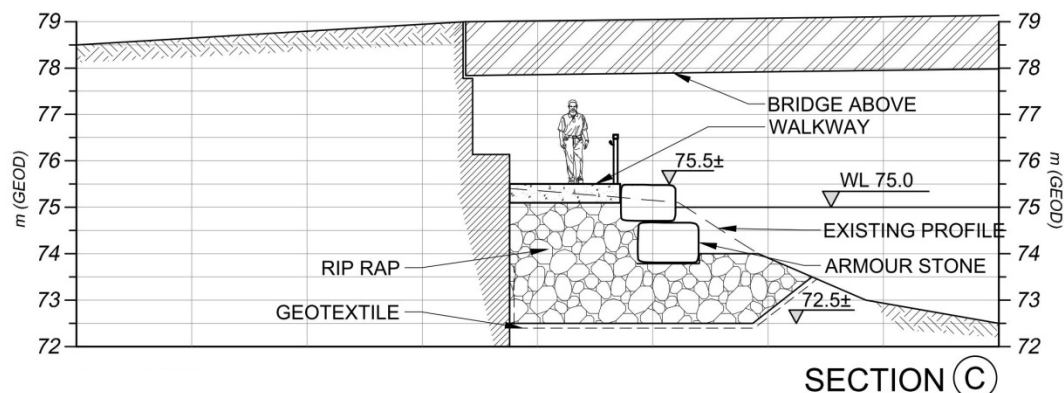


Figure 22: Underpass Cross Section

8.3. Marina Park

Shoreline Reach Locations:

North Section of the Park, South Section of the Park

The vision for Marina Park as articulated by the WPS is a multi-use civic space that is vibrant, flexible to facilitate different uses, and provides public access to the river's edge. The WPS also recommended that the existing boat launch ramps be removed from Marina Park; however, for the purposes of this Study it was determined that the existing boat launch ramps will remain in the park in the short term. If an alternative location is identified for a public launch area for motorized boats in the future, the existing ramps at Marina Park may be removed at that time.

The following identifies the municipal infrastructure needed to achieve this vision:

Protection from Flooding and Erosion

Marina Park is currently below the flood elevation and thus is at risk of flooding during design high water level (1:100 year water level). It is proposed that the elevation of the whole park will be raised to allow for year-round usability. It is prudent to accomplish this prior to investing in any other park enhancements. The elevation of Marina Park will be raised by approximately 0.4 to 0.5 metres (to an elevation 76.5 metres or higher) by adding clean fill as illustrated in **Figures 23a to 23b** (refer to **Figure 21** for cross-section locations). Stone revetment and armour stone will be placed along the shore to protect from erosion and the existing sheet pile wall in the area of the commercial charter boat moorings will be repaired.

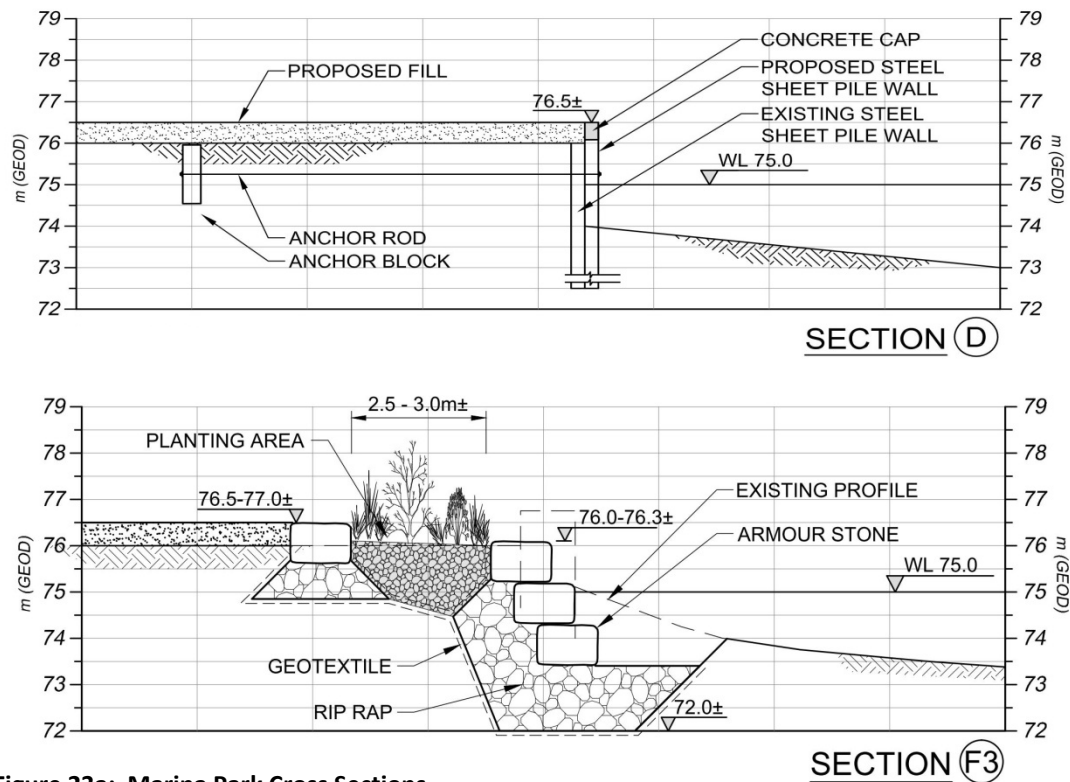


Figure 23a: Marina Park Cross Sections

It is anticipated that these park improvements will be staged such that fill and shore improvement at the south end of Marina Park (see **Figure 23a**) is undertaken first as the shoreline in this area is deteriorated. Improvements at the north section of Marina Park may be constructed at a later date as the shore infrastructure is still functioning. There is an existing stormwater outfall extending from Port Street South; this outfall will be accommodated in the shoreline improvements.

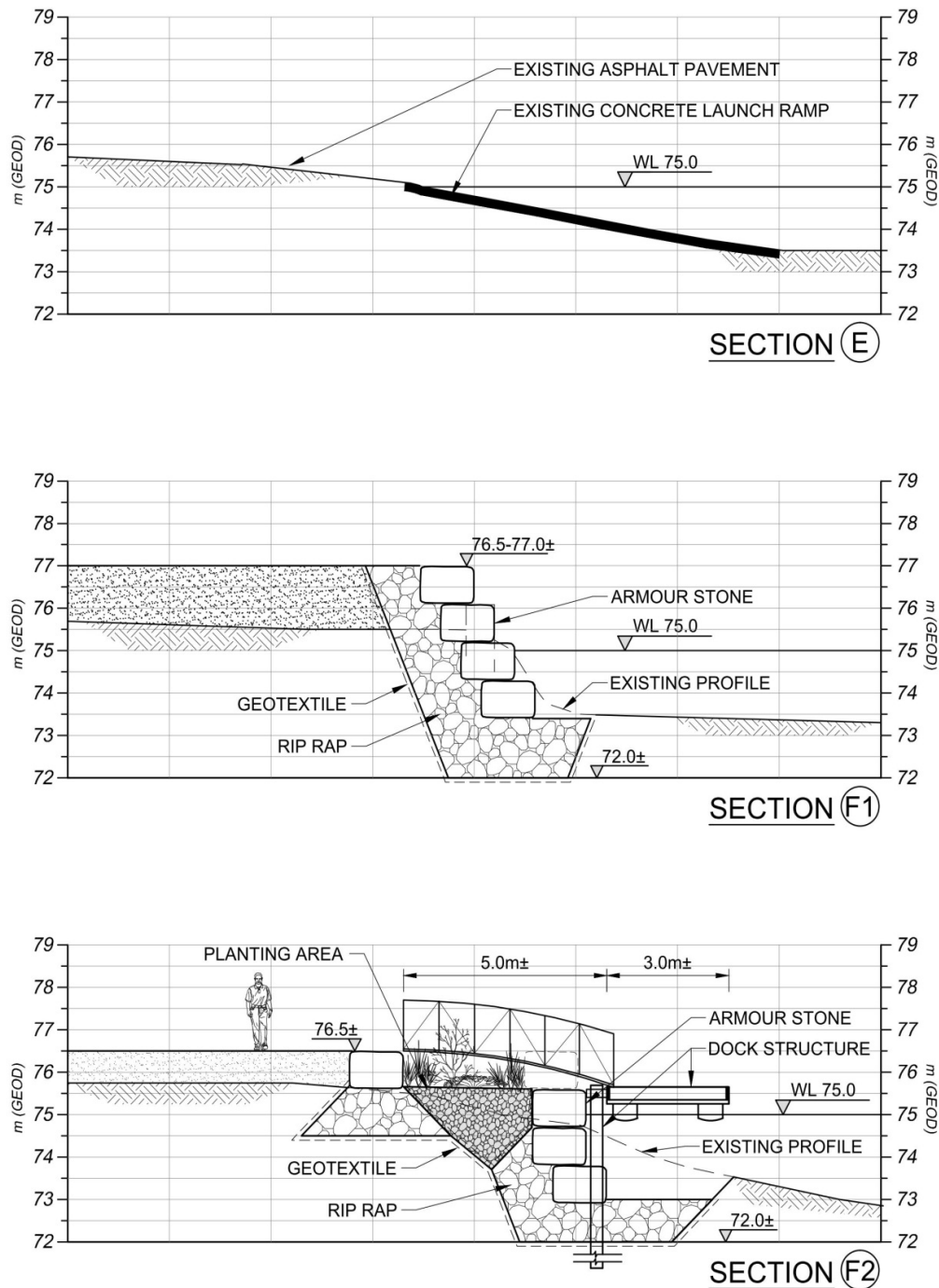


Figure 23b: Marina Park Cross Sections

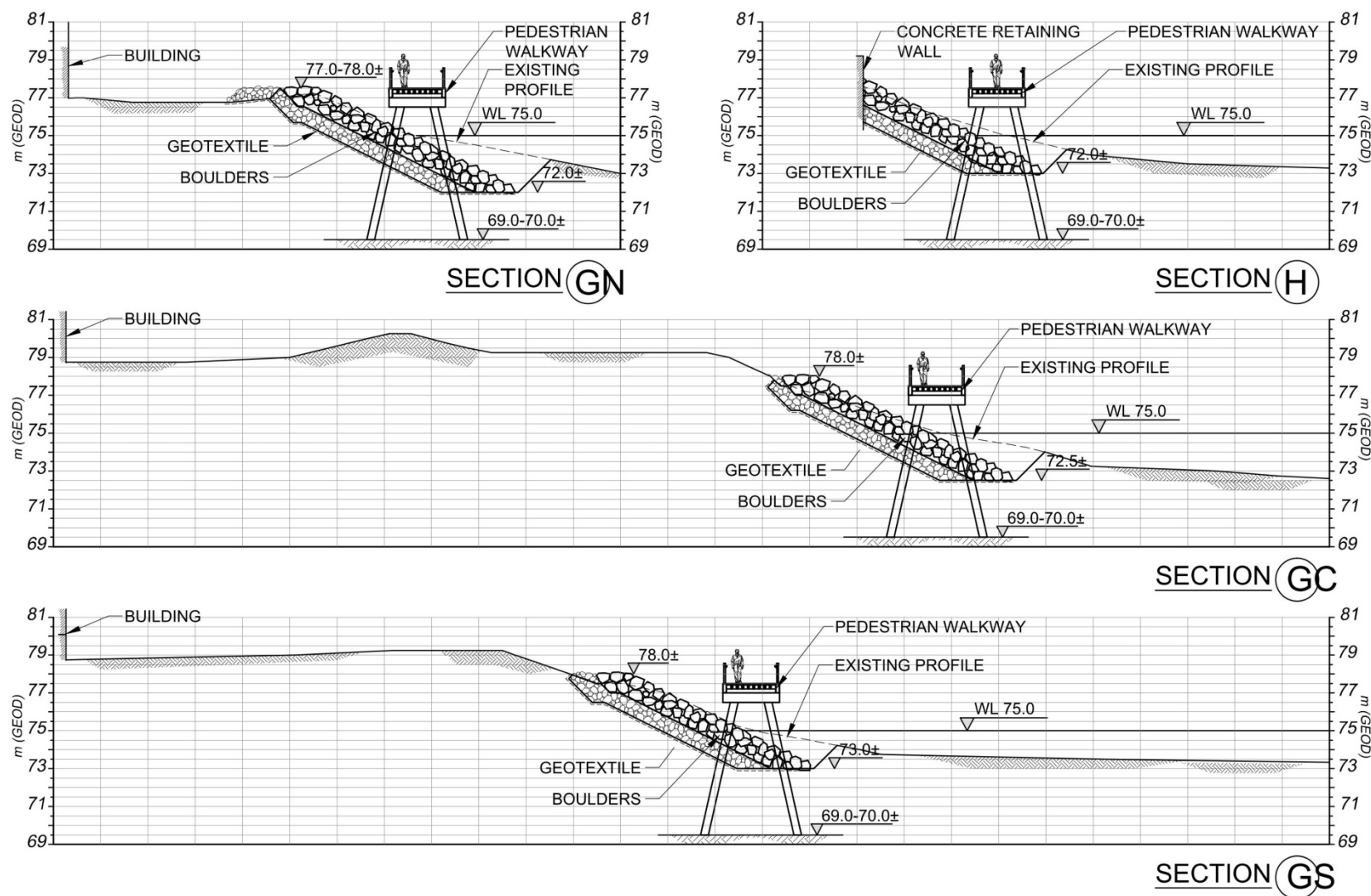


Figure 25: Rivergate Easement Cross Sections

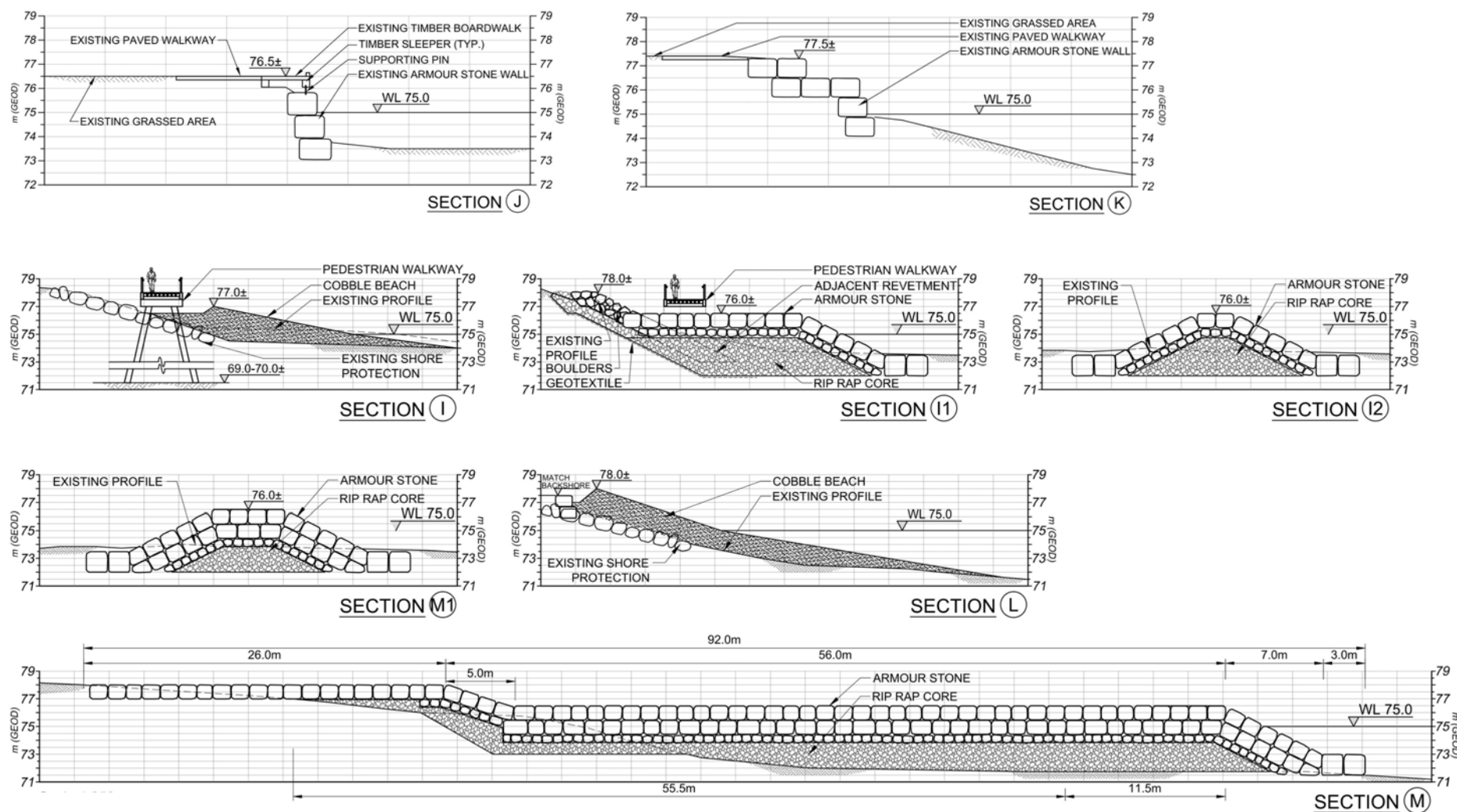


Figure 26: J.C. Saddington Park East Cross Sections

Geotechnical investigation undertaken as part of this project has confirmed that bedrock is approximately 5 to 6 meters below lake level in close proximity to the shore and falls further towards the centre of the river channel. The shoreline is owned by Credit Valley Conservation (CVC) and currently leased to the City of Mississauga.

Prior to construction of the walkway, the existing shoreline will need to be reinforced with rip rap and boulders where needed to protect from erosion. This would include repairing a section of the existing shoreline that has failed. The removal of existing vegetation along the shoreline will be kept to a minimum to the extent possible. Further discussions will be required between the City and CVC to determine who is responsible for repairing the existing shoreline in this area.

8.5. J.C. Saddington Park

Shoreline Reach Locations:

Hacienda Bay, East Shore to Groyne and Southeast Headland

J.C. Saddington Park is a well used destination park and will continue in this role. There are opportunities to improve specific elements of the park including the existing pond, Hacienda Bay, which is currently underused and the shore along Lake Ontario. The existing shoreline protection needs to be repaired and access to the water's edge needs to be enhanced and made safer. The WPS also identifies the desire for an all-season, serviced park pavilion which would require municipal servicing and reconfiguration of the parking lots. The following infrastructure improvements are required for J.C. Saddington Park:

Enhancement of the Cobble Beach in Hacienda Bay

Through the evaluation conducted as part of this Study, a cobble beach was identified as the preferred method to improve and stabilize Hacienda Bay. A proposed cross section for the shoreline is shown in **Figure 26** (refer to **Figure 24** for the *Section 1, I1 and I2* location). As noted in **Section 8.1.2**, it will be important to connect the Rivergate easement elevated walkway with the cobble beach. It is anticipated that cobble (approximately 20 to 40 mm in size) will be placed along the shore in the bay. The design and construction of the cobble beach will maintain the existing outlet for the J.C. Saddington Park pond. Periodic maintenance will be necessary as the cobble may shift in severe weather and this area will continue to collect waste and debris materials that travel down the river. The existing groyne which provides an anchor for the cobble beach will be reinforced with the addition of armour stone material.

Enhancement of the Existing Boardwalk

The east shore of J.C Saddington Park includes two distinct reaches of shore structures and an armour stone groyne. All of these structures are considered to be functional and replacement or reconstruction is not required or recommended at this time, although periodic maintenance of these structures will be required. The maintenance should be guided by periodic detailed inspections that should be carried out every five years or when any notable change in conditions is observed by the City's park staff.

A timber boardwalk that extends from the base of the park to the groyne (see **Figure 10**, and refer to **Figure 8** for the *Section J* location) is supported on an armour stone seawall with a sleeper pinned into the armour stone. All components are functional, but the pressure treated timber walkway has a limited useful remaining life. The condition of the boardwalk is not related to shoreline exposure. All pressure treated timber structures exposed to the elements have limited design life.

The armour stone groyne is also functional. Some settlement of the stone material has likely taken place since the initial construction, but this has not reduced its function. The observed settlement cannot be quantified since *As Constructed* drawings are not available, but likely settlement estimated based on the review appears to be within acceptable limits for armour stone structures. The type of periodic maintenance that may be required includes the replacement of fractured stones or infilling of crevices found in the structure.

The stepped revetment that extends from the groyne out to the southeast headland of the park is also functional (see **Figure 26** (*Section K*), and refer to **Figure 24** for cross section location). Although some settlement of armour stone appears to have also taken place, the structure shows no signs of failure or immediate maintenance requirements. As with the groyne described above, the type of maintenance that may be required in time includes the replacement of fractured stones or infilling of crevices found in the structure. In addition, the placement of additional riprap in the splash pad behind the cap stone may be required after a severe storm at high lake levels. Wave overtopping may displace some riprap and gravel material.

Lake Ontario Shoreline Improvements and Cobble Beach

Shoreline Reach Locations:

Southeast Headland to Central Headland, Central Headland to West Boundary

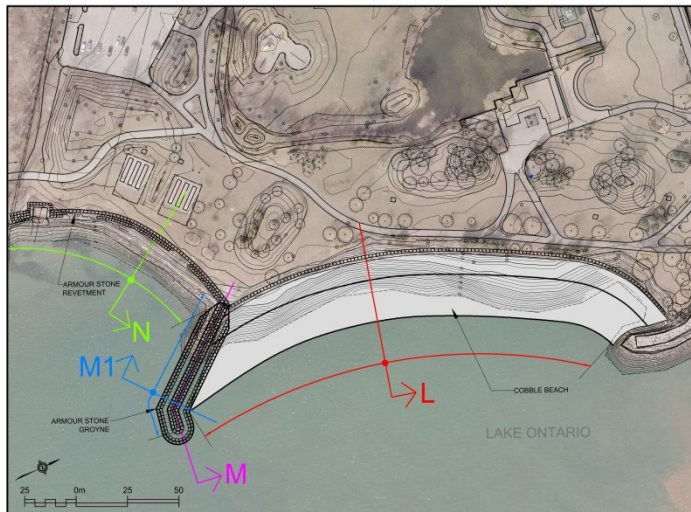


Figure 27: J.C. Saddington Park West Cross Sections Key Map

In many areas along Lake Ontario minor improvement to protect the shoreline is required and will be accomplished through the addition of armour stone to the top of the existing revetment. There is an existing stormwater outlet at the east side of the park extending from Mississauga Road and any shoreline improvements will be constructed to minimize impact to the existing outlet. A second outlet, which appears to be abandoned, will be maintained if it is determined to be necessary. Along the eastern side of the park the evaluation in

Section 6.0 of this report has identified the construction of a cobble

beach as the preferred alternative to stabilize the shore and provide improved opportunities for park users to access the water. This construction of a cobble beach in this location will require a

reconfiguration of the shoreline to extend the existing groyne by approximately 45 metres to provide the required protection to stabilize the beach. The shoreline in this area will also be brought back from its current location to allow for the formation of the beach. The cobble to be placed on the beach is expected to be approximately 50 to 150 millimetre in diameter, subject to detailed design. **Figures 26 and 28** (Sections L, M and M1) show the new shoreline in cross sections (refer to **Figure 27** for cross section locations).

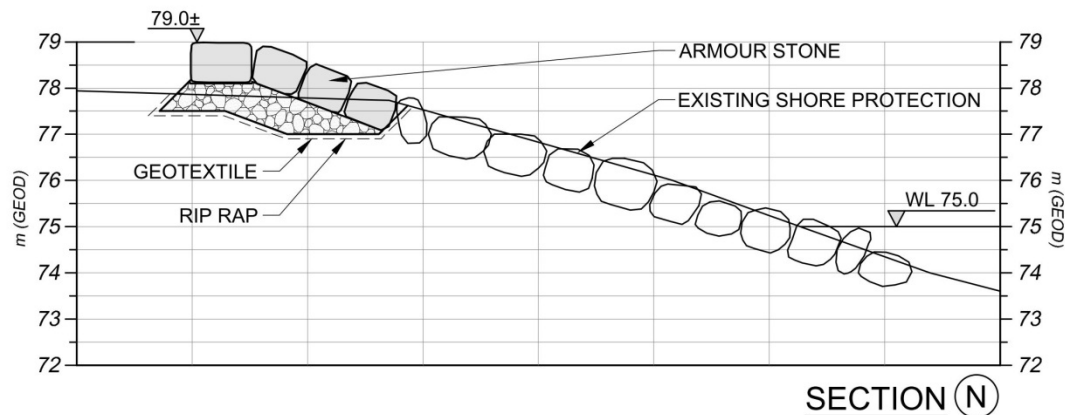


Figure 28: J.C. Saddington Park West Cross Section

Naturalizing the Pond in J.C. Saddington Park

Naturalization of the pond will include re-lining, adding substrate and planting. Modifications to the pond may also require the reconstruction of the concrete outlet channel. Information on existing municipal infrastructure associated with the pond or in the pond vicinity is limited, and further review of the site is needed during detailed design to confirm the presence, location, size and condition of the existing park infrastructure. It is also noted that since J. C. Saddington Park was constructed on a closed landfill, environmental soil testing in the areas of any proposed excavation for the pond or channel will need to be undertaken and the appropriate management of impacted soils undertaken. It will be important to ensure that any changes made to improve the pond do not impact the existing model boating activities and do not preclude the community initiative to have a fish hatchery at the former pumping station buildings at the west side of the park. Improvements to the pond would need to be constructed during non-peak park season to minimize the impact to park users and during construction the area of the pond would be fenced off to restrict public access. It will also be important to consider the potential impact of construction on the birds and other wildlife that use the pond and vicinity.

Parking Improvements

Sustainable green parking standards will be implemented, where appropriate, during the reconstruction of the parking area at J.C. Saddington Park. These measures will include Low Impact Design techniques, as well as reorganization of parking spaces, improved circulation and signage. The northwest parking lot will be phased into a 'Village Green' when no longer in use or necessary due to an increase in public transit needs and use.

Water and Sewer Servicing

The WPS envisions an all-season pavilion in J.C. Saddington Park. Municipal water and wastewater servicing is provided along Lake Street adjacent to the park and it is assumed that servicing connection could be provided to the park. It is anticipated that any municipal servicing required for the proposed fish hatchery suggested for former pumping station buildings at the west side of the park can also be accommodated through existing municipal servicing along Lake Street. As the location of any future pavilion is not known, the location of any needed underground services can not be confirmed at this time. Where possible, their construction should be timed to coincide with other park improvements to minimize the impact on park users.

8.6. Implementation of the Large Block Concept Plan

The redevelopment of the Port Credit Harbour West Parks will require a phased approach to reflect priorities related to lifespan, structural integrity and the capital costs of the infrastructure improvements in each of the three parks and the Rivergate easement. Additional detailed investigations, approvals and permits required prior to redevelopment, as discussed in **Section 8.4**, will also influence the implementation schedule.

A summary of the existing shoreline lifespan and structural integrity is provided in **Table 15**, along with improvement recommendations, Class EA status, estimated costs and direction on the priority of construction. A detailed cost breakdown for each park and the Rivergate easement is provided in **Appendix 8**.

Table 15: Large Block Concept Plan Implementation Summary

Shoreline Reach and Park Area Description/ Location	Lifespan and Structural Integrity	Recommendations for Improvements	Priority	Design & Construction Cost (rounded)	Municipal Class EA Status
PORT CREDIT MEMORIAL PARK (WEST)					
Mississauga Canoe Club	Gabion wall constructed in early 1990s. No specific structural problems noted. URL* 10 years or greater for gabion wall.	Riprap revetment north of North launch ramp. Gabion wall replaced with armour stone wall. South ramp maintained.	LOW for all.	\$337,000 (shoreline improvements)	Works undertaken in a watercourse for the purpose of flood control or erosion, including bank or slope regrading and revetments, are considered to be <i>Schedule B</i> projects under the Municipal Class EA. All EA requirements are met through this Study.
Don Rowing Club	Riprap revetment appears informal; no URL estimated. South section is eroding now; no URL*.	Riprap revetment with armour stone cap for both south and north sections. Design to accommodate floating dock.	MODERATE for revetment in the north section. HIGH for south section as there is no protection.	\$253,000 (shoreline improvements)	
Port Credit Memorial Park (south of clubs)	Structure is considered informal at this stage, no URL* estimated.	Boulder and armour stone revetment with planting areas and aquatic habitat features. Stepped armour stone revetments to accommodate shore access and fishing.	MODERATE for all.	\$767,000 (shoreline improvements + planting)	
Streetscaping Improvements	N/A	Improve street tree planting to create a more robust edge to the parks without blocking views into the park and the river. The streets should provide a pleasant walking experience.	LOW.	N/A	This is considered a <i>Schedule A+</i> project and is pre-approved under the Municipal Class EA.

Shoreline Reach and Park Area Description/ Location	Lifespan and Structural Integrity	Recommendations for Improvements	Priority	Design & Construction Cost (rounded)	Municipal Class EA Status
CONNECTION BETWEEN PORT CREDIT MEMORIAL PARK (WEST) AND MARINA PARK					
Underpass Connection	Outfall, under the bridge and transition south of the bridge appear functional with URL* greater than 10 years.	Transition ramps to backshore from walkway under the bridge. Stepped armour stone revetment with a walkway.	MODERATE for all.	\$300,000 (shoreline improvements)	Incorporated into shoreline improvements and thus considered a <i>Schedule B</i> Municipal Class EA. All EA requirements are met through this Study.
MARINA PARK					
North Section of the Park	Steel sheet pile and docks appear functional, and no URL* estimated since no design details are available. Detailed assessment of the steel sheet pile wall and round piles supporting the docks including testing of pile steel thickness and pile length, excavation and inspection of anchor rods and anchors as required to make detailed structural assessment. Launch ramp appears functional with URL* greater than 10 years at average water levels, but functionality reduced at low water level. Pressure treated timber wall functional with URL* of less than 10 years.	Increase height of wall to 76.5 metres and place fill to approximately the same elevation. Replacement of steel sheet pile wall if existing structure does not have adequate capacity**. Addition of concrete pile cap if existing steel sheet pile has adequate capacity. Repair pressure treated timber wall when steel sheet pile wall upgraded. Extent of toe of launch ramp to accommodate low water. Increase top elevation of ramp once park is filled.	LOW.	\$931,000 (does not include backshore grading) Back fill to flood proof park: Costs N/A Dock refurbishing: \$37,000 Launch Ramp Upgrade: \$162,000	Works undertaken in a watercourse for the purpose of flood control or erosion including bank or slope regrading and revetments are considered to be <i>Schedule B</i> projects under the Municipal Class EA. All EA requirements are met through this Study.
South Section of the Park	Corrugated steel pipe caissons appear functional with URL* greater than 10 years. Structures along east shore have no URL*.	Stacked armour stone seawall or stepped armour stone seawall with planting area. Riparian vegetation to improve wildlife habitat.	HIGH.	\$837,000 (shoreline improvements + planting) Back fill to flood proof park: Costs N/A	Works undertaken in a watercourse for the purpose of flood control or erosion, including bank or slope regrading and revetments, with the incorporation of a new launch dock, are considered to be <i>Schedule B</i> projects under the Municipal Class EA. All EA requirements are met through this Study.

Shoreline Reach and Park Area Description/ Location	Lifespan and Structural Integrity	Recommendations for Improvements	Priority	Design & Construction Cost (rounded)	Municipal Class EA Status
MARINA PARK (cont'd)					
Non-Motorized Boat Launch	N/A	Launch docks for non-motorized boats.	LOW.	\$75,000	Works undertaken in a watercourse for the purpose of flood control or erosion, including bank or slope regrading and revetments, with the incorporation of a new launch dock, are considered to be <i>Schedule B</i> projects under the Municipal Class EA. All EA requirements are met through this Study.
Parking Improvements	N/A	Integrated sustainable stormwater management through the use of features such as swales, porous pavement, etc., where appropriate. Improve circulation of cars and boat launch users.	LOW for integrated sustainable design features. HIGH for circulation improvements	N/A	This is considered a <i>Schedule A</i> project and is pre-approved under the Municipal Class EA.
Future Water and Wastewater Servicing	N/A	Provide services to support any future park amenities.	LOW.	N/A	New service connections are considered to be <i>Schedule A</i> projects and pre-approved under this Municipal Class EA.
Streetscaping Improvements	N/A	Improve street tree planting to create a more robust edge to the parks without blocking views to the park and the river. The streets should provide a pleasant walking experience.	LOW.	N/A	This is considered a <i>Schedule A+</i> project and is pre-approved under the Municipal Class EA.

Shoreline Reach and Park Area Description/ Location	Lifespan and Structural Integrity	Recommendations for Improvements	Priority	Design & Construction Cost (rounded)	Municipal Class EA Status
RIVERGATE EASEMENT					
Shore along Credit River	Northern section of shore along Credit River with failed revetment is at potential risk of significant erosion. Stability of the remainder of east shore protection unknown; no URL* estimated.	Reconstruct armour stone revetment with aquatic habitat features and areas of naturalization.	HIGH.	\$498,000 (shoreline improvements)	Works undertaken in a watercourse for the purpose of flood control or erosion including bank or slope regrading and revetments, with the incorporation of an elevated pedestrian walkway, are considered to be <i>Schedule B</i> projects under the <i>Schedule B</i> projects under the Municipal Class EA. All EA requirements are met through this Study.
Shore along Hacienda Bay	Revetment along Hacienda Bay is functional with estimated URL* of greater than 10 years.	Reconstruct armour stone revetment with aquatic habitat features and areas of naturalization.	LOW.	\$531,000 (shoreline improvements)	
Elevated Pedestrian Walkway	N/A	Pedestrian walkway (3 metres wide) supported on piles.	LOW.	\$2,646,000 (shoreline improvements)	
J.C. SADDINGTON PARK					
Hacienda Bay	Revetment is functional with estimated URL* of greater than 10 years. Floating debris makes shore access difficult.	Cobble beach anchored with existing groyne which will be reinforced with additional armour stone. Riparian vegetation to improve wildlife habitat. Boardwalk linked to Rivergate easement walkway west trail connection.	LOW.	\$459,000, (shoreline improvements + planting) \$751,000 (boardwalk)	Works undertaken in a watercourse for the purpose of flood control or erosion including bank or slope regrading and revetments are considered to be <i>Schedule B</i> projects under the Municipal Class EA. All EA requirements are met through this Study.
East Shore to Groyne and Southeast Headland	Armour stone seawall is functional with estimated URL* of greater than 10 years, pressure treated timber may require maintenance prior to that but its deterioration is not related to coastal exposure. Groyne is functional with estimated URL* of greater than 10 years, some minor movement and settlement observed. Revetment is functional with estimated URL* of greater than 10 years, waves overtop revetment at high water levels.	Periodic maintenance of seawall as required. Repair or replace pressure treated timber boardwalk as required to support park functions. Periodic maintenance of groyne and southeast headland as required.	LOW.	N/A (no reconstruction or major improvements required)	

Shoreline Reach and Park Area Description/ Location	Lifespan and Structural Integrity	Recommendations for Improvements	Priority	Design & Construction Cost (rounded)	Municipal Class EA Status
J.C. SADDINGTON PARK (cont'd)					
Southeast Headland to Central Headland	<p>Revetment is functional at low water levels with estimated URL* of greater than 10 years, although erosion observed at various locations.</p> <p>Waves overtop revetment at high water levels.</p>	<p>Cobble beach with extended groyne at south side and reinforced north headland.</p> <p>Riparian vegetation to improve wildlife habitat.</p>	MODERATE.	\$2,135,000 (shoreline improvements + planting)	<p>Construction of new shoreline works such as groynes is considered to be a <i>Schedule C</i> project under the Municipal Class EA.</p> <p>All EA requirements are met through this study.</p>
Central Headland to West Boundary	<p>Revetment is functional at low water levels with estimated URL* of greater than 10 years.</p> <p>Waves overtop revetment at high water levels.</p> <p>Erosion observed at various locations along the revetment.</p>	<p>Upgrade revetment with addition of riprap and armour stone in the upper part of the revetment.</p> <p>Carry out routine maintenance on the rest of the structure.</p>	MODERATE.	\$432,000	<p>Works undertaken in a watercourse for the purpose of flood control or erosion including bank or slope regarding and revetments are considered to be <i>Schedule B</i> projects under the Municipal Class EA.</p> <p>All EA requirements are met through this Study.</p>
Pond	N/A	<p>Remove fountain, concrete substrate and barriers to provide greater depths and habitat for fish, subject to appropriate studies confirming this will not risk exposing possible contaminants underneath the concrete liner.</p> <p>Naturalization around the pond, but not limiting the current uses of the pond.</p> <p>Reconstruction of the concrete outlet channel is needed.</p>	LOW.	\$601,000*** (including planting)	<p>Class EA does not specifically apply to this improvement.</p>

Shoreline Reach and Park Area Description/ Location	Lifespan and Structural Integrity	Recommendations for Improvements	Priority	Design & Construction Cost (rounded)	Municipal Class EA Status
J.C. SADDINGTON PARK (cont'd)					
Parking Improvements	N/A	Integrated sustainable stormwater management through the use of features such as swales, porous pavement, etc., where appropriate. Assess need for north-west parking lot as public transit needs and use increase.	LOW.	N/A	This is considered a <i>Schedule A</i> project and is pre-approved under the Municipal Class EA.
Water and Sewer Servicing	N/A	Provide services to support any future park amenities.	LOW.	N/A	New service connections are considered to be <i>Schedule A</i> projects and pre-approved under this Municipal Class EA.
Streetscaping Improvements	N/A	Improve street tree planting to create a more robust edge to the parks without blocking views to the park and the river. The streets should provide a pleasant walking experience.	LOW.	N/A	This is considered a <i>Schedule A+</i> project and is pre-approved under the Municipal Class EA.

NOTES

* Useful Remaining Life (URL); estimate only ** Construction budget based on this approach ***Cost will vary with liner type

Costing does not include back shore conditions such as grading and filling, utilities, parking lot refurbishments, streetscape and site specific park program elements which will be resolved through future detail design.

Cost estimates have been updated since October 2012 PIC # 2 to include design and construction, contingencies, general requirements, project administration and applicable taxes.

8.7. Potential Effects and Proposed Mitigation

During construction there is some potential for negative effects on the environment and on those who use the Credit River and Lake Ontario waterfronts. The following text outlines the potential effects and the City's commitment to proposed mitigation. The effects and mitigation are also summarized in **Table 16**.

8.7.1. Natural Environment

Overall, the proposed shoreline improvements will reduce the potential for flooding and erosion and will have minimal impacts on the natural environment. Although shoreline construction may have some short-term impacts on fish habitat, the inclusion of vegetated areas along Port Credit Memorial Park (West) and cobble beach sections in Hacienda Bay and J.C. Saddington Park will provide improved shoreline fish habitat over the long-term. Naturalization of riparian areas will improve habitat for breeding birds, migrating birds and local wildlife diversity (e.g., butterflies). The naturalization of J.C. Saddington Pond will also improve habitat for waterfowl, possibly amphibians and invertebrates. Construction has the potential to disturb existing riparian vegetation surrounding the pond in the short-term, but careful construction planning and staging can reduce this impact and the new habitat created will increase overall diversity of the pond for the long-term.

Shoreline Improvements – Construction activities associated with the shoreline improvements have the potential to impact fish habitat and riparian vegetation. Mitigation measures may include:

- In-water works to be conducted during the appropriate timing window (e.g., no in-water works between April 1 and June 30);
- All construction materials and equipment used for the purposes of site preparation and project completion should be operated and stored in a manner that prevents any deleterious substances from entering water;
- An emergency spill kit should be kept on site in case of fluid leaks or spills from machinery;
- Any stockpiled construction materials should be stored more than 30 metres from any water;
- Vehicular and equipment refueling and maintenance should be conducted away from any water;
- Implementation of sediment and erosion control measures should occur prior to the commencement of construction, and maintained and upgraded as necessary during the construction phase to prevent entry of sediment into the water. This will likely involve the use of a silt curtain;
- Shoreline materials to be used should be environmentally-friendly materials that will not release potential contaminants into the aquatic environment;
- Disturbance of riparian vegetation should be confined to specific areas and exclusion fencing used to protect areas where access is not permitted;
- Riparian vegetation removed for shoreline repair/replacement should be reinstated where appropriate post-construction using native species; and,

- All disturbed surfaces should be stabilized as soon as possible after construction. Effective erosion and sediment control measures should be maintained until disturbed areas are stabilized.

With the implementation of these mitigation measures, the potential for construction impacts to fish and fish habitat can be minimized.

Naturalization of Pond – Improvements to naturalize the pond could include removing or covering the existing bottom and adding planting within and around the pond. Removal of vegetation that has grown up around and within the pond would likely be required. The pond and surrounding vegetation does not provide fish habitat but is habitat for landbirds, waterfowl and other urban wildlife. To minimize impacts during construction, pond improvements will be designed to confine construction to the smallest possible area and outside of higher value vegetation areas. Construction will also be kept to a short time frame and phased, where possible, to avoid breeding birds and bird migration. Restoration will be completed quickly including covering exposed soils and replanting areas. Prior to construction a nesting survey should be completed to confirm the location of Barn Swallow nests in the area. If construction is to occur during the breeding bird time frame, appropriate buffers should be provided to ensure Barn Swallows are not disturbed during construction.

Given that J.C. Saddington Park is constructed on a historic landfill site and other areas may be on old fill, it will be important to minimize the potential for the release of any contaminated materials. A Phase II Environmental Site Assessment will need to be undertaken to confirm the presence or absence of contaminated materials. If necessary, a plan will be put in place to avoid the mixing of impacted soils or the release of these materials into the air or water.

8.7.2. Socio-Economic and Cultural Environment

The proposed park improvements will be phased in over time. To the extent possible, construction will be timed to take place in the off-season to minimize the potential for impact on park and waterfront users.

Access to the water at Port Credit Memorial Park (West) will be limited during construction. At the north end of Port Credit Memorial Park West, shoreline improvements will be timed to minimize overlap with the canoe and rowing seasons. The City will continue discussions with the Mississauga Canoe Club and the Don Rowing Club to coordinate construction.

Construction of the underpass under Lakeshore Road West will temporarily impact the use and accessibility of the adjacent park areas in Port Credit Memorial Park (West) and Marina Park.

During construction of the improved parking facilities in Marina Park, the site may need to be closed for a year. Depending on the timing and length of construction, there may be a need to temporarily relocate the launching activities and commercial charters to another location. The need for temporary relocation will be confirmed following detailed design and will be subject to the timing of permits and project funding. If necessary, temporary location options for the commercial charters could include the east side of the harbour in the Credit Village Marina. The temporary location for the public launch ramp would likely be Lakefront Promenade Park. Users will be provided advanced notice on the timing of construction through signs and other appropriate means. Signs will also be posted to identify alternate parking areas during construction.

Construction of the J.C. Saddington Pond and the shoreline improvements in this park will require limiting access to the shore and pond areas. Depending on timing this could temporarily impact events in the park, general park use, use of trails through the park, and the ability to fish along the shoreline. These impacts would occur for the duration of construction only. Construction will be completed and areas restored as quickly as possible to minimize disruption to park users.

It is expected that most of the work activities for the shoreline improvements will be land based and interference with boating activities in the harbour as a result of shoreline work will be limited. The exception may be the Rivergate Easement where water access to improve the shoreline and construct the walkway may be required. Potential conflicts between in-water construction vehicles and boats will be minimized through timing of construction in the off-peak season for boating and ensuring that the construction area is clearly marked. An on-water construction circulation plan will be prepared during detailed design. The City will continue to provide updates to the boating community through detailed design and into the construction phase of this project. The canoe and rowing community had also raised concern that the project could increase wave refraction within the river. This potential effect has been addressed through the design of the shoreline in Port Credit Memorial Park (West) to include naturalized shoreline areas.

Temporary disruption may occur for those using the Waterfront Trail or accessing the waterfront for other reasons. Trail detour signs will be provided if needed.

Overall shoreline improvements are expected to be phased in over time and the disruption is anticipated to be localized and over short periods of time. Appropriate signage and fencing will be put in place to minimize impact and maintain public safety during construction. Construction will be designed to incorporate all existing outfalls and other existing infrastructure such as utilities, where necessary.

There is likely to be some construction related disruption including noise, dust and traffic. Construction will occur during normal working hours and will abide by the municipal noise by-law. Dust is not expected to be significant; however, dust suppressants will be used where necessary. Trucks will be required to bring equipment and materials on-site. Given that the shoreline construction will be staged it is not anticipated that there will be a significant number of trucks at one time. Trucks will access the park locations via Front Street or Mississauga Road and drivers will be instructed to maintain speed limits and exercise caution. Traffic control may be used if necessary.

In the event that unanticipated archaeological sites are uncovered during construction work on the site and within 20 metres, work will cease and the site will be secured. The City will make contact with appropriate agencies and First Nations, and a site specific plan will be prepared.

Table 16 – Potential Effects and Proposed Mitigation for Proposed Municipal Infrastructure Improvements

Potential Impact of Park Infrastructure Improvements	City Commitment to Minimizing Impacts
Improved habitat in some areas	<ul style="list-style-type: none"> • Terrestrial habitat improvements integrated as part of the shoreline reconstruction • Aquatic habitat improvements as part of the in-water works • Design concepts enhance habitat in many locations
Possible temporary closure of Marina Park	<ul style="list-style-type: none"> • Minimize length of construction and time to avoid boating season. • Boat launching may need to be temporarily moved to Lakefront Promenade Park • Charter boats may also require temporary relocation • Signs will be posted identifying alternate parking locations
Truck traffic associated with fill and/or stone transport	<ul style="list-style-type: none"> • Material deliveries to be scheduled during regular business hours • Traffic control; dust control to be used if necessary
Impact on near shore habitat and fish spawning	<ul style="list-style-type: none"> • Timing of in-water construction to be scheduled to respect warm water timing windows (i.e., no in-water construction between April 1 and June 30) • To the extent possible, shoreline improvements will minimize disturbance to existing aquatic habitat • Proposed improvements will enhance nearshore habitat diversity • Put in place water sediment control measures
Potential conflict with boating activities	<ul style="list-style-type: none"> • Minimize length of construction and time to avoid boating season • Boat launching may need to be temporarily moved to Lakefront Promenade Park • Charter boats may also require temporary relocation • Signs will be posted identifying alternate parking locations.
Construction dust and noise for residents/businesses adjacent to the parks	<ul style="list-style-type: none"> • Construction to be scheduled during regular business hours • Noise by-laws to be adhered to • Dust management to be put in place where necessary
Limited access to the waterfront and pond during construction	<ul style="list-style-type: none"> • Appropriate signage and fencing to be put in place for safety • Construction to be phased over time and completed as quickly as possible • Alternative trail detours
Potential for spills/sedimentation during construction	<ul style="list-style-type: none"> • Fuelling of construction equipment away from the water • Exposed soils to be covered immediately
Potential for increased wave	<ul style="list-style-type: none"> • Proposed shoreline improvements, such as the addition of cribs and live stakes at Port Credit Memorial Park (West), will

refraction in Credit River	minimize the potential for increased wave refraction
Potential impact on terrestrial habitat, birds and other wildlife during reconstruction of the pond	<ul style="list-style-type: none"> • Design and construction will minimize removal of existing vegetation to the extent possible • Construction to be phased to avoid breeding and migrating timeframes
Exposing of historic contaminated soils	<ul style="list-style-type: none"> • The potential for exposure of contaminated soils will be confirmed during detailed design • Use of best practices to minimize the mixing of impacted soils
Potential for impact on utilities	<ul style="list-style-type: none"> • Utility locates will be completed prior to construction • Storm outfalls will be incorporated into design of shoreline improvements
Potential for impact on terrestrial habitat	<ul style="list-style-type: none"> • Prior to construction, a nest survey to be completed to confirm presence/absence of Barn Swallow nests (an Endangered Species considered <i>Threatened</i>) • Construction to be phased to avoid breeding and migrating timeframes • Tree protection measures will be implemented
Potential to uncover unexpected archaeological sites	<ul style="list-style-type: none"> • Work on the site and within 20 metres will cease and the site will be secured • The City will inform appropriate agencies and First Nations
Disruption to the Waterfront Trail	<ul style="list-style-type: none"> • Construction to be phased over time to minimize the length of trail that might be disrupted • Signs to redirect trail users will be posted if necessary

8.8. Next Steps and Additional Approvals

This section provides direction on the next steps and additional approval requirements for the redevelopment of the Port Credit Harbour West Parks. A summary is provided in **Table 17**.

8.8.1. Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was undertaken for Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park, as a due diligence measure prior to the park redevelopment. Phase II ESA was recommended all three parks and already completed for Port Credit Memorial Park (West) and Marina Park. No further investigations are required for Port Credit Memorial Park (West), and it was recommended that a soil delineation program be undertaken for Marina Park prior to a risk assessment. A Phase II ESA is still required for J.C. Saddington Park.

8.8.2. Detailed Design

The next step in the redevelopment process of the Port Credit Harbour West Parks is to resolve the proposed improvements from the large block concept plan through detailed design. The detailed design should incorporate any opportunities to improve terrestrial and aquatic habitat, and sustainable design elements, as appropriate per site conditions. Studies confirming the existing servicing infrastructure and detailed above and below water inspections will be required,

along with other approvals by various City departments and agreements with adjacent landowners.

8.8.3. Permits and Approvals

Once the detailed design is complete, the following additional approvals are required prior to the construction of the proposed Port Credit Harbour West Parks improvements:

Navigable Waters Protection Act – Approval under the *Navigable Waters Protection Act* protects the public right to boat freely on the waterways in Canada. Approval is required for any structure to be placed in any navigable waters. Transport Canada review or approval is not required for erosion protection works that are considered minor works based on the terms and conditions outlined in the Minor Works and Waters (*Navigable Waters Protection Act*) Order. Transport Canada review and approval may be required for the separate non-motorized launch ramp and the groyne extension in J.C. Saddington Park. The **Navigation Protection Act** is expected to come into effect in spring 2014 which will replace the Navigable Waters Protection Act and may change some of the requirements.

Fisheries Act – Section 35 (1) of the *Fisheries Act* states that “No person shall carry on any work, undertaking or activity that results in the harmful alteration or disruption, or the destruction, of fish habitat”. Fisheries and Oceans Canada has a Level II agreement with the Credit Valley Conservation (CVC). Under this agreement, CVC is responsible for reviewing projects to identify any impact to fish and fish habitat and working with proponents to identify mitigation measures. If impacts can be mitigated, CVC will issue a letter of advice for the project and authorization under the *Fisheries Act* is not required. Through review of the work to date and the work to be done during detailed design, it will be confirmed whether impacts to fish and fish habitat have been adequately mitigated.

Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 161/06) – Proposed shoreline works along the Credit River and Lake Ontario are regulated by the Credit Valley Conservation in order to prevent flooding and erosion. Approval will be required for any and all works proposed within the lands regulated pursuant to *Ontario Regulation 161/06*. The City of Mississauga will work with CVC during the detailed design phase for the shoreline components of the park improvements to fulfill these requirements.

Public Lands Act – Public Lands Act (PLA) may be also required. The approval is provided under a Work Permit issued by the Ministry of Natural Resources. Lake and river bottoms are owned by the province and MNR administers these lands under PLA. Approval is not needed if a water lot has been granted to the shore owner in the past. Approvals may be needed for any new works that extend into the water where no waterlot have been granted. The proposed modifications to the central headland of J.C Saddington Park may extend beyond the limit of the existing waterlot, and approval under Public Lands Act and possible waterlot purchase may be required.

Table 17: Next Steps and Additional Approvals

Park	Environmental Site Assessment (ESA)	Detailed Design	Permits and Approvals
Port Credit Memorial Park (West)	Completed	Confirm servicing infrastructure for the Clubs.	Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 161/06) Fisheries Act
Marina Park	Completed	Confirm servicing infrastructure for the fish cleaning station.	Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 161/06) Fisheries Act Navigable Waters Protection Act*
Rivergate Easement	N/A		Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 161/06) Navigable Waters Protection Act* Fisheries Act
J.C. Saddington Park	Phase II ESA to be completed.	Confirm servicing infrastructure within the park.	Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 161/06) Fisheries Act Public Lands Act Navigable Waters Protection Act*

* Requirement may be eliminated subject to changes proposed under Navigation Protection Act.

APPENDIX 1 - Reference List

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



- BirdLife International. *Important Bird Areas. West End of Lake Ontario (ON022)*. www.bsc-eoc.org/iba/site.jsp?siteID=ON152&lang=EN. Accessed August 2012.
- Bird Studies Canada. 1994. *Marsh Monitoring Program- Amphibian Breeding Surveys*. www.bsc-eoc.org/volunteer/glmp/index.jsp?targetpg=glmpfrog&lang=EN. Accessed August 2012.
- Cadman, M., Sutherland, D., Beck, G., Lepage, D., Couturier, A.. (2007). *Atlas of the Breeding Birds of Ontario: Second Atlas (2001-2005)*. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. <http://www.birdsontario.org/atlas/index.jsp>
- City of Mississauga. (2003). *Heritage Conservation Feasibility Study of Old Port Credit Village Stage 1 Report*. Prepared by: George Robb Architect et al.
- City of Mississauga. (2004). *Old Port Credit Village Heritage Conservation District Plan*. Prepared by: George Robb Architect et al.
- City of Mississauga. (2008). *Waterfront Parks Strategy*. Prepared by: Brook McIlroy Inc. & Pace Architects.
- City of Mississauga. (2008). *Lakeview and Port Credit District Policies Review and Public Engagement Process Directions Report*. City of Mississauga.
- City of Mississauga. (2010). *Natural Areas Survey: 2010 Update*. 111 pp.
- City of Mississauga. (2011). *Official Plan*. City of Mississauga.
- City of Mississauga. (2012). *Natural Heritage & Urban Forest Strategy: Phase 1*. City of Mississauga.
- City of Mississauga. (2012). *Port Credit Local Area Plan – Draft*. City of Mississauga.
- Clayton, J. (2011.). *Lake Ontario Integrated Shoreline Strategy Background Review and Data Gap Analysis. Appendix G Aquatic Natural Heritage Final Report*. Credit Valley Conservation.
- Credit River Mouth Regeneration Planning Group. (1995). *Opportunities for Regeneration at the Mouth of the Credit River*. 148 pp.
- Credit Valley Conservation Authority. (2009a). *Terrestrial Ecological Land Classification*. Prepared by Natural Resource Solutions Inc.
- Credit Valley Conservation Authority. (2009b). *Fall Migrant Butterflies and Observations of Other Arthropods in Mississauga, Ontario. Monitoring Report – Fall 2009*. Prepared by W.D. McIlveen. 38 pp.
- Credit Valley Conservation Authority. (2009c). *Winter Birds in Mississauga Shoreline Parks: Monitoring Program 2008 – 2009*. Prepared by W.D. McIlveen. 88 pp.
- Environment Canada. *Species at Risk Public Registry*. <http://www.sararegistry.gc.ca>. Accessed August 2012
- Fisheries and Oceans Canada. (2012). *Distribution of Fish and Mussel Species at Risk Mapping for Credit Valley Conservation Authority*.

- Lee, H. et al. (2001). *Ecological Land Classification for Southern Ontario: Training Manual*. Ontario Ministry of Natural Resources.
- Ministry of Natural Resources. (1989). *Great Lakes Flood Levels and Water Related Hazards*. Prepared by Conservation Authorities and Water Management Branch, Ontario Ministry of Natural Resources, February, 1989.
- Ontario Breeding Bird Atlas. (2001). *Guide for Participants*. Atlas Management Board, Federation of Ontario Naturalists, Don Mills.
- Ontario Ministry of Natural Resources. *Natural Heritage Information Centre Database*. <http://nhic.mnr.gov.on.ca/>. Accessed March 2011.
- Ontario Ministry of Natural Resources. *The Species at Risk in Ontario (SARO) List*. www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080230_e.htm. Accessed March 2011.
- Ontario Ministry of Natural Resources. (2000). *Significant Wildlife Habitat Technical Guide*. 151pp.
- Ontario Ministry of Natural Resources. 2012. *Significant Wildlife Habitat Eco-regional Criteria Schedules. Ecoregion 6E*. <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTczNDgy>
- Pullen, T., N.W.H. Allsop, T. Bruce, A. Kortenhaus, H. Schuttrumpf, and J. W. van der Meer. (2007). *EurOtop, Wave Overtopping of Sea Defences and Related Structures: Assessment Manual*. Environmental Agency UK, Expertise Netwerk Waterkeren, NL, KFKI, DE, August 2007
- Shoreplan Engineering Limited. (2005). *Lake Ontario Shoreline Hazards*. Prepared for Credit Valley Conservation Authority.
- Tripodo, P. (2011). *Lake Ontario Integrated Shoreline Strategy Background Review and Data Gap Analysis. Appendix E Terrestrial Natural Heritage Final Report*. Credit Valley Conservation
- Watershed Science Centre and Ontario Ministry of Natural Resources, 2001. *Great Lakes - St. Lawrence River System and Large Inland Lakes. Technical Guides for flooding, erosion and dynamic beaches in support of natural hazards policies 3.1 of the provincial policy statement*. Watershed Science Centre. ISBN: 0-9688196-1-3

APPENDIX 2 - Natural Environment Conditions

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



Tree Inventory

An inventory of all trees greater than 100 mm diameter-at-breast-height (dbh) present within J.C. Saddington Park, Rivergate easement, Marina Park and Port Credit Memorial Park (West) was completed in spring 2012. During this inventory each tree was tagged with a unique identifier and an assessment of the trees condition was recorded. Each tree along with its' unique identifier was surveyed by J.D. Barnes and the criteria used to define each tree was presented as in Good, Fair and Poor condition.

Good Condition - The specimen tree shows no symptoms of decline in the trunk, and all scaffold branches are present and are in good condition. Most scaffold branches are at right angles to the trunk, and show good vigour. Small amounts of dead wood may be present in secondary branches, but account for less than 25% of the canopy. Depending on the grading in the immediate area, a tree in good condition would be recommended for preservation. Such a tree would survive to maturity without major arboriculture maintenance.

Fair Condition – Trees in fair condition show moderate symptoms of decline in lower canopy or scaffold branches, but at least 50% of scaffold branches are present and viable. Trunk shows limited evidence of rot or insect damage. Callus growth is present near wound areas. Trees that have scaffold branches that are healthy but are in a "Y" formation may also be included in this category, if included, bark is evident due to the risk of splitting or breakage as the tree matures. Removal or preservation of these trees depends on the location of the specimen and associated hazard potential and would depend on the species and its tolerance to grading, trenching and surviving in an urban environment. Some major arboriculture maintenance may be required in the future and may include major scaffold or secondary branch removal, bracing and/or cabling.

Poor Condition – Trees in poor condition show major symptoms of decline. At least 50% of main scaffold branches are dead, missing or in diseased state. The trunk shows evidence of advanced rot, deadwood or is hollow throughout. Twig development on the main branches or through sucker growth is limited. Callus growth around wounds is minimal. A tree in poor condition could become a safety hazard and may require removal prior to development.

Tree Inventory within the Port Credit Harbour West Parks

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
198	614469	4822482	Thuja occidentalis	Eastern White Cedar	14, 4 stems less than 10 cm	G	
199	614468.9	4822487.2	Tilia cordata	Little Leaf Linden	13, 14, 5 stems less than 10 cm	G	
200	614473.9	4822489.2	Populus alba	White Poplar	20.0	P	Little new growth
201	614473.9	4822489.2	Thuja occidentalis	Eastern White Cedar	13, 1 stem less than 10 cm	G	
202	614475.9	4822495.2	Tilia cordata	Little Leaf Linden	41.0	G	Recently pruned
203	614470.9	4822505.2	Salix alba 'Tristis'	Golden Weeping Willow	69.0	G	Surrounded by asphalt
204	614469.9	4822513.2	Salix alba 'Tristis'	Golden Weeping Willow	70.0	G	Surrounded by asphalt
205	614466.9	4822543.2	Salix alba 'Tristis'	Golden Weeping Willow	88.0	G	
206	614479.9	4822516.2	Acer sp.	Maple species	15.0	G	Red, freeman's or silver
207	614482.9	4822516.2	Acer sp.	Maple species	20.0	G	Red, freeman's or silver
208	614528.4	4822495.0	Salix alba 'Tristis'	Golden Weeping Willow	31.0	G	
209	614523.4	4822485.8	Salix alba 'Tristis'	Golden Weeping Willow	33.0	G	
210	614486.3	4822497.2	Tilia cordata	Little Leaf Linden	37.0	G	Some pruning of lower branches
211	614487.9	4822491.3	Pinus sylvestris	Scot's Pine	29.0	G	
212	614482.4	4822489.6	Tilia cordata	Little Leaf Linden	24.0	G	
213	614481.4	4822488.0	Tilia cordata	Little Leaf Linden	28, 22	G	Trunks separates at breast height
214	614489.3	4822484.7	Betula papyrifera	White Birch	14, 1 stem less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
215	614493.5	4822483.8	Pinus sylvestris	Scot's Pine	31.0	G	
216	614489.5	4822480.3	Pinus sylvestris	Scot's Pine	21, 21	G	
217	614484.6	4822481.0	Betula papyrifera	White Birch	25, 16, 1 stem under 10 cm	G	
218	614485.0	4822481.8	Betula papyrifera	White Birch	16, 16	P	~20% live crown
219	614478.1	4822475.8	Betula papyrifera	White Birch	18.0	G	
220	614484.1	4822474.1	Betula papyrifera	White Birch	13, 13, 17	G	
221	614490.6	4822474.8	Fraxinus sp.	Ash	23.0	G	
222	6144984.6	4822475.4	Fraxinus sp.	Ash	30.0	P-F	Adventitious shoots near base, some wounds near base
223	614513.6	4822469.1	Acer platanoides	Norway Maple	12.0	G	
224	614508.5	4822458.6	Malus sp.	Crabapple	10, 2 stems less than 10 cm	G	
225	614488.6	4822470.3	Fraxinus sp.	Ash	24.0	P	Large wound and dead wood at base
226	614489.2	4822463.5	Populus sp.	Cottonwood	38.0	G	Leaves just breaking, possibly cottonwood POPUDEL
227	614474.1	4822465.2	Crataegus monogyna	Hawthorn	23.0	P	Trunk splitting, crown looks healthy
228	614476.6	4822460.5	Fraxinus sp.	Ash	26.0	F	Leaning, suckering on trunk
229	614478.8	4822457.6	Fraxinus sp.	Ash	39.0	G	
230	614486.5	4822456.3	Acer sp.	Maple species	11.0	G	Red, Freeman's or silver.
231	614484.5	4822449.8	Acer sp.	Maple species	22.0	G	Red, Freeman's or silver.
232	614478	4822453	Fraxinus sp.	Ash	24.0	P	Larger branches dying
233	614473.0	4822450.1	Crataegus monogyna	Hawthorn	24.0	P	Trunk splitting, crown looks healthy
234	614470.9	4822454.5	Crataegus monogyna	Hawthorn	21.0	P	Trunk splitting, crown looks healthy
235	614473.0	4822450.1	Fraxinus sp.	Ash	33.0	G	
236	614473	4822443	Populus balsamifera	Balsam Poplar	41.0	P	Almost dead, some live buds on lower branches
237	614499.6	4822440.1	Malus sp.	Crabapple	18.0	G	
238	614495.3	4822431.2	Malus sp.	Crabapple	18.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
239	614491.8	4822426.8	Malus sp.	Crabapple	11, 14	G	Trunk splits a breast height
240	614482.5	4822421.9	Acer rubrum	Red Maple	18.0	G	
241	614479.0	4822427.6	Acer sp.	Maple species	23.0	G	Red, Freeman's or silver, one large branch removed at trunk
242	614479.1	4822393.7	Fraxinus sp.	Ash	14.0	G	
243	614472.2	4822396.3	Fraxinus sp.	Ash	16.0	G	
244	614473.7	4822388.9	Picea glauca	White Spruce	11.0	F	Some dead needles in lower branches
245	614483	4822368	Thuja occidentalis	Eastern White Cedar	10.0	G	
246	614473.9	4822367.2	Thuja occidentalis	Eastern White Cedar	12, 2 stems less than 10 cm	G	
247	614474.9	4822365.2	Thuja occidentalis	Eastern White Cedar	11, 5 stems less than 10 cm	G	
248	614474.9	4822366.2	Thuja occidentalis	Eastern White Cedar	13, 10, 3 stems less than 10 cm	G	
249	614471.9	4822373.2	Thuja occidentalis	Eastern White Cedar	10, 2 stems less than 10 cm	G	
250	614460.3	4822390.4	Fraxinus sp.	Ash	11.0	G	
251	614461.0	4822383.8	Fraxinus sp.	Ash	16.0	G	
252	614465.4	4822368.1	Acer platanoides	Norway Maple	17.0	P-F	Healed wounds on trunk, crown ~75%
253	614474.3	4822358.1	Acer rubrum	Red Maple	14.0	G	
254	614467.5	4822356.5	Acer sp.	Maple species	11.0	G	Red, Freeman's or silver.
255	614456.7	4822345.6	Fraxinus sp.	Ash	13.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
256	614450.9	4822352.2	Fraxinus sp.	Ash	16.0	G	
257	614453.8	4822362.0	Acer rubrum	Red Maple	12.0	G	
258	614446.5	4822371.1	Acer rubrum	Red Maple	22.0	F	
259	614443.7	4822376.3	Acer rubrum	Red Maple	14.0	G	
260	614424.1	4822351.8	Acer platanoides	Norway Maple	14.0	G	
261	614420.4	4822354.5	Acer platanoides	Norway Maple	15.0	P-F	Healed wound near base
262	614411.2	4822333.2	Acer platanoides	Norway Maple	14.0	P	
263	614404.9	4822307.2	Populus balsamifera	Balsam Poplar	62.0	G	
264	614405.9	4822313.2	Acer sp.	Maple species	14.0	G	Red, Freeman's or silver.
265	614393.9	4822314.2	Acer sp.	Maple species	22.0	G	Red, Freeman's or silver.
266	614395.9	4822320.2	Acer rubrum	Red Maple	21.0	G	
267	614384.9	4822314.2	Fraxinus sp.	Ash	42.0	G	
268	614378.9	4822315.2	Quercus rubra	Red Oak	33.0	G	
269	614372.9	4822319.2	Acer rubrum	Red Maple	39.0	G	
270	614372.9	4822323.2	Acer rubrum	Red Maple	44.0	G	
271	614379.9	4822321.2	Fraxinus sp.	Ash	30.0	G	
272	614382.9	4822324.2	Fraxinus sp.	Ash	40.0	G	
273	614387.9	4822326.2	Acer sp.	Maple species	47.0	G	Red, Freeman's or silver.

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
274	614391.9	4822333.2	Acer sp.	Maple species	36.0	G	Red, Freeman's or silver.
275	614398.9	4822335.2	Thuja occidentalis	Eastern White Cedar	14, 1 stem less than 10 cm	G	
276	614384.9	4822343.2	Fraxinus sp.	Ash	42.0	G	
277	614386.9	4822344.2	Fraxinus sp.	Ash	32.0	G	
278	614393.9	4822343.2	Acer sp.	Maple species	36.0	G	Red, Freeman's or silver.
279	614399.9	4822344.2	Acer rubrum	Red Maple	10.0	G	
280	614393.9	4822351.2	Acer sp.	Maple species	29.0	G	Red, Freeman's or silver.
281	614396.9	4822355.2	Acer sp.	Maple species	25.0	G	Red, Freeman's or silver.
282	614401.9	4822353.2	Acer sp.	Maple species	18.0	G	Red, Freeman's or silver.
283	614405.9	4822357.2	Acer x freemanii	Freeman's Maple	13.0	G	
284	614403.9	4822359.2	Fraxinus sp.	Ash	27.0	G	
285	614395.9	4822363.2	Fraxinus sp.	Ash	33.0	P-F	Some signs of disease
286	614389.9	4822364.2	Fraxinus sp.	Ash	26.0	G	
287	614391.9	4822369.2	Acer sp.	Maple species	33.0	G	Red, Freeman's or silver.
288	614393.9	4822372.2	Thuja occidentalis	Eastern White Cedar	10, 1 stem less than 10 cm	G	
289	614393.9	4822372.2	Thuja occidentalis	Eastern White Cedar	11, 1 stem less than 10 cm	G	
290	614390.9	4822374.2	Thuja occidentalis	Eastern White Cedar	11.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
291	614388.9	4822376.2	Thuja occidentalis	Eastern White Cedar	12, 1 stem less than 10 cm	G	
292	614384.9	4822371.2	Fraxinus sp.	Ash	34.0	G	
293	614380.9	4822372.2	Fraxinus sp.	Ash	37.0	F	Bend in trunk in canopy
294	614380.9	4822377.2	Fraxinus sp.	Ash	27.0	G	
295	614373.9	4822378.2	Acer platanoides	Norway Maple	18.0	G	
296	614377.9	4822380.2	Quercus rubra	Red Oak	33.0	G	
297	614378.9	4822383.2	Malus sp.	Crabapple	16.0	G	
298	614366.9	4822384.2	Quercus rubra	Red Oak	20.0	G	
299	614363.9	4822388.2	Malus sp.	Crabapple	13.0	G	
300	614359.9	4822391.2	Malus sp.	Crabapple	13.0	G	
301	614366.9	4822392.2	Malus sp.	Crabapple	12, 11	G	Some suckering
302	614364.9	4822394.2	Malus sp.	Crabapple	12, 12	G	Some suckering
303	614364.9	4822404.2	Thuja occidentalis	Eastern White Cedar	17, 13, 10, 1 stem less than 10 cm	G	
304	614365.9	4822406.2	Thuja occidentalis	Eastern White Cedar	10, 15, 2 stems less than 10 cm	G	
305	614361.9	4822406.2	Acer negundo	Manitoba Maple	10.0	G	
306	614361.9	4822407.2	Thuja occidentalis	Eastern White Cedar	15, 2 stems less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
307	614361.9	4822407.2	Acer negundo	Manitoba Maple	11.0	G	Recently pruned
308	614361.9	4822408.2	Thuja occidentalis	Eastern White Cedar	14, 2 stems	G	
309	614358.9	4822410.2	Thuja occidentalis	Eastern White Cedar	11, 10, 1 stem less than 10	G	
310	614356.9	4822411.2	Thuja occidentalis	Eastern White Cedar	13, 1 stem less than 10 cm	G	
311	614356.9	4822411.2	Thuja occidentalis	Eastern White Cedar	14, 2 stems less than 10	G	
312	614352.9	4822409.2	Pinus nigra	Austrian Pine	34.0	G	
313	614350.9	4822411.2	Pinus nigra	Austrian Pine	29, 27	G	Trunk splits at approximately breast height
314	614348.9	4822413.2	Pinus nigra	Austrian Pine	44.0	G	
315	614345.9	4822413.2	Pinus nigra	Austrian Pine	49.0	G	
316	614339.9	4822413.2	Pinus nigra	Austrian Pine	38.0	G	
317	614327.9	4822406.2	Tilia cordata	Little Leaf Linden	53.0	G	Recently pruned
318	614323.9	4822401.2	Acer platanoides	Norway Maple	19.0	F	Recently pruned, large wound
319	614310.9	4822387.2	Acer platanoides	Norway Maple	31.0	G	
320	614307.9	4822383.2	Acer platanoides	Norway Maple	26.0	G	
321	614303.9	4822377.2	Acer platanoides	Norway Maple	16.0	G	
322	614348.9	4822324.2	Acer platanoides	Norway Maple	21.0	G	
323	614345.9	4822327.2	Acer platanoides	Norway Maple	28.0	G	
324	614341.9	4822331.2	Acer platanoides	Norway Maple	20.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
325	614337.9	4822335.2	Acer platanoides	Norway Maple	32.0	G	
326	614332.9	4822338.2	Acer platanoides	Norway Maple	22.0	F	Exposed roots
327	614328.9	4822342.2	Acer platanoides	Norway Maple	28.0	G	
328	614318.9	4822350.2	Acer platanoides	Norway Maple	31.0	F	Exposed roots
329	614292	4822374	Acer platanoides	Norway Maple	17.0	G	
330	614291.9	4822370.2	Acer platanoides	Norway Maple	27.0	G	
331	614286.9	4822374.2	Acer platanoides	Norway Maple	21.0	G	
332	614326.9	4822410.2	Tilia cordata	Little Leaf Linden	39.0	G	
333	614352.9	4822418.2	Thuja occidentalis	Eastern White Cedar	13, 15, 2 stems less than 10 cm	G	
334	614352.9	4822419.2	Thuja occidentalis	Eastern White Cedar	10, 3 stems less than 10 cm	G	
335	614352.9	4822419.2	Thuja occidentalis	Eastern White Cedar	15, 12, 3 stems less than 10 cm	G	
336	614352.9	4822422.2	Acer negundo	Manitoba Maple	11.0	G	
337	614352.9	4822422.2	Thuja occidentalis	Eastern White Cedar	12, 2 stems less than 10 cm	G	
338	614351.9	4822426.2	Acer negundo	Manitoba Maple	11.0	G	
339	614351.9	4822426.2	Acer negundo	Manitoba Maple	14.0	G	
340	614351.9	4822427.2	Thuja occidentalis	Eastern White Cedar	13, 13, 3 stems less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
341	614345.9	4822430.2	Acer sp.	Maple species	29.0	G	Red, silver or Freeman's
342	614339.9	4822431.2	Syringa reticulata	Silk tree	15.0	G	
343	614337.9	4822430.2	Acer sp.	Maple species	33.0	G	
344	614331.9	4822426.2	Syringa reticulata	Silk tree	19.0	G	
345	614320.9	4822424.2	Quercus rubra	Red Oak	28.0	G	
346	614320.9	4822421.2	Quercus rubra	Red Oak	35.0	G	
347	614316.9	4822420.2	Quercus rubra	Red Oak	41.0	G	
348	614312.9	4822413.2	Acer negundo	Manitoba Maple	12.0	G	
349	614312.9	4822411.2	Acer negundo	Manitoba Maple	19.0	G	
350	614293.9	4822391.2	Acer saccharum	Sugar Maple	40.0	G	
351	614289.9	4822391.2	Acer sp.	Maple species	21.0	G	
352	614285.9	4822394.2	Acer sp.	Maple species	15.0	F-G	
353	614279.9	4822393.2	Acer rubrum	Red Maple	26.0	G	
354	614285.9	4822403.2	Populus balsamifera	Balsam Poplar	61.0	P-F	
355	614288.9	4822403.2	Populus balsamifera	Balsam Poplar	18, 16	G	Clones ~2m from 354
356	614287.9	4822415.2	Acer ginnala	Amur Maple	13, 12, 11, 12	G	
357	614288.9	4822416.2	Acer ginnala	Amur Maple	13, 10, 7 stems less than 10 cm	G	
358	614292.9	4822421.2	Acer ginnala	Amur Maple	15, 11, 10, 12	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
359	614293.9	4822420.2	Acer ginnala	Amur Maple	15, 14, 13, 12	G	
360	614294.9	4822423.2	Acer ginnala	Amur Maple	10, 1 stem less than 10 cm	G	
361	614294.9	4822424.2	Acer ginnala	Amur Maple	12, 3 stems less than 10	G	
362	614295.9	4822426.2	Acer ginnala	Amur Maple	10, 3 stems less than 10 cm	G	
363	614298.9	4822423.2	Pseudotsuga menziesii	Douglas Fir	26.0	G	
364	614301.9	4822423.2	Pseudotsuga menziesii	Douglas Fir	26.0	G	
365	614303.9	4822426.2	Pseudotsuga menziesii	Douglas Fir	34.0	G	
366	614299.9	4822425.2	Acer ginnala	Amur Maple	10, 10, 11, 12	G	
367	614297.9	4822429.2	Acer ginnala	Amur Maple	13, 10, 10	G	
368	614300.9	4822431.2	Acer ginnala	Amur Maple	13, 14, 13	G	
369	614301.9	4822428.2	Acer ginnala	Amur Maple	12, 12, 11, 10, 10	G	
370	614308.9	4822429.2	Syringa reticulata	Silk tree	19.0	G	
371	614309.9	4822429.2	Syringa reticulata	Silk tree	24.0	G	
372	614309.9	4822432.2	Syringa reticulata	Silk tree	14.0	G	
373	614312.9	4822431.2	Syringa reticulata	Silk tree	18.0	F	
374	614316.9	4822430.2	Syringa reticulata	Silk tree	23.0	G	
375	614317.9	4822432.2	Syringa reticulata	Silk tree	17.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
376	614330.9	4822431.2	Acer sp.	Maple species	45.0	G	
377	614334.9	4822432.2	Syringa reticulata	Silk tree	14.0	G	
378	614344.9	4822432.2	Pinus nigra	Austrian Pine	32.0	F	
379	614341.9	4822437.2	Betula papyrifera	White Birch	28.0	G	
380	614337.9	4822438.2	Betula papyrifera	White Birch	14, 11	F	
381	614338.9	4822442.2	Acer sp.	Maple species	18.0	G	
382	614324.9	4822449.2	Platanus x acerifolia	London Plane Tree	29.0	F	
383	614318.9	4822448.2	Acer negundo	Manitoba Maple	10, 12, 15	G	
384	614322.9	4822453.2	Acer negundo	Manitoba Maple	11, 12, 14	G	
385	614322.9	4822452.2	Acer negundo	Manitoba Maple	11.0	G	
386	614333.9	4822466.2	Malus sp.	Crabapple	14, 13, 15	G	
387	614328.9	4822468.2	Picea glauca	White Spruce	23.0	G	
388	614334.9	4822468.2	Picea glauca	White Spruce	36.0	G	
389	614338.9	4822469.2	Picea glauca	White Spruce	35.0	G	
390	614348.9	4822473.2	Quercus rubra	Red Oak	28.0	G	
391	614341.9	4822457.2	Acer rubrum	Red Maple	14.0	G	
392	614333.9	4822454.2	Acer rubrum	Red Maple	10.0	G	
393	614346.9	4822441.2	Pinus sylvestris	Scot's Pine	26.0	F	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
394	614349.9	4822442.2	Pinus sylvestris	Scot's Pine	23.0	F	
395	614349.9	4822441.2	Pinus sylvestris	Scot's Pine	30.0	G	
396	614358.9	4822430.2	Thuja occidentalis	Eastern White Cedar	11, 11, 12	G	
397	614359.9	4822425.2	Thuja occidentalis	Eastern White Cedar	13, 13, 12	G	
398	614358.9	4822436.2	Thuja occidentalis	Eastern White Cedar	22, 10	G	
399	614357.9	4822438.2	Thuja occidentalis	Eastern White Cedar	15, 1 stem less than 10 cm	G	
400	614353.9	4822446.2	Acer sp.	Maple species	22.0	G	
401	614361.9	4822452.2	Acer sp.	Maple species	37.0	G	
402	614355.9	4822451.2	Betula papyrifera	White Birch	17.0	G	
403	614353.9	4822453.2	Malus sp.	Crabapple	13, 15, 18	G	
404	614341.9	4822452.2	Syringa reticulata	Silk tree	14.0	G	
405	614352.9	4822454.2	Malus sp.	Crabapple	12.0	F	
406	614355.9	4822459.2	Malus sp.	Crabapple	21, 15, 18, 14	G	
407	614352.9	4822469.2	Acer x freemanii	Freeman's Maple	12.0	G	
408	614358.9	4822470.2	Quercus rubra	Red Oak	12.0	G	
409	614351.9	4822493.2	Acer platanooides	Norway Maple	30.0	P	Large split in trunk
410	614357.9	4822494.2	Acer platanooides	Norway Maple	12.0	G	
411	614356.9	4822497.2	Acer platanooides	Norway Maple	36.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
412	614356.9	4822505.2	Acer platanoides	Norway Maple	26.0	G	
413	614353.9	4822511.2	Gleditsia triacanthos	Honey Locust	16.0	G	
414	614376.9	4822555.2	Acer sp.	Maple species	38.0	G	
415	614402.9	4822382.2	Acer platanoides	Norway Maple	15.0	G	
416	614396.6	4822598.2	Acer platanoides	Norway Maple	17.0	G	
417	614401.9	4822604.8	Salix alba 'Tristis'	Golden Weeping Willow	76.0	G	Some exposed root
418	614393.2	4822605.3	Acer platanoides	Norway Maple	18.0	G	
419	614398.3	4822613.6	Acer platanoides	Norway Maple	20.0	P-F	Large hole in trunk
420	614389.8	4822618.6	Acer platanoides	Norway Maple	14.0	F	Scars on trunk
421	614385.5	4822621.9	Acer platanoides	Norway Maple	21.0	G	
422	614382.3	4822626.7	Acer platanoides	Norway Maple	18.0	G	
423	614378.1	4822631.5	Acer platanoides	Norway Maple	22.0	G	
424	614369.6	4822652.6	Acer platanoides	Norway Maple	22.0	G	
425	614386.6	4822616.0	Pseudotsuga menziesii	Douglas Fir	13.0	G	
426	614364.9	4822552.2	Acer sp.	Maple species	33.0	G	Red, silver or Freeman's
427	614359.9	4822549.2	Acer sp.	Maple species	26.0	G	Red, silver or Freeman's
428	614355.9	4822553.2	Acer sp.	Maple species	32.0	G	Red, silver or Freeman's
429	614352.9	4822549.2	Acer sp.	Maple species	39.0	G	Red, silver or Freeman's

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
430	614356.9	4822542.2	Acer platanoides	Norway Maple	22.0	G	
431	614353.9	4822536.2	Acer platanoides	Norway Maple	19.0	G	
432	614352.9	4822538.2	Acer platanoides	Norway Maple	26.0	G	
433	614351.9	4822532.2	Acer platanoides	Norway Maple	24.0	G	
434	614347.9	4822536.2	Acer platanoides	Norway Maple	25.0	G	
435	614343.9	4822540.2	Prunus avium	Sweet Cherry	61.0	G	
436	614342.9	4822543.2	Prunus avium	Sweet Cherry	11, 1 stem less than 10 cm	G	
437	614344.9	4822549.2	Fraxinus sp.	Ash	54.0	F	Large open healing hole
438	614340.9	4822546.2	Fraxinus sp.	Ash	20.0	F	Some dead lower branches
439	614326.9	4822534.2	Fraxinus sp.	Ash	46.0	G	
440	614330.9	4822536.2	Fraxinus sp.	Ash	34.0	G	
441	614336.9	4822527.2	Fraxinus sp.	Ash	38.0	G	
442	614340.9	4822530.2	Prunus avium	Sweet Cherry	13, 11, 17	G	
443	614341.9	4822524.2	Prunus avium	Sweet Cherry	14.0	G	
444	614336.9	4822518.2	Acer negundo	Manitoba Maple	28, 28, 30	G	
445	614334.9	4822508.2	Acer negundo	Manitoba Maple	46, 30, 42, 36	F	
446	614335.9	4822507.2	Acer negundo	Manitoba Maple	30.0	G	
447	614347.9	4822507.2	Acer platanoides	Norway Maple	30.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
448	614349.9	4822501.2	Quercus rubra	Red Oak	22.0	G	
449	614345.9	4822495.2	Acer ginnala	Amur Maple	13.0	G	
450	614343.9	4822485.2	Quercus alba	White Oak	47.0	G	
451	614327.9	4822488.2	Acer negundo	Manitoba Maple	45, 42	G	
452	614325.9	4822492.2	Malus sp.	Crabapple	16.0	G	
453	614332.9	4822499.2	Malus sp.	Crabapple	10, 14	G	
454	614334.9	4822498.2	Prunus avium	Sweet Cherry	10, 16, 14	G	Trunk splits below breast height
455	614336.9	4822500.2	Prunus avium	Sweet Cherry	13, 10	G	
456	614340.9	4822503.2	Quercus rubra	Red Oak	31.0	G	
457	614315.9	4822505.2	Malus sp.	Crabapple	13.0	G	
458	614311.9	4822506.2	Malus sp.	Crabapple	32.0	G	
459	614309.9	4822506.2	Malus sp.	Crabapple	20.0	G	
460	614303.9	4822509.2	Malus sp.	Crabapple	12, 13, 15, 13	G	
461	614306.9	4822506.2	Malus sp.	Crabapple	17.0	G	
462	614298.9	4822504.2	Picea abies	Norway Spruce	49.0	G	
463	614312 .2	4822501.2	Quercus rubra	Red Oak	50.0	G	
464	614008.8	4822934.5	Fraxinus sp.	Ash	74.0	F	Trimmed for hydro line
465	613995.3	4822936.5	Acer platanoides	Norway Maple	30.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
466	613987.6	4822937.6	Acer platanoides	Norway Maple	27.0	G	
467	613981.1	4822938.3	Acer platanoides	Norway Maple	28.0	G	
468	613974.3	4822939.0	Acer platanoides	Norway Maple	19.0	G	
469	613967.4	4822939.7	Acer platanoides	Norway Maple	21.0	G	
1108	614425.6	4822291.2	Acer negundo	Manitoba Maple	21.0, 17.5	F-P	Multi-stemmed, some of which are dead. Tree is growing between revetment rocks and has poor form typical for species.
1109	614435.1	4822304.3	Acer negundo	Manitoba Maple	14.0	F-P	Multi-stemmed, largest is noted. Tree is growing between revetment rocks and has poor form typical for species.
1110	614444.4	4822313.1	Acer negundo	Manitoba Maple	16.5, 22.5, 40.0 at base	F-P	16.5 and 22.5 are codominant branches from stem between revetment rocks, 40.0 is the base measurement of 3 codominant branches with included bark.
1111	614470.9	4822329.4	Ulmus pumila	Siberian Elm	26.5	P	No buds present in crown, branches are brittle except for lower sprouts with green wood. Tree is growing between revetment rocks, bark is loose and numerous tiny pest holes are evident on the trunk. Tree is likely dead.
1112	614478.5	4822334.0	Salix sp.	Willow	20.5, 26.0, 22.0	G-F	3 stems growing between revetment rocks. There is heavy sprouting at the base of

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
							the trunks.
1113	614496.9	4822350.0	Ulmus pumila	Siberian Elm	20.0, 13.0	F	Two stems with included bark are growing between revetment rocks.
1114	614499.0	4822353.4	Acer saccharinum	Silver Maple	39.0	G-F	Trunk is growing between revetment rocks, splits into three codominant branches above rocks. Base is contorted around rocks. There are signs of pest entry in bark openings along the trunk.
1115	614496.6	4822370.6	Salix sp.	Willow	23.0	G-F	Growing in grass, 15% deadwood, friction between branches in crown.
1116	614491.9	4822384.2	Fraxinus sp.	Ash	11.0	G	Leader is dead but a new one is well established.
1117	614489.9	4822404.8	Salix alba 'Tristis'	Golden Weeping Willow	22.0	G	Codominant branching in crown with included bark. There is an opening in the bark, but no signs of pest entry.
1118	614493.3	4822411.4	Salix alba 'Tristis'	Golden Weeping Willow	23.0	G	There is a sway in the lower trunk of the trunk and a 5 degree lean.
1119	614496.9	4822405.2	Acer negundo	Manitoba Maple	14.0	G-F	Shrubby form.
1120	614503.9	4822432.2	Malus sp.	Crabapple	12.5	G	Low branching.
1121	614505.9	4822429.2	Acer negundo	Manitoba Maple	13.0	F	Bark is missing around base of trunk (50%).
1122	614511.2	4822442.1	Picea glauca	White Spruce	~30.0	G	Branch tips are trimmed along edge of trail. Slight sway in trunk.
1123	614513.9	4822446.2	Ulmus pumila	Siberian Elm	14.0	G-F	
1124	614520.9	4822453.2	Fraxinus sp.	Ash	18.0	F	Growing between revetment rocks. 20% deadwood and

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
							leaning 5 degrees inland.
1125	614525.9	4822459.2	Populus sp.	Cottonwood	35.0	G-F	Growing between revetment rocks. 15% deadwood in lower crown.
1126	614531.9	4822462.2	Populus sp.	Cottonwood		F	Growing between revetment rocks. Codominant stem is dead. Large amount of debris is piled against the base of the tree.
1127	614520.9	4822463.2	Picea pungens	Colorado Blue Spruce	33.0	G	
1128	614522.9	4822468.2	Picea sp.	Spruce	27.5	G	
1129	614524.9	4822471.2	Picea sp.	Spruce	29.5	G	
1130	614530.9	4822475.2	Picea glauca	White Spruce	~32.0	G-F	
1131	614532.9	4822479.2	Picea sp.	Spruce	26.0	G	
1132	614535.9	4822478.2	Populus sp.	Cottonwood	25.0, 14.0	G	Growing between revetment rocks. Two codominant stems with included bark.
1133	614537.9	4822477.2	Populus sp.	Cottonwood	22.5	G	Growing between revetment rocks.
1134	614534.5	4822483.3	Acer rubrum	Red Maple	10.0	G	Memorial tree for Erica Weden 2003.
1135	614537.1	4822488.4	Salix sp.	Willow	15.0 at base	G-F	Shrubby form.
1136	614540.4	4822494.2	Picea glauca	White Spruce	18.0	G	Heavy production of cones.
1137	614543.9	4822498.2	Picea glauca	White Spruce	22.0	G	Heavy production of cones.
1138	614549.9	4822505.2	Acer negundo	Manitoba Maple	20.0, 14.0	F	Growing between revetment rocks, poor form.
1139	614548.9	4822506.2	Salix sp.	Willow	24.0, 18.0, 17.0	F	Multi-stemmed form.

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1140	614546.9	4822504.2	Picea sp.	Spruce	~16.0	G-F	Lichen present on branches.
1141	614548.9	4822510.2	Picea sp.	Spruce	25.0	F	Sway in trunk and growth less vigorous than nearby spruce.
1142	614549.9	4822514.2	Picea sp.	Spruce	21.0	F	2 codominant leaders and sparse growth on lower half of the tree. 15% dieback overall.
1143	614559.9	4822525.2	Fraxinus sp.	Ash	10.0	G-F	Growing between revetment rocks.
1144	614558.9	4822527.2	Salix sp.	Willow	18.0 at base	F	Growing between revetment rocks, poor form.
1145	614566.0	4822539.4	Salix sp.	Willow	43.5	G	5% deadwood.
1146	614570.5	4822534.6	Salix sp.	Willow	47.0	G	Growing between revetment rocks. Codominant branching in crown with included bark.
1147	614589.5	4822538.9	Fraxinus sp.	Ash	13.5	F	Growing between revetment rocks and sprouting at base.
1148	614594.4	4822540.4	Salix sp.	Willow	2 x 10.0	F	Growing between revetment rocks, poor multi-stemmed form.
1149	614596.3	4822538.3	Salix sp.	Willow	13.0	F	Growing between revetment rocks.
1150	614598.6	4822541.3	Populus sp.	Cottonwood	11.0	F	Growing between revetment rocks. One limb chewed down by beaver.
1151	614598.0	4822544.1	Alnus sp.	Alder	14.0	F-P	Growing between revetment rocks. Top half of trunk has split off, lower branches are still green.
1152	614597.8	4822548.8	Fraxinus sp.	Ash	10.0	F	Growing between revetment rocks, poor form.
1153	614593.3	4822546.3	Salix sp.	Willow	47.0	G-F	Roots are entirely exposed and suspended down slope towards revetment.
1154	614588.2	4822551.1	Salix sp.	Willow	30.0	G	Small tree next to main trunk has a DBH of 10cm.

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1155	614582.9	4822557.7	Salix sp.	Willow	31.0	G-F	
1156	614584.4	4822564.1	Tilia sp.	Linden	3 x 18.0	G	Growing at edge of rock revetment. Some branches are girdling the trunk and included bark is present between trunks.
1157	614575.0	4822559.5	Salix sp.	Willow	30.5, 24.0	G	two stems with very little included bark at the base.
1158	614576.3	4822552.5	Salix sp.	Willow	17.0	F	Swayed trunk and poor form.
1159	614582.7	4822550.3	Salix sp.	Willow	29.5 at base	F	Poor form. Two codominant branches with a hollow base.
1160	614570.7	4822550.0	Salix sp.	Willow	24.0	G-F	5 degree lean.
1161	614554.1	4822574.0	Malus sp.	Crabapple	20.5	G-F	
1162	614560.0	4822572.8	Malus sp.	Crabapple	12.0	F	5 degree lean away from trail.
1163	- could not locate	- could not locate	Acer negundo	Manitoba Maple	10.0 - 30.0	F	Low vigour and poor form. Very multi-stemmed with poor form, growing between rocks in revetment pier.
1164	614421.8	4822611.0	Ulmus pumila	Siberian Elm	17.5, 13.0, 11.0	F	Roots are underneath the boardwalk and trunk is pushing up alongside boardwalk.
1165	614410.6	4822612.1	Juglans nigra	Black Walnut	19.0	G-F	Codominant branches with included bark.
1166	Tag Group 'B'	Tag Group 'B'	Acer platanooides	Norway Maple	10.0	G	
1167	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	11.0, 17.0, 35.0	F-P	Poor form, multi-stemmed with openings in bark with signs of pest entry. Leaning over trail. 30% deadwood.
1168	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	21.0	F-P	Codominant branching. Leaning over trail. One limb is dead. 40% deadwood.
1169	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	32.5	F-P	30% deadwood with signs of pest entry.
1170	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	38.0	VP	More than 50% deadwood.
1171	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	35.0, 33.0	F	Codominant stems, one of which is hanging over the trail.
1172	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	14.5	F	10% deadwood.
1173	Tag Group 'B'	Tag Group 'B'	Populus sp.	Cottonwood	47.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1174	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	32.0	F-P	45 degree lean toward water. Base of tree is directly adjacent to tree 1173.
1175	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	23.0	P	50% of tree is dead. Remaining trunk is leaning over water and has signs of pest entry.
1176	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	15.5	P	Leaning over trail with 25% deadwood.
1177	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	18.0	F-P	Leaning over water.
1178	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	16.0	F-P	Leaning over water.
1179	Tag Group 'B'	Tag Group 'B'	Quercus rubra	Red Oak	22.5	G	
1180	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	15.0	P	Leaning over trail with 50% deadwood.
1181	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	16.0	F	Poor form.
1182	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	21.0	F	Leaning toward water.
1183	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	35.5	F-P	Codominant branching with included bark. One branch is hanging over trail with 25% deadwood.
1184	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	36.5	F-P	40% deadwood.
1185	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	42.0	F-P	50% deadwood.
1186	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	32.5	F	20% deadwood. Codominant branching with included bark.
1187	Tag Group 'B'	Tag Group 'B'	Acer sp.	Maple	11.0	G	Codominant branching.
1188	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	24.0	F-P	30% deadwood. Crown is leaning towards the trail.
1189	Tag Group 'B'	Tag Group 'B'	Acer sp.	Maple	10.0	G	
1190	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	33.0	F-P	Leaning 45 degrees over the trail with 30% deadwood.
1191	Tag Group 'B'	Tag Group 'B'	Acer sp.	Maple	12.5	G	
1192	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	15.0	F-P	
1193	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	39.0, 22.0	F-P	Surrounded by dead trunks. 40% deadwood.
1194	Tag Group 'B'	Tag Group 'B'	Acer sp.	Maple	10.0	G	
1195	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	48.5 at base	F	Codominant branching. Leaning slightly towards trail at

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1196	Tag Group 'B'	Tag Group 'B'	Acer saccharum	Sugar Maple	19.5	G	45 degrees. Many young trees around base of trunk.
1197	Tag Group 'B'	Tag Group 'B'	Acer saccharum	Sugar Maple	25.5	G	
1198	Tag Group 'B'	Tag Group 'B'	Acer saccharum	Sugar Maple	13.5	G-F	Branches from 1197 have grown into branches of 1198 and are encased.
1199	Tag Group 'B'	Tag Group 'B'	Acer saccharum	Sugar Maple	11.0	G	
1200	Tag Group 'B'	Tag Group 'B'	Fraxinus sp.	Ash	13.5	G	Crown is one-sided due to overcrowding by young adjacent maples.
1201	Tag Group 'B'	Tag Group 'B'	Acer saccharum	Sugar Maple	13.0	G	Codominant branching, growing on steep slope.
1202	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	15.5	F-P	Poor form, leaning downslope. 30% deadwood.
1203	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	41.0 at base	F-P	Leaning downslope adjacent to concrete retaining wall , codominant stems with deep included bark.
1204	Tag Group 'B'	Tag Group 'B'	Acer platanooides	Norway Maple	11.0	G	
1205	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	16.0	F-P	On slope, leader broken, grapevine is pulling down on crown. Poor form.
1206	Tag Group 'B'	Tag Group 'B'	Acer platanooides	Norway Maple	14.0	G	On slope.
1207	Tag Group 'B'	Tag Group 'B'	Acer platanooides	Norway Maple	11.5	G	Codominant branching.
1208	Tag Group 'B'	Tag Group 'B'	Acer platanooides	Norway Maple	13.0	G	
1209	Tag Group 'B'	Tag Group 'B'	Salix sp.	Willow	23.0, 27.0, 27.0, 30.0	F	Poor multi-stemmed form.
1210	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	12.0, 17.0	F	Codominant stems with included bark.
1211	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	25.0	P	Leaning 45 degrees towards water with 25% deadwood.
1212	Tag Group 'B'	Tag Group 'B'	Acer negundo	Manitoba Maple	15.0	P	Trunk bent in 'u' form with 50% deadwood.
1213	Tag Group 'B'	Tag Group 'B'	Fraxinus sp.	Ash	22.5	G	Near water's edge.

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1214	Tag Group 'B'	Tag Group 'B'	Salix sp.	Willow	32.0, 34.0, 18.0, 26.0	F	Poor form. Multi-stemmed with 15% deadwood.
1215	613970.9	4822963.6	Salix alba 'Tristis'	Golden Weeping Willow	97.0	G-F	Weak branch union to north and east side. Exposed root system.
1216	613977.8	4822969.5	Ulmus pumila	Siberian Elm	18.0	G-F	Growing between revetment rocks.
1217	614002.7	4822956.1	Ulmus sp.	Elm	22.0	G	Codominant branching with included bark.
1218	614008.5	4822952.8	Fraxinus sp.	Ash	10.0	G	In planting bed.
1219	614012.0	4822951.9	Fraxinus sp.	Ash	10.0	G	In planting bed.
1220	614020.5	4822948.4	Ailanthus altissima	Tree of Heaven	20.0	G-F	In planting bed.
1221	614024.7	4822952.8	Ulmus sp.	Elm	12.0	G-F	Codominant branching. Growing between revetment rocks.
1222	614029.5	4822947.4	Fraxinus sp.	Ash	11.5		
1223	614030.3	4822941.6	Tilia cordata	Little Leaf Linden	21.0	G-F	Sprouts at base of trunk have been trimmed. Some branches are girdling the trunk.
1224	614059.7	4822933.5	Salix sp.	Willow	117.0	F	Opening in trunk, rot setting in. 10% deadwood, numerous burls, exposed root system and codominant branching with included bark.
1225	614081.6	4822929.1	Juglans nigra	Black Walnut	10.5	G	
1226	614090.2	4822922.9	Acer rubrum	Red Maple	17.5	G-F	Opening in bark (crack). Some cuts have not compartmentalized.
1227	614111.2	4822925.5	Populus sp.	Cottonwood	13.5, 37.0, 27.0	F	2 stems, one with codominant stems and included bark.
1228	614110.8	4822926.8	Salix sp.	Willow	30.0	F	Poor pruning cuts and open bark. Crown is leaning over the

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
							water and is one-sided.
1229	614112.2	4822927.4	Ulmus pumila	Siberian Elm	19.0	F	Codominant branching with included bark.
1230	614118.1	4822930.7	Acer sp.	Maple	12.5	G-F	Codominant branching with included bark, growing between revetment rocks.
1231	614117.5	4822927.1	Acer negundo	Manitoba Maple	11.5	F	Poor form.
1232	614123.0	4822929.5	Ulmus pumila	Siberian Elm	25.0, 11.0, 11.0, 13.0	F-P	Poor form, multi-stemmed.
1233	614128.4	4822925.4	Ulmus pumila	Siberian Elm	12.5, 19.5	F	
1234	Tag Group 'A' 614403	Tag Group 'A' 4822776	Prunus sp.	Ornamental cherry	10.0	G	Trunk leaning over edge of bank
1235	Tag Group 'A' 614389	Tag Group 'A' 4822786	Acer negundo	Manitoba Maple	24.0	Dead	Edge of water
1236	Tag Group 'A' 614362	Tag Group 'A' 4822786	Malus sp.	Crabapple	22, 13		
1237	Tag Group 'A' 614359	Tag Group 'A' 4822785	Acer negundo	Manitoba Maple	11, 9	G	
1238	Tag Group 'A' 614358	Tag Group 'A' 4822783	Acer negundo	Manitoba Maple	14, 8	G	
1239	Tag Group 'A' 614357	Tag Group 'A' 4822790	Salix sp.	Willow	30, 30, 12, 15, 12, 20, 12	G	Full crown, growing in concrete on edge of water
1240	614387.5	4822777.8	Salix alba 'Tristis'	Golden Weeping Willow	91.0	G	Full crown, roots exposed
1241	614396.4	4822772.4	Salix alba 'Tristis'	Golden Weeping Willow	76.0	G	Small number of dead lower branches, roots exposed

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1242	614400.7	4822735.1	Salix alba 'Tristis'	Golden Weeping Willow	47.0	F	Overshadowed by neighbouring trees, die off in lower branches
1243	614398.5	4822728.8	Salix alba 'Tristis'	Golden Weeping Willow	81.0	G	Crown 80%, some lower branch die off, roots exposed
1244	614392.5	4822741.8	Salix alba 'Tristis'	Golden Weeping Willow	75.0	G	Full crown, roots exposed
1245	614398.5	4822728.3	Salix alba 'Tristis'	Golden Weeping Willow	77.0	G	Full crown, roots exposed
1246	614380.9	4822762.8	Salix alba 'Tristis'	Golden Weeping Willow	63.0	F	~60% live crown
1247	614567.9	4822560.6	Malus sp.	Crabapple	11.0	G	slight lean
1248	614550.6	4822559.9	Malus sp.	Crabapple	12.0	G	
1249	614532.9	4822578.2	Picea pungens	Colorado Blue Spruce	27.0	G	
1250	614532.0	4822574.0	Picea pungens	Colorado Blue Spruce	21.0	G	
1251	614528.9	4822570.2	Picea pungens	Colorado Blue Spruce	23.0	G	
1252	614550.9	4822556.2	Picea abies	Norway Spruce	20.0	G	
1253	Tag Group 'D' 614548.1	Tag Group 'D' 4822552.9	Picea abies	Norway Spruce	19.0	G	
1254	Tag Group 'D' 614552	Tag Group 'D' 4822549	Picea pungens	Colorado Blue Spruce	23.0	G	
1255	Tag Group 'D' 614549.0	Tag Group 'D' 4822551.3	Picea pungens	Colorado Blue Spruce	24.0	G	
1256	614553.9	4822545.2	Picea pungens	Colorado Blue Spruce	23.0	G	
1257	614553.4	4822539.6	Salix alba 'Tristis'	Golden Weeping Willow	29.0	G	Slight lean
1258	614544.9	4822523.3	Salix alba 'Tristis'	Golden Weeping Willow	29.0	G	Trunk splits at ~1.5 m

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1259	614538.3	4822511.6	Salix alba 'Tristis'	Golden Weeping Willow	27.0	G	Suckering at base
1260	614538.5	4822550.7	Populus sp.	Cottonwood	51.0	F	Some damage to base and trunk, some dead branches in crown
1261	614523.3	4822550.1	Fraxinus sp.	Ash	33.0	G	Buds erupting, difficult to ID to species
1262	614518.2	4822548.0	Fraxinus sp.	Ash	22.0	G	Significant lean
1263	614516.6	4822551.7	Fraxinus sp.	Ash	29.0	G	Some dead secondary branches, some lean
1264	614511.2	4822550.5	Fraxinus sp.	Ash	19, 15	G	Trunk splits at ~1 m
1265	614526.6	4822543.0	Quercus rubra	Red Oak	13.0	G	Memorial tree
1266	614530 .1	4822534.8	Fraxinus sp.	Ash	34.0	G	
1267	614526.9	4822533.8	Fraxinus sp.	Ash	23.0	F	Slight damage to trunk, buds missing from several major branches
1268	614523.6	4822536.5	Fraxinus sp.	Ash	18.0	G	
1269	614519.2	4822537.0	Fraxinus sp.	Ash	29.0	G	
1270	614522.6	4822532.2	Fraxinus sp.	Ash	29.0	F	
1271	614513.1	4822527.8	Fraxinus sp.	Ash	24.0	P-F	Previously pruned, trunk leaning, large wounds in trunk
1272	614512.4	4822522.1	Acer rubrum	Red Maple	11.0	G	Old wound at base
1273	614514.3	4822517.1	Pinus sylvestris	Scot's Pine	29.0	G	
1274	614511.9	4822514.3	Pinus sylvestris	Scot's Pine	31.0	G	
1275	614509.4	4822511.1	Pinus sylvestris	Scot's Pine	27.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1276	614506.1	4822516.4	Acer sp.	Maple species	19.0	G	Red or silver maple? Buds bursting
1277	614501.1	4822517.3	Acer sp.	Maple species	13.0	G	Buds bursting
1278	614500.5	4822512.3	Acer sp.	Maple species	16.0	G	
1279	614502.8	4822507.6	Acer rubrum	Red Maple	36.0	G	
1280	614497.9	4822507.2	Thuja occidentalis	Eastern White Cedar	17, 4 stems less than 10cm	G	
1281	614498	4822508	Thuja occidentalis	Eastern White Cedar	12, 6 stems less than 10 cm	G	
1282	614497	4822511	Thuja occidentalis	Eastern White Cedar	15, 3 stems less than 10 cm	G	
1283	614495	4822515	Thuja occidentalis	Eastern White Cedar	13, 12, 3 stems less than 10 cm	G	
1284	614496.0	4822514.8	Thuja occidentalis	Eastern White Cedar	15, 3 stems less than 10 cm	G	
1285	614497.1	4822528.3	Picea glauca	White Spruce	13.0	P-F	Dead wood in trunk, wounds, bend in crown
1286	614498.4	4822537.7	Picea glauca	White Spruce	15.0	P-F	Dead lower branches, some yellowing of needles
1287	614499.4	4822556.3	Malus sp.	Crabapple	12.0	G	
1288	614506.0	4822587.4	Salix alba 'Tristis'	Golden Weeping Willow	22, 22	G	
1289	614502.6	4822587.3	Salix alba 'Tristis'	Golden Weeping Willow	26.0	G	
1290	614503.9	4822590.6	Salix alba 'Tristis'	Golden Weeping Willow	48.0	G	
1291	614503.9	4822591.1	Acer negundo	Manitoba Maple	20, 14, 15, 15, 15	P-F	Growing laterally out of ground, several stems less than 10 cm

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1292	614474.6	4822596.4	Malus sp.	Crabapple	13.0	G	
1293	614462.5	4822592.9	Fraxinus sp.	Ash	13.0	G	
1294	614453.9	4822594.3	Fraxinus sp.	Ash	12.0	G	Small wound in upper branch
1295	614444.1	4822585.4	Alnus glutinosa	Black Alder	21.0	F	Main leader pruned
1296	614438.9	4822589.4	Betula papyrifera	White Birch	11.0	F	Trunk leaning, secondary leader broken
1297	614434.2	4822602.5	Pinus nigra	Austrian Pine	26, 31	G	
1298	614431.9	4822599.1	Pinus nigra	Austrian Pine	26.0	G	
1299	614425.1	4822603.5	Pinus nigra	Austrian Pine	34.0	G	
1300	614421.0	4822604.3	Pinus nigra	Austrian Pine	34.0	G	
1301	Tag Group 'C' 614417	Tag Group 'C' 4822609	Alnus glutinosa	Black Alder	13, 11, 3 stems less than 10 cm	G	
1302	Tag Group 'C' 614421	Tag Group 'C' 4822602	Acer negundo	Manitoba Maple	16, 12	G	
1303	Tag Group 'C' 614419	Tag Group 'C' 4822600	Acer negundo	Manitoba Maple	15, 12	G	
1304	Tag Group 'C' 614423	Tag Group 'C' 4822599	Acer negundo	Manitoba Maple	10.0	G	
1305	Tag Group 'C' 614426	Tag Group 'C' 4822596	Acer negundo	Manitoba Maple	12.0	G	
1306	Tag Group 'C' 614425	Tag Group 'C' 4822595	Thuja occidentalis	Eastern White Cedar	12.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1307	Tag Group 'C' 614425	Tag Group 'C' 4822597	Thuja occidentalis	Eastern White Cedar	12, 12, 2 stems less than 10 cm	G	
1308	Tag Group 'C' 614431	Tag Group 'C' 4822598	Acer negundo	Manitoba Maple	15, 13	G	
1309	Tag Group 'C' 614433	Tag Group 'C' 4822595	Thuja occidentalis	Eastern White Cedar	13, 11, 11	G	
1310	Tag Group 'C' 614431	Tag Group 'C' 4822594	Thuja occidentalis	Eastern White Cedar	11, 10, 2 stems less than 10 cm	G	
1311	Tag Group 'C' 614432	Tag Group 'C' 4822592	Acer negundo	Manitoba Maple	24, 21, 1 stem less than 10 cm	G	
1312	Tag Group 'C' 614427	Tag Group 'C' 4822590	Acer negundo	Manitoba Maple	12.0	F-G	Roots exposed, tree on creek bank
1313	Tag Group 'C' 614443	Tag Group 'C' 4822582	Alnus glutinosa	Black Alder	12, 10	G	
1314	Tag Group 'C' 614442	Tag Group 'C' 4822583	Alnus glutinosa	Black Alder	10.0	G	
1315	Tag Group 'C' 614444	Tag Group 'C' 4822577	Alnus glutinosa	Black Alder	12.0	G	
1316	Tag Group 'C' 614439	Tag Group 'C' 4822575	Thuja occidentalis	Eastern White Cedar	10, 11, 2 stems less than 10 cm	G	
1317	Tag Group 'C' 614441	Tag Group 'C' 4822581	Thuja occidentalis	Eastern White Cedar	14, 16, 1 stem less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1318	Tag Group 'C' 614437	Tag Group 'C' 4822583	Thuja occidentalis	Eastern White Cedar	10.0	G	Leaning a bit from base
1319	Tag Group 'C' 614439	Tag Group 'C' 4822578	Acer negundo	Manitoba Maple	13.0	G	
1320	Tag Group 'C' 614439	Tag Group 'C' 4822584	Alnus glutinosa	Black Alder	14, 15, 12, 13	F	One major stem dead
1321	Tag Group 'C' 614442	Tag Group 'C' 4822585	Fraxinus sp.	Ash	12.0	G	
1322	Tag Group 'C' 614435	Tag Group 'C' 4822586	Acer negundo	Manitoba Maple	12.0	G	Leaning over creek, roots exposed
1323	Tag Group 'C' 614430	Tag Group 'C' 4822590	Acer negundo	Manitoba Maple	23.0	G	
1324	Tag Group 'C' 614431	Tag Group 'C' 4822583	Thuja occidentalis	Eastern White Cedar	10, 3 stems less than 10 cm	G	
1325	Tag Group 'C' 614433	Tag Group 'C' 4822579	Thuja occidentalis	Eastern White Cedar	12, 1 stem less than 10 cm	G	
1326	Tag Group 'C' 614431	Tag Group 'C' 4822576	Thuja occidentalis	Eastern White Cedar	11, 3 stems less than 10 cm	G	
1327	Tag Group 'C' 614429	Tag Group 'C' 4822583	Thuja occidentalis	Eastern White Cedar	13, 13, 14, 1 stem less than 10 cm	G	
1328	Tag Group 'C' 614430	Tag Group 'C' 4822584	Thuja occidentalis	Eastern White Cedar	18.0	G	
1329	Tag Group 'C'	Tag Group 'C'	Acer rubrum	Red Maple	23.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
	614426	4822587					
1330	Tag Group 'C' 614426	Tag Group 'C' 4822595	Thuja occidentalis	Eastern White Cedar	17, 3 stems less than 10 cm	G	
1331	Tag Group 'C' 614426	Tag Group 'C' 4822591	Juglans nigra	Black Walnut	12.0	G	
1332	Tag Group 'C' 614421	Tag Group 'C' 4822584	Thuja occidentalis	Eastern White Cedar	21.0	G	
1333	Tag Group 'C' 614427	Tag Group 'C' 4822592	Acer negundo	Manitoba Maple	10.0	G	
1334	Tag Group 'C' 614421	Tag Group 'C' 4822591	Thuja occidentalis	Eastern White Cedar	18, 2 stems less than 10 cm	G	
1335	Tag Group 'C' 614421	Tag Group 'C' 4822594	Acer rubrum	Red Maple	29.0	G	
1336	Tag Group 'C' 614419	Tag Group 'C' 4822595	Thuja occidentalis	Eastern White Cedar	11.0	G	
1337	Tag Group 'C' 614414	Tag Group 'C' 4822595	Thuja occidentalis	Eastern White Cedar	13.0	G	
1338	Tag Group 'C' 614423	Tag Group 'C' 4822593	Unknown	Unknown	16, 15, 13, 11	Dead	Potential hazard tree
1339	Tag Group 'C' 614418	Tag Group 'C' 4822600	Acer negundo	Manitoba Maple	11.0	F	
1340	Tag Group 'C'	Tag Group 'C'	Thuja occidentalis	Eastern White Cedar	16, 10, 13	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
	614413	4822596					
1341	Tag Group 'C' 614416	Tag Group 'C' 4822603	Thuja occidentalis	Eastern White Cedar	12, 11, 12, 13, 4 stems less than 10 cm	G	
1342	Tag Group 'C' 614416	Tag Group 'C' 4822593	Acer negundo	Manitoba Maple	15, 12	G	
1343	Tag Group 'C' 614410	Tag Group 'C' 4822600	Thuja occidentalis	Eastern White Cedar	11, 12	G	
1344	Tag Group 'C' 614415	Tag Group 'C' 4822602	Thuja occidentalis	Eastern White Cedar	11, 10, 12	G	
1345	Tag Group 'C' 614415	Tag Group 'C' 4822602	Acer negundo	Manitoba Maple	11, 2 stems less than 10 cm	G	
1346	614432.9	4822564.2	Quercus rubra	Red Oak	34.0	G	
1347	614433.9	4822570.2	Quercus rubra	Red Oak	35.0	G	
1348	614424.9	4822572.2	Fraxinus sp.	Ash	32.0	G	
1349	614410.9	4822573.2	Fraxinus sp.	Ash	31.0	G	
1350	614406.9	4822572.2	Fraxinus sp.	Ash	36.0	F-G	Some exposed dead wood at base
1351	614413.9	4822571.2	Fraxinus sp.	Ash	28.0	G	
1352	614418.9	4822564.2	Quercus rubra	Red Oak	34.0	G	
1353	614427.9	4822569.2	Quercus rubra	Red Oak	24.0	G	
1354	614433.9	4822564.2	Fraxinus sp.	Ash	23.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1355	614428.9	4822556.2	Fraxinus sp.	Ash	35.0	G	
1356	614433.9	4822556.2	Acer rubrum	Red Maple	24.0	G	
1357	614432.9	4822551.2	Acer rubrum	Red Maple	25.0	G	
1358	614436.9	4822551.2	Pseudotsuga menziesii	Douglas Fir	18.0	G	
1359	614430.9	4822549.2	Acer rubrum	Red Maple	16.0	G	
1360	614422.9	4822549.2	Acer rubrum	Red Maple	12.0	G	
1361	614412.9	4822548.2	Acer rubrum	Red Maple	16.0	G	
1362	614407.9	4822552.2	Fraxinus sp.	Ash	37.0	G	
1363	614408.9	4822548.2	Fraxinus sp.	Ash	44.0	G	
1364	614404.9	4822548.2	Fraxinus sp.	Ash	31.0	G	
1365	614400.9	4822552.2	Fraxinus sp.	Ash	46.0	G	
1366	614398.9	4822550.2	Picea glauca	White Spruce	18.0	F	broken top, shaded
1367	614399.9	4822546.2	Pseudotsuga menziesii	Douglas Fir	23.0	G	
1368	614401.9	4822541.2	Pseudotsuga menziesii	Douglas Fir	23.0	G	
1369	614416.9	4822533.2	Pinus nigra	Austrian Pine	35.0	G	
1370	614426.9	4822538.2	Pinus nigra	Austrian Pine	40.0	G	
1371	614430.9	4822538.2	Pinus nigra	Austrian Pine	36.0	G	
1372	614450.9	4822535.2	Pseudotsuga menziesii	Douglas Fir	13, 16	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1373	614445.9	4822532.2	Picea glauca	White Spruce	23.0	G	
1374	614444.9	4822525.2	Salix alba 'Tristis'	Golden Weeping Willow	45, 36	G	
1375	614438.9	4822521.2	Salix alba 'Tristis'	Golden Weeping Willow	54.0	G	
1376	614422.9	4822519.2	Malus sp.	Crabapple	16.0	G	
1377	614409.9	4822525.2	Picea glauca	White Spruce	16.0	G	
1378	614403.9	4822522.2	Fraxinus sp.	Ash	16.0	G	
1379	614405.9	4822524.2	Picea glauca	White Spruce	20.0	G	
1380	614393.9	4822534.2	Picea pungens	Colorado Blue Spruce	49.0	G	
1381	614387.9	4822538.2	Fraxinus sp.	Ash	12, 11	G	
1382	614388.9	4822540.2	Fraxinus sp.	Ash	14, 12	G	
1383	614382.9	4822542.2	Acer negundo	Manitoba Maple	15, 1 stem less than 10 cm	G	
1384	614376.9	4822540.2	Picea abies	Norway Spruce	34.0	G	
1385	614377	4822538	Acer negundo	Manitoba Maple	10.0	G	
1386	614388	4822538	Acer negundo	Manitoba Maple	13, 13, 1 stem less than 10 cm	G	
1387	614374	4822540	Acer negundo	Manitoba Maple	11.0	G	
1388	614380	4822532	Acer negundo	Manitoba Maple	13.0	G	
1389	614383	4822528	Acer negundo	Manitoba Maple	14.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1390	614390.0	4822525.8	<i>Picea abies</i>	Norway Spruce	44.0	G	
1391	614372.9	4822532.2	<i>Quercus alba</i>	White Oak	11.0	G	
1392	614373.9	4822522.2	<i>Quercus rubra</i>	Red Oak	10.0	G	
1393	614397.9	4822521.2	<i>Picea glauca</i>	White Spruce	33.0	G	
1394	614396.9	4822520.2	<i>Picea glauca</i>	White Spruce	26, 13	G	
1395	614395.9	4822518.2	<i>Picea glauca</i>	White Spruce	24.0	G	
1396	614395.9	4822514.2	<i>Picea glauca</i>	White Spruce	21.0	F	Some die off in lower branches
1397	614397.9	4822513.2	<i>Picea glauca</i>	White Spruce	36.0	G	
1398	614394.9	4822512.2	<i>Picea glauca</i>	White Spruce	19, 16	G	
1399	614400.9	4822507.2	<i>Quercus alba</i>	White Oak	13.0	G	
1400	614408.9	4822503.2	<i>Quercus rubra</i>	Red Oak	35.0	G	
1401	614400.9	4822495.2	<i>Pinus strobus</i>	White Pine	13.0	F	Some yellowing of needles
1402	614415.9	4822490.2	<i>Alnus glutinosa</i>	Black Alder	12, 10, 6 stems less than 10 cm	G	
1403	614420.9	4822477.2	<i>Salix sp.</i>	Willow	33.0	G	
1404	614426.9	4822476.2	<i>Alnus glutinosa</i>	Black Alder	12, 4 stems less than 10 cm	G	
1405	614438.9	4822460.2	<i>Salix sp.</i>	Willow	29.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1406	614432.9	4822456.2	Salix sp.	Willow	26.0	G	
1407	614449.9	4822452.2	Picea pungens	Colorado Blue Spruce	11.0	G	
1408	614445.9	4822468.2	Salix alba 'Tristis'	Golden Weeping Willow	72.0	G	One main leader has some dead wood
1409	614449.9	4822447.2	Alnus glutinosa	Black Alder	14.0	G	
1410	614450.9	4822443.2	Alnus glutinosa	Black Alder	12.0	G	
1411	614449.9	4822443.2	Alnus glutinosa	Black Alder	11.0	G	
1412	Tag Group 'F' 614450	Tag Group 'F' 4822445	Alnus glutinosa	Black Alder	12, 10	G	
1413	Tag Group 'F' 614450	Tag Group 'F' 4822444	Alnus glutinosa	Black Alder	12.0	G	
1414	Tag Group 'F' 614447	Tag Group 'F' 4822443	Alnus glutinosa	Black Alder	11, 1 stem less than 10 cm	G	
1415	Tag Group 'F' 614446	Tag Group 'F' 4822438	Alnus glutinosa	Black Alder	12.0	G	
1416	Tag Group 'F' 614443	Tag Group 'F' 4822436	Malus sp.	Crabapple	14.0	G	Small cavity, black alder winding around this tree
1417	Tag Group 'F' 614445	Tag Group 'F' 4822436	Alnus glutinosa	Black Alder	11, 13, 1 stem less than 10 cm	G	
1418	Tag Group 'F' 614447	Tag Group 'F' 4822435	Alnus glutinosa	Black Alder	11.0	G	
1419	Tag Group 'F' 614444	Tag Group 'F' 4822430	Alnus glutinosa	Black Alder	13, 3 stems less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1420	Tag Group 'F' 614445	Tag Group 'F' 4822431	<i>Alnus glutinosa</i>	Black Alder	12, 13, 1 stem less than 10 cm	G	
1421	Tag Group 'F' 614444	Tag Group 'F' 4822428	<i>Alnus glutinosa</i>	Black Alder	13, 12, 10	G	
1422	Tag Group 'F' 614444	Tag Group 'F' 4822423	<i>Alnus glutinosa</i>	Black Alder	14.0	G	Squirrel nest
1423	Tag Group 'F' 614442	Tag Group 'F' 4822424	<i>Alnus glutinosa</i>	Black Alder	13, 12	G	
1424	Tag Group 'F' 614442	Tag Group 'F' 4822424	<i>Alnus glutinosa</i>	Black Alder	18.0	G	
1425	Tag Group 'F' 614437	Tag Group 'F' 4822425	<i>Alnus glutinosa</i>	Black Alder	14.0	P-F	Central leader broken off
1426	Tag Group 'F' 614442	Tag Group 'F' 4822426	<i>Alnus glutinosa</i>	Black Alder	13, 11, 14	G	
1427	Tag Group 'F' 614441	Tag Group 'F' 4822421	<i>Alnus glutinosa</i>	Black Alder	11.0	F	
1428	Tag Group 'F' 614441	Tag Group 'F' 4822421	<i>Alnus glutinosa</i>	Black Alder	13.0	G	
1429	Tag Group 'F' 614443	Tag Group 'F' 4822421	<i>Alnus glutinosa</i>	Black Alder	10, 10, 2 stems less than 10 cm	G	
1430	Tag Group 'F' 614440	Tag Group 'F' 4822420	<i>Alnus glutinosa</i>	Black Alder	11, 2 stems less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1431	Tag Group 'F' 614441	Tag Group 'F' 4822414	<i>Alnus glutinosa</i>	Black Alder	22, 1 stem less than 10 cm	G	
1432	Tag Group 'F' 614441	Tag Group 'F' 4822412	<i>Alnus glutinosa</i>	Black Alder	12.0	F (?)	Dead wood in crown
1433	Tag Group 'F' 614443	Tag Group 'F' 4822412	<i>Alnus glutinosa</i>	Black Alder	16.0	G	
1434	Tag Group 'F' 614438	Tag Group 'F' 4822411	<i>Thuja occidentalis</i>	Eastern White Cedar	12.0	G	
1435	614438.0	4822408.8	<i>Alnus glutinosa</i>	Black Alder	13.0	F	Some limbs lacking buds
1436	614434.9	4822409.2	<i>Acer</i> sp.	Maple species	25.0	G	Buds erupting, red, silver or freeman's maple
1437	614431.9	4822407.2	<i>Acer</i> sp.	Maple species	25.0	G	Buds erupting, red, silver or freeman's maple
1438	614424.9	4822406.2	<i>Acer</i> sp.	Maple species	15.0	G	Buds erupting, red, silver or freeman's maple
1439	614423.9	4822398.2	<i>Acer</i> sp.	Maple species	25.0	G	Buds erupting, red, silver or freeman's maple
1440	614418.9	4822395.2	<i>Acer</i> sp.	Maple species	24.0	G	Buds erupting, red, silver or freeman's maple
1441	614423.9	4822386.2	<i>Salix alba</i> 'Tristis'	Golden Weeping Willow	45.0	G	
1442	614421.9	4822387.2	<i>Salix alba</i> 'Tristis'	Golden Weeping Willow	47.0	G	
1443	614409.9	4822394.2	<i>Acer</i> sp.	Maple species	25.0	G	Buds erupting, red, silver or freeman's maple
1444	614404.9	4822402.2	<i>Acer platanooides</i>	Norway Maple	34.0	G	Previously pruned, memorial tree
1445	614409.9	4822406.2	<i>Acer platanooides</i>	Norway Maple	14.0	G	
1446	614406.9	4822415.2	<i>Acer platanooides</i>	Norway Maple	11.0	G	Some dead wood at base

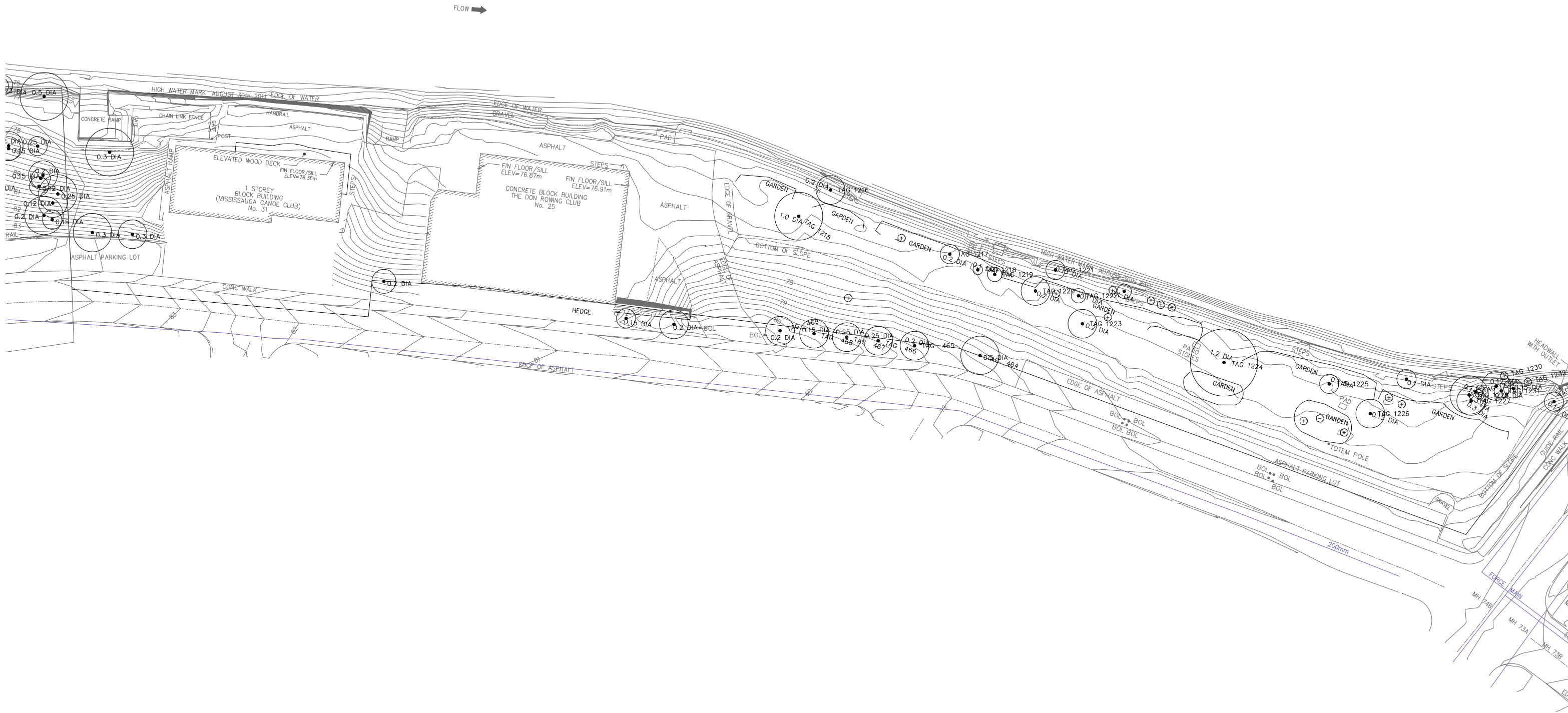
Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1447	614399.05	4822389.8	Betula pendula	European White Birch	15.0	G	
1448	614394.9	4822398.2	Salix alba 'Tristis'	Golden Weeping Willow	102.0	G	
1449	614384.9	4822419.2	Salix alba 'Tristis'	Golden Weeping Willow	52.0	G	
1450	614380.9	4822416.2	Salix alba 'Tristis'	Golden Weeping Willow	79.0	G	
1451	614376.0	4822404.0	Betula pendula	European White Birch	17.0	P	Almost dead, growing out of water
1452	614380.9	4822406.2	Betula pendula	European White Birch	16.0	G	
1453	614375.9	4822398.2	Pseudotsuga menziesii	Douglas Fir	14, 16	F	Central leader pruned
1454	614379.8	4822396.2	Pseudotsuga menziesii	Douglas Fir	27.0	G	
1455	614379.9	4822399.2	Populus tremuloides	Trembling Aspen	13.0	P	Significant leaning
1456	614380.9	4822400.2	Betula pendula	European White Birch	14.0	P	Almost dead, growing out of water
1457	614377.7	4822391.3	Malus sp.	Crabapple	19, 17, 17	F	Splits at about 1m, suckering on major stems
1458	614374.7	4822395.2	Pseudotsuga menziesii	Douglas Fir	15.0	G	Previously pruned
1459	614385.5	4822390.2	Acer platanoides	Norway Maple	35.0	G	
1460	614391.7	4822388.7	Acer platanoides	Norway Maple	33.0	G	
1461	614398.1	4822384.2	Acer platanoides	Norway Maple	16.0	G	
1462	614403.4	4822387.5	Salix sp.	Willow	13.0	G	
1463	614402.7	4822379.7	Acer platanoides	Norway Maple	22.0	G	
1464	614408.9	4822382.2	Acer platanoides	Norway Maple	25.0	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1465	614415.9	4822382.2	Betula pendula	European White Birch	14.0	G	
1466	614416.9	4822379.2	Acer platanoides	Norway Maple	20.0	G	Exposed roots
1467	614421.9	4822379.2	Acer platanoides	Norway Maple	19.0	G	
1468	614434.9	4822383.2	Salix alba 'Tristis'	Golden Weeping Willow	67.0	G	
1469	614431.9	4822392.2	Salix alba 'Tristis'	Golden Weeping Willow	66.0	G	
1470	614437.9	4822390.2	Salix alba 'Tristis'	Golden Weeping Willow	62.0	G	
1471	614442.9	4822397.2	Salix alba 'Tristis'	Golden Weeping Willow	57.0	G	
1472	614447.6	4822405.2	Pinus sylvestris	Scot's Pine	10, 1 stem less than 10 cm	G	
1473	614445.0	4822403.3	Alnus glutinosa	Black Alder	12.0	G	
1474	614445	4822415	Alnus glutinosa	Black Alder	14.0	Dead	
1475	614445	4822420	Alnus glutinosa	Black Alder	19, 2 stems less than 10 cm	G	
1476	614445	4822420	Alnus glutinosa	Black Alder	16.0	G	
1477	614451	4822423	Malus sp.	Crabapple	13, 12	F-G	Previously pruned
1478	614450.8	4822408.0	Pinus sylvestris	Scot's Pine	12.0	G	
1479	614456.1	4822408.8	Pinus sylvestris	Scot's Pine	15.0	G	
1480	614456.1	4822414.3	Pinus sylvestris	Scot's Pine	17.0	G	
1481	Tag Group 'G' 614446	Tag Group 'G' 4822423	Alnus glutinosa	Black Alder	16, 12	F-G	12 cm stem with dead crown

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1482	Tag Group 'G' 614450	Tag Group 'G' 4822424	<i>Alnus glutinosa</i>	Black Alder	13, 1 stem less than 10 cm	G	
1483	Tag Group 'G' 614446	Tag Group 'G' 4822422	<i>Alnus glutinosa</i>	Black Alder	12, 1 stem less than 10 cm	G	
1484	Tag Group 'G' 614450	Tag Group 'G' 4822426	<i>Alnus glutinosa</i>	Black Alder	19, 16	G	
1485	Tag Group 'G' 614453	Tag Group 'G' 4822435	<i>Alnus glutinosa</i>	Black Alder	12, 18, 10	P	One stem dead
1486	Tag Group 'G' 614457	Tag Group 'G' 4822436	<i>Thuja occidentalis</i>	Eastern White Cedar	13, 11, 11, 5 stems less than 10 cm	G	
1487	Tag Group 'G' 614454	Tag Group 'G' 4822435	<i>Alnus glutinosa</i>	Black Alder	10, 1 stem less than 10 cm	P	Little new growth
1488	Tag Group 'G' 614458	Tag Group 'G' 4822437	<i>Thuja occidentalis</i>	Eastern White Cedar	10, 3 stems less than 10 cm	G	
1489	614454.0	4822439.8	<i>Alnus glutinosa</i>	Black Alder	15, 12, 11, 1 stem less than 10 cm	G	
1490	Tag Group 'E' 614458	Tag Group 'E' 4822445	<i>Thuja occidentalis</i>	Eastern White Cedar	13, 15, 12, 6 stems less than 10 cm	G	
1491	Tag Group 'E' 614457	Tag Group 'E' 4822445	<i>Alnus glutinosa</i>	Black Alder	15, 19	F	19 cm trunk dead
1492	Tag Group 'E' 614462	Tag Group 'E' 4822447	<i>Thuja occidentalis</i>	Eastern White Cedar	11, 10, 13, 1 stem less than 10 cm	G	
1493	Tag Group 'E' 614460	Tag Group 'E' 4822448	<i>Thuja occidentalis</i>	Eastern White Cedar	12, 12, 2 stems less than 10 cm	G	

Key	Easting	Northing	Botanical Name	Common Name	DBH (cm)	Condition*	Comments
1494	Tag Group 'E' 614461	Tag Group 'E' 4822453	<i>Alnus glutinosa</i>	Black Alder	15, 11, 10	G	
1495	Tag Group 'E' 614464	Tag Group 'E' 4822457	<i>Alnus glutinosa</i>	Black Alder	10, 2 stems less than 10 cm	G	
1496	Tag Group 'E' 614466	Tag Group 'E' 4822455	<i>Thuja occidentalis</i>	Eastern White Cedar	15, 13, 3 stems less than 10 cm	G	
1497	Tag Group 'E' 614465	Tag Group 'E' 4822461	<i>Alnus glutinosa</i>	Black Alder	13, 9 stems less than 10 cm	G	
1498	Tag Group 'E' 614469	Tag Group 'E' 4822480	<i>Thuja occidentalis</i>	Eastern White Cedar	10, 5 stems less than 10 cm	G	
1499	Tag Group 'E' 614466	Tag Group 'E' 4822482	<i>Populus tremuloides</i>	Trembling Aspen	11.0	P	Little new growth
1500	614468.9	4822481.2	<i>Populus tremuloides</i>	Trembling Aspen	15.0	P	Little new growth

*G – Good; F – Fair; P – Poor (see methods for definitions at the beginning of this Appendix section)



MAP/DRAWING INFORMATION
Topographic survey of Port Credit Memorial Park (West),
Marina Park, Rivergate Easement and J.C. Saddlington Park
completed by J.D. Barnes.

Tree Inventory completed by Dillon Consulting Ltd. Inventoried
trees located on survey by J.D. Barnes.

MAPPING LAYOUT CREATED BY: Dillon Consulting Ltd.





CITY OF MISSISSAUGA
Port Credit Harbour West Parks
Pre-Design Report / Environmental
Study Report

APPENDIX 2 - NATURAL ENVIRONMENT CONDITIONS
Tree Inventory



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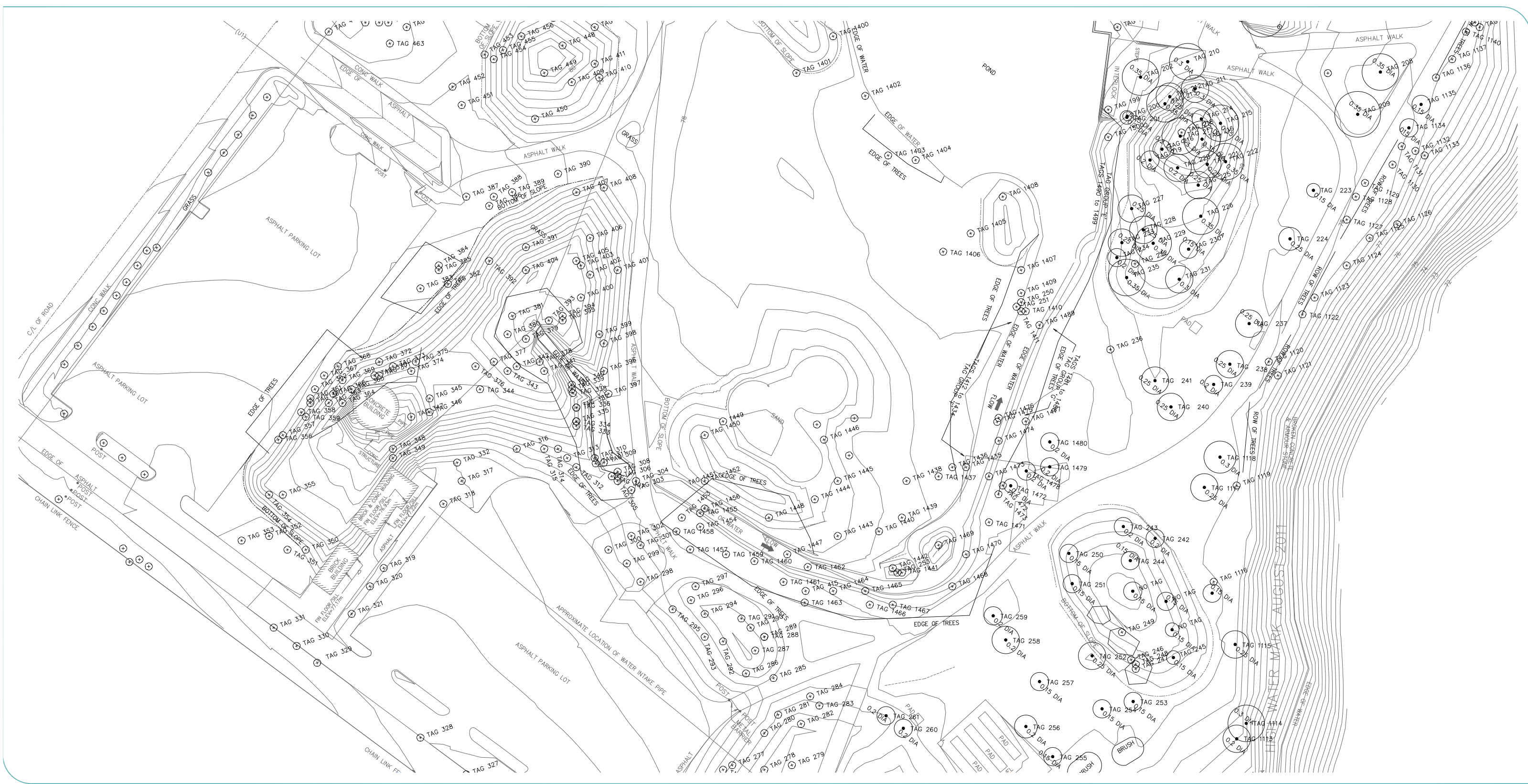
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Plant species observed within the Port Credit Harbour West Parks

Scientific Name ¹	Common Names	Federal SARA Registry Status ²	Ontario ESA Species At Risk List Status ³	Provincial Conservation Rank (Srank) ⁴	Coefficient Conservation	Coefficient Wetness
<i>Acer negundo</i>	Manitoba Maple	---	---	S5	0	-2
<i>Acer platanoides</i>	Norway Maple	---	---	SE5	0	5
<i>Acer saccharinum</i>	Silver Maple	---	---	S5	5	-3
<i>Acer saccharum ssp. saccharum</i>	Sugar Maple	---	---	S5	4	3
<i>Acer X freemanii</i>	Freeman's Maple	---	---	S5	---	---
<i>Achillea millefolium ssp. millefolium</i>	Common Yarrow	---	---	SE	0	3
<i>Ailanthus altissima</i>	Tree-of-heaven	---	---	SE5	0	5
<i>Alliaria petiolata</i>	Garlic Mustard	---	---	SE5	0	0
<i>Apocynum androsaemifolium ssp. androsaemifolium</i>	Spreading Dogbane	---	---	S5	3	5
<i>Arctium minus ssp. minus</i>	Common Burdock	---	---	SE5	0	5
<i>Artemisia vulgaris</i>	Common Mugwort	---	---	SE5	0	5
<i>Asclepias syriaca</i>	Common Milkweed	---	---	S5	0	5
<i>Aster lanceolatus ssp. lanceolatus</i>	Panicked Aster	---	---	S5	3	-3
<i>Aster lateriflorus var. lateriflorus</i>	One-sided Aster	---	---	S5	3	-2
<i>Aster novae-angliae</i>	New England Aster	---	---	S5	2	-3
<i>Barbarea vulgaris</i>	Common Wintercress	---	---	SE5	0	0
<i>Betula papyrifera</i>	White Birch	---	---	S5	2	2
<i>Betula pendula</i>	European White Birch	---	---	SE4	0	-4
<i>Bidens frondosa</i>	Devil's Beggar-ticks	---	---	S5	3	-3
<i>Bromus inermis ssp. inermis</i>	Smooth Brome	---	---	SE5	0	5
<i>Calystegia sepium ssp. angulata</i>	Hedge Bindweed	---	---	S5	2	0
<i>Carex rosea</i>	Stellate Sedge	---	---	S5	5	5

Scientific Name ¹	Common Names	Federal SARA Registry Status ²	Ontario ESA Species At Risk List Status ³	Provincial Conservation Rank (Srank) ⁴	Coefficient Conservation	Coefficient Wetness
<i>Chenopodium album</i> var. <i>album</i>	Lamb's Quarters	---	---	SE5	0	1
<i>Chrysanthemum leucanthemum</i>	Ox-eye Daisy	---	---	SE5	0	5
<i>Cichorium intybus</i>	Chicory	---	---	SE5	0	5
<i>Circaea lutetiana</i> ssp. <i>canadensis</i>	Canada Enchanter's Nightshade	---	---	S5	3	3
<i>Cirsium arvense</i>	Canada Thistle	---	---	SE5	0	3
<i>Cirsium vulgare</i>	Bull Thistle	---	---	SE5	0	4
<i>Clematis virginiana</i>	Virgin's Bower	---	---	S5	3	0
<i>Cornus stolonifera</i>	Red-osier Dogwood	---	---	S5	2	-3
<i>Coronilla varia</i>	Trailing Crown-vetch	---	---	SE5	0	5
<i>Dactylis glomerata</i>	Orchard Grass	---	---	SE5	0	3
<i>Daucus carota</i>	Wild Carrot	---	---	SE5	0	5
<i>Dipsacus fullonum</i> ssp. <i>sylvestris</i>	Common Teasel	---	---	SE5	0	5
<i>Elymus repens</i>	Quack Grass	---	---	SE5	0	3
<i>Equisetum arvense</i>	Field Horsetail	---	---	S5	0	0
<i>Erigeron philadelphicus</i> ssp. <i>philadelphicus</i>	Philadelphia Fleabane	---	---	S5	1	-3
<i>Erythronium americanum</i> ssp. <i>americanum</i>	Yellow Trout Lily	---	---	S5	5	5
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	---	---	S5	2	-2
<i>Fraxinus</i> sp	Ash Species	---	---	---	---	---
<i>Geum aleppicum</i>	Yellow Avens	---	---	S5	2	-1
<i>Geum canadense</i>	White Avens	---	---	S5	3	0
<i>Glechoma hederacea</i>	Ground Ivy	---	---	SE5	0	3
<i>Heracleum lanatum</i>	Cow-parsnip	---	---	S5	3	-3
<i>Hesperis matronalis</i>	Dame's Rocket	---	---	SE5	0	5

Scientific Name ¹	Common Names	Federal SARA Registry Status ²	Ontario ESA Species At Risk List Status ³	Provincial Conservation Rank (Srank) ⁴	Coefficient Conservation	Coefficient Wetness
<i>Hypericum perforatum</i>	Common St. John's-wort	---	---	SE5	0	5
<i>Impatiens capensis</i>	Spotted Touch-me-not	---	---	S5	4	-3
<i>Juglans nigra</i>	Black Walnut	---	---	S4	5	3
<i>Juncus tenuis</i>	Path Rush	---	---	S5	0	0
<i>Leonurus cardiaca ssp. cardiaca</i>	Motherwort	---	---	SE5	0	5
<i>Linaria vulgaris</i>	Butter-and-eggs	---	---	SE5	0	5
<i>Lonicera tatarica</i>	Tartarian Honeysuckle	---	---	SE5	0	3
<i>Lotus corniculatis</i>	Birds-foot Trefoil	---	---	SE5	0	1
<i>Lycopus americanus</i>	Cut-leaved Water- horehound	---	---	S5	4	-5
<i>Lythrum salicaria</i>	Purple Loosestrife	---	---	SE5	0	-5
<i>Malus sp</i>	Crabapple Species	---	---	---	---	---
<i>Medicago lupulina</i>	Black Medick	---	---	SE5	0	1
<i>Melilotus alba</i>	White Sweet-clover	---	---	SE5	0	3
<i>Myosotis scorpioides</i>	Common Forget-me-not	---	---	SE5	0	-5
<i>Nepeta cataria</i>	Catnip	---	---	SE5	0	1
<i>Parthenocissus inserta</i>	Thicket Creeper	---	---	S5	3	3
<i>Pastinaca sativa</i>	Wild Parsnip	---	---	SE5	0	5
<i>Phalaris arundinacea</i>	Reed Canary Grass	---	---	S5	0	-4
<i>Phleum pratense</i>	Timothy	---	---	SE5	0	3
<i>Physocarpus opulifolius</i>	Ninebark	---	---	S5	5	-2
<i>Phytolacca americana</i>	Pokeweed	---	---	S4	3	1
<i>Picea abies</i>	Norway Spruce	---	---	SE3	0	5
<i>Picea glauca</i>	White Spruce	---	---	S5	6	3
<i>Plantago major</i>	Common Plantain	---	---	SE5	0	-1
<i>Poa pratensis ssp. pratensis</i>	Kentucky Blue Grass	---	---	S5	0	1

Scientific Name ¹	Common Names	Federal SARA Registry Status ²	Ontario ESA Species At Risk List Status ³	Provincial Conservation Rank (Srank) ⁴	Coefficient Conservation	Coefficient Wetness
<i>Polygonum persicaria</i>	Lady's Thumb	---	---	SE5	0	-3
<i>Polygonum cuspidatum</i>	Japanese Knotweed	---	---	SE4	0	3
<i>Populus alba</i>	European White Poplar	---	---	SE5	0	5
<i>Populus balsamifera ssp. balsamifera</i>	Balsam Poplar	---	---	S5	4	-3
<i>Populus tremuloides</i>	Trembling Aspen	---	---	S5	2	0
<i>Potentilla recta</i>	Rough-fruited Cinquefoil	---	---	SE5	0	5
<i>Potentilla anserina ssp. anserina</i>	Silverweed	---	---	S5	5	-4
<i>Prunella vulgaris ssp. vulgaris</i>	Selfheal	---	---	SE3	0	0
<i>Prunus avium</i>	Sweet Cherry	---	---	SE4	0	5
<i>Prunus sp</i>	Cherry Species	---	---	---	---	---
<i>Ranunculus acris</i>	Tall Buttercup	---	---	SE5	0	-2
<i>Rhamnus cathartica</i>	Common Buckthorn	---	---	SE5	0	3
<i>Rhus aromatica</i>	Fragrant Sumac	---	---	S5	8	5
<i>Rhus typhina</i>	Staghorn Sumac	---	---	S5	1	5
<i>Rosa sp</i>	Rose Species	---	---	---	---	---
<i>Rubus idaeus ssp. melanolasius</i>	Wild Red Raspberry	---	---	S5	0	-2
<i>Rumex crispus</i>	Curly Dock	---	---	SE5	0	-1
<i>Salix exigua</i>	Sandbar Willow	---	---	S5	3	-5
<i>Salix sp</i>	Willow Species	---	---	---	---	---
<i>Senecio vulgaris</i>	Common Ragwort	---	---	SE5	0	5
<i>Solanum dulcamara</i>	Bittersweet Nightshade	---	---	SE5	0	0
<i>Solidago canadensis</i>	Canada Goldenrod	---	---	S5	1	3
<i>Sonchus arvensis ssp. arvensis</i>	Field Sow-thistle	---	---	SE5	0	1
<i>Symphytum officinale ssp. officinale</i>	Common Comfrey	---	---	SE5	0	5

Scientific Name ¹	Common Names	Federal SARA Registry Status ²	Ontario ESA Species At Risk List Status ³	Provincial Conservation Rank (Srank) ⁴	Coefficient Conservation	Coefficient Wetness
<i>Syringa vulgaris</i>	Common Lilac	---	---	SE5	0	5
<i>Tanacetum vulgare</i>	Tansy	---	---	SE5	0	5
<i>Taraxacum officinale</i>	Common Dandelion	---	---	SE5	0	3
<i>Trifolium repens</i>	White Clover	---	---	SE5	0	2
<i>Tussilago farfara</i>	Coltsfoot	---	---	SE5	0	3
<i>Ulmus pumila</i>	Siberian Elm	---	---	SE3	0	5
<i>Urtica dioica ssp. gracilis</i>	Slender Stinging Nettle	---	---	S5	2	-1
<i>Vicia cracca</i>	Cow Vetch	---	---	SE5	0	5
<i>Vitis riparia</i>	Riverbank Grape	---	---	S5	0	-2
<i>Xanthium strumarium</i>	Cocklebur	---	---	S5	2	0

Bird Species Observed within the Port Credit Harbour West Parks

Scientific Name	Common Name	SARA ²	ESA 2007 ³	SRank ⁴
<i>Turdus migratorius</i>	American Robin*	---	---	S5B
<i>Carduelis tristis</i>	American Goldfinch*	---	---	S5B
<i>Spizella arborea</i>	American Tree Sparrow	---	---	S4B
<i>Icterus galbula</i>	Baltimore Oriole*	---	---	S4B
<i>Riparia riparia</i>	Bank Swallow	---	---	S4B
<i>Hirundo rustica</i>	Barn Swallow*	---	THR	S4B
<i>Ceryle alcyon</i>	Belted Kingfisher	---	---	S4B
<i>Poecile atricapillus</i>	Black-capped Chickadee	---	---	S5
<i>Nycticorax nycticorax</i>	Black-crowned Night-heron	---	---	S3B, S3N
<i>Dendroica caerulescens</i>	Black-throated Blue Warbler	---	---	S5B
<i>Cyanocitta cristata</i>	Blue Jay	---	---	S5
<i>Certhia americana</i>	Brown Creeper	---	---	S5B
<i>Molothrus ater</i>	Brown-headed Cowbird*	---	---	S4B
<i>Bucephala albeola</i>	Bufflehead	---	---	S4
<i>Branta canadensis</i>	Canada Goose*	---	---	S5
<i>Aythya valisineria</i>	Canvasback	---	---	S1B, S4N
<i>Sterna caspia</i>	Caspian Tern*	---	---	S3B
<i>Bombycilla cedrorum</i>	Cedar Waxwing*	---	---	S5B
<i>Dendroica pensylvanica</i>	Chestnut-sided Warbler	---	---	S5B
<i>Peterochelidon pyrrhonota</i>	Cliff Swallow*	---	---	S4B
<i>Bucephala clangula</i>	Common Goldeneye	---	---	S5
<i>Quiscalus quiscula</i>	Common Grackle*	---	---	S5B
<i>Mergus merganser</i>	Common Merganser	---	---	S5B, S5N
<i>Sterna hirundo</i>	Common Tern*	---	---	S4B
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	---	---	S5B
<i>Picoides pubescens</i>	Downy Woodpecker*	---	---	S5

Scientific Name	Common Name	SARA ²	ESA 2007 ³	SRank ⁴
<i>Sturnus vulgaris</i>	European Starling*	---	---	SNA
<i>Regulus satrapa</i>	Golden-crowned Kinglet	---	---	S5B
<i>Larus marinus</i>	Great Black-backed Gull	---	---	S2B
<i>Aythya marila</i>	Greater Scaup	---	---	S4
<i>Larus argentatus</i>	Herring Gull*	---	---	S5B, S5N
<i>Lophodytes cucullatus</i>	Hooded Merganser	---	---	S5B, S5N
<i>Podiceps auritus</i>	Horned Grebe	---	SC	S1B, S4N
<i>Carpodacus mexicanus</i>	House Finch*	---	---	SNA
<i>Troglodytes aedon</i>	House Wren*	---	---	S5B
<i>Passer domesticus</i>	House Sparrow*	---	---	SNA
<i>Charadrius vociferus</i>	Killdeer*	---	---	S5B, S5N
<i>Aythya affinis</i>	Lesser Scaup	---	---	S4
<i>Clangula hyemalis</i>	Long-tailed Duck	---	---	S3B
<i>Anas platyrhynchos</i>	Mallard*	---	---	S5
<i>Zenaida macroura</i>	Mourning Dove*	---	---	S5
<i>Cygnus olor</i>	Mute Swan*	---	---	SNA
<i>Cardinalis cardinalis</i>	Northern Cardinal*	---	---	S5
<i>Mimus polyglottos</i>	Northern Mockingbird*	---	---	S4
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	---	---	S4B
<i>Carduelis pinus</i>	Pine Siskin	---	---	S4B
<i>Mergus serrator</i>	Red-breasted Merganser	---	---	S4B, S5N
<i>Aythya americana</i>	Redhead	---	---	S2B, S4N
<i>Podiceps grisegena</i>	Red-necked Grebe	---	---	S3B, S4N
<i>Agelaius phoeniceus</i>	Red-winged Blackbird*	---	---	S4
<i>Larus delawarensis</i>	Ring-billed Gull*	---	---	S5B, S4N
<i>Aythya collaris</i>	Ring-necked Duck	---	---	S5
<i>Columbia livia</i>	Rock Dove*	---	---	SNA
<i>Regulus calendula</i>	Ruby-crowned Kinglet	---	---	S4B

Scientific Name	Common Name	SARA ²	ESA 2007 ³	SRank ⁴
<i>Accipiter striatus</i>	Sharp-shinned Hawk	---	---	S5B, SZN
<i>Melospiza melodia</i>	Song Sparrow*	---	---	S5B
<i>Cygnus buccinator</i>	Trumpeter Swan	---	---	S4
<i>Zonotrichia albicollis</i>	White-throated Sparrow	---	---	S5B
<i>Vireo gilvus</i>	Warbling Vireo*	---	---	S5B
<i>Dendroica coronata</i>	Yellow-rumped Warbler	---	---	S5B
<i>Dendroica petechia</i>	Yellow Warbler*	---	---	S5B

* - Observed during breeding bird surveys conducted on June 14, 2012

Mammals Observed within Port Credit Harbour West Parks

Scientific Name	Common Name	Federal SARA Registry Status ²	MNR Species At Risk List Status ³	Provincial Conservation Rank (SRank) ⁴
<i>Sciurus carolinensis</i>	Gray Squirrel	---	---	S5
<i>Tamias striatus</i>	Eastern Chipmunk	---	---	S5
<i>Sylvilagus floridanus</i>	Eastern Cottontail	---	---	S5
<i>Mustela vison</i>	Mink	---	---	S5
<i>Procyon lotor</i>	Raccoon	---	---	S5

Lepidopterans Observed within Port Credit Harbour West Parks

Family	Scientific Name	Common Name	Federal SARA Registry Status ¹	MNR Species At Risk List Status ²	Provincial Conservation Rank (SRank) ⁴
HESPERIIDAE	<i>Erynnis sp.</i>	Duskywing Species	---	---	---
PAPILIONIDAE	<i>Papilio polyxenes</i>	Black Swallowtail	---	---	S5
PIERIDAE	<i>Pieris rapae</i>	Cabbage White	---	---	SNA
NYMPHALIDAE	<i>Polygonia interrogationis</i>	Question Mark	---	---	S5
NYMPHALIDAE	<i>Vanessa atalanta</i>	Red Admiral	---	---	S5
NYMPHALIDAE	<i>Vanessa virginiensis</i>	American Lady	---	---	S5
NYMPHALIDAE	<i>Danaus plexippus</i>	Monarch	SC	SC	S2N,S4B

1 - Nomenclature According to Newmaster et al (1998)

2 - Federal SARA Registry

3 - MNR Species at Risk list

4 - S-ranks - S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperiled; SNA(SE) = conservation status ranking not applicable (exotic), ? -status uncertain

Species at Risk Screening for Port Credit Harbour West Parks

Species		Federal SARA Registry Status ¹	Ontario ESA Status ²	S-Rank ³	NHIC Occurrence Record ⁴	Additional Secondary Information Record ⁵	Habitat Requirements ⁶	Natural Features that may Provide Habitat and Occur Within the Project Location	Potential Need for Authorization	Rationale	Proposed Survey Methods (if required)
Scientific Name	Common Name										
BIRDS											
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Endangered	Endangered	SHB	Yes	No	Large, fallow, grassy area with ground mat of dead vegetation, dense herbaceous vegetation, ground litter and some song perches; neglected weedy fields; wet meadows; cultivated uplands; a moderate amount of moisture needed; requires a minimum tract of grassland of 40 ha, but usually in areas >100 ha. ⁶	None.	None.	Grassland areas are restricted to JC Saddington Park which is cultivated and maintained. Records of this species are historic: last observed in 1932.	None.
HERPTOZOA											
<i>Sternotherus odoratus</i>	Eastern Musk Turtle	Threatened	Threatened	S3	Yes	No	Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water; home range size is larger for females (about 70 ha) than males (about 30 ha) and includes hibernation, basking, nesting and feeding areas; aquatic corridors (e.g. stream) are required for movement; not readily observed. ⁶	None.	None.	Substrates of Lake Ontario and Credit River shoreline consist of large boulders, cobble and sand. Highly disturbed habitat, boat traffic and absence of basking logs and beaches. Records of this species are historic: last observed in 1969.	None.
FISH											
<i>Coregonus reighardi</i>	Shortnose Cisco	Endangered	Endangered	SH	Yes	Yes	Has been collected in depths ranging from 22 m to 92 m in Lake Ontario living in clear, cold water environments all year round. ⁷	None.	None.	In-water work limited to shoreline.	None.
<i>Acipenser fulvescens</i> pop. 3	Lake Sturgeon (Great Lakes/Upper St. Lawrence River Population)	Threatened	Threatened	S2	Yes	Yes	Most sub-populations spawn in high-gradient reaches of large rivers, often below waterfalls, with current velocities of 0.5 to 1.3 m/s, water depths of 0.1 m to 2 m and substrates of coarse gravel, cobble boulders, hardpan or sand. Some lake dwelling sub-populations are known to spawn along rocky lake shorelines exposed to wave action. Adequate food supplies are essential for early life stages and may dictate habitat selection. ⁸	Rocky lake shoreline with wave action is located within the study area.	None.	Suitable lake spawning habitat may exist however records of this species are historic: last observed in 1931.	None.

Species		Federal SARA Registry Status ¹	Ontario ESA Status ²	S-Rank ³	NHIC Occurrence Record ⁴	Additional Secondary Information Record ⁵	Habitat Requirements ⁶	Natural Features that may Provide Habitat and Occur Within the Project Location	Potential Need for Authorization	Rationale	Proposed Survey Methods (if required)
Scientific Name	Common Name										
<i>Clinostomus elongatus</i>	Redside Dace	Endangered	Endangered	S2	Yes	Yes	Inhabit slow moving sections of streams having a mixture of overhanging stream side vegetation and pool and riffle habitat. Pools are used as resident habitat while riffles are used for spawning. Bottom substrates include boulders, rocks, gravel or sand, often with a shallow surface covering of detritus or silt. Prefer clear water and are sensitive to turbidity. ⁹	None.	None.	Suitable headwater habitat with overhanging vegetation is not found within the study area. Records of this species are historic: last observed in 1962.	None.

--- indicates no statues under the current legislation

1 – Canada Species at Risk Act Registry

2 – Ontario Endangered Species Act

3 - Ontario Srank; S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperilled; SX = Extirpated; SH = Possibly Extirpated (Species with an Srank of 1,2 or 3 is considered to be a Species of Conservation Concern in Ontario)

4 - OMNR Natural Heritage Centre Biodiversity Explorer

5 – Fisheries and Oceans Canada/Conversation Ontario Aquatic Species at Risk Mapping 2011.

6 – MNR. 2000. Significant Wildlife Habitat Technical Guide: Appendix G.

7 – COSEWIC. 2005. COSEWIC assessment and update status report on the shortnose cisco *Coregonus reighardi* in Canada.

8 - Golder Associates Ltd. 2011. Recovery Strategy for Lake Sturgeon (*Acipenser fulvescens*) – Northwestern Ontario, Great Lakes-Upper St. Lawrence River and Southern Hudson Bay-James Bay populations in Ontario.

9 - Redside Dace Recovery Team. 2010. Recovery Strategy for Redside Dace (*Clinostomus elongatus*) in Ontario.

APPENDIX 3 - Shoreline Conditions

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks





Photo A 1 – Docks and Gabion Wall in front of Mississauga Canoe Club



Photo A 2 - Docks and Gabion Wall in front of Mississauga Canoe Club

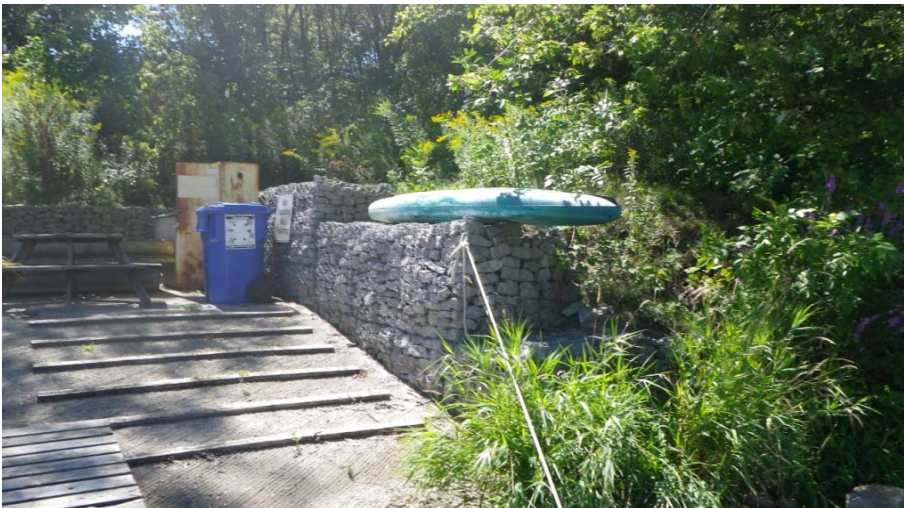


Photo A 3 – Access Ramp and Gabion Wall in front of Mississauga Canoe Club



Photo A 4– Access Ramp on the south end of the Mississauga Canoe Club



Photo A 5– Rip Rap Revetment and Docks in front of the Don Rowing Club



Photo A 6 – Access Ramp and Dock in front of Don Rowing Club



Photo A 7 – Access Ramp and Dock in front of the Don Rowing Club



Photo A 8 – Concrete Slab Shore Treatment along Memorial Park (West)



Photo A 9– Concrete Slab Shore Treatment along Memorial Park (West)



Photo A 10– Concrete Slab Shore Treatment along Memorial Park (West)

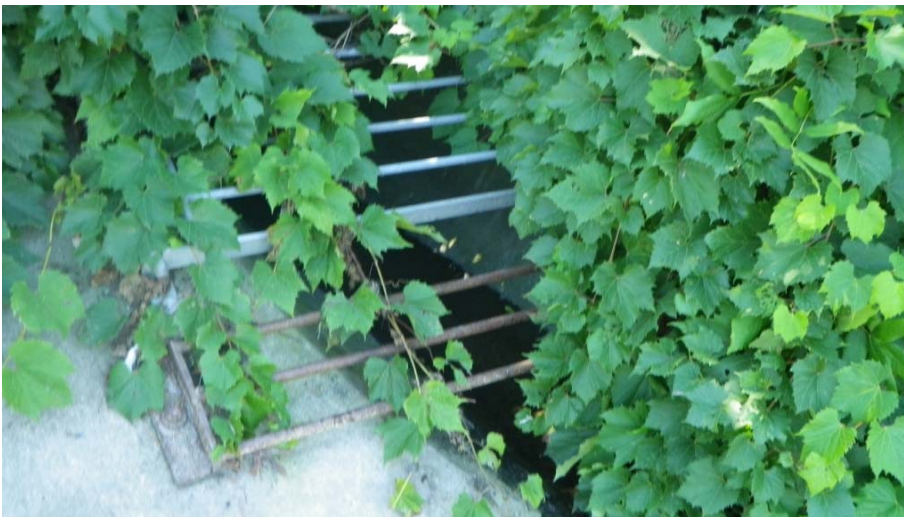


Photo A 11 – Storm Sewer Outlet North of Lakeshore Road Bridge



Photo A 12 – Storm Sewer Outlet along Memorial Park West Shore



Photo A 13 – Storm Sewer Outlet North of Lakeshore Road Bridge



Photo A 14 - Storm Sewer Outlet, Gabion Wall and Lakeshore Road Bridge



Photo A 15 - Gabion Wall and Lakeshore Road Bridge, North Side



Photo A 16 – Shore Treatment and Abutment, Lakeshore Road Bridge



Photo A 17 – Gabion Basket and Steel Sheet Pile Walls South of Lakeshore Rd. Bridge



Photo A 18 – Sewer Outlet, South of Lakeshore Road Bridge



Photo A 19 – Armour Stone Revetment & Steel Sheet Pile Wall in Marina Park



Photo A 20 – Steel Sheet Pile Wall in Marina Park



Photo A 21- Launch Ramp and Steel Sheet Pile Wall in Marina Park



Photo A 22 - Launch Ramp, Timber and Steel Sheet Pile Walls in Marina Park



Photo A 23- Launch Ramp and Boarding Docks in Marina Park



Photo A 24 – South Side of Launch Ramp Area in Marina Park



Photo A 25 – Shore along South Part of Marina Park



Photo A 26 – Shore along South Part of Marina Park



Photo A 27– Shore along South Part of Marina Park



Photo A 28 – Armour Stone/Rubble Revetment along Rivergate Easement



Photo A 29 – Failed Revetment along Rivergate Easement



Photo A 30 – Shore along Rivergate Easement at J.C. Saddington Park



Photo A 31– Shore along J.C. Saddington Park, North- East Side



Photo A 32– Shore along J.C. Saddington Park, East Side



Photo A 33 - Shore along J.C. Saddington Park, Groyne on East Side



Photo A 34 – Armour Stone along J.C. Saddington Park, East Side



Photo A 35 – Armour Stone along J.C. Saddington Park, South East Side



Photo A 36 – Armour Stone along J.C. Saddington Park, South East Headland



Photo A 37 – Rubble Revetment along J.C. Saddington Park, South Side



Photo A 38 – Armour Stone Groyne, Central J.C. Saddington Park



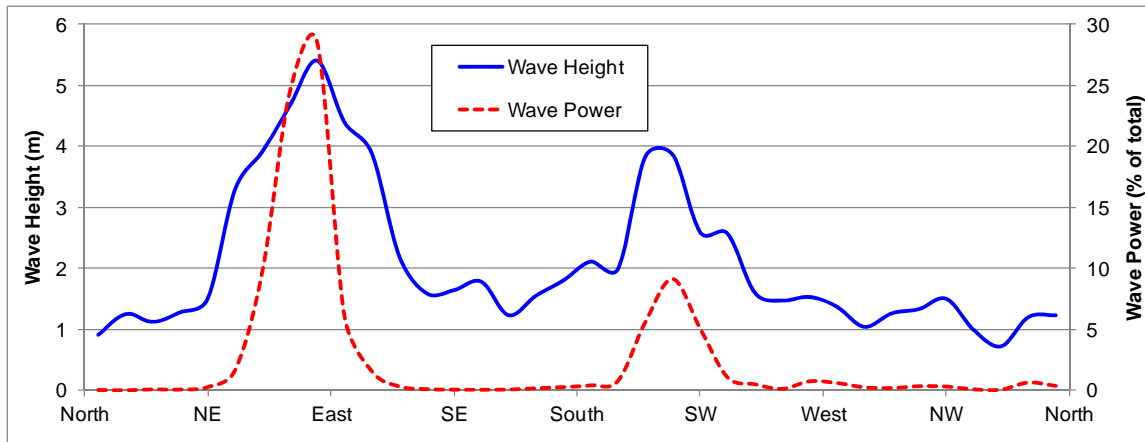
Photo A 39– Armour Stone/Rubble Revetment along J.C. Saddington Park, South Side



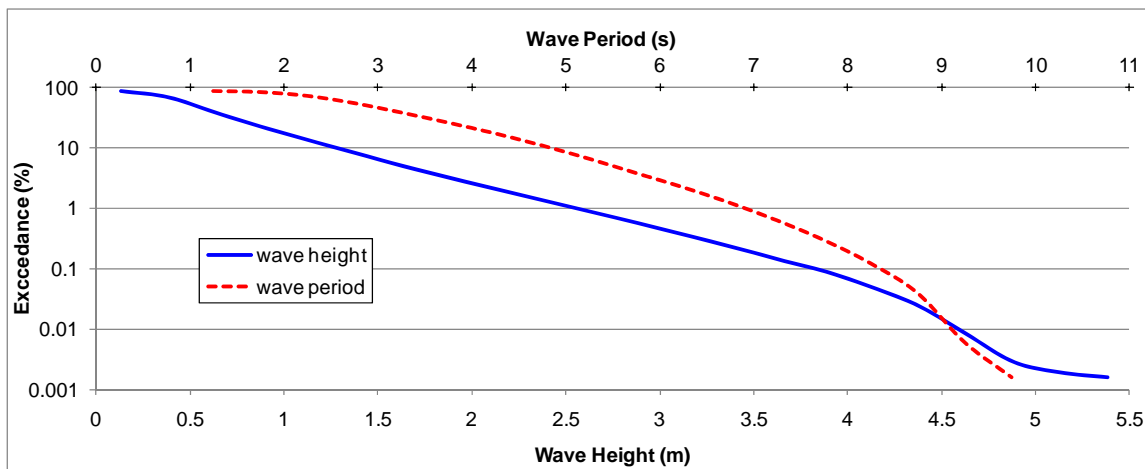
Photo A 40 – Storm Sewer Outlets at West End of J.C. Saddington Park



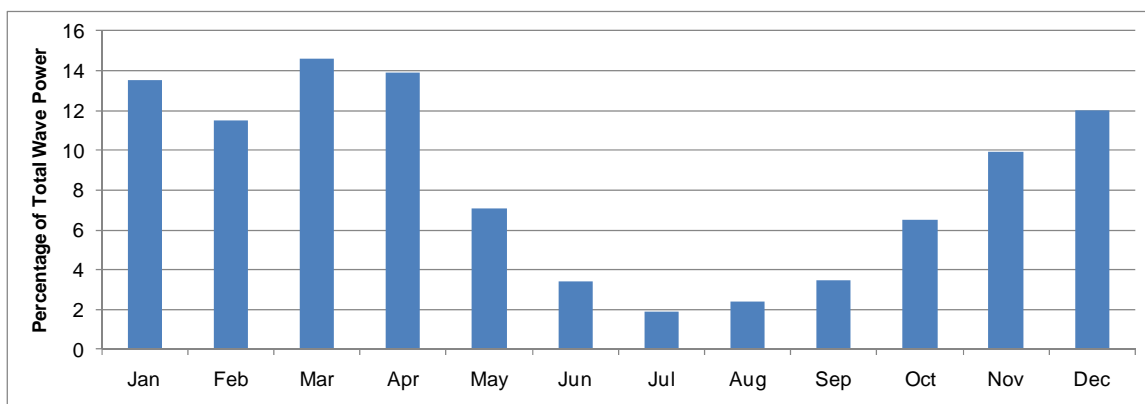
Photo A 41 - Armour Stone Pier West of J.C. Saddington Park



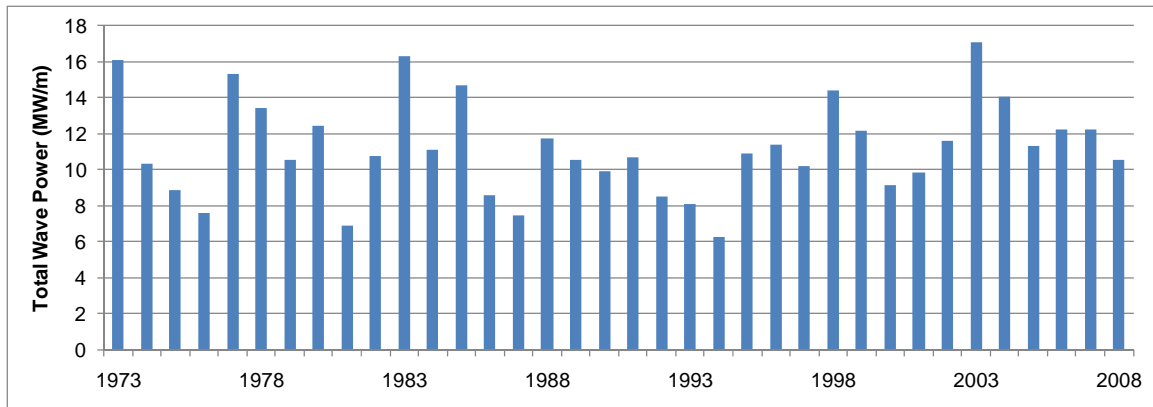
Distribution of Highest Hindcast Wave Heights and Total Wave Power



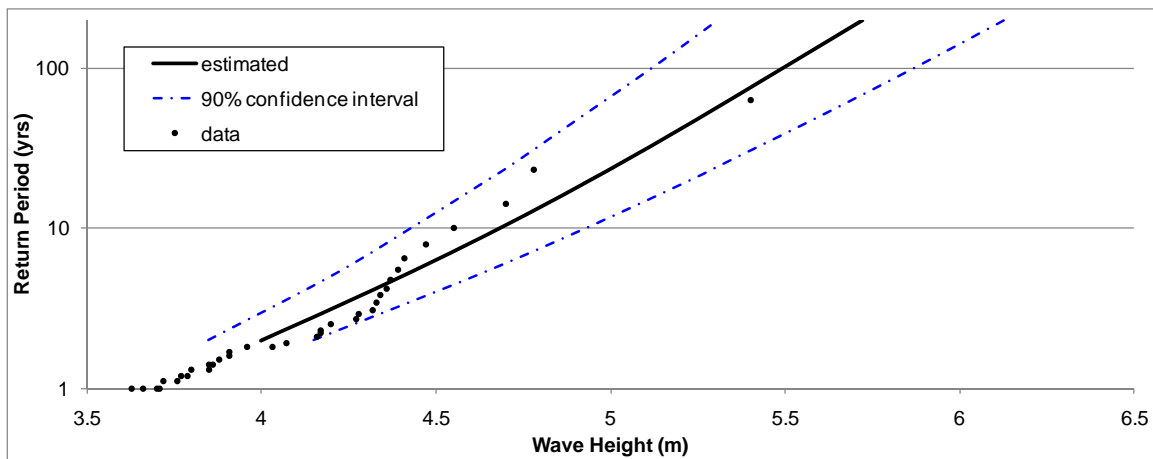
Wave Height and Period Exceedance Curves



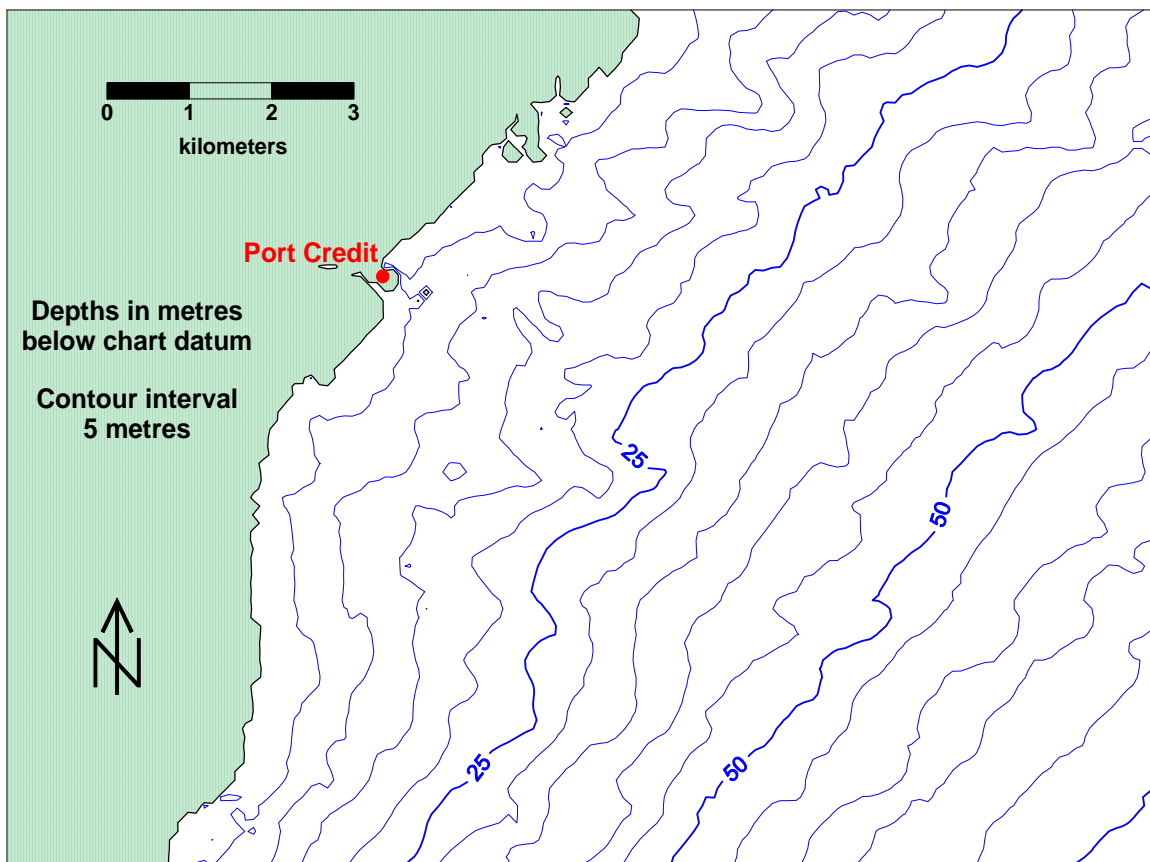
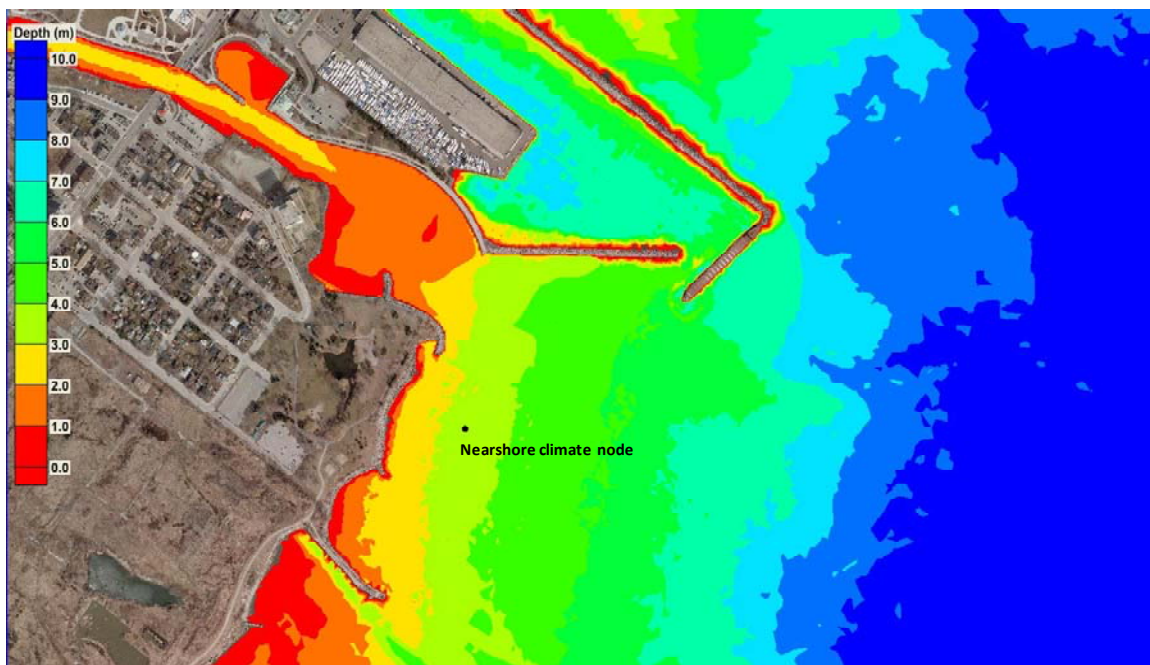
Monthly Distribution of Total Wave Power

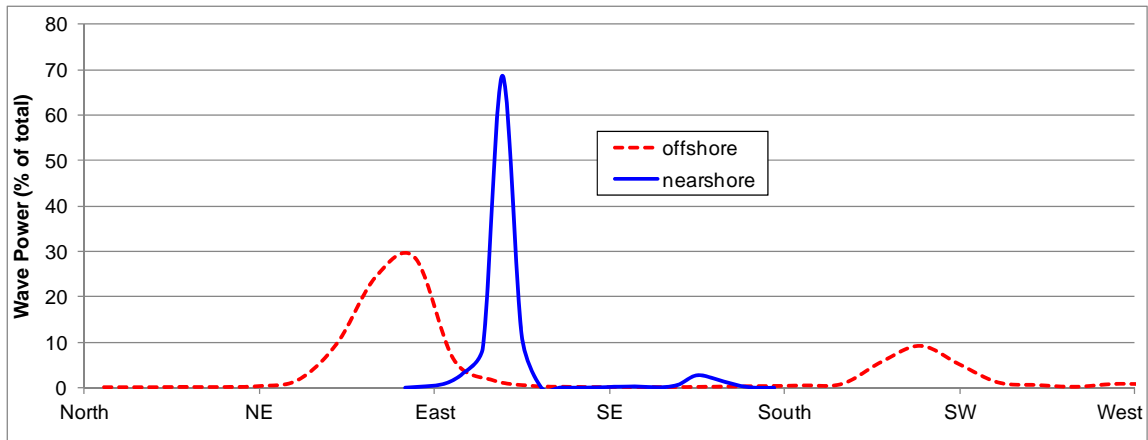


Annual Distribution of Total Wave Power

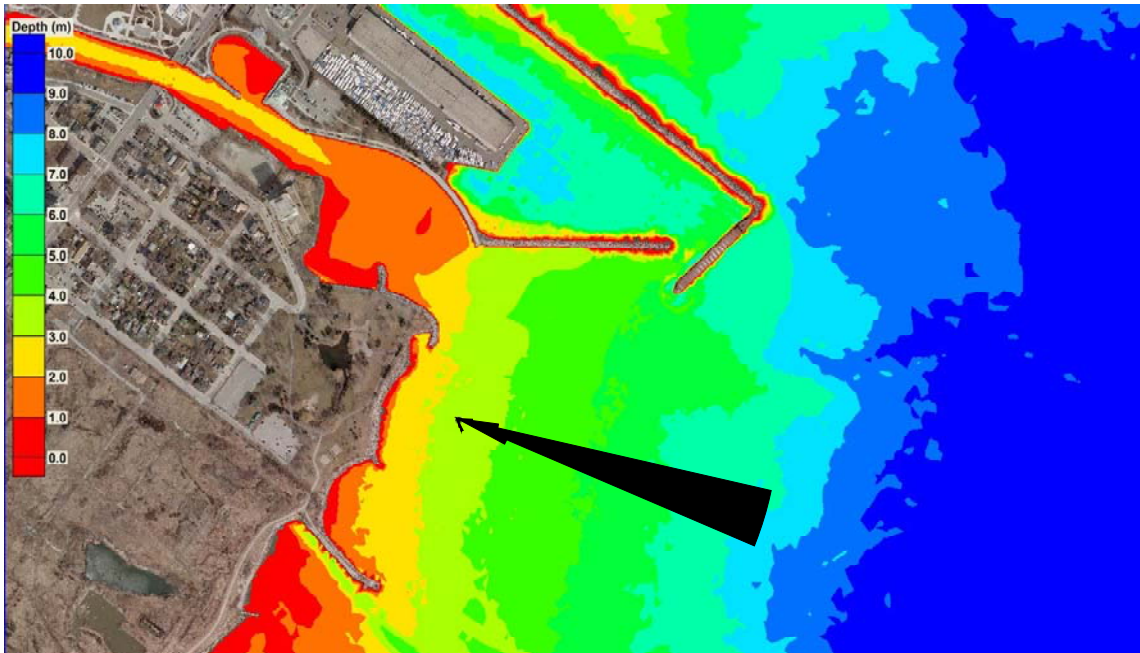


Peak-Over-Threshold Extreme Value Analysis (Easterly Storms)

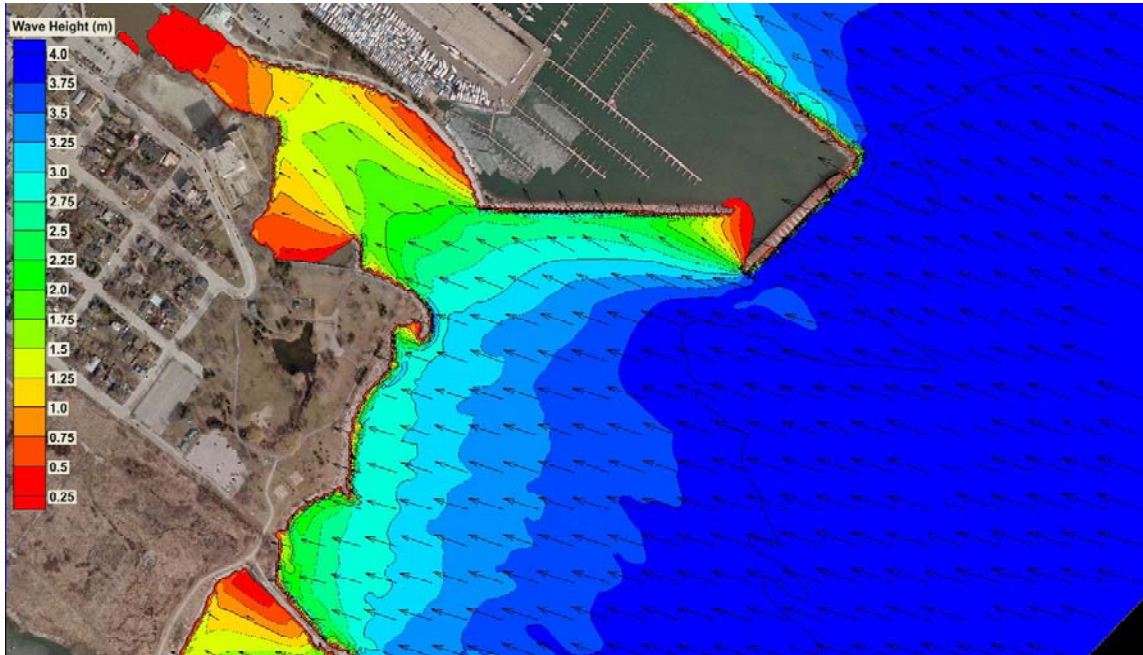
**Regional Bathymetry****Local Bathymetry**



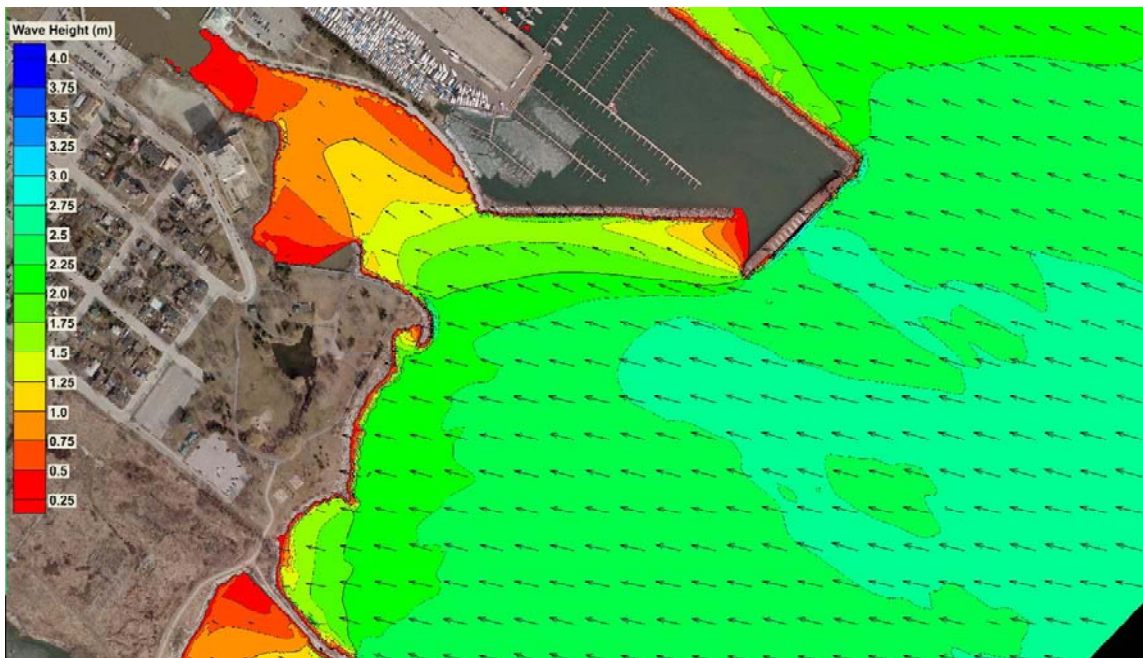
Comparison of Offshore and Nearshore Wave Energy Distributions



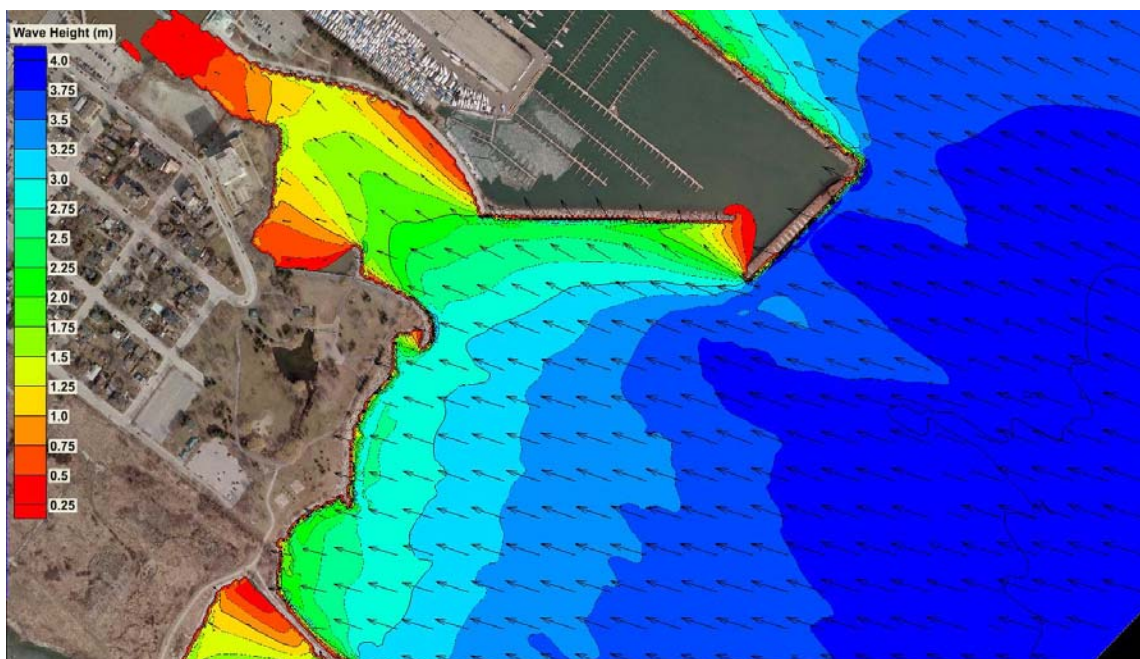
Nearshore Wave Energy Distribution



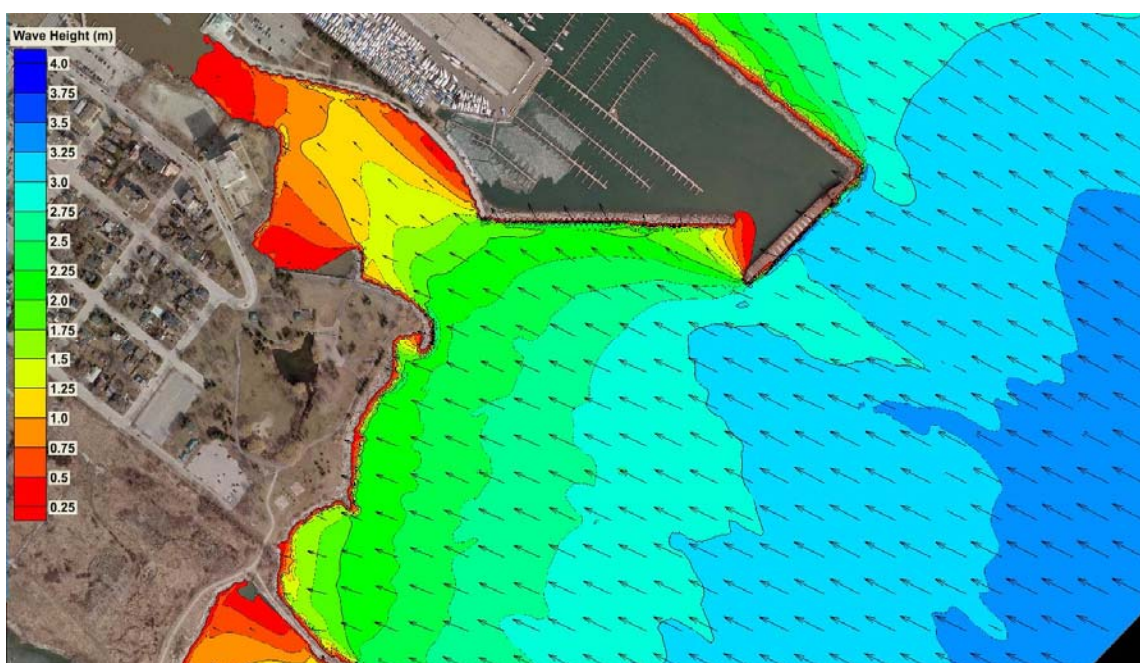
Design Wave (100-yr wave, 100-yr water level)



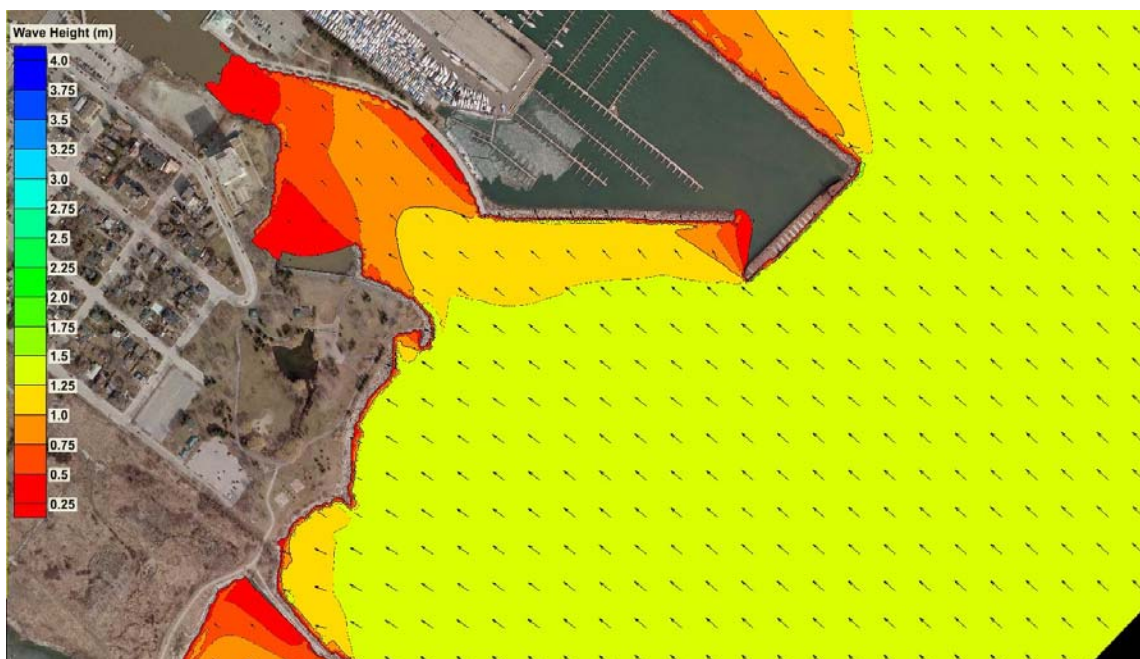
Annual Wave – Average of 36 Highest Annual Wave Heights
(3.4m 8s in deep water, analysis water level 75.0m)



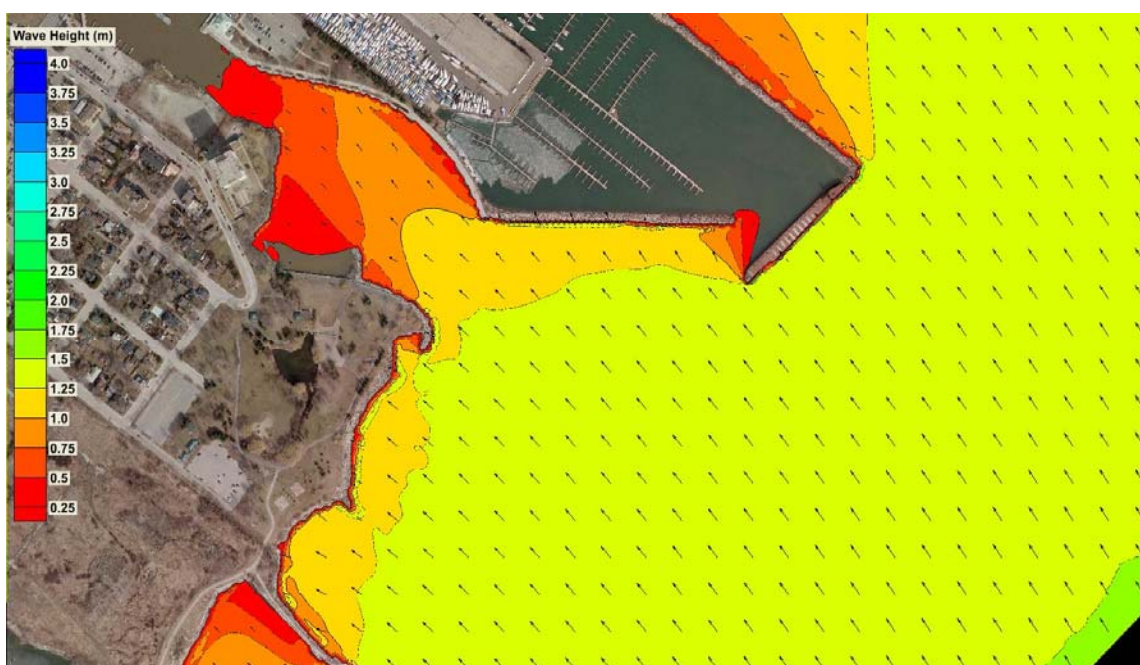
Highest Hindcast Waves – East Waves



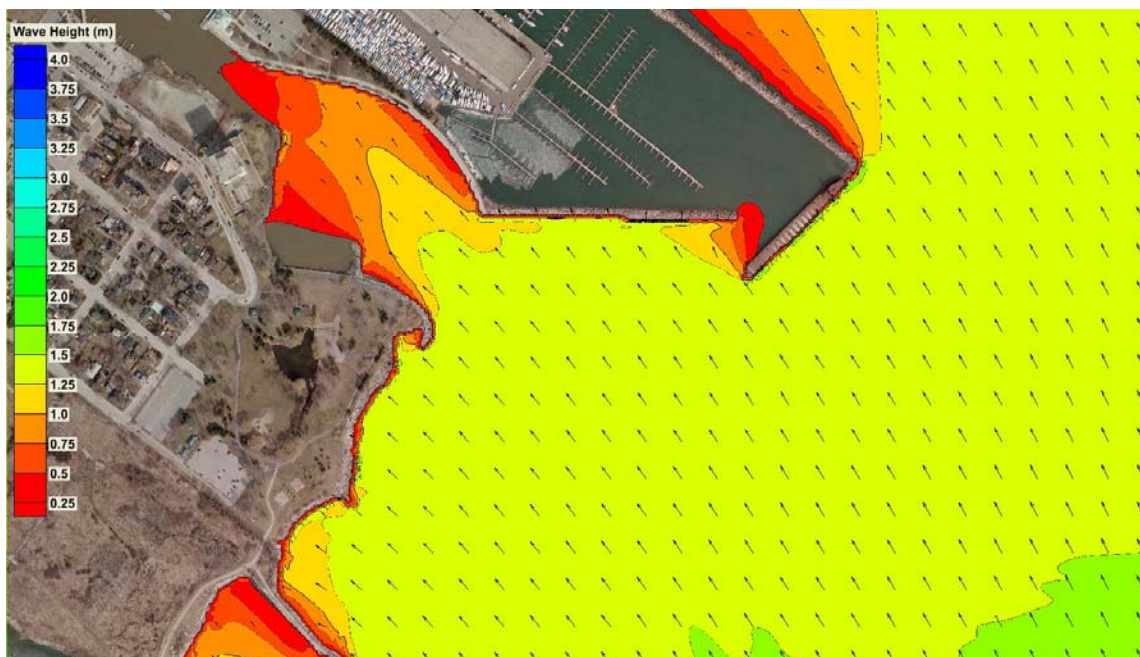
Highest Hindcast Waves – East-Southeast Waves



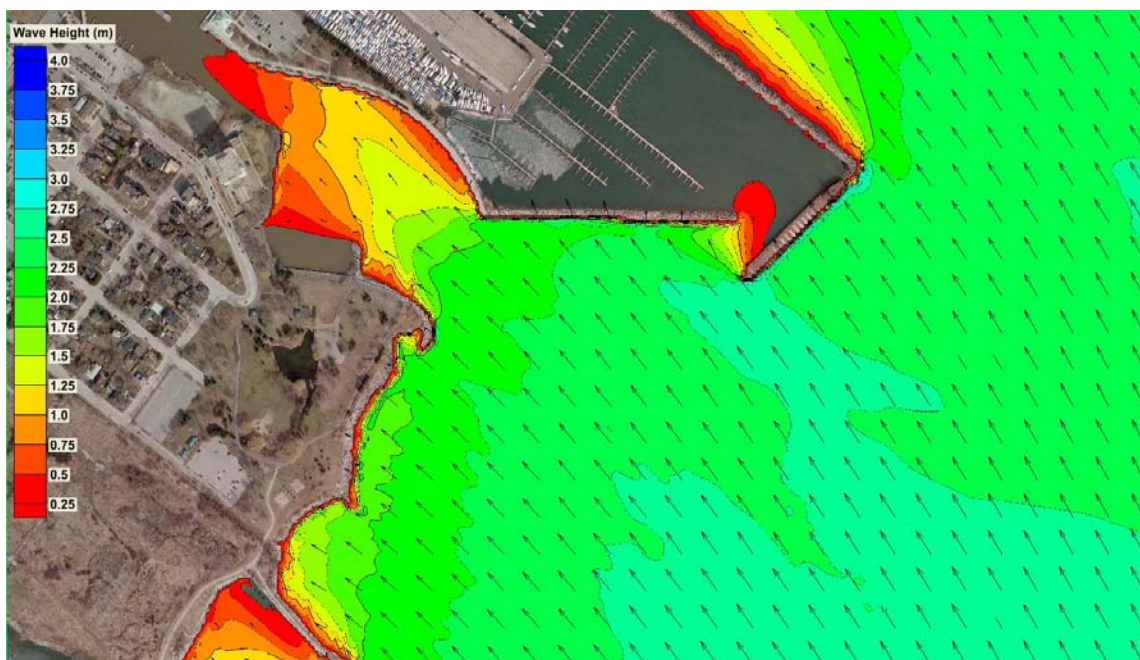
Highest Hindcast Waves – Southeast Waves



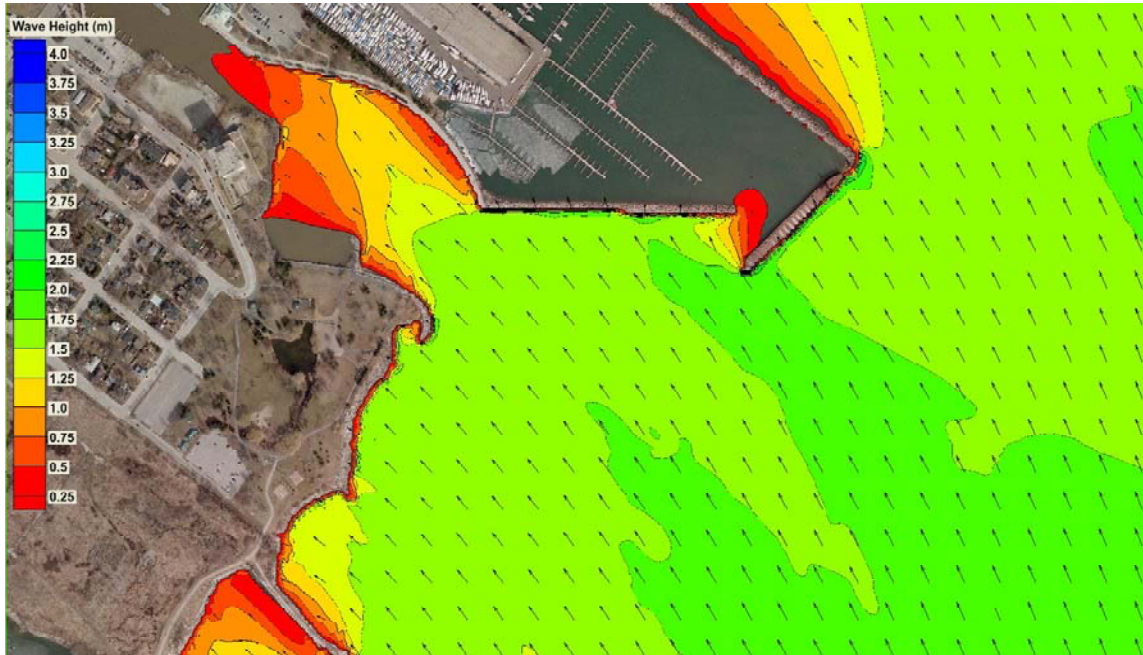
Highest Hindcast Waves – South-Southeast Waves



Highest Hindcast Waves – South Waves



Highest Hindcast Waves – South-Southwest Waves



Highest Hindcast Waves – Southwest Waves

APPENDIX 4 - Infrastructure Conditions

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



SEE SHEET 2 FOR CONTINUATION

MATCH LINE

JOHN STREET NORTH

HIGH STREET WEST

FRONT STREET NORTH

CREDIT RIVER

PORT CREDIT

SERVICE PLAN 3
PLAN/FIGURE # 3

LEGEND

SANITARY
STORM

WATERMAIN
BELL

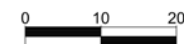
ROGERS COAXIAL
ROGERS FIBER

HYDRO
GAS



MAP/DRAWING INFORMATION
Base drawing provided by
City of Mississauga

CREATED BY: SJH
CHECKED BY: DV
DESIGNED BY: DV



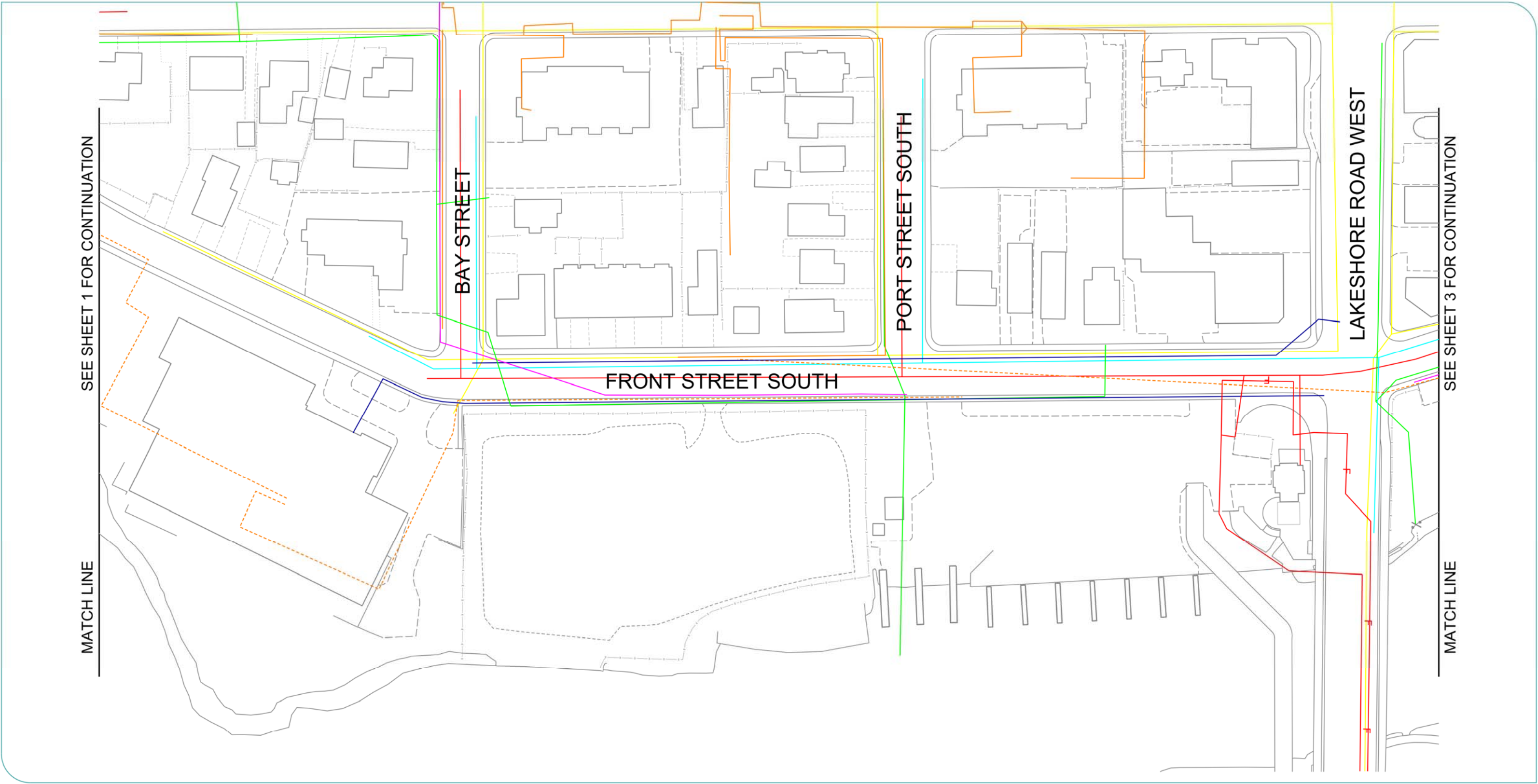
SCALE 1:500



PROJECT #: 125881

STATUS: FINAL

DATE:
FEBRUARY 2013



PORT CREDIT

SERVICE PLAN 2
PLAN/FIGURE # 2

LEGEND

SANITARY
STORM



WATERMAIN
BELL



ROGERS COAXIAL
ROGERS FIBER



HYDRO
GAS



MAP/DRAWING INFORMATION
Base drawing provided by
City of Mississauga

CREATED BY: SJH
CHECKED BY: DV
DESIGNED BY: DV



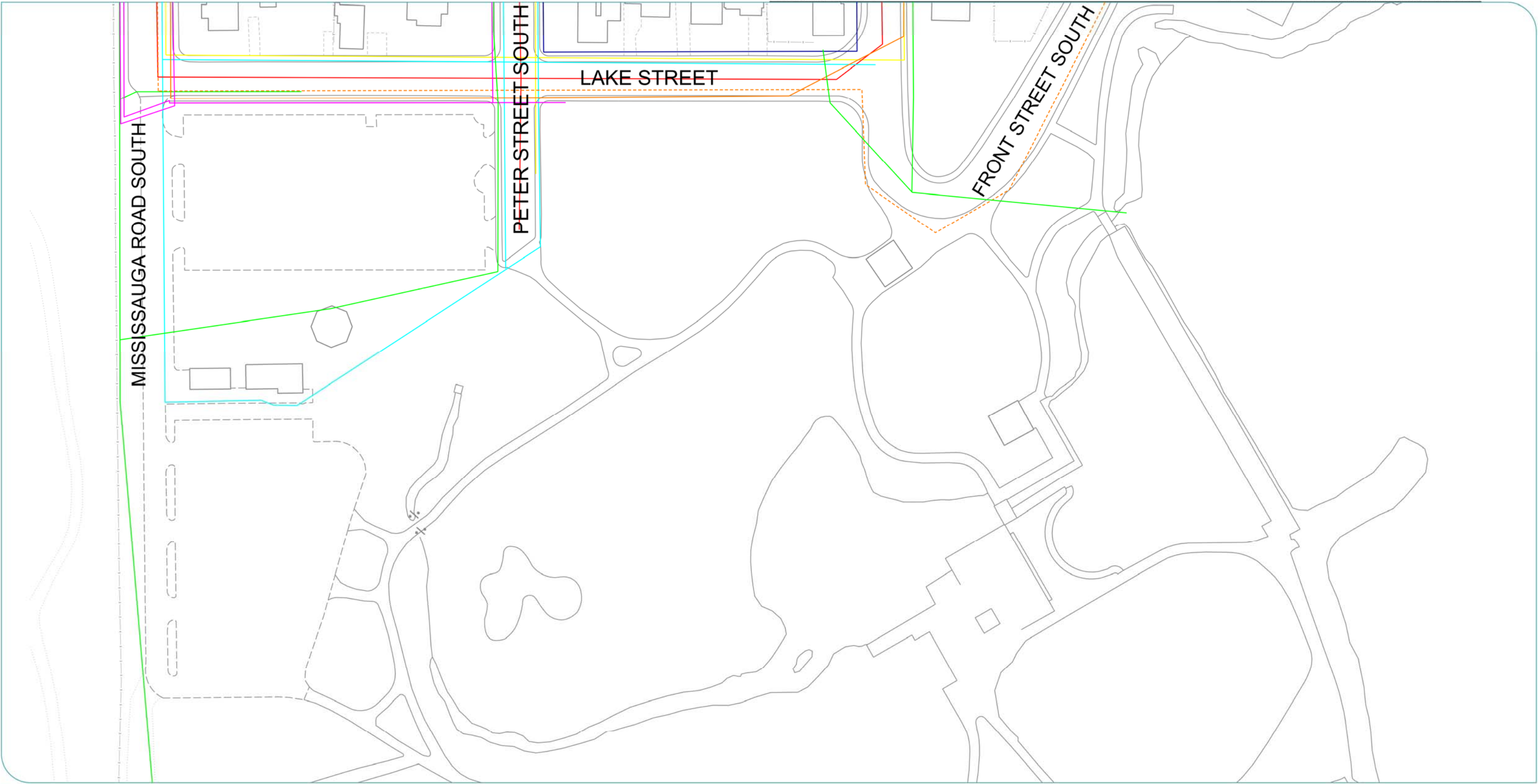
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PROJECT #: 125881

STATUS: FINAL

DATE:
FEBRUARY 2013



PORT CREDIT

SERVICE PLAN 1
PLAN/FIGURE # 1

LEGEND

SANITARY		WATERMAIN		ROGERS COAXIAL		HYDRO	
STORM		BELL		ROGERS FIBER		GAS	



MAP/DRAWING INFORMATION
Base drawing provided by
City of Mississauga

CREATED BY: SJH
CHECKED BY: DV
DESIGNED BY: DV





Photo 1 - Close up view of outlet structure at the extension of Mississauga Road



Photo 2 - Outlet structure at the extension of Mississauga Road



Photo 3 – Discharge structure into channel adjacent to former filtration building



Photo 4 – Concrete outlet channel from pond flowing into naturalized outlet



Photo 5 – Naturalized channel downstream of concrete outlet channel (Photo 4)



Photo 6 – Naturalized channel (Photo 5) discharge into Credit River



Photo 7 – Storm outfall at Marina Park



Photo 8 – Storm outfall at Memorial Park West at Lakeshore Road



Photo 9 – Storm outfall (675mm) at Memorial Park West north of Lakeshore Road



Photo 10 – Storm outfall (1050mm) at Memorial Park West north of Lakeshore Road

APPENDIX 5 - Topographical Survey

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



TOPOGRAPHIC SKETCH OF
PART OF 20 ACRE MARSH LOT
AND BROOK STREET,
WEST OF BROOK STREET,
WEST OF CREDIT RIVER,
(ALSO KNOWN AS HOWARD'S STRIP)

PLAN PC 2

(TOWN OF PORT CREDIT)

CITY OF MISSISSAUGA

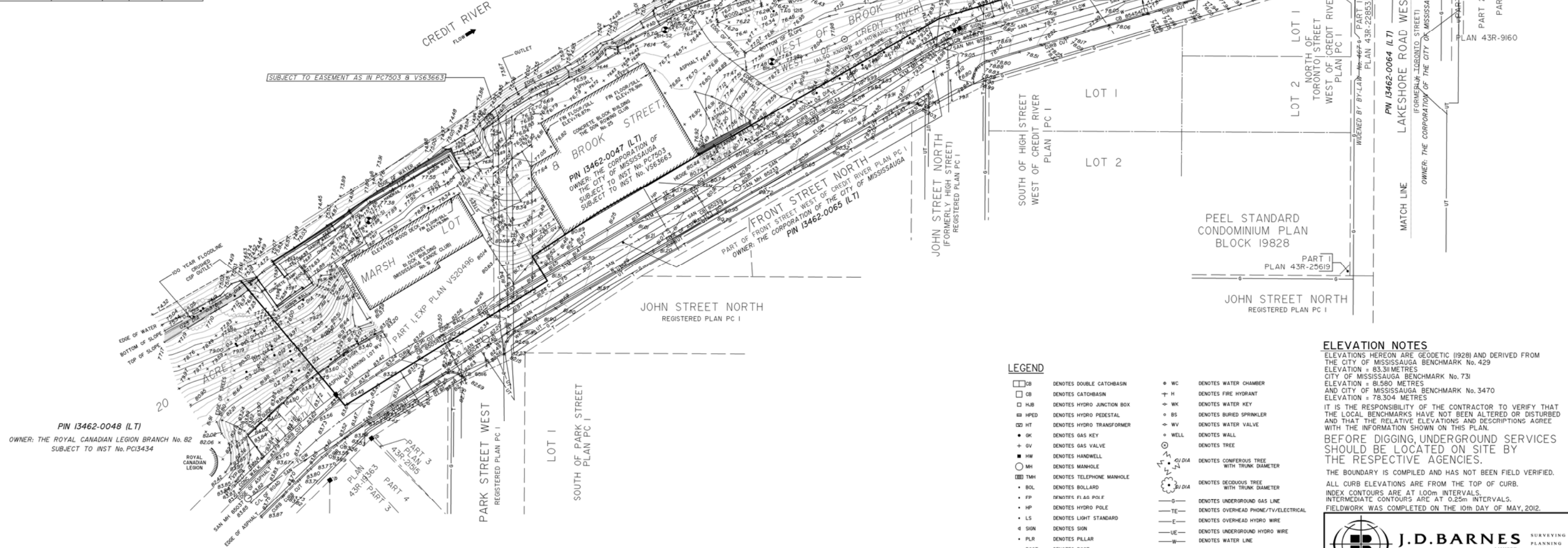
REGIONAL MUNICIPALITY OF PEEL

SCALE 1:500

10 0 10 20 30 metres

J.D. BARNES LIMITED

CATCHBASIN-MANHOLE INVERTS				
CB/MH #	LID ELEV(m)	DIR	INV(m)	TYPE
SAN MH 85037	83.82	NW SE	78.70 78.68	300mm PVC 300mm PVC
CB 85058	82.42	NW SE	80.52 80.52	300mm CONC 300mm CONC
CB 85116	82.63	NE	80.68 81.28	300mm CONC WATERPIPE
SAN MH 85047	82.20	W NW E SE	78.42 78.43 79.15 78.40	300mm PVC 300mm PVC 200mm PVC 300mm PVC
CB 85224	80.77	NW SE	79.01 79.01	300mm CONC 300mm CONC
CB 85239	80.79	W NE	79.41 79.18	300mm CONC 300mm CONC
SAN MH 85233	80.81	NW N SE	77.99 78.11 77.96	300mm PVC 200mm PVC 300mm PVC
CB 85303	79.11	SE SW	77.61 77.61	300mm CONC 300mm CONC
STM MH 85283	79.02	W E	75.26 75.22	800mm CONC 1000mm CONC
SAN MH 85282	78.98	W NW S	76.78 76.63 76.54	300mm PVC 300mm PVC 300mm PVC
CB 85280	78.86	NW	77.46	300mm CONC
CB 85401	77.86	SW SE	76.31 76.31	300mm CONC 300mm CONC
CB 85454	77.87	E	76.38	300mm CONC




LEGEND

- CB DENOTES DOUBLE CATCHBASIN
- CB DENOTES CATCHBASIN
- HJB DENOTES HYDRO JUNCTION BOX
- HPED DENOTES HYDRO PEDESTAL
- HT DENOTES HYDRO TRANSFORMER
- GK DENOTES GAS KEY
- GV DENOTES GAS VALVE
- HW DENOTES HANDWELL
- MH DENOTES MANHOLE
- TMH DENOTES TELEPHONE MANHOLE
- BOL DENOTES BOLLARD
- FP DENOTES FLAG POLE
- HP DENOTES HYDRO POLE
- LS DENOTES LIGHT STANDARD
- SIGN DENOTES SIGN
- PLR DENOTES PILLAR
- POST DENOTES POST
- GATE DENOTES GATE
- CB DENOTES CABLE TV JUNCTION BOX
- TVP DENOTES CABLE TV PEDESTAL
- FB DENOTES FLOWER BOX
- WC DENOTES WATER CHAMBER
- H DENOTES FIRE HYDRANT
- WK DENOTES WATER KEY
- BS DENOTES BURIED SPRINKLER
- WV DENOTES WATER VALVE
- WELL DENOTES WELL
- CONIFER DENOTES CONIFEROUS TREE WITH TRUNK DIAMETER
- DECIDUOUS DENOTES DECIDUOUS TREE WITH TRUNK DIAMETER
- GAS LINE DENOTES UNDERGROUND GAS LINE
- PHONE/TV/ELECTRICAL DENOTES OVERHEAD PHONE/TV/ELECTRICAL
- HYDRO WIRE DENOTES OVERHEAD HYDRO WIRE
- HYDRO WIRE DENOTES UNDERGROUND HYDRO WIRE
- WATER LINE DENOTES WATER LINE
- SANITARY SEWER LINE DENOTES SANITARY SEWER LINE
- STORM SEWER LINE DENOTES STORM SEWER LINE
- OVERHEAD/UNDERGROUND TV CABLE DENOTES OVERHEAD/UNDERGROUND TV CABLE
- UNDERGROUND TV CABLE DENOTES UNDERGROUND TV CABLE
- FIBRE OPTIC CABLE DENOTES FIBRE OPTIC CABLE

ELEVATION NOTES

ELEVATIONS HEREON ARE GEODETIC (1928) AND DERIVED FROM THE CITY OF MISSISSAUGA BENCHMARK No. 429 ELEVATION = 83.31 METRES CITY OF MISSISSAUGA BENCHMARK No. 731 ELEVATION = 81.580 METRES AND CITY OF MISSISSAUGA BENCHMARK No. 3470 ELEVATION = 78.304 METRES IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE LOCAL BENCHMARKS HAVE NOT BEEN ALTERED OR DISTURBED AND THAT THE RELATIVE ELEVATIONS AND DESCRIPTIONS AGREE WITH THE INFORMATION SHOWN ON THIS PLAN. BEFORE DIGGING, UNDERGROUND SERVICES SHOULD BE LOCATED ON SITE BY THE RESPECTIVE AGENCIES. THE BOUNDARY IS COMPILED AND HAS NOT BEEN FIELD VERIFIED. ALL CURB ELEVATIONS ARE FROM THE TOP OF CURB. INDEX CONTOURS ARE AT 1.00m INTERVALS. INTERMEDIATE CONTOURS ARE AT 0.25m INTERVALS. FIELDWORK WAS COMPLETED ON THE 10th DAY OF MAY, 2012.

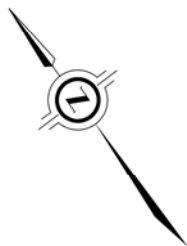


J.D. BARNES
SURVEYING
PLANNING
LIMITED
MAPPING
LAND INFORMATION SPECIALISTS
401 WHEELABRATOR WAY, SUITE 101, M1T 1C1
T: (905) 875-9955 F: (905) 875-9956 www.jdbarnes.com

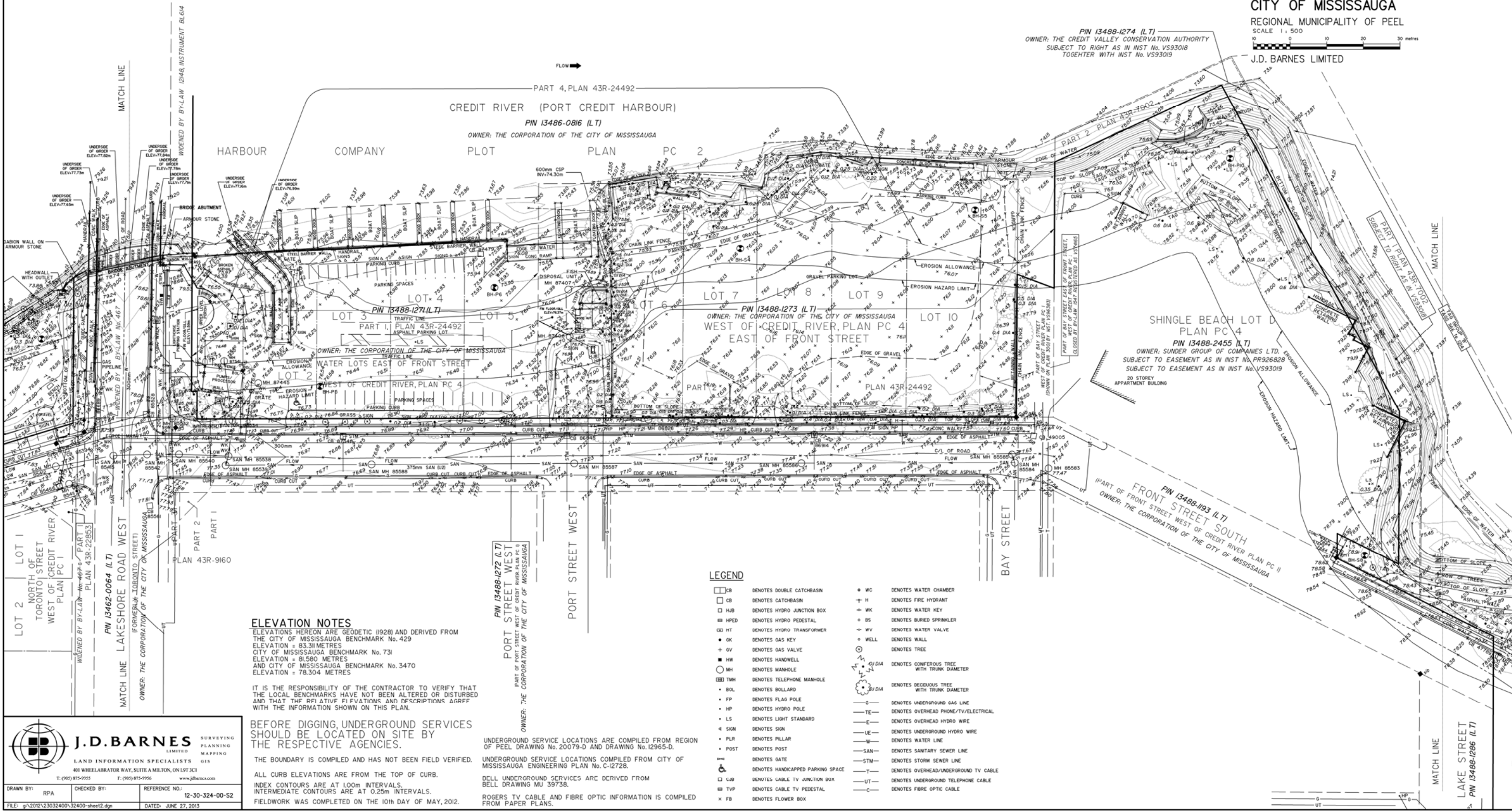
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CHECKED BY: RPA
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DATED: JUNE 27, 2013
PLOTTED: 27 JUN 2013

UNDERGROUND SERVICE LOCATIONS COMPILED FROM CITY OF MISSISSAUGA ENGINEERING PLAN No. C-12728.
BELL UNDERGROUND SERVICES ARE DERIVED FROM BELL DRAWING MU 39736.
ROGERS TV CABLE AND FIBRE OPTIC INFORMATION IS COMPILED FROM PAPER PLANS.

CATCHBASIN - MANHOLE INVERTS					CATCHBASIN - MANHOLE INVERTS					CATCHBASIN - MANHOLE INVERTS				
CB/MH #	LID ELEV(m)	DIR	INV(m)	TYPE	SAN MH 85540	77.70	NW	73.76	400mm CONC	CB 87479	75.85	E	75.48	200mm PVC
CB 85466	77.73	W	76.89	150mm PVC	STM MH 85534	77.23	W	73.57	800mm CONC	STM MH 87407	76.04	N	74.50	480mm CONC
SAN MH 85412	77.93	N	75.43	400mm PVC	STM MH 85538	77.36	W	73.69	400mm CONC	MH 87406	76.70	FULL OF MUD & DEBRIS		
STM MH 85411	77.79	NW	75.59	400mm PVC						CB 86845	76.95	N	74.84	500mm CONC
CB 85394	77.74	N	75.99	300mm CONC	SAN MH 85539	77.35	E	73.70	300mm CONC			E	74.77	600mm CONC
		SE	75.94	300mm PVC	MH 87541	76.50	NOT ACCESSIBLE BOLTED DOWN			STM MH 86826	77.21	W	74.65	200mm PVC
		SW	76.04	300mm PVC	SAN MH 87445	76.58	SE	74.93	TOP OF PIPE	CB 86914	77.22	N	75.23	440mm CONC
SAN MH 85415	78.03	N	73.83	500mm	CB 87348	76.88	S	75.32	200mm CONC			S	75.28	250mm CONC
		S	73.73	450mm	SAN MH 85588	76.88	NW	73.83	300mm CONC	CB 49005	77.44	N	75.71	300mm
		W	74.74	450mm			SE	73.88	300mm CONC			W	75.59	300mm
CB 86689	77.84	N	75.27	470mm CONC	SAN MH 85587	77.23	NW	73.88	300mm CONC					
CB 85561	77.79	N	76.69	150mm PVC			SE	73.91	300mm CONC					
STM MH 85542	77.92	W	75.11	300mm PVC	SAN MH 85586	77.42	NW	74.15	300mm CONC					
		N	73.60	400mm PVC			SE	74.17	300mm CONC					
		S	73.55	400mm PVC	SAN MH 85585	77.63	SE	74.60	200mm CONC					
CB 85528	77.88	NW	76.53	400mm CONC	SAN MH 85584	77.64	NW	74.27	300mm CONC					
SAN MH 85532	77.75	W	74.86	200mm CONC			NE	74.49	300mm CONC					
		E	74.85	200mm CONC	MH 85583	77.54	NW	76.07	300mm CONC					
SAN MH 85540	77.70	NW	73.76	400mm CONC			SW	76.73	200mm PVC					



TOPOGRAPHIC SKETCH OF
PART OF WATER LOT 1,
WATER LOTS 2, 3, 4, 5,
6, 7, 8, 9 AND 10
EAST OF FRONT STREET,
WEST OF CREDIT RIVER, PLAN PC 4
PART OF HARBOUR COMPANY PLOT,
PLAN PC 2
PART OF PORT STREET
WEST OF CREDIT RIVER, PLAN PC 1
AND PART OF BAY STREET
EAST OF FRONT STREET,
WEST OF CREDIT RIVER, PLAN PC 1
(CLOSED BY BY-LAW 1547 REGISTERED AS VS74165)
(TOWN OF PORT CREDIT)
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL
SCALE 1:500
J.D. BARNES LIMITED



APPENDIX 6 - Consultation Documentation

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



Consultation Summary

	Date & Location	Public Notifications	Purpose	Invitation	Attendance
AGENCY CONSULTATIONS					
Agency Meeting # 1	March 26, 2012 Port Credit Memorial Arena	N/A	To introduce the project and review the project scope and schedule, as well as a site-walk of the three parks and the Rivergate easement.	Email invitation to the Ministry of the Environment (MOE), Credit Valley Conservation (CVC)	MOE, CVC
Agency Meeting # 2	September 17, 2012 City of Mississauga offices	N/A	To present draft existing conditions and technical study reports for the study site and receive the agencies' preliminary comments.	Email invitation to MOE and CVC	MOE, CVC
CVC	November 26, 2012 <i>CVC's Comments Received</i>	N/A	Comments received and generally the letter indicated " <i>no major concerns with the submission and the proposed options outlined</i> ".	N/A	N/A
CVC	December 21, 2012 <i>Response Letter sent to CVC</i>	N/A	Response letter to address CVC's concerns and questions.	N/A	N/A
Meeting # 3	February 1, 2013 CVC Meadowvale Office	N/A	To address any outstanding concerns from CVC on the preferred shoreline alternatives and to review shoreline treatment options that enhance aquatic and terrestrial habitat features.	Email invitation to CVC	CVC
Region of Peel	January 21, 2013 <i>Region's Comments Received</i>	N/A	Comments received and Class EA supports the Regional Official Plan's Urban System and Core Area of the Greenlands System objectives, and recommends further reference to the closed landfill and appropriate provisions.	N/A	N/A

PUBLIC CONSULTATIONS					
Stakeholder Meeting	May 22, 2012 Port Credit Memorial Arena 3:30pm to 5:30pm	N/A	To provide information about the Study and obtain input from those who actively use the waterfront in the area.	Email sent to stakeholder groups, including representatives from the charter boat operations and the boat clubs along the west harbour shoreline, as well as representatives from Greenwin Inc. which manages the Rivergate apartment.	Mississauga Canoe Club, Don Rowing Club, Credit River Anglers Association, Canadian Bass Angler's Federation, Mississauga Bass Masters, Salmon Express Charters, Andres Charter, Fish On Charter, Port Credit BIA, and Port Credit Salmon and Trout Association
Public Information Centre # 1	June 19, 2012 Clarke Hall 6:30-9:00pm	-Mississauga News: June 6, 7, 13 and 14 -Municipal Website: www.mississauga.ca	To provide information about the study purpose, existing conditions as well as the opportunities and constraints that will guide the redevelopment of the Port Credit Harbour West Parks, and provide an opportunity for feedback.	-Mail out within 300 m of study area -Emails sent to internal & external stakeholders (City, external agencies, First Nations, residential groups)	Approximately sixty (60) members of the public.
First Nations	August 15, 2012	N/A	Letter sent to introduce project, provide PIC # 1 presentation materials and invite the two First Nation groups to the Public Information Centre # 2	-Emailed the letter to Six Nations of the Grand River, Mississauga of the New Credit First Nation on August 15, 2012 -Reminder e-mail sent on October 11, 2012 -Follow-up email sent on October 29, 2013 with PIC # 2 presentation materials -Received email from Carolyn King, Mississauga of the New Credit First Nation, on October 30, 2012 expressing her interest to attend PIC # 2 but not having the opportunity to go -No comments received	N/A

Public Information Centre # 2		<ul style="list-style-type: none"> -Mississauga News: October 10, 11, 17 and 18 -Municipal Website: www.mississauga.ca 	To present technical alternatives considered for the parks, including shoreline improvements and pedestrian access, and revised concept plans, and provide an opportunity for feedback.	<ul style="list-style-type: none"> -Mail out within 300 m of study area -Emails sent to internal & external stakeholders (City, external agencies, First Nations, residential groups) 	Approximately fifty (50) or sixty (60) members of the public.
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Consultation Summaries

The following section includes the discussion highlights and an overview of the comments and suggestions received from representatives of organizations active on the Port Credit Harbour West shoreline, the general public and agencies. The consultation comments were received and recorded during one-to-one discussions between the public and the project team staff and question and answer periods at the public information centres, as well as comments sheets, emails and other correspondences received by the City after the events.

The received comments were very valuable and have informed the identification of the problem, opportunities and challenges for each park. The input received through consultation also informed the identification of the alternatives, the evaluation of alternatives, and the preferred alternative for each park area.

Agency Input

Although CVC did not have major concerns with the initial submission, the following summarizes their comments on the Existing Conditions Draft and Public Information Centre # 2 panels:

Port Credit Memorial Park (West)

- Use more shoreline treatments that allow for greater habitat diversity and quality.

Marina Park

- Concern with underpass affecting both aquatic and terrestrial habitat and species, as well as filling within the floodplain.

J.C. Saddington Park

- Identified risk of exposing contaminants by removing pond liner;
- Recommends creation of coastal wetland;
- Suggests Reducing linear extent of engineered approaches to shoreline redevelopment at Rivergate easement; and
- Concern regarding potential impacts from filling within the floodplain.

General Comments

- Suggest more softer approaches where suitable to provide better opportunities for natural process to occur, improvements to fish and wildlife habitats, and better connection from the land to the water;
- Need better review and inclusion of Lake Ontario's Integrated Shoreline Strategy (LOISS) goals and objectives and associated surveys in this Study; and
- Understood that only native, non invasive vegetation will be used.

The key issues and comments raised by the Credit Valley Conservation included: the need for softer shoreline treatments that allow for greater habitat diversity and quality, the inclusion of a coastal wetland at Hacienda Bay and the concern with filling within the floodplain.

All three concerns were addressed and resolved at the third agency meeting. The greater habitat diversity and quality will be addressed during detailed design of the shoreline treatments. A coastal wetland is not the preferred alternative for Hacienda Bay as the geotechnical investigations provided evidence for a challenging and expensive construction given the existing conditions, and there is also a high uncertainty that the coastal wetland would be able to achieve and maintain its ecological integrity. Finally, the construction of an underpass under the Lakefront Bridge will not encroach or require additional fill into the floodplain.

Key Stakeholder Input

The stakeholders had very insightful comments on their daily use and enjoyment of the Port Credit Harbour West shoreline, as well as their concerns for the future redevelopment of the parks:

- Programming of waterfront includes the use of motor boats, canoes, kayaks and rowing, commercial fishing, shore fishing and organized events (fishing derby, regatta)
- Very well used parks – parks and fishing are strong economic anchors for Port Credit
- Marina Park is a strong fishing community, including shore fishing
- Marina Park has an excellent fish cleaning/disposal service
- Lots of activity and congestion on the river but all users work together
- Launch ramps at Marina Park are convenient and easy to launch
- Clubs would like to maintain their 'members only' launch areas
- Fish hatchery idea in J.C. Saddington Park well-liked
- Signage important to improve safety of shared access to the river
- Separating motorized and non-motorized boat launch to minimize congestion – more public launches at the current location
- Boat launch area in Marina Park should be improved to make it more efficient and visually appealing, including the parking
- Dredging to increase water depth
- Don Rowing Club has limited space to launch boats – additional landscaping may impede that ability
- West shore improvements should be softer to limit additional wake from boats
- Important to maintain wildlife and support fishery
- Signage for safer shore fishing activities
- Better maintenance of parks
- Additional parking and ramp safety to be considered for the clubs
- J.C. Saddington Park launch area not appropriate due to the exposure to open water

- Concerns about potential security challenges, privacy issues and visual intrusion with the walkway around Rivergate apartments

The key issues and comments raised at the Stakeholder Meeting included: the importance of waterfront/riverfront accessibility, coordination of use of the river by motorized and non-motorized boats, the potential for boat traffic congestion, the need to improve park facilities and signage, the importance of the boat launch and commercial fisheries activities at Marina Park. The key issues and comments were considered and had informed the evaluation of each park alternative for this Study.

Public Information Centre # 1 Input

The public attending the first Public Information Centre had a varied set of comments on the existing conditions, opportunities and challenges for the Port Credit Harbour West Parks, as highlighted in the list below by park:

Port Credit Memorial Park (West)

- Great multi-functional open space
- Preservation of existing mature trees
- Enhancing the tree canopy while respecting views to the river
- Improve connections to the river by opening up views
- Public accessibility to water and riverside trail
- Softening the shoreline treatment to absorb wave action
- Park programming improvements
- Improve parking opportunities in the parks
- Canoe and rowing clubs train primarily on the river north of Lakeshore Road bridge
- Keep launching of public non-motorized boats separate from club launch areas
- Underpass connection to Marina Park
- Incorporate the carved totem pole into the park redevelopment plan
- Move non-motorized boat access on the east side of the Credit River

Marina Park

- Great boat launch location for access to both the river and lake
- Active harbour – offers focal point/vibrancy
- Important community fishing nucleus
- Users of launch ramps like the current location –easy to launch, parking convenient
- Commercial fishing and boat launches have cultural and heritage significance

- Improve existing facilities and waterfront trail
- Landscape improvements – more greenery and seating
- Open views to the water
- Concern that large trees would impede the views
- Concern that built structures would impede views
- Parking and signage improvements – parking busy and unorganized for boat trailers
- Concerns with walkway on the Rivergate easement and how it will relate to the existing building
- Boardwalk around Rivergate apartment building enhances the experience

J.C. Saddington Park

- Well liked multi-purpose park, including trails
- Lakefront and river views
- Add open views down local streets
- Increase access to the lake and pond
- Boardwalk against water's edge
- Improve the look of the pond
- Improve the park and its facilities
- Repurposing the old pumping station (fish hatchery)
- Potential economic benefits - food services at the park
- Potential locations for a boat launch
- Attract visitors and provide visitor information signage
- Cobblestone beach
- Improve park connectivity from adjacent neighbourhoods
- Provide additional park programs (i.e. community garden, splash pad, playground, etc.)
- Improve park maintenance
- Maintain opportunities for on shore fishing

Other Comments

- Concerns with sedimentation and river depth and potential dredging
- Consider streetscape improvements in the study
- Maintain existing park programs
- Improve parking opportunities in the parks
- East/west connection on the north side of Lakeshore Road to connect Port Credit Memorial Park (West)
- Redevelopment of parks to reflect heritage values of the district

The key issues and comments raised at the first Public Information Centre included: the importance of waterfront/riverfront accessibility and views, the need for improved park programming and facilities, enhancements to the pond and vegetation, the importance of commercial and fishing activity, and Rivergate easement walkway impacts. The key issues and comments were considered and have informed the evaluation of each park alternative for this Study.

Public Information Centre # 2

The public attending the second Public Information Centre had clarification questions on the presented materials, but in general had positive feedback and showed support for the Large Block Concept Plan. The comments and discussions are highlighted in the list below by park:

Port Credit Memorial Park (West)

- Consider recreating historical shoreline
- Consider future integration of bridge to connect with east side
- Concern with location of underpass impeding into the river
- Content to have totem pole incorporated in park design
- Improve streetscaping in front of the clubs

Marina Park

- No built structures in the multi-use civic space
- Consider Waterfront Trail treatment crossing at boat launch area
- Consider non-boating use of park
- Clarification on why the south end is being raised and if river dredging makes a difference
- Small shrubs/plants are welcome but large trees would compromise visual access to waterfront

J.C. Saddington Park

- Consider opportunity for skating pond, pond could be enlarged for this option and even used as hockey pad
- Group uses pond to run radio controlled model-boats in the pond for the last 24 years
- Consider appropriate width of Rivergate easement walkway and if bikes are allowed
- Clarification on how the water level would affect the use of the Rivergate easement walkway
- Consider flooding that occurs in south shore of the park
- Need for raising level of shore level on south side does not appear warranted
- Concern with large span of cobble beach at Hacienda Bay
- Feasibility study for the Fish Hatchery underway
- Clarification on cobble beach replacing existing armourstone
- Boulder beach may present a hazard to people accessing the water, consider sandy beach
- Clarification on the physical/visual connections of the parks
- Concern that shore fisherman areas are being reduced
- Concern with village green space demonstrated in concept plan that overrides a parking lot
- Opportunity to exhibit art installation at J.C. Saddington Park
- Disappointment that wetland was deemed unfeasible
- Desire for naturalized pond and surroundings
- Concern for non-maintained naturalization over time

Other Comments

- Implementation schedule
- Concepts looks great
- Softening all shoreline and using native vegetation is great
- Good information and well presented
- Consider traffic calming measures
- Consider moving streetscape as a median in the middle of the street
- All riparian development should provide space for ecological corridors

- Provide more benches
- Consider placement of natural habitat and walking paths near the water

The key issues and comments raised at the second Public Information Centre included: the need to flood-proof the parks, concern for a decrease in areas to park, importance of diverse park programming including the pond, concern for a decrease in waterfront access for shore fishing, and concern that large vegetation and built structures act as visual barriers. The key issues and comments were considered and had informed the evaluation of each park alternative for this Study.

Port Credit Harbour West Parks EA
STAKEHOLDER MEETING and PIC # 1 COMMENT SUMMARY FORM



Date	Stakeholder Group	Port Credit Memorial Park (West) Comments	Marina Park Comments	J.C. Saddington Park Comments	Contributed Information	Evaluation Criteria	Additional Comments	Addressing the Comments
5/22/12	representatives from organizations active on the Port Credit West harbour shoreline	<p>Like - there is a lot of activity/congestion on the river but all users work together to share the river; strong mutual respect.</p> <p>Racing is a tourism draw.</p> <p>Clubs would like to retain the members only launch areas they have.</p> <p>Change - Clubs do not have sufficient parking.</p> <p>Concern that large sailing boat's ability to be launched would be impeded if there is additional landscaping.</p> <p>Safety of ramps at the Mississauga Canoe Club.</p> <p>Suggested for west shore improvements to be softer to limit the additional wake from the boats.</p> <p>If a separate non-motorized launch ramp is considered, make sure it does not impede the already narrow river and that it is sufficiently removed from the clubs.</p>	<p>Like - the users of the launch ramps like the current location for its easy access, location, proximity to parking, alongside the commercial fishing boats creating strong fishing nucleus, and convenient parking although not enough.</p> <p>Anglers association collects fee during Salmon Derby.</p> <p>Fish disposal/cleaning location is an excellent service.</p> <p>Change - there is lots of activity/congestion on the river. It was suggested that separating the motorized launch from the canoe/kayak launch may be a way to minimize congestion.</p> <p>Signage helping navigation and for people to slow down.</p> <p>Parking is an issue in area - not enough immediate parking.</p>	<p>Like -idea for a fish hatchery in J.C. Saddington Park is well liked in the fishing/boating community.</p> <p>Lots of shore fishing.</p> <p>Mouth of the river is getting shallower - requested that kayaks and rowboat stay to the shallow side to allow deeper boats to maneuver.</p> <p>It is dangerous to launch on open water which is a key reason that a launch ramp in J.C. Saddington is not considered appropriate - significant protection would be required.</p> <p>The walkway around Rivergate apartments will likely be controversial - introduction of potential security challenges, privacy issues and visual intrusion.</p>	N/A	N/A	Very well used parks, parks and fishing is a strong economic anchor for Port Credit (West).	<p>Naturalization - Naturalization of the park and specific natural shore treatments would not impede on any boat club activities. Parking and safety of ramps are not part of this study.</p> <p>Non-motorized Boat Launch - The potential for traffic congestion, necessary coordination between the motorized and non-motorized boaters and lack of signage at Marina Park are being addressed with an evaluation for a separate non-motorize boat launch.</p> <p>Rivergate Easement Walkway - The elevated design of the Rivergate easement walkway provides a lower elevation and greater separation from the apartment building.</p>
6/19/12	general public	<p>Change- wider path/underpass as kids occupy extra room by feeding ducks.</p> <p>Canoe Club needs to have access from Front St. for boats (i.e. don't plant it up).</p> <p>Move shrubs closer to sidewalk to open the river view for regattas.</p> <p>Construct amphitheatre seating facing the river for water festivals.</p> <p>Celebrate the water!</p> <p>If the pathway is to go under the bridge, it needs to be much wider than the path on the east side to accommodate pedestrians, cyclists and fisherman. It is a very cramped and narrow path on the other side, which sometimes is flooded.</p> <p>East side of Port Credit Memorial Park may be too steep to accommodate a launch area for canoe/ kayaks as suggested by another resident.</p>	<p>Like - parking area important for continued use of launch ramps. Consider keeping parking for festivals, restaurants, fisherman, etc.</p> <p>Continuous waterfront access through Rivergate easement is a beautiful initiative.</p> <p>Observation of Marina Park traffic movements leads to conclusions that it's a really busy launch ramp and that other programs may negatively impact its current functions.</p> <p>Community is based on the port and is a fishing community. Any change to the park should not take away the heritage component.</p> <p>Change - placement of non-motorized launch on the east end of the river.</p> <p>Concern with intention to build low-rise buildings.</p> <p>More congestion anticipated at the entrance to the Marina - consider dredging.</p> <p>If cleaned up, usage should increase - even increased without much done.</p> <p>Satellite image shows beautiful park, but on ground it's disappointing due to the fence.</p>	<p>Like - fish hatchery is important.</p> <p>Park is perfect and incredible - 25 years of design.</p> <p>Hacienda Bay - improvements necessary, maybe cobble beach?</p> <p>Inquiry about restaurant proposal.</p> <p>Change - bringing franchises to the park has socio-economic benefits - job creation, creation of revenue. There are seasonal opportunities - what are the City's policies on this?</p> <p>Pond is weedy and smelly - City needs to help maintain.</p>	Old Port Credit Heritage District - there are barriers to the parks, including berms to the south and fences around Marina Park. Guidelines in Heritage District speak to open spaces that need to be integrated and limit physical barriers.	N/A	<p>Credit River very shallow - inquiry about plans to dredge the river. Communities up the stream to the north should pay to dredge the river - major reason for the sedimentation.</p> <p>Conditions of the parks is the problem. Hierarchy of importance - which parks to redevelop first.</p> <p>What Consultation has been done with the First Nations?</p> <p>East Side of Port Credit Memorial Park may be too steep to accommodate a launch area for canoes/kayaks.</p> <p>Need to expand pedestrian walkway on north side of Lakeshore: very congested with pedestrians, cyclists, young families, GO commuters (double or triple!).</p> <p>Turn this transient boat dock into a center for boat rental? Giving a priority to non-motorized craft (canoe, kayak, paddleboat, etc.) to allow people to fully experience Port Credit from the water level.</p> <p>Keep tabs on /collaborate with development proposed at 1 Port St. Also - Lakeshore Corridor Project, Ideas from TOPCA, Port Credit Village Project, Hurontario LRT, etc.</p> <p>Keep the majority of motorized boats in this existing area, to allow for more space to be used by non-motorized craft.</p>	<p>Franchise in Park - Waterfront Parks Strategy identifies potential locations for pavilions in J.C. Saddington Park that may include food services.</p> <p>Structures - Not part of this study and area is flood-prone and there are safety concerns. The plan from the Waterfront Strategy shows launching area and maybe festivals. There is no land use change or no buildings are part of this EA.</p> <p>Cobble beach at Hacienda Bay - Still looking at improvement options. Not sand, but maybe cobble beach is appropriate.</p> <p>Restaurant proposal - Identified for J.C. Saddington Park by repurposing the existing building. Existing infrastructure under review - still evaluating.</p> <p>Dredging the Credit River - Currently there are no plans to dredge the river, however, we are looking at shoreline conditions and will examine all the necessary measures.</p> <p>First Nations have been contacted.</p>
6/19/12	general public	N/A	<p>Change - no low rise building</p> <p>No structures, no concrete.</p> <p>The most beautiful building will look just completely ugly in a natural spot like this - no buildings please.</p> <p>Public access space just west of apartment building.</p> <p>Maintain business operating in this space - it seems that the parking conditions are sufficient and do not need to be expanded.</p>	<p>Change - revamp the pond.</p> <p>Small boat launch (canoe) at Hacienda Bay.</p> <p>Possibility of turning the structure (building) into a location for a Port Credit Farmer's Market?</p> <p>Importance of safety along waterfront conditions - beach conditions, boardwalk?</p>	N/A	N/A	<p>Lake views down Mississauga Road, Peter St and John St.</p> <p>Bigger Trees may compromise/block views - no structures.</p> <p>Widen Front St. S for angled parking (east side), garden boxes down centre of street with street breaks.</p> <p>No structures along waterfront to block any views from street. Especially Front St.</p> <p>Park only along waterfront, so as not to block the view from the street. And keep consistent to the opposite side.</p> <p>Waterfront trail along the waterfront.</p> <p>Pedestrian walkway between two shores at mouth of the river.</p> <p>Non-motorized pedestrian bridge to divide motorized.</p> <p>Open a 'rent-by-the-hour' non-motorized boat launch and school for tourists + locals to access the water.</p> <p>Move the public motorized boat launch to 1 Port St.</p> <p>More access for those not associated with water sports clubs - kayakers/canoeists/ outriggers/SUPs.</p>	<p>Marina Park - Built structures are not envisioned at this time for Marina Park.</p> <p>Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions.</p> <p>Pond - Improvement alternatives for the pond are being considered as part of this study.</p> <p>Alternative Boat Launch - Alternative locations for non-motorized boat launch are being considered as part of this study.</p> <p>Park Programming - Reuse of a building for a farmer's market is not part of this study.</p>

Port Credit Harbour West Parks EA
STAKEHOLDER MEETING and PIC # 1 COMMENT SUMMARY FORM



Date	Stakeholder Group	Port Credit Memorial Park (West) Comments	Marina Park Comments	J.C. Saddington Park Comments	Contributed Information	Evaluation Criteria	Additional Comments	Response
6/19/12	fisherman	N/A	Like - keep access for the fishing boats people live and work very hard there.	N/A	N/A	N/A	N/A	Fishing - It is recognized that commercial and recreational fishing activities are important to the Port Credit Harbour West Parks.
6/19/12	general public	Like - lots of water use including regattas. Change - improve shoreline.	Like - great boat launch, lots of activity, charter fleet. Change - renewal of facilities, improve flow, improve pedestrian walking along water.	Like - great ambiance for a small park including ponds and fountain. Excellent Potential. Change - renew its condition.	Value of dredging should be evaluated. Plan for economic benefit from design.	Satisfaction survey, economic measures.	Great initiative. Glad to see boat ramp will stay. Dredge now! Get the fish hatchery project moving ahead.	Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions. Pond - Improvement alternatives for the pond are being considered as part of this study.
		Like - open space possibilities.	Like - multiple uses and open space. Change - more greenery and seating/picnic access	Like - lakefront vistas, possible people place.		Dredging and keeping the Credit River open and accessible to larger boats and ferries.	Would love to have horse drawn buggies and/or pedi-cabs available for tours and tourism.	Vistas - Waterfront and riverfront views will be maintained through aligned vistas and opening in the vegetation.
6/19/12	unknown	Like - historic plaque, totem pole, shoreline access for kayak, quiet, view of Memorial East, passive, picnic-casual, not formal, good for night fishing Change - clean it up, more tables, more trees, connection under bridge to Marina park is vital.	Like - boat launch activity - keep!! Parking for trailers keeps parking off neighbourhood streets (used to be), where the action is - cross roads of P.C. with lighthouse, harbour. Change -clean it up, miss the log cabin - need something like that for Salmon Derby.	Like - lots of potential and elements (all run-down). Should be open to community, rearrange parking so you don't enter that way. Change - remove berms which isolate the park from community, safer with views into park. Pond need rehabilitation - better flow.	Washout at Saddington is a problem - huge problem.	Heritage is a critical element (natural, built and cultural).	Need to maintain shoreline fishing on present basis - casual, few restrictions, open. Need a bridge at CNR to connect legion to GO station and East-West Memorial Parks.	Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions.
6/19/12		Like - accessible, open landscape. Change - destination interest items.	Like - charter boats, boat launch. Change - open up street views, no tree barrier, grass parking lot.	Like - pond, stream (needs clearing vegetation badly), walkways, bridges. Change - more destination interest items, boardwalks against water's edge that is visible - not behind overgrown vegetation.	N/A	N/A	Include the streets. Front Street south - the street itself needs beautification. It's just a wide open runway - needs centre landscape Blvds, needs angle parking and possibly speed bumps.	Vistas - Waterfront, riverfront and street views will be maintained through aligned vistas and opening in the vegetation. Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions. Streetscaping - The Waterfront Parks Strategy recommended streetscaping improvements, and a detailed look at this is not part of this study.
6/19/12		Change - landscaping and naturalization , safe fishing areas, protect boaters from fishers, walking along the riverside.	Like - availability of charter boats and public ramp for boaters. Change - gardens and landscaping while maintaining the public launch and charter boating community.	Like - pleasant for walking, picnicking. Change - street foods, boat launch.	N/A	N/A	N/A	Naturalization - Naturalization of the parks and the opportunity for natural shore treatments along are being evaluated as part of this study.
6/19/12	municipal government	N/A	N/A	N/A	N/A	As part of a municipal Class EA study, traffic conditions need to be assessed on a separate item. Although no land use changes are anticipated, few new improvements will lead to changes in traffic patterns in the community and then a traffic report must be generated during the course of the study.	N/A	A traffic report is not part of this study.
6/19/12	general public	Like - it's nice to be able to launch canoe in park when rowing club not using it but on busy weekends.	Like - parking lot for non-motorized boats might be used by non boaters. Could the arena have 'shallow' boat launch on the east side of the river: to be able to park in summer for canoeist/ kayakers/ etc. non motorized when the arena lot is not busy.	N/A	N/A	N/A	N/A	Non-motorized Boat Launch - The potential for traffic congestion, necessary coordination between the motorized and non-motorized boaters and lack of signage at Marina Park are being addressed with an evaluation for a separate non-motorize boat launch.
6/19/12	general public	Like - multi-purpose space, beautiful view of river, great kid space. Change - more trees, interactive water place for kids (river water park like the one found in the.	N/A	Like - natural state of park, lake and river views, kids parks, water features, trail. Change - cobblestone beach, increased access to lake, updated boardwalk, more visitor awareness signs (inform about danger to wildlife and birds- fishing line and garbage) and garbage cans, community garden, pond revitalized.	N/A	N/A	N/A	Naturalization - Naturalization of the parks and the opportunity for natural shore treatments along are being evaluated as part of this study. Pond - Improvement alternatives for the pond are being considered as part of this study. Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions.
6/20/12	general public	Like - not much going on there besides fishing. Change - make more accessible (less vegetation blocking view/access). Good spot for non-motorized boat launch. Pathway under the bridge.	Like - boat launch, ample parking (too much though). Change - really ugly area now/parking lot. Organize/green space/extend waterfront trail through.	Like - walking path, pond, waterfall and stream, kids playground, board walk on river edge. Change - redo pond with clear access around/address weed issue in pond. As much water access as possible/beach/cobble stone, etc. Open up views down John/Peter/and Mississauga Rd. Community garden, splash pad for kids, keep playground, look outs to view lake, remove as much rip rap rock as possible.	N/A	N/A	Looking forward to having the parks spruced up!	Naturalization - Naturalization of the parks and the opportunity for natural shore treatments along are being evaluated as part of this study. Pond - Improvement alternatives for the pond are being considered as part of this study. Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions.

Port Credit Harbour West Parks EA
STAKEHOLDER MEETING and PIC # 1 COMMENT SUMMARY FORM



Date	Stakeholder Group	Port Credit Memorial Park (West) Comments	Marina Park Comments	J.C. Saddington Park Comments	Contributed Information	Evaluation Criteria	Additional Comments	Response
6/21/12	general public	N/A	Change - the area just south of the launch area is undeveloped and should house moorings and easy access to the river. On the land we should have more services offered, such as kiosks for mountain bike or electric scooter rentals. The addition of kayak or canoe rentals would help the experience of the visitor to our Port of the Credit.	N/A	N/A	N/A	<p>I would like to suggest a pedestrian crossing (bridge) be constructed just south of the railway tracks, near the Canadian Legion. The construction of a pedestrian bridge would help to 'tie' in the overall area.</p> <p>No decrease in boat launch ramps. In fact additional launch ramps, docks and parking slips for sail and power craft would definitely be an asset to the Credit River area. Just look at the number of sail boats in the river at Oakville.</p> <p>The apartment building (35 Front Street South) has blocked off the public access of the riverfront long enough and plans to construct a boardwalk would enhance the experience of our river visitors.</p> <p>In current form the lakefront area is deemed to be off limits to almost everyone, why not put in protected dock areas, and allow pedestrians to be allowed closer to this incredible area. Visitors to Port Credit come here to relax and participate in physical activities. Access to restaurants will bring employment opportunities to the community.</p>	<p>Bridge - The investigation on the pedestrian crossing south of the railway track is not part of this study.</p> <p>Rivergate Easement Walkway- The elevated design of the Rivergate easement walkway provides a lower elevation and greater separation from the apartment building.</p> <p>Accessibility - All of the Port Credit Harbour West Parks will be better connected with pedestrian trails and improve the existing shoreline conditions, and opportunities for a cobble beach will be evaluated.</p>
6/26/12	general public	N/A	N/A	<p>Like - there are a lot of large tree lining the pathway west of the Credit River entrance blocking the view of the waterfront. Wondering if it would be possible to relocate or thin these trees out so that you could see Lake Ontario better.</p> <p>Change - Port Credit is on the water and it would be nice if park visitors could get close to the water or have some sort of water feature where they could experience water first hand - not just look at it from afar (i.e. pool/fountain??). The pond is very nice but too dirty to soak your feet or get cooled off in when the summer heat is on.</p>	N/A	N/A	<p>Hoping that since the parks are in the heritage district of Old Port Credit the design can reflect this fact and be designed to fit in with flavour of the neighbourhood i.e. having old fashioned lights, perhaps an old fashioned gazebo type structure to provide shelter for people to get out of the rain or sun, etc. The lights currently in the park are very 60/70s and does not fit the look the neighbourhood has been aspiring too. Having the gardens landscaped to grow 'old fashioned' plants would be also nice.</p> <p>Follow-up response: Hi, Thanks for getting back to me. Yes, if possible plants that would have been found in the area when Port Credit was first established would be great. Hopefully they include wild flowers, daisies, black eyed susan's, holly hocks, delphiniums, bleeding hearts, lupines, etc. Something different from Memorial and Rhododendron Park. Thanks for your consideration in including my ideas.</p>	<p>Hello, thank you for your comments, we appreciate the time you spent at the meeting and for the follow-up. We will include responses with the summary of those we received at the meeting and will consider the suggestions. For clarification, are the 'old fashioned' plants ones that would have been present when the village was established? Would this include plants that are found in the area, including native trees and shrubs and wildflowers?</p>
7/5/2012	general public	<p>Like - odd question as not much used by anyone except boat/ rowing/ canoe clubs & shore fisherman.</p> <p>Change - tidy it up, add underpass below Lakeshore Road West if possible.</p>	<p>Like - that this is the 'heart' of Port Credit; the lighthouse, charter boats, boat launch, Salmon Derby weigh station, community meeting place.</p> <p>Change - clean it up & re-pave, repaint lines, redo docks, redo one-way in/out (sign placed incorrectly) and monitor use as overflow Starbucks/Helen's parking. City's issues mainly. E.g.. Consider boat launch fee.</p>	<p>Like - a well-designed park used mainly May-Sept on sunny weekends for BBQs, picnics, events. Other times is lightly used as cycle/walking or dog-walking by local residents. Too cold-winter- not much used so its peaceful for locals</p> <p>Change - renovate pond, allow for model fish hatchery. City - Miss: enforce by-laws re: dogs on leash, open fires, park hours, motorized vehicles in park, shade trees picnic areas. Basically it works. Doesn't need fixing.</p>	Consider having Front St. S - south of Bay- become one way to Miss. Rd. S parking lots. Widen sidewalk to allow for heavy traffic times such as for Port Credit festivals/events.	Cost benefit: is capital outlay justified in terms of park usage? Habitat disruption along River; fishing along river outside of summer, people are busy with work, children's activities and holidays. Not likely to walk in wind, snow, cold, rain, etc.	<p>Tracking visitors by postal code not optimum: no info about how often they visit (once? Weekly? Monthly? Winter?) Emphasize City to better maintain & patrol all parks; which isn't part of your (Dillon) mandate.</p>	<p>Underpass - An underpass connecting Marina Park and Port Credit Memorial Park West will be evaluated as part of this study.</p> <p>Pond - Improvement alternatives for the pond are being considered as part of this study.</p>
6/19/2012	general public	Like - the non-motorized boats club.	<p>Like - open view, the boats docks</p> <p>Change - remove garbage and junk from fenced area. Remove the fence/ totally grass the fenced area. Remove /trim all large trees that are killing the beautiful view.</p>	<p>Like - the size makes it more enjoyable</p> <p>Change - maintain the park/ pond better.</p>	All I can say that Marina Park fenced area makes it so far the worst used/least maintained park I have seen anywhere in Ontario.	The most important criteria should be public opinion.	<p>No structures or buildings can be justified. Please don't repeat the mistake of planting trees that kill the view - grass/small plants are more suitable.</p> <p>Thanks for your efforts.</p>	<p>Pond - Improvement alternatives for the pond are being considered as part of this study.</p> <p>Structures - Not part of this study and area is flood-prone and there are safety concerns. The plan from the Waterfront Strategy shows launching area and maybe festivals. There is no land use change or no buildings are part of this EA.</p>

Port Credit Harbour West Parks EA
PIC #2 COMMENT SUMMARY FORM



Group Type (land owner, general public, government agency, etc.)	How Comments Received * (PIC, e-mail, phone, fax, letter)	Comments on Proposed Shoreline Improvements	Implementation Concerns	Additional Comments	Additional Comments (cont'd)	Additional Comments (cont'd)	Response Provided
general public	PIC 2	Concepts look great. Go for it!					
general public	PIC 2	Small shrubs/plants welcome but large trees would compromise visual access to water front. Building or any large structures would be a very bad choice. Thanks.					Structures - Not part of this study and there is no land use change. The plan from the Waterfront Strategy shows launching area and maybe festivals.
general public	PIC 2	Generally agree with proposed changes. Pond could be enlarged if skating is to be an option - climate change may negate this possibility. Need for raising level of shore level on south side of Saddington really does not appear warranted! A boulder beach (size of boulders shown in photos) may enable views of water but represents a hazard for people trying to reach water. Need for sandy areas! Agree with attempts to soften all shorelines and intent to use native vegetation. Large limestone blocks are an eyesore.	The suggestion that parking in west Saddington might be removed. All of the existing space will be required (despite possible improvements to public transportation) to accommodate population increases in general as well as increased tourism. Keep bicycles off Rivergate walkway.	Did not hear about 1st public meeting.			Pond - The evaluation of alternatives showed that the naturalization of the pond was the most preferred as it provides the most opportunities for habitat creation and naturalization within the Port Credit Harbour West Parks. These benefits outweigh the advantages of the urban/concrete pond. Parking - The parking lot conversion to a green space is a long-term plan that would need to be supported by transit, traffic and vehicular circulation trends and studies in the future.
	PIC 2	Great progress converting feedback from the June session into the new plan going forward. Lot's of good information. Well presented. Thanks.					
	PIC 2	PCVP's ARTconnect project in celebration of PC's 175th anniversary hosted a provincial wide competition for an interpretive art installation reflecting Port Credit. The winning design (wide jury) was by aboriginal artist/sculptor Philip Cote. He selects Saddington Park as his preferred site for installation. We will fund-raise for this. May we meet and talk about this phase? We have a full report to share. Many thanks.					Resident directed to follow up with the Culture Division.
general public	PIC 2	Green space @ Lake and Mississauga Road is great! However there will need to be an alternate option for parking (Brickworks, Petro Canada Lands). During the summer this parking North & South are always full. Thanks. Great job.					Parking - The parking lot conversion to a green space is a long-term plan that would need to be supported by transit, traffic and vehicular circulation trends and studies in the future.
general public	PIC 2	Good job for the future.					
general public	PIC 2	The question raised about reducing parking in Saddington was not adequately answered. Existing parking is fully utilized at this time. Where will those people park? You cannot enhance a facility and not make it accessible to general public.					Parking - The parking lot conversion to a green space is a long-term plan that would need to be supported by transit, traffic and vehicular circulation trends and studies in the future.
	PIC 2	Pond should be doubled in size to accommodate 3-4 hockey pads.					Pond - The evaluation of alternatives showed that the naturalization of the pond was the most preferred as it provides the most opportunities for habitat creation and naturalization within the Port Credit Harbour West Parks. These benefits outweigh the advantages of the urban/concrete pond.
general public	email			In 1957 my father Howard Geddes, former Town of Port Credit Superintendant (now deceased), carved and donated the totem pole located in the Port Credit Memorial Park (West) commemorating Canada's Centennial. At the public information centre I attended, I was happy to learn from you (the City) and the consultants that the totem pole will be incorporated into the new park design. As a long time resident of Port Credit, I along with my family, have a vested interest in the preservation of the totem pole, the Memorial Park and Port Credit as a whole. Because of this and due to its age, I have some considerations for the totem pole as follows: correct the listing of the pole; inspect the base, below ground, for any deterioration and reinforce if necessary. I am impressed with the proposed Port Credit waterfront parks strategy to enhance the village and its heritage for the enjoyment of its residents and visitors.			The City is following up with Parks Operations to that any issues with the totem pole can be addressed in the short term.
	email			I had hoped to be able to attend the Public Information Centre tonight regarding the Harbour Parks but unfortunately am not able to. Would it be possible to meet with you to discuss the concepts, or if you have anything electronic that you might be able to send me regarding the project. I am interested in knowing more about the development of these lands and how we might be of use to you in heritage interpretation that is one of the considerations in the designs. I was also raised in the Port Credit area and have a personal interest in the spaces.			The city followed up with an email containing PDFs of the panels presented at the PIC. When the City pursues detailed design of these parks, cultural heritage and interpretation will be important elements in the design.
Heritage Mississauga	email						
South Peel Naturalists' Club	email	* disappointed that there was not more mention of concrete improvements with regard to wildlife habitat. All riparian development along the Lake Ontario shoreline should provide space for ecological corridors where wildlife is able to move between disparate areas. This is so necessary to maintain genetic diversity and to prevent local extirpations. It was mentioned that vegetation would be removed partly because it included invasive species. I sincerely hope that all such areas have been thoroughly investigated for significant native species and that none of these would be killed but would rather be either moved to another part of the park or housed somewhere for replanting later or planted elsewhere where they would have a better chance of survival . * disappointed that the wetland was deemed unfeasible. This could have been a significant feature for those, such as myself, wanting more natural elements. I sincerely hope that the pond will be converted to a more natural pond with a wetland at the south-west corner (the stream end). I also hope that the stream will be left as natural as possible and that the width of the surrounding vegetation area will be increased.		*J.C. Saddington it was mentioned that it would naturalize over time. Natural naturalization is not preferred, as it brings more unwanted invasives than desirable native plants. Aggressive, native planting must be carried out along with aggressive weeding, as disturbance creates weed habitat! Hillsides are particularly nice in summer, as a height of land where one may experience the lake breeze advantage. However it would be nice if one of these hills (especially near the stream) could be vegetated with natural vegetation to give additional variety of natural habitat contours. I am all for increasing the amount of green space along the lakefront. I understand the ideal of reducing parking along the lake. However the reality is that for many activities public transit is impractical. I for one have too much heavy gear to carry: scope, tripod, camera, lenses and binoculars, sunscreen, insect repellent, etc. The weight is far more than I could hold on a bus. I often make return trips to the car.	Also, birders like to bird the waterfront and require available parking to be able to stop at each park along the route, jump out bird, jump back in, drive to the next park, jump out, etc. Much information about local and migratory bird populations is gathered in this manner. I would like more details, particularly regarding exact placement of paths and 'natural' habitat. Natural habitat should be along the edge of the water in order to benefit the aquatic habitat. Wildlife, such as the mink that I saw Nov 3rd, should be able to access the water. I like the way one can access the water along Port Credit Memorial Park, except that it is dangerous. I do not like the idea of a built-up, pier-type of walkway such as on the east side. One is too far removed from the water.	As the population increases, by just adding no additional parking one effectively reduce the parking -to -people ratio. Eliminating parking will mean that people who visit the parks now may no longer be able to. As it is, it can be very difficult to find parking along the lake and one must often drive a long way before being able to stop and visit. It seems that all too often parks are for the exclusive use of those wealthy enough to be able to afford living in the neighbourhood.	Pond - The evaluation of alternatives showed that the naturalization of the pond was the most preferred as it provides the most opportunities for habitat creation and naturalization within the Port Credit Harbour West Parks. These benefits outweigh the advantages of the urban/concrete pond. Wildlife Habitat - Naturalization of areas within all three parks will allow for improvements to terrestrial habitat, along with shoreline improvements that create opportunities for aquatic habitat. It is also recognized that a wildlife corridor needs to be improved between J.C Saddington Park and the undeveloped property to the west. Parking - The parking lot conversion to a green space is a long-term plan that would need to be supported by transit, traffic and vehicular circulation trends and studies in the future.



Group Type (land owner, general public, government agency, etc.)	How Comments Received * (PIC, e-mail, phone, fax, letter)	Comments on Proposed Shoreline Improvements	Implementation Concerns	Additional Comments	Additional Comments (cont'd)	Additional Comments (cont'd)	Response Provided
model boat club	telephone			<ul style="list-style-type: none">• Charlie and friends have been running radio controlled model boats in the JC Saddington Pond every Wednesday night for last 24 years• Informal group that has included model sailboats (who now go to Lakefront Promenade?)• 4-6 boats typically on the water; have had as many as 10 boats• Only rules – wildlife has right of way, no gas or electrical boats• Run boats 7-9 pm every Wednesday from April/May to Thanksgiving• Generate a lot of interest from other park users who watch the boats; informally “police” the park• Originally ran boats down creek/stream into pond; now only run boats in pond• Developed a good working relationship with parks operations over the years• Boaters clear out weeds in pond once a year and parks operations disposes of weeds• Wood dock was built to provide boaters with place to launch boats• Use all of pond when weed free; as weeds grow, restricted to area between fountain and shoreline			<p>The City talked to Charles over the phone and forwarded the PIC panels to him.</p> <p>Model Boats - this Study recognizes that running of the model boats is an important activity at JC Saddington Park pond, and any future improvements to the pond would not impede continued use of the pond for such activities.</p>
general public	PIC 2	<p>Port Credit Memorial Park (West) - historically significant, evolution of shoreline take into consideration?</p> <p>Clarification on location of underpass.</p> <p>Concern with function of the pink-coloured area in the Marina Park concept plan - what is the circulation/other uses? No built structures.</p> <p>Concern with proximity of Waterfront Trail to the boat launch area.</p> <p>Inquiry on non-boating use of the parks.</p> <p>Width of walkway at Rivergate easement - bikes allowed?</p> <p>Need to floodproof the pond/shoreline.</p> <p>Cobble beach JC Saddington Park replacing existing armourstone?</p> <p>Provide views to the lake, not just park.</p> <p>Village green in JC Saddington Park - where did parking go?</p>		<p>Does the Plan allow for future integration of the bridge to connection with the east side?</p> <p>Noting there is a feasibility study underway for the pump station.</p> <p>Concern for reduction in areas for shore fishing.</p> <p>Implementation time frame for the plan.</p>			<p>Natural shoreline cannot be recreated at Port Credit Memorial Park (West) as it is in an urban environment.</p> <p>Bridge connection to the east side not looked at in this study.</p> <p>Waterfront Trail along boat launch area will addressed through detailed design and may include measures such as zebra crossing, signage, etc.</p> <p>Tremendous capital improvements planned for the parks - other programs (such as skating) not looked at as part of this study.</p> <p>The walkway at JC Saddington Park is about 4m wide and like in other similar circumstances, the cyclist would be asked to dismount and walk with the bike.</p> <p>Cobble beach at JC Saddington Park is replacing revetment and armourstone will be re-used elsewhere.</p> <p>Shore-fishing considered, along with other park programs.</p> <p>Village green identified in the Waterfront Parks Strategy - a time of development will look at the opportunity to reduce parking at JC Saddington Park. There might be capacity to reduce parking due to public transit if available.</p>

Stakeholder Meeting

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



Invitation to Stakeholder Meeting

To: insert contact information (see distribution list below)

Regarding the Pre-Design Studies and Environmental Assessment for the Redevelopment of the Port Credit Harbour West Parks

Dillon Consulting, on behalf of City of Mississauga, would like to invite you to attend a stakeholder meeting to discuss the ongoing studies for Port Credit Harbour West Parks. The meeting will be held from **3:30 to 5:30 on May 22, 2012** at **Port Credit Memorial Arena** (40 Stavebank Road). The purpose of this meeting is to provide you with information about the pre-design and environmental assessment study underway and obtain input from those who actively use the waterfront in this area. We have invited representatives from the charter boat operations and the boat clubs along the west harbour shoreline, as well as a representative from Greenwin which manages the Rivergate Apartment.

The 2008 Waterfront Parks Strategy set in place a framework for progressing urban park redevelopment and established a series of objectives and program requirements and design concepts for Port Credit Memorial Park West, Marina Park and J.C. Saddington Park. The current work involves a detailed technical investigation to better understand infrastructure needs including water and wastewater servicing, safe pedestrian access, and shoreline improvements to support park redevelopment. The infrastructure needs will help inform the development of detailed designs for the parks. The project is being undertaken to meet the requirements of the Municipal Class Environmental Assessment process.

The stakeholder meeting will commence with a project overview after which we will seek input from you on your experiences as waterfront users. A Public Information Centre is planned for June 19th to communicate the study process and the work completed to date to the public.


Please confirm whether you, or a representative from your organization, are able to attend the May 22nd stakeholder meeting by May 15th by contacting Martina Braunstein (mbraunstein@dillon.ca). If you have any questions about the stakeholder meeting or the project in general, please feel free to contact me or Martina.

We look forward to discussing this project with you on further.

Sincerely,

Eha Naylor

Project Manager, Dillon Consulting Limited
235 Yorkland Blvd Suite 800
Toronto, ON, M2J 4Y8
T - 416.229-4647 ext. 2362
enaylor@dillon.ca



Port Credit West Parks Stakeholder Meeting --- Waterfront Operators --- May 22, 2012

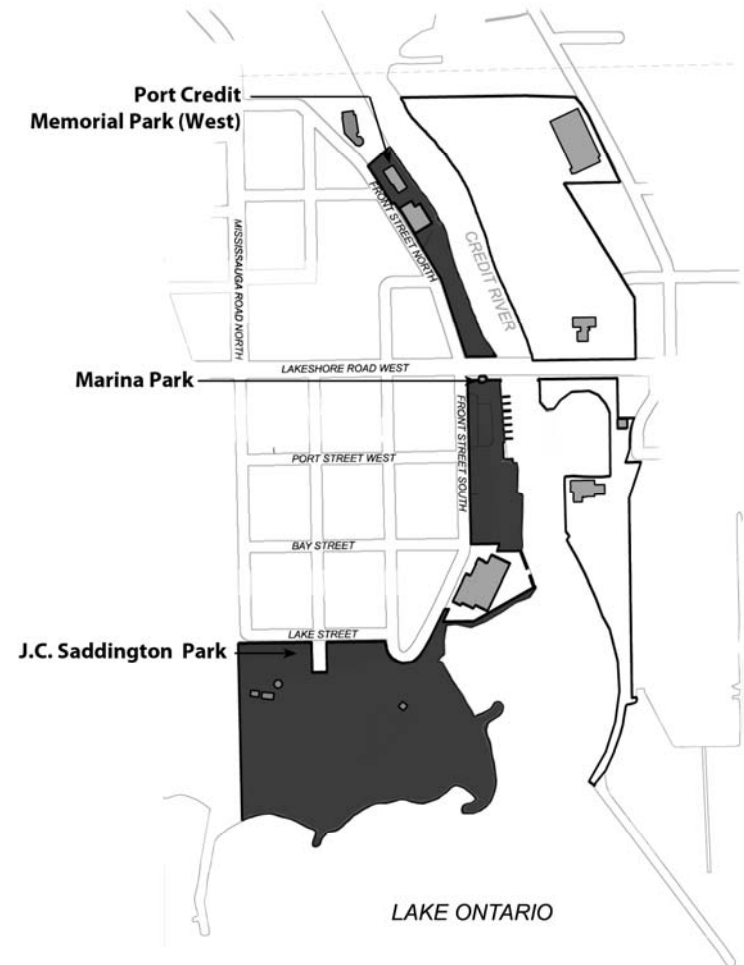
Meeting Agenda

- 1.0 Welcome and Introductions
- 2.0 Overview of Project, Schedule and Objectives
- 3.0 Round Table Discussion/Q&A
- 4.0 Next Steps and Closing Remarks



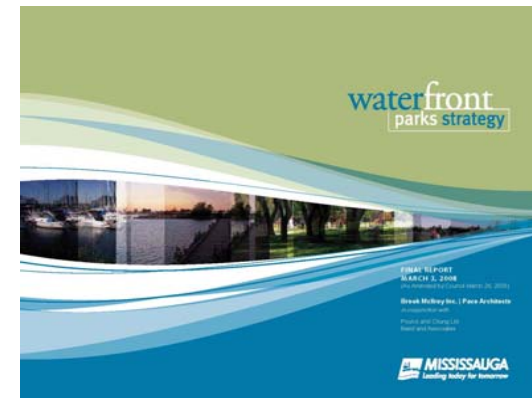
Project Overview

- Purpose - detailed technical investigation on infrastructure needs to support park re-development:
 - Shoreline improvements
 - Safe pedestrian access
 - Water and wastewater servicing



Background

- Extensive work has gone into planning for this area from 1987 to current
- Waterfront Parks Strategy (2008) proposed a concept for the Port Credit West Parks with key recommendations:
 - Improve shoreline
 - Promote fish habitat
 - Manage waterfowl
 - Control erosion
 - Facilitate pedestrian access to water's edge
 - Consider development of a coastal wetland



Study Approach

Three key phases

Understanding The Context

- Background data collection

Issues and Options

- Identifying issues
- Developing and evaluating improvement options
- Refinement of park concept plans

Documentation

- Draft and final report

- Focus of consultation is in the Issues and options Phase – 2 Public Information Centres
- Following a Master Plan approach under the Municipal Class EA – outcome could be a number of projects to be implemented over time.





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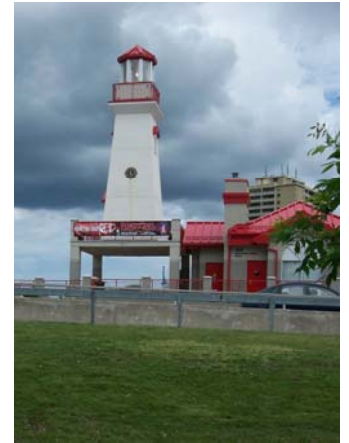


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SHOREPLAN

Round Table Discussion

- How do you use the waterfront
- What works well today
- What would you like to change



Next Steps

Public Information Centre:

Date: **Tuesday, June 19, 2012**

Time: **6:30 pm to 9:00 pm (presentation at 7:00 pm)**

Location: **Clarke Hall, 161 Lakeshore Rd W.**



Key Contacts:

Jane Darragh, OALA, MCIP, RPP

Planner, Park Planning Section

Parks and Forestry Division

Community Services Department

City of Mississauga

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Pre-Design Studies and Environmental Assessment for the Redevelopment of the Port Credit Harbour West Parks Stakeholder Meeting - May 22nd, 2012

On May 22nd a meeting was held with representatives from organizations active on the Port Credit West harbour shoreline. The list of invitees and attendees is appended.

The purpose of the meeting was to provide information about the pre-design and environmental assessment study underway and obtain input from those who actively use the waterfront in this area.

Following a short presentation, the following three questions were asked of participants:

- How do you use the waterfront?
- What works well today?
- What would you like to see change?

Round Table Discussion

How do you use the waterfront?

Participants identified the following ways the waterfront is used:

- Motor boats
- Canoes, kayaks and rowing
- Commercial fishing
- Fishing from shore
- Organized events (e.g. fishing derby, regatta)
- Rowing practice and racing

What works well today?

- Convenient location – close to urban area
- Very well used parks; parks and fishing is a strong economic anchor for Port Credit West
- There is a lot of activity/congestion on the river but all users work together and share the river; there is strong mutual respect
- Racing is a tourism draw
- Anglers association collects fee during Salmon Derby
- Lots of shore fishing
- Real fishing community – always has been
- Word of mouth has recognized that this is a great place to fish
- Curb appeal of commercial boats – creates visual atmosphere and vibrancy
- Atlantic salmon fishery is growing so use of this area will also grow
- Fish disposal/cleaning location is an excellent service
- Area is also used in the winter

- The boating community helps to keep the river clean of debris
- The clubs would like to maintain the members only launch areas they have
- The idea for a Fish hatchery in J.C. Saddington Park is well liked in the fishing/boating community
- The users of the launch ramps like the current location for the following key reasons:
 - Easy to launch; it's not a steep launch - can launch by myself
 - Launch ramps generate business, 609 people/day
 - Proximity of the ramp to the parking makes it easier to transfer gear to and from the boat and keep an eye on kids and things left in the car
 - There is easy access to the launch ramps; launch is well situated with good access to both the river and lake
 - Having the launch ramps alongside the commercial fishing boats creates a strong fishing nucleus
 - Parking is convenient and like that there are no speed bumps; still not enough parking

What would you like to change?

- There is a lot of activity/congestion on river; all parties need to continually remind each other of the need to be careful and implement safe practices; signage was also noted as a way to help remind people to slow down and watch out for others.
- It was suggested that separating the motorized launch from the canoe/kayak launch may be a way minimize congestion
- Need for more rest rooms
- The boat launch should stay in its current location but improvements need to be made to make it more efficient and visually appealing. Improvements suggested include: paving, painting lines, signage around drop off area vs parking, more spaces
- Parking is an issue in the area – there is not enough immediate parking but based on parking studies done by the Business Improvement Area there is sufficient parking in Port Credit overall
- Those in attendance are looking for improvement not change and expressed frustration with the attitude that there has to be change
- The mouth of the river is getting shallower. It was requested that kayaks and rowboat stay to the shallow side to allow deeper boats to manouver. Dredging to increase water depth was discussed as an option.
- There is a kids program on learning to fish that is planned for Port Credit
- The clubs do not have sufficient parking; members park on the street
- Concern was raised about on the Don Rowing club. The boats are large and they need to amount of room currently available. Encroachment resulting from additional landscaping would impede the ability to launch the boats

- Concern was raised by the Mississauga Club regarding the safety of their ramps – the ramps are very steep; creates an access issue for wheelchairs, there is no vehicle access
- Since the hard shore improvements along the east shore have been made, there is additional wake in the river. The west shore improvements should be softer to limit the additional wake from boats
- Shore fishing can be a problem when fishermen cast in front of boats. This should be considered in locating shore fishing. Signs should be posted to remind shore fisherman of appropriate etiquette
- Bank safety is important
- These parks are very busy and should receive a bigger share of city parks maintenance budget
- More public launches should be added at the current location
- If a separate non-motorize launch ramp is considered it will be important to ensure it does not impede the already narrow river and that it is sufficiently removed from the clubs
- Important to maintain wildlife and support fishery
- It is dangerous to launch on open water which a key reason that a launch ramp in J.C. Saddington Park is not considered appropriate. Significant protection would be required to make a launch ramp in this location possible
- The walkway around Rivergate will likely be controversial. This is people's home and the walkway would introduce potential security challenges, privacy issues and visual intrusion. Not convinced that the walkway is needed for connection as the small stretch of road sufficiently connects the parks

List of Attendees

Port Credit Harbour West
Parks

Date

May 22 stakeholders Mtg.
- Waterfront Operators -

Name

Organization

Derek Weckers

Dillon

Milo Sturm

Shoreplan

Kevin Howard

Mississauga Canoe Club

K. Zieba

35 Front,

Jason Robbie

CSAF

DAVE FODOR

FISH ON CHARTER

OLI HAJNY

CREDIT RIVER ANGL. ASSOC.

BOB CUTMORE

PC SALMON & TROUT ASSN

LEE KING

CANADIAN BASS ANGLERS FED. ^{MISS} BASS FISHERIES

Dolly Erbscheid

Salmon Express Charters

Morrison Monowood

Port Credit ISIA

Wayne Andrew

Andrews Charter

Janet Lack

City of Mississauga

James Darragh

Mississauga Canoe Club

Kerri Langlois

Don Rowley Club of Miss.

John Cary

Salmon Express Charters

Jamie Louden

City of Mississauga
201 City Centre Drive
Suite 900
MISSISSAUGA ON L5B 2T4



Leading today for tomorrow

www.mississauga.ca

August 15, 2012

File: CD.10-11306.05

Ms. Carolyn King
Mississaugas of the New Credit
2789 Mississauga Road, RR. 6
Hagersville, ON N0A 1H0

VIA EMAIL: carolyn.king@newcreditfirstnation.com

Dear Ms. King:

SUBJECT: PORT CREDIT HARBOUR WEST PARKS ENVIRONMENTAL ASSESSMENT
Port Credit Memorial Park (West), Marina Park, JC Saddington Park
City of Mississauga

The City of Mississauga has initiated this study to assess the shoreline, natural heritage and servicing infrastructure needs of the Port Credit Harbour West Parks (Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park).

The 2008 Waterfront Parks Strategy established a series of objectives, program requirements and concepts for the Port Credit Harbour West Parks. The current work involves more detailed technical investigations which will be used when establishing the designs for the parks.

A Public Information Centre was held on June 19, 2012 to outline the study purpose, existing conditions as well as the opportunities and constraints that will guide the redevelopment of the Port Credit Harbour West Parks. The presentation can be viewed at:
<http://www.mississauga.ca/portal/residents/parksusefullinks>.

A second Public Information Centre (PIC) will be held in October 2012 to outline the proposed options to be considered in the redevelopment of Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park. An invitation to the PIC will be emailed to you.

In the meantime, if you have any questions, please contact the undersigned at (905) 615-3200 ext . 4946.

Yours truly,

A handwritten signature in black ink that reads "Jane Darragh".

Jane Darragh, OALA, MCIP, RPP
Planner, Park Planning
Parks and Forestry Division
Community Services Department

cc: Eha Naylor, Dillon Consulting
Karla Kolli, Dillon Consulting
David Marcucci, Park Planning
Geoff Smith, Park Planning
Mark Howard, Park Planning

port credit harbour west parks - environmental assessment

Jane Darragh <jane.darragh@mississauga.ca>

Thu, Oct 11, 2012 at 8:28 AM

To: "carolyn.king@newcreditfirstnation.com" <carolyn.king@newcreditfirstnation.com>

Good morning Ms. King,

The City of Mississauga is conducting pre engineering studies for the redevelopment of Port Credit Memorial Park (West), Marina Park and JC Saddington Park through an environmental assessment process. We would appreciate receiving any feedback that the Mississauga of New Credit may provide.

We have tried to reach you in the past using email. I have attached a letter that I sent you in the summer as well as a notice of a public information centre to be held on October 24.

Mark Howard has just informed me that I should try using these email settings... Please confirm that you have received this email.

Regards,

Jane Darragh, OALA, MCIP, RPP
Planner, Park Planning Section
Parks and Forestry Division
Community Services Department
City of Mississauga
(905) 615-3200 ext.4946

----- Forwarded message -----

From: Jane Darragh <jane.darragh@mississauga.ca>

To: "carolyn.king@newcreditfirstnation.com" <carolyn.king@newcreditfirstnation.com>

Date: Wed, 15 Aug 2012 12:01:26 -0400

Subject: City of Mississauga - PORT CREDIT HARBOUR WEST PARKS ENVIRONMENTAL ASSESSMENT

Ms. King,

Please review the attached letter and contact me regarding any questions or comments you may have.

Regards,

Jane Darragh, OALA, MCIP, RPP

Planner, Park Planning Section

Parks and Forestry Division

Community Services Department

City of Mississauga

[\(905\) 615-3200 ext.4946](tel:(905)615-3200)

2 attachments



20120815115652963.pdf

48K



Port Credit Harbour West Parks_PIC #2 Final Public Notice.pdf

232K

Public Information Centre # 1

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



PUBLIC NOTICE

NOTICE OF PUBLIC INFORMATION CENTRE

Port Credit Harbour West Parks Pre-Design Studies & Environmental Assessment

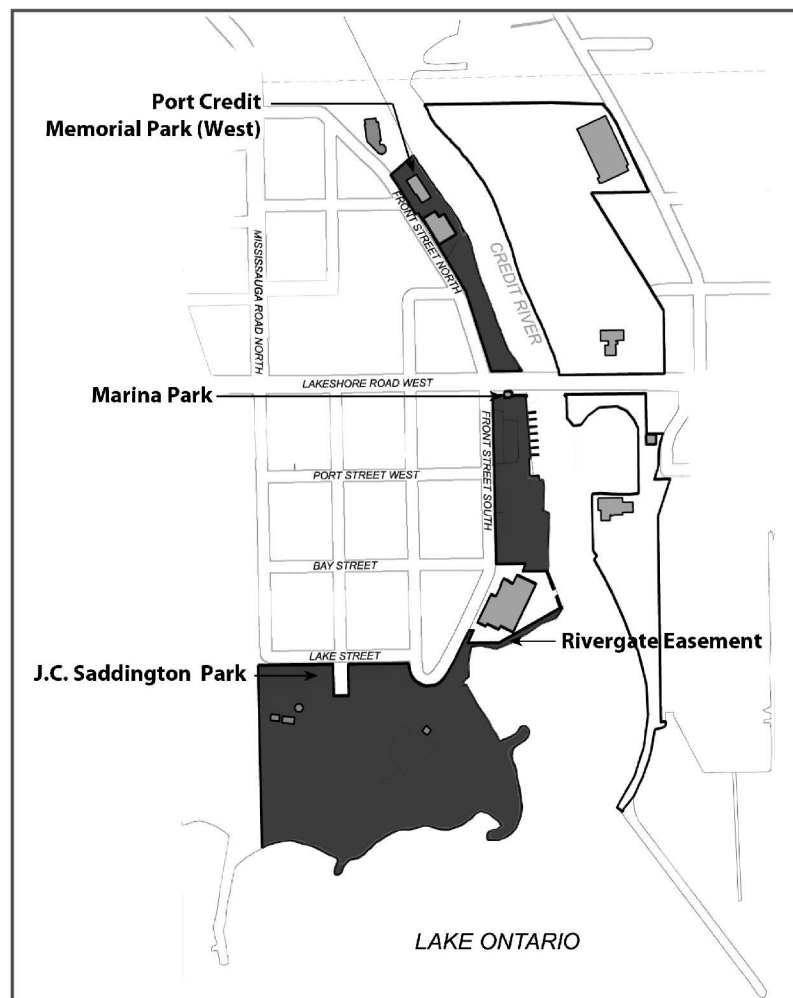
The City of Mississauga has initiated this study to assess the shoreline, natural heritage and servicing infrastructure needs of the Port Credit Harbour West Parks (Port Credit Memorial Park W., Marina Park and J.C. Saddington Park).

The 2008 Waterfront Parks Strategy established a series of objectives, program requirements and concepts for the Port Credit Harbour West Parks. The current work involves more detailed technical investigations which will be used when establishing the designs for the parks.

We invite you to the Public information Centre to find out further information about the study purpose, existing conditions as well as the opportunities and constraints that will guide the redevelopment of the Port Credit Harbour West Parks. At the Public Information Centre, staff will be available to answer your questions and receive your comments.

The Public Information Centre will take place at the following date, time and location:

Date: Tuesday June 19, 2012
Time: 6:30pm to 9:00pm
 (with a presentation at 7:00pm)
Location: Clarke Hall 161 Lakeshore Rd. W.



This study is being conducted in accordance with the Municipal Class Environmental Assessment process, which is an approved process under the *Environmental Assessment Act*.

If you have any comments, questions or require further information regarding the study, please contact either of the individuals below:

Jane Darragh, OALA, MCIP, RPP
 Planner, Park Planning Section
 Parks and Forestry Division
 Community Services Department
 905-615-3200 ext. 4946
Jane.Darragh@mississauga.ca

Eha Naylor, OALA, MCIP, RPP
 Dillon Consulting Limited
 235 Yorkland Boulevard Suite 800
 Toronto, ON, M2J 4Y8
 416-229-4647 ext. 2362
enaylor@dillon.ca

Purpose

To gain community input on:

- Existing conditions information
- Identification of challenges & opportunities



This Public Information Centre will:

- Present background information
- Introduce the project context
- Provide an overview of the existing conditions
- Identify challenges & opportunities
- Present study process and timeline

Study Approach

Public Consultation

**Stakeholder
Meeting**

**Public Information
Centres #1 & #2**

**Public Review of
Documentation**



Technical Work

**Data Collection
& Analysis**

**Refinement of Large
Block Concept Plan**

Draft & Final Report

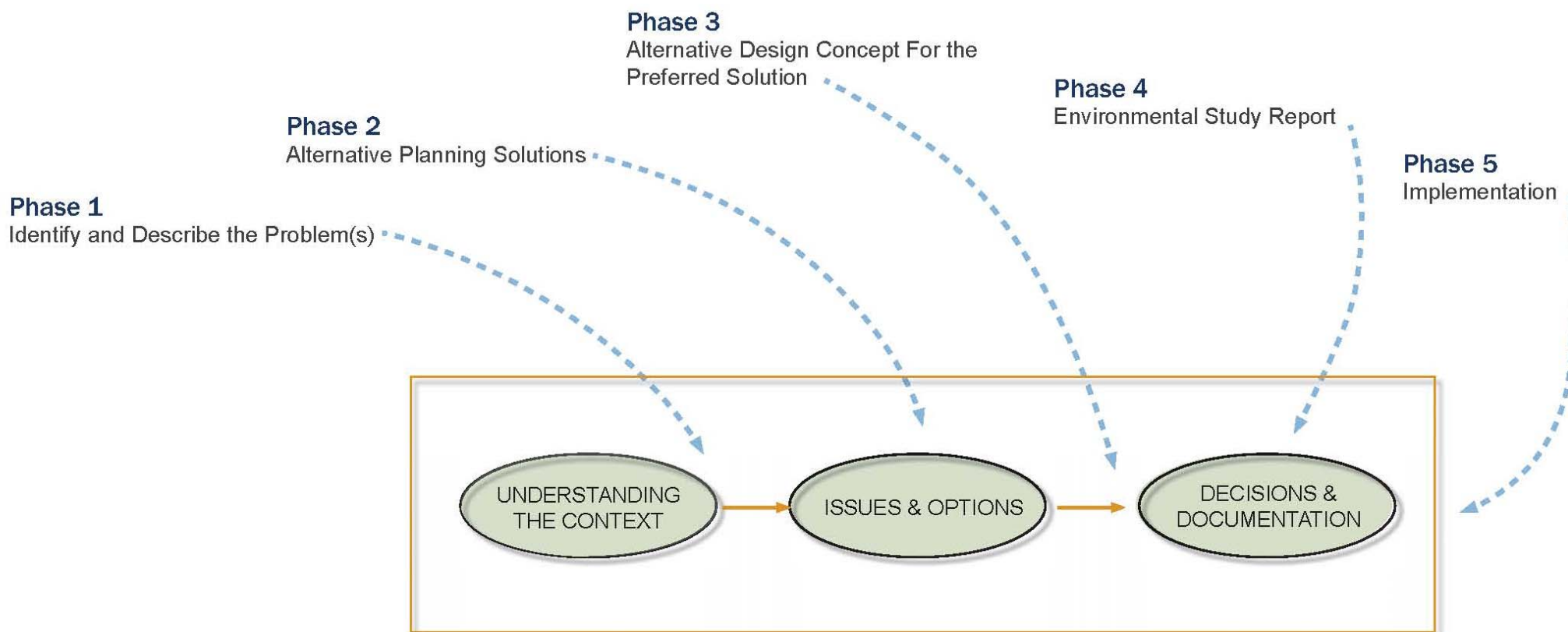
Study Approach

Municipal Class Environmental Assessment

- Traceable & Easy Decision-Making

- Public Involvement

- Consideration of Alternatives



Study Approach

Decision Making – Criteria Groups for Evaluating Options

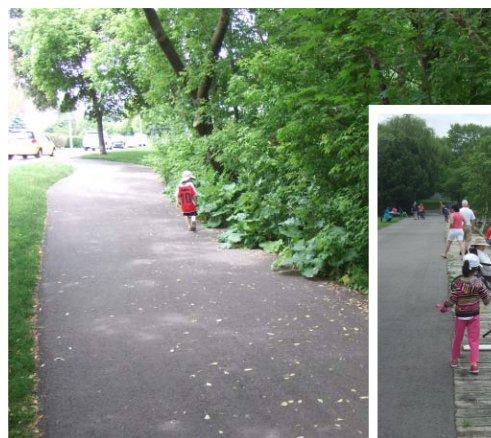
- Natural Environment
- Socio-Economic and Cultural Environment
- Technical
- Cost



Background + Project Context

Port Credit Community Today

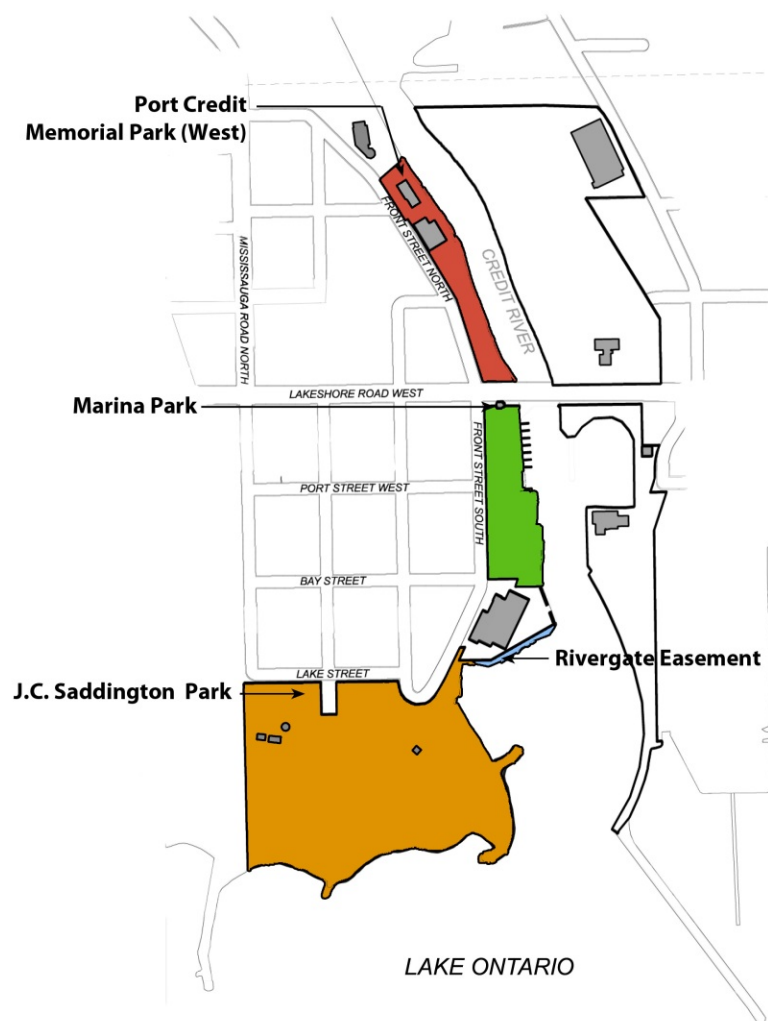
- Established Port Credit BIA
- Within the Old Port Credit Village Heritage Conservation District
- Popular area for festivals and events
- Harbour well used by motorized and non-motorized boats
- Waterfront Trail and multi-use trails connect the parks and attractions



Project Context

Port Credit Memorial Park (West)

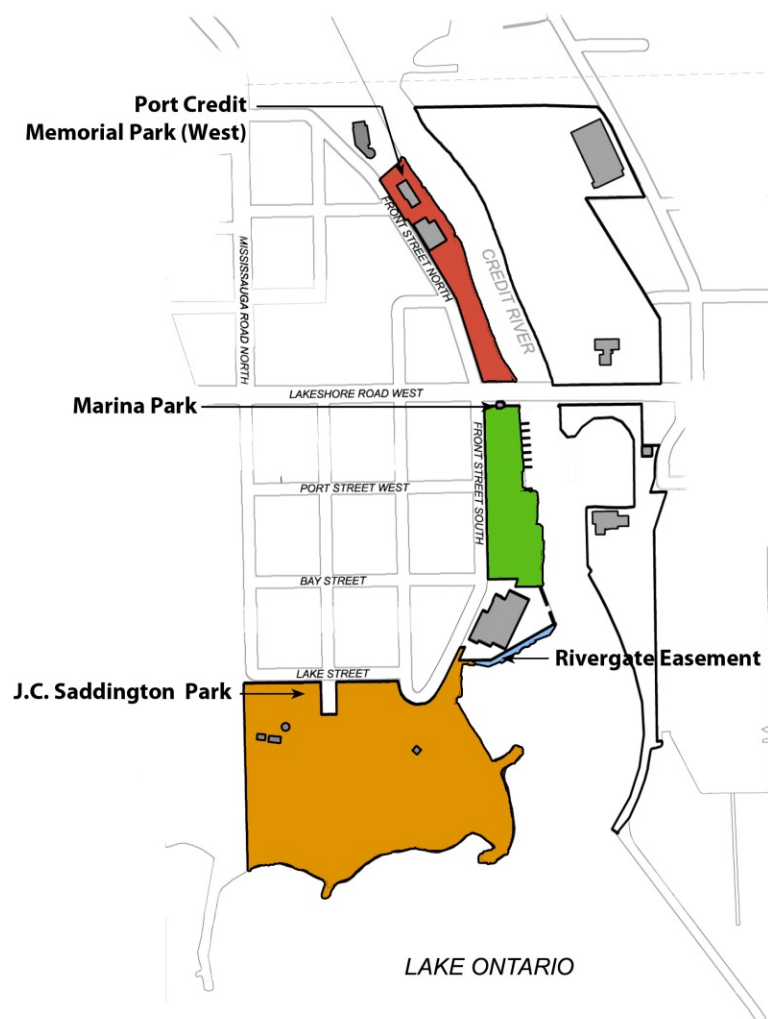
- Approximately 1 hectares (2.47 acres)
- Approximately 327 metres of shoreline (1,1073 feet)



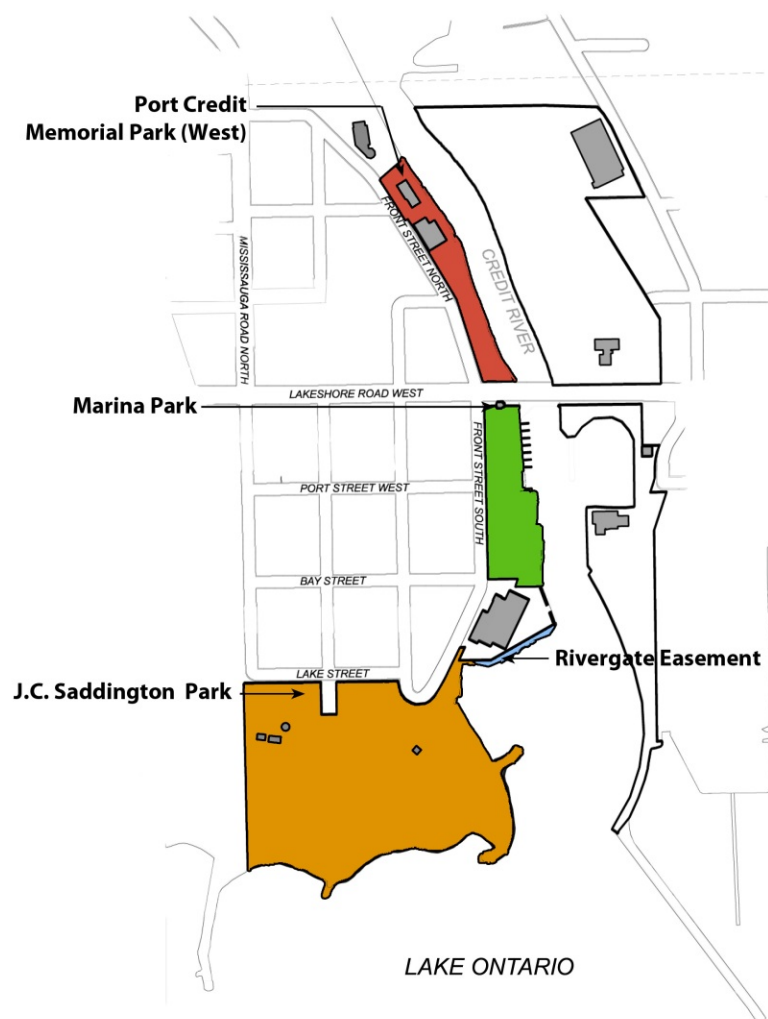
Project Context

Marina Park

- Approximately 1.27 hectares (3.13 acres)
- Approximately 264 metres of shoreline (866 feet)



Project Context



Rivergate Easement

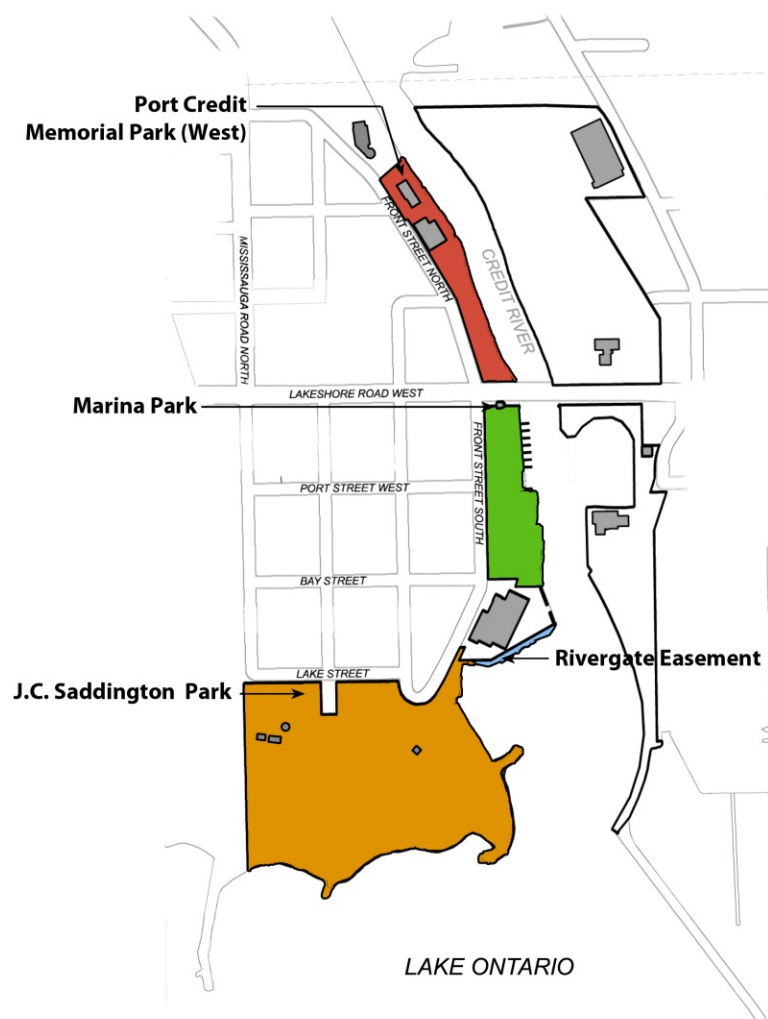
- Approximately 6 metre width (20 feet)
- Approximately 193 metres of shoreline (633 feet)



Project Context

J.C. Saddington Park

- Approximately 10 hectares (25 acres)
- Approximately 810 metres of shoreline (2,658 feet)



Overview of Existing Shoreline Conditions



Overview of Existing Shoreline Conditions

Local Bathymetry

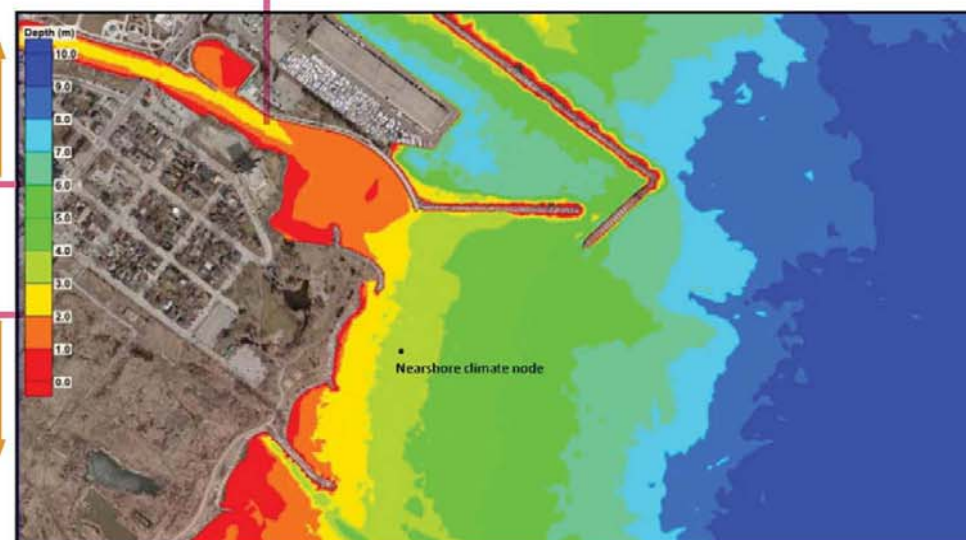
- depths of 6 metres or more are found near the entrance of the Port Credit Marina

6.0 m

- depths of 2 metres or less are found in the mouth of the Credit River

2.0 m

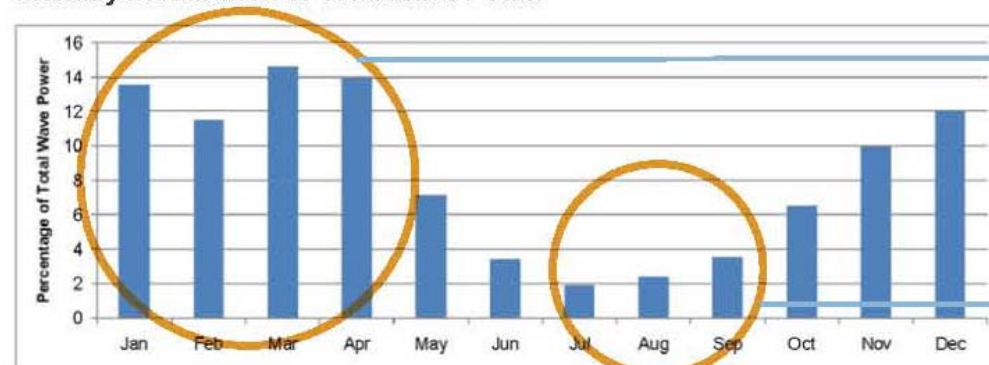
- a deeper channel is found along the east side of the Credit River



Overview of Existing Wave Conditions

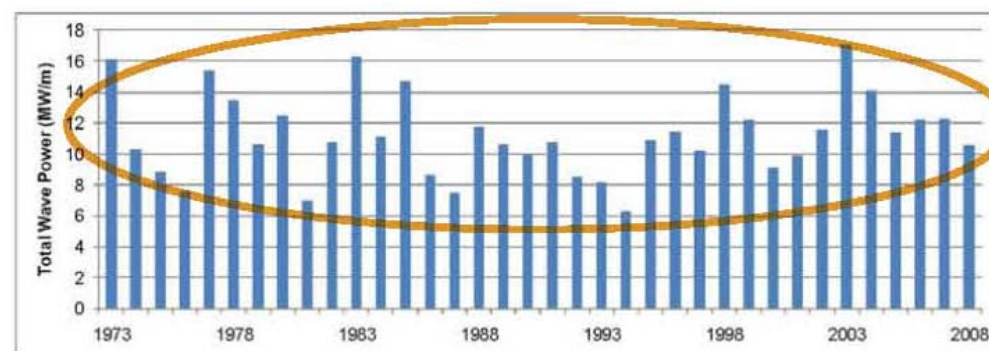
Wave Power Distribution

Monthly Distribution of Total Wave Power



- most wave power is generated during winter and early spring months
- June, July and August are the calm months on Lake Ontario

Annual Distribution of Total Wave Power



- wave power varies significantly from year to year

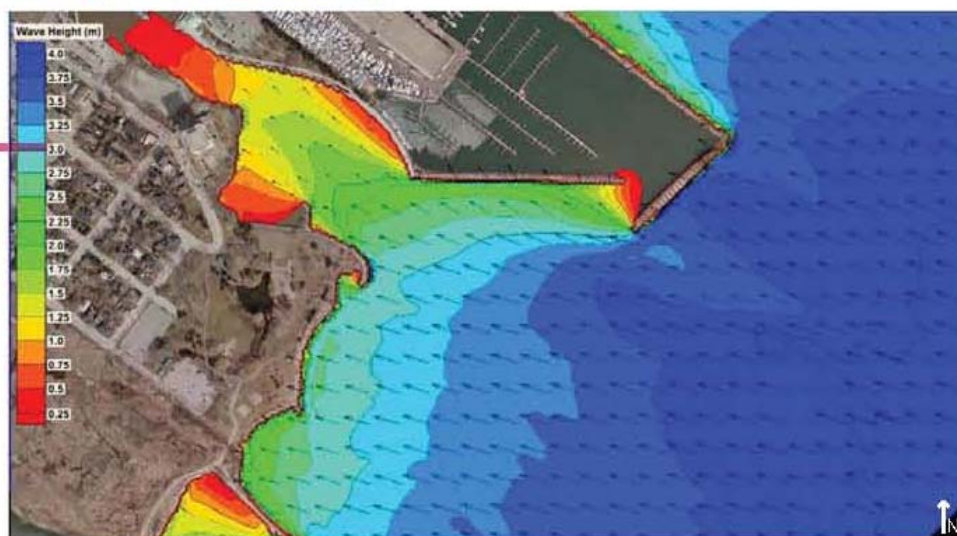
Overview of Existing Wave Conditions

Nearshore Wave Transformations

- diagrams indicate nearshore wave conditions (wave height and direction)
- information used for design of offshore protection structures

Highest Hindcast Wave Height - East Waves

(5.5m 10s in deep water, analysis water level 75.0m)



- largest nearshore waves approach the site from the east
- east waves also penetrate furthest into the mouth of the river and up the river channel

Overview of Existing Infrastructure Conditions

- Servicing & Utilities
- Connecting Infrastructure
- J.C. Saddington Pond



Overview of Existing Natural Heritage Conditions

Credit River

- habitat for warm water fish, migratory corridor for salmonids

Terrestrial Environment

- manicured lawn with both landscape trees and naturalized vegetation

Riparian Vegetation

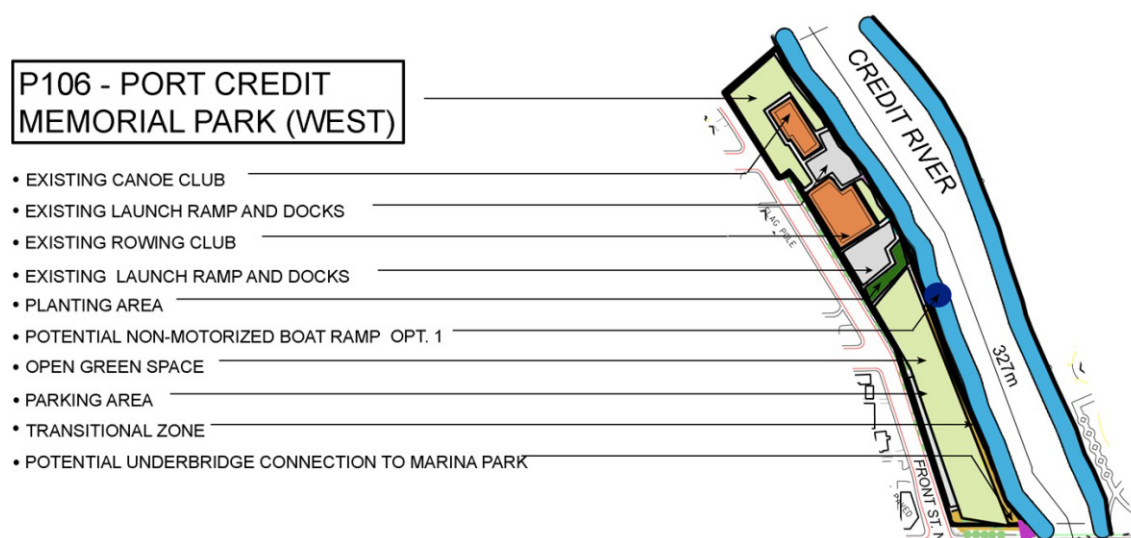
- provides some corridor connection to adjacent natural features



Challenges & Opportunities

Stakeholder Meeting Comments (May 22, 2012)

- Keep launching of public non-motorized boats separate from club launch areas
- West shore improvements should be softer/naturalized to limit the additional wake from boats
- Improve connections to the river by opening up views



Dillon Consulting/ShorePlan

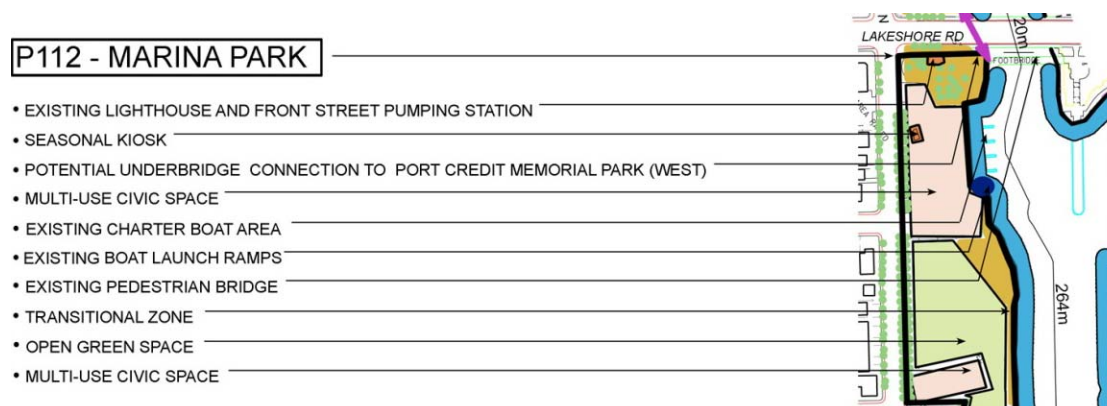
- Natural heritage linkage improvements along the water
- Introduction of more native vegetation
- Technical work still in progress

Challenges & Opportunities

Stakeholder Meeting Comments (May 22, 2012)

- Boat launch – great location for access to both river and lake
- A lot of activity/congestion on the river, but boaters work together to minimize conflict
- Fish disposal/cleaning location is an excellent service
- Parking improvements – parking busy and unorganized for boat trailers
- Suggestion to separate motorized boat launch from the canoe/kayak launch to minimize congestion

Dillon Consulting/ShorePlan



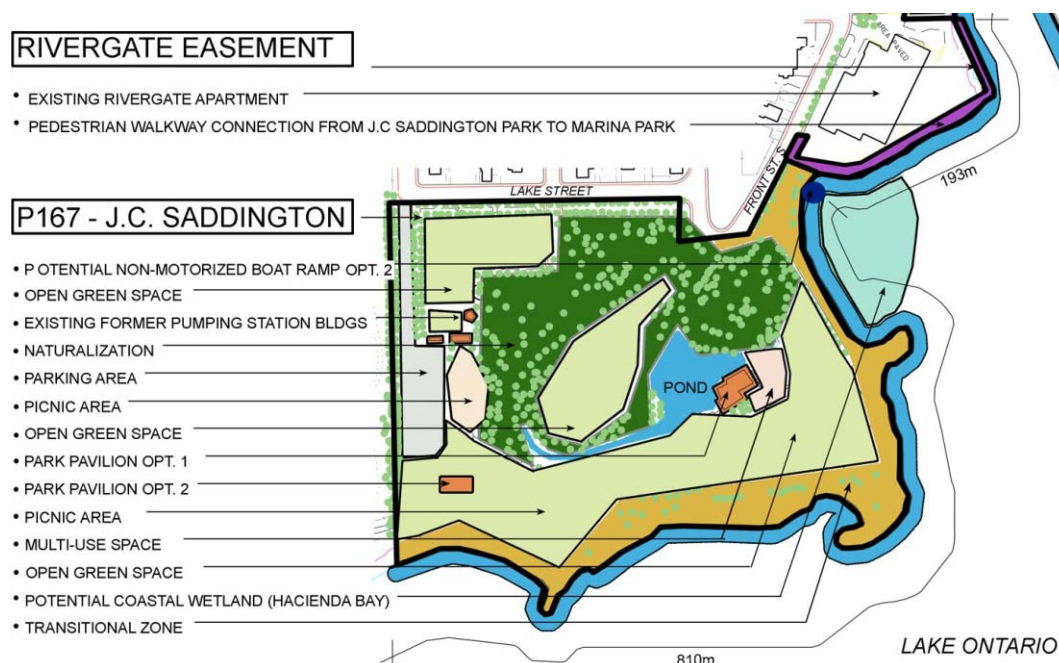
- Introduction of more native vegetation
- Opportunity to add green space and community space
- Technical work still in progress

Challenges & Opportunities

Stakeholder Meeting Comments (May 22, 2012)

- Potential location for fish hatchery
- Concerns with walkway on the Rivergate easement and how it will relate to the existing apartment building

Dillon Consulting/ShorePlan



- Coastal wetland opportunity
- Cobble beach at Hacienda Bay
- Naturalization of pond and surroundings
- Opportunity to improve shoreline fishing
- Habitat creation for wildlife, singing birds and amphibians
- Technical work still in progress

Timeline

[illegible]



Port Credit Harbour West Parks

Engineering Studies & Environmental Assessment

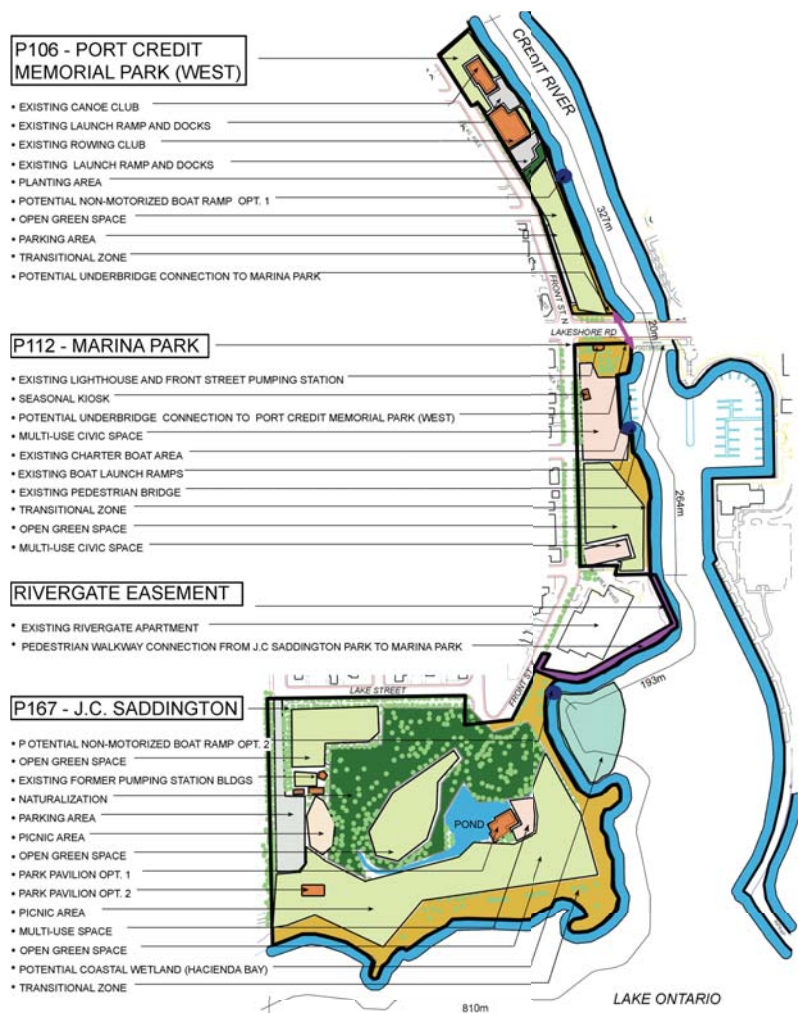
Welcome To Public Information Centre # 1

June 19, 2012

PANELS



Study Objectives



Study Purpose

Three parks frame Port Credit's west harbour and provide great opportunities for passive and active recreation, boating and fishing. The three urban parks offer a dynamic opportunity for interaction and enjoyment of the city's water edge.

Port Credit Memorial Park (West)
Marina Park
J.C. Saddington Park

The 2008 Waterfront Parks Strategy established a series of objectives, program requirements and concepts for the Port Credit Harbour West parks. This study will assess the shoreline, natural heritage and infrastructure needs of the parks to inform the design and planning of the park redevelopment.

Public Information Centre Purpose

To gain community input on:

- **existing conditions** information
- **identification of challenges & opportunities**

This Public Information Centre (PIC) will:

- present **background information**
- introduce the **project context**
- provide an overview of the **existing conditions**
- identify **challenges** and **opportunities**
- present **study process** and **timeline**

Study Approach

Big Picture Planning 2008 Waterfront Parks Strategy

Site Specific Planning **TODAY** Technical Studies
Large Block Concept Design **ENVIRONMENTAL ASSESSMENT**

Detailed Design 2014* Port Credit Memorial Park (West)
Marina Park

Construction 2016* Port Credit Memorial Park (West)
Marina Park

Notes:

*subject to budget review and other planning initiatives

Redevelopment of J.C. Saddington Park is not fully funded at this time.

PUBLIC CONSULTATION

☐ stakeholder meeting

☐ ongoing consultation

☐ Public Information Centre #1
~to review existing conditions & challenges/
opportunities

☐ Public Information Centre #2
~to review the evaluation of options + refined
large block concept plan

☐ public review of documentation

UNDERSTANDING
THE CONTEXT

ISSUES & OPTIONS

DECISIONS &
DOCUMENTATION

TECHNICAL WORK

☐ data collection on existing
conditions

☐ identification of challenges &
opportunities

☐ identification of infrastructure needs

☐ confirmation of challenges &
opportunities

☐ development & evaluation
improvement options

☐ refinement of large block concept plan

☐ identification of positive & negative
effects of proposed improvements

☐ draft & final report

Key Deliverables

- approval in principle for shoreline, natural heritage and infrastructure improvements
- large block concept plan

Study Approach

Municipal Class Environmental Assessment

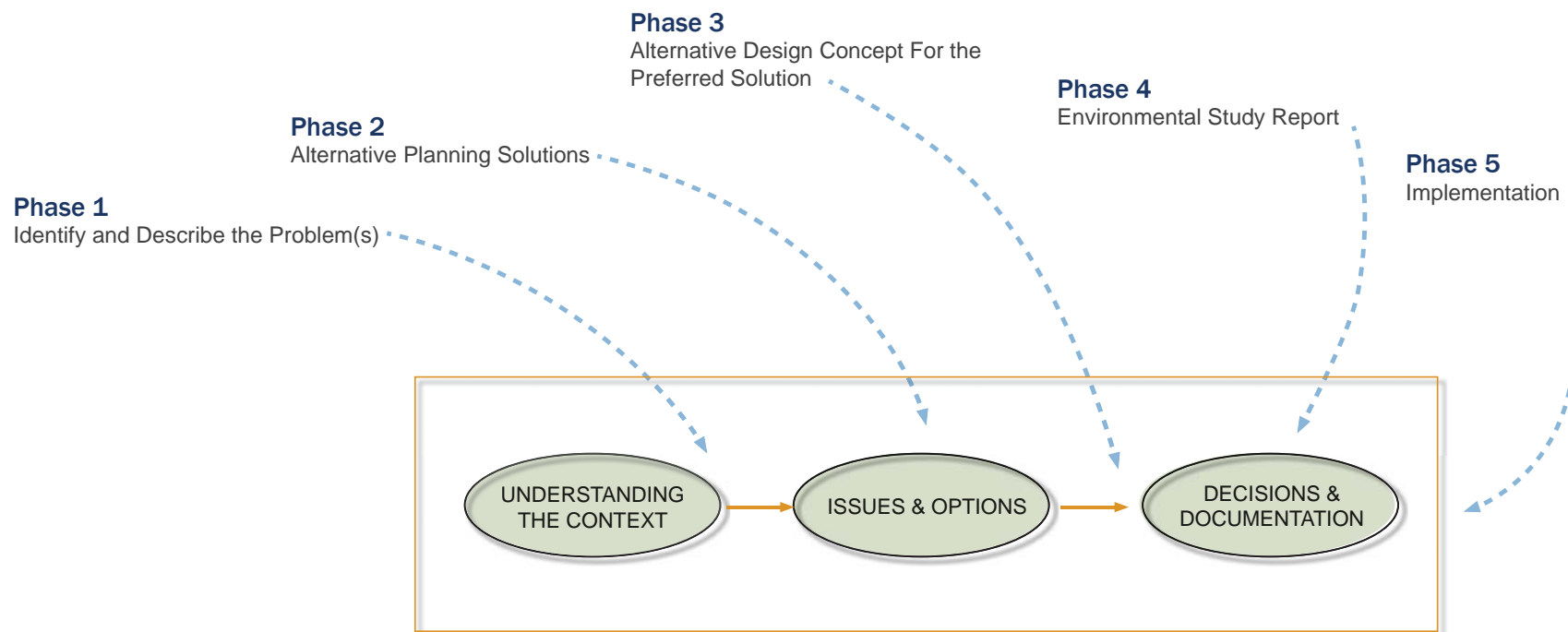
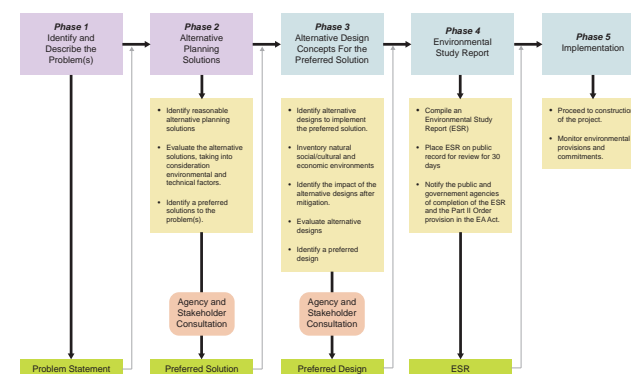
The Municipal Class Environmental Assessment process is a key part of the planning process for municipal infrastructure projects that have potential for effects on the environment. The process is focused on:

- providing traceable and easy to understand decision-making
- involving the public
- considering alternatives

Municipal infrastructure projects such as shoreline improvements to the Port Credit Harbour West Parks must follow the Municipal Class Environmental Assessment (Class EA) process.

The study approach for this project has been designed to incorporate the phases of the Class EA.

General Class EA Process



Study Approach - Details Shown on Panel 2

Study Approach

Decision Making

This project may involve the comparison of different ways to improve the parks. When considering options it is important to have a clear set of things to consider or 'evaluation criteria'.

This set of criteria have been developed for use in comparing the shoreline options and are based on consideration of all aspects of the environment.

Tell us if there are other things we should consider for the criteria!

Port Credit Harbour West Parks Draft Criteria for Evaluating Options	
Criteria Groups	Evaluation Criteria
Natural Environment	Opportunity to improve fish habitat
	Opportunity to increase areas of naturalization
	Potential for impact to aquatic or terrestrial habitat during construction
	Potential for impact to water quality
	Potential for impact to species at risk
Socio-Economic and Cultural Environment	Potential for disruption during construction and operation
	Opportunity to enhance park/waterfront enjoyment
	Opportunity to improve safety
	Opportunity to improve economic benefits to the community
Technical	Level of protection provided from wave conditions
	Design life/ Maintenance requirements
	Potential for contamination issues
	Operational Flexibility
	Potential impact on utilities
	Constructability
Cost	Relative cost differences (including capital, property, operational and maintenance)

Background + Project Context

Changes to the Port Credit Waterfront



1835 survey



1928 survey



2003 map



Note:

The triangle provides a point of reference between the historic maps.

Port Credit Periods of Human Use & Activity

Port Credit has been active community since the 1600s.

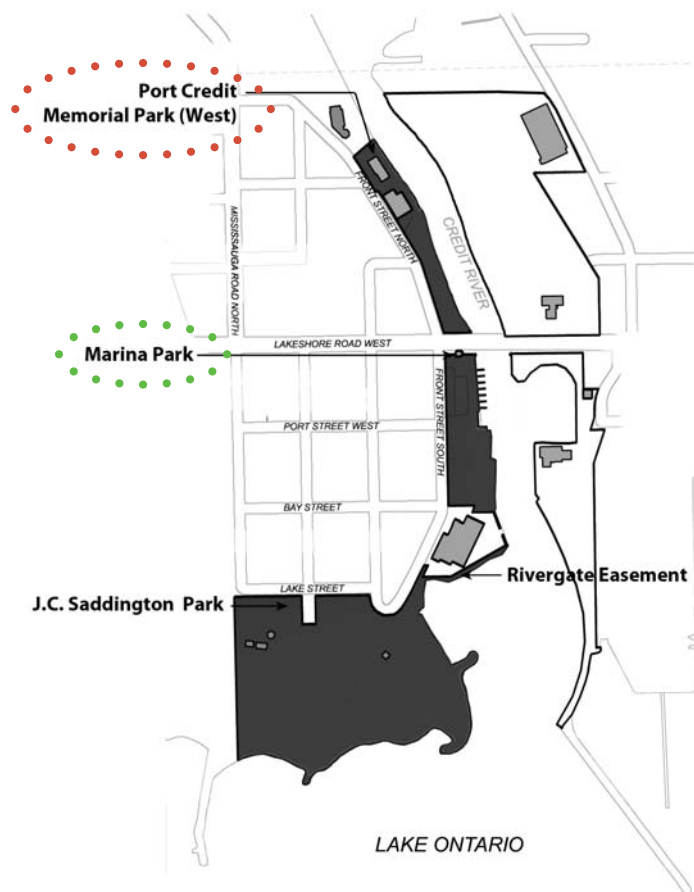
- before 1600s** Native history
- 1700s to 1826** Mississauga native settlement, early 1700s to 1826
- 1834-1847** Credit Harbour Company established and the Port Credit Village planned and constructed
- 1848-1856** Busy port operations
- 1855-1883** Village fire on the west bank of the river and port in decline
- 1909-1928** Twentieth-century infrastructure and improvements
- 1961-1973** Modern development including J.C. Saddington Park

Source: Heritage Conservation Feasibility Study, 2003

Port Credit Community Today

- established Port Credit BIA
- within the Old Port Credit Village Heritage Conservation District
- popular area for festivals and events
- harbour is well used by motorized and non-motorized boats
- multiple users of the river's edge (motor boat, shore fishing, canoe/kayak and rowing)
- attractive to users of both Credit River and Lake Ontario
- harbour is a visual attraction
- Waterfront Trail and multi-use trails connect the parks and attractions

Background + Project Context



Port Credit Memorial Park (West)

- approximately 1 hectare (2.47 acres)
- approximately 327 metres of shoreline (1073 feet)
- Mississauga Canoe and Don River Rowing Clubs lease facilities at the north end of the park
- open green space is used as a viewing area for river activities



Marina Park

- approximately 1.27 hectares (3.13 acres)
- approximately 264 metres of shoreline (866 feet)
- lighthouse that contains the Region of Peel's Front Street Pumping Station, as well as offices for the Port Credit BIA and public washrooms
- charter boats occupy several timber docks at the north end of the site
- public launch ramps are used for both motorized and non motorized boats
- south section of the park is currently a gravel parking lot
- location of Salmon Derby
- within the Old Port Credit Village Heritage Conservation District
- Waterfront Trail



Background + Project Context



J.C. Saddington Park

- approximately 10 hectares (25 acres)
- approximately 810 metres of shoreline (2,658 feet)
- park was constructed in the 1970s and primarily consists of lake fill
- great proximity and views to Lake Ontario
- family oriented activity areas, including children's play facilities, picnic facilities, a pond and public washrooms
- multi-use trails
- Waterfront Trail
- within the Old Port Credit Village Heritage Conservation District



Rivergate Easement

- approximately 193 metres of shoreline (633 feet)
- City leases a 6 metre wide easement around the perimeter of the 20 storey apartment building from Credit Valley Conservation
- links Marina and J.C. Saddington Parks on the western bank of the Credit River



Overview of Existing Shoreline Conditions

Existing Shoreline

- most shoreline structures in the study area require upgrading or maintenance
- updated provincial regulations will be used to provide design standards for shoreline improvements
- Lake Ontario and Credit River shorelines within the study area are dominated by hardened treatments including concrete, armour stone or gabion



Random Armour Stone Revetment
J.C. Saddington Park



Stacked Armour Stone Wall
J.C. Saddington Park



Various Protection Works
J.C. Saddington Park - Rivergate Easement



Launch Ramps
Marina Park



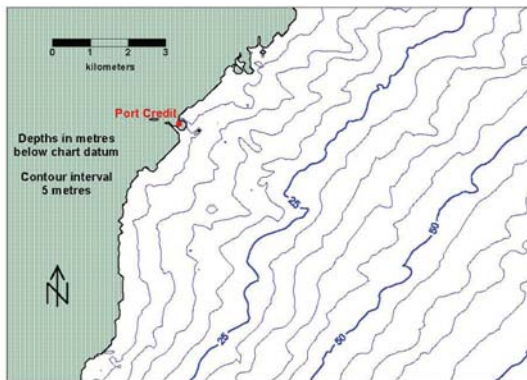
Lakeshore Road Bridge Abutment with Armour
Stone Revetment



Concrete Slab Revetment
Port Credit Memorial Park
(West)

Regional Bathymetry

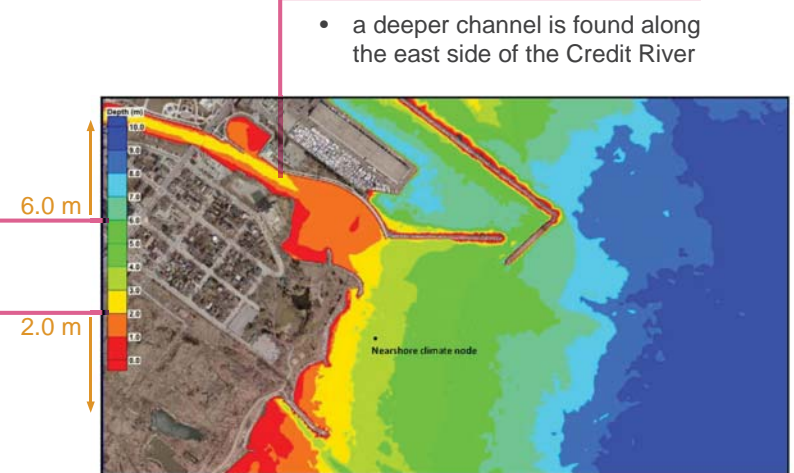
Bathymetry shows what the bottom of the lake looks like



Local Bathymetry

- depths of 6 metres or more are found near the entrance of the Port Credit Marina

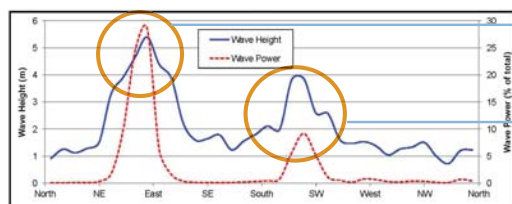
- depths of 2 metres or less are found in the mouth of the Credit River



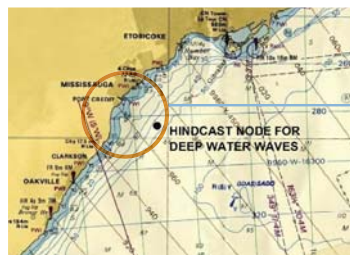
Overview of Existing Wave Conditions

Deep Water Wave Conditions

Directional Distribution of Highest Hindcast Wave Heights and Total Wave Power



- highest waves are generated from the east quadrant
- southwest quadrant has most frequent on-shore waves

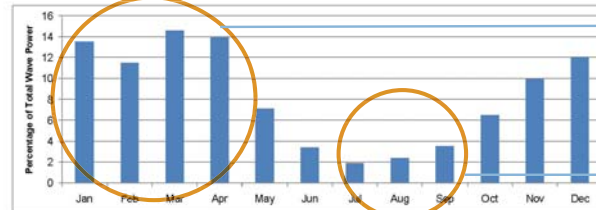


- location of deep water node for wave hindcast at Port Credit
- approximately 6.5 km offshore

Source: Navigation Chart No. 2000 produced by Canadian Hydrographic Service 1997

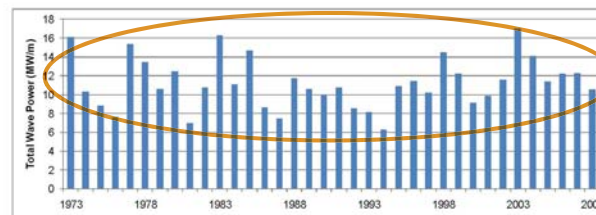
Wave Power Distribution

Monthly Distribution of Total Wave Power



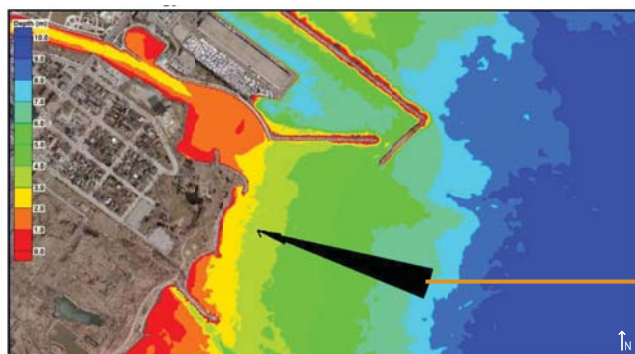
- most wave power is generated during winter and early spring months
- June, July and August are the calm months on Lake Ontario

Annual Distribution of Total Wave Power



- wave power varies significantly from year to year

Wave Energy Distribution



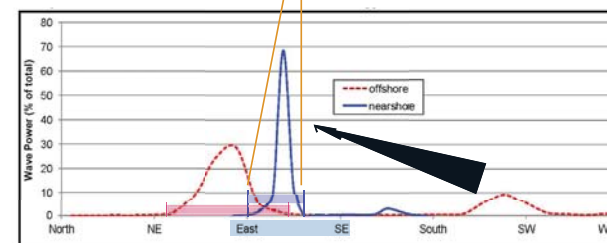
Nearshore Wave Energy Distribution

Understanding Conditions Influencing Shoreline Design

Understanding the direction of the wave and wave energy distribution is important in the consideration of shoreline design (e.g. to help determine where soft shorelines or cobble beaches are appropriate)

- the direction of the wave energy direction at J.C. Saddington Park is generally east-southeast as shown by the arrow

- wave energy becomes focused as it approaches the shore



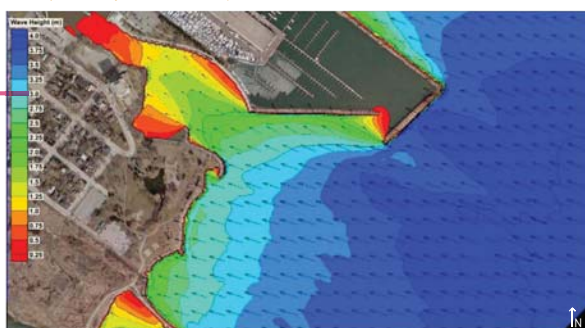
Comparison of Offshore and Nearshore Wave Energy Distributions

Overview of Existing Wave Conditions

Nearshore Wave Transformations

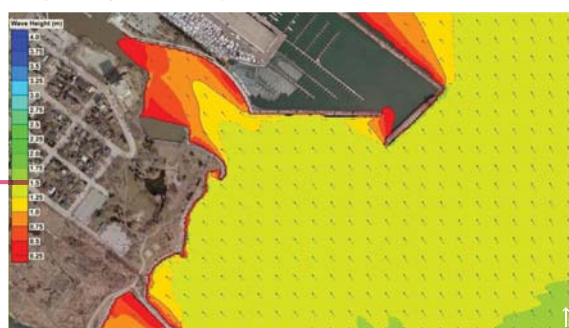
- diagrams indicate nearshore wave conditions (wave height and direction)
- information used for design of offshore protection structures

Highest Hindcast Wave Height - East Waves
(5.5m 10s in deep water, analysis water level 75.0m)



- largest nearshore waves approach the site from the east
- east waves also penetrate furthest into the mouth of the river and up the river channel

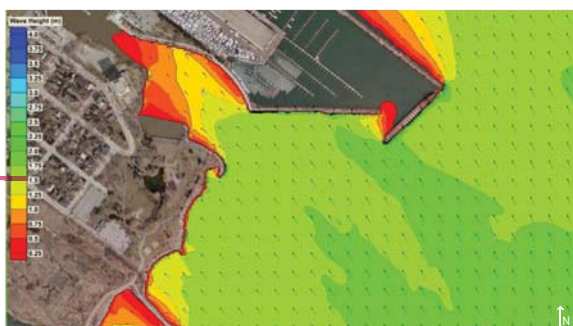
Highest Hindcast Wave Height - South Waves
(2.1m 6s in deep water, analysis water level 75.0m)



Hindcast

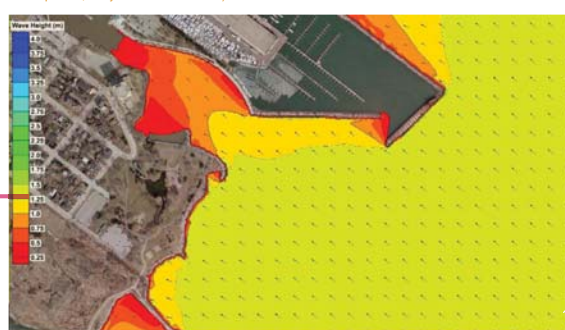
Mathematical modelling process that produces wave conditions on a body of water using 36 years of recorded wind speeds and directions from the Toronto Island Airport.

Highest Hindcast Wave Height - Southwest Waves
(4.0m 8s in deep water, analysis water level 75.0m)



- southwest waves also penetrate well into the river mouth

Highest Hindcast Wave Height - Southeast Waves
(1.6m 5s in deep water, analysis water level 75.0m)



Design Wave Conditions

Defined as the wave height having a probability of being equalled or exceeded during any year of 1%.

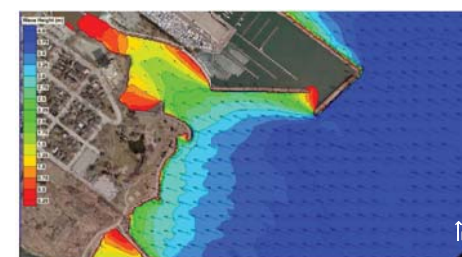
This means that on average, during a 100-year period, this wave height is expected to be equalled or exceeded once.

Design Water Level

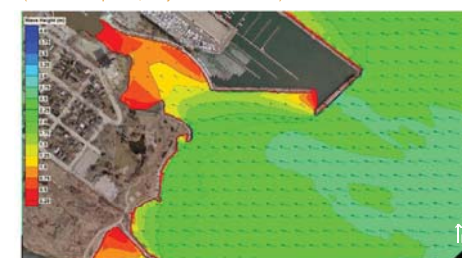
Defined as the peak instantaneous level having a probability of being equalled or exceeded during any year of 1%.

This means that on average, during a 100 year period, the 100 year flood level is expected to be equalled or exceeded once.

Design Wave (100-yr wave, 100-yr water level)
(6.0m 10s east wave in deep water, analysis water level 75.8m)



Annual Wave - Average of 36 Highest Annual Wave Heights
(3.4m 8s in deep water, analysis water level 75.0m)



Overview of Existing Infrastructure Conditions

Servicing & Utilities

Municipal servicing, power, gas and communications are available in or adjacent to Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park.

J.C. Saddington Pond

The pond is filled with water that is pumped from Lake Ontario and circulated through the pond system with an outlet back into the lake. The 2008 Waterfront Parks Strategy considers the pond and stream to be a great asset to the park.

Connecting Infrastructure

The study area is connected with east harbour parks via the Lakeshore Road West bridge and a separate pedestrian overpass. There is a pedestrian underpass on the east shoreline below Lakeshore Road West bridge. Currently there is no connection between Port Credit Memorial Park (West) and Marina Park. Pedestrians can travel west to the lights at John Street, but often cross Lakeshore Road at the Lighthouse.



J.C. Saddington Park

Mississauga Road leading
to J.C. Saddington Park



Marina Park



Port Credit Memorial Park (West)



Marina Park



Pumping Station



Marina Park

Overview of Existing Natural Heritage Conditions

Natural Heritage Context

- natural heritage **characterization** of the lands within the parks will be used to help provide direction for land use strategies, recreational amenities and infrastructure improvements
- study includes an **extensive review of natural heritage** data that has been collected previously, consultation with agencies such as Credit Valley Conservation (CVC), Ministry of Natural Resources (MNR) and Fisheries and Oceans Canada (DFO), and field work being undertaken in 2012
- natural heritage **field work** includes several components, such as documentation of shoreline fish habitat conditions, plant and wildlife surveys, birds and species at risk
- study characterizes natural **heritage constraints and opportunities** associated with the park lands, particularly along the riverbank and shoreline areas

Natural Heritage Existing Conditions

- lower Credit River provides important **habitat for a warm water fish** community, ranging from bait fish to top predators such as smallmouth bass
- Credit River also provides an important **migratory corridor** for salmonids, such as chinook salmon and rainbow trout
- waterfront parks' **terrestrial environment** is an assortment of manicured lawn with both landscape trees and naturalized vegetation in some areas
- riparian vegetation along the Lake Ontario waterfront and Credit River provides some **corridor connection** to adjacent natural features
- **breeding bird and amphibian habitat** is limited to the central pond area at J.C. Saddington Park



Western shoreline of Port Credit Memorial Park (West)



Concrete lining along the Credit River adjacent to Port Credit Memorial Park (West)



Pond within J.C. Saddington Park



Naturalized section of tributary within J.C. Saddington Park, upstream of the Credit River



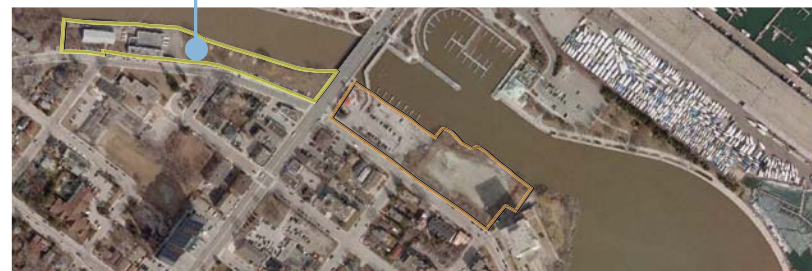
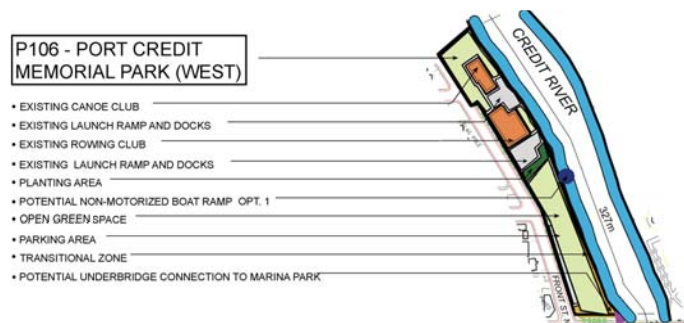
Shallow bay along Lake Ontario shoreline created by rock groyne along J.C. Saddington Park

Challenges & Opportunities

Port Credit Memorial Park (West)

Waterfront Parks Strategy, 2008

- improvement of entire river edge, new design can provide for needed park facilities such as water's edge seating and pedestrian access
- new shoreline treatment should absorb wake and be accessible to non-motorized water-craft such as canoes and kayaks
- shoreline should be redeveloped with a combination of vegetated slope and armour stone to promote fish habitat and waterfowl management
- river edge improvements can provide locations for education elements
- topography well suited to viewing the river
- small watercraft launching facility for public use
- narrow site, should be better connected to Marina Park
- under-bridge connection to Marina Park may be possible, requires further study
- at-grade crossing on Lakeshore Road should be examined, potentially not feasible due to sightline issues
- healthy mature trees on site that should be preserved
- incorporation of the goose management plan
- existing parking off Front Street can remain with minor improvements



Stakeholder Meeting Comments (May 22, 2012)

- club regattas are a tourism draw
- canoe and rowing clubs train primarily on the river north of Lakeshore Road bridge
- boating community helps to keep the river clean and free of debris
- keep launching of public non-motorized boats separate from club launch areas
- additional wake in the Credit River due to hard shore improvements on the east shore
- west shore improvements should be softer/naturalized to limit the additional wake from boats
- additional landscaping may impede large boats at the Don Rowing Club that need the room available to launch the boats
- improve connections to the river by opening up views

Dillon Consulting /ShorePlan

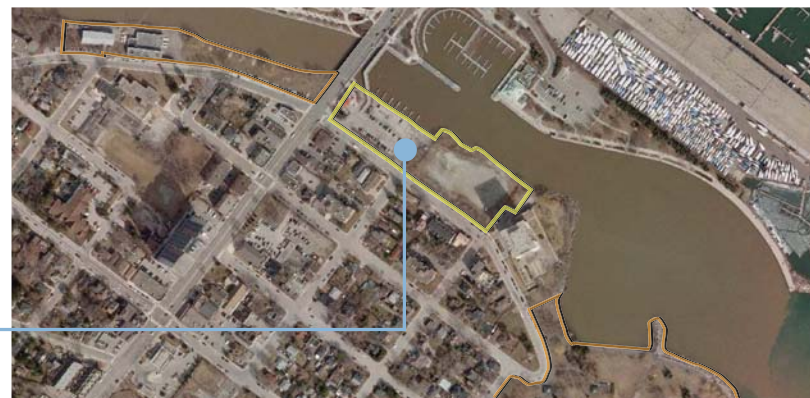
- natural heritage linkage improvements along the water
- introduction of more native vegetation

In process - other technical work near completion
- other opportunities in process of being determined

Challenges & Opportunities

P112 - MARINA PARK

- EXISTING LIGHTHOUSE AND FRONT STREET PUMPING STATION
- SEASONAL KIOSK
- POTENTIAL UNDERBRIDGE CONNECTION TO PORT CREDIT MEMORIAL PARK (WEST)
- MULTI-USE CIVIC SPACE
- EXISTING CHARTER BOAT AREA
- EXISTING BOAT LAUNCH RAMPS
- EXISTING PEDESTRIAN BRIDGE
- TRANSITIONAL ZONE
- OPEN GREEN SPACE
- MULTI-USE CIVIC SPACE



Marina Park

Waterfront Parks Strategy, 2008

- shoreline should be redeveloped with necessary repairs to the existing sheet pile wall and shoreline protection that will promote fish habitat and pedestrian access to the water's edge
- views to the river need to be preserved; views along Port Street and Bay Street to Credit River reinforce the original street pattern and historic layout of site
- long history of human use on the site (native history, warehouses, stone hooking, swimming, recreational boating, public riverfront access) should inspire interpretation elements
- fishing is an important activity that takes place in this park and should be provided with a dedicated location to try and limit potential conflicts with boaters
- a connection could be created to Port Credit Memorial Park (West) and J.C. Saddington Park along the shoreline
- almost the entire site is within the Flood Hazard Limit and may be limited in regards to the addition of structures, further study will be required to determine the feasibility of permanent structures on the site

Dillon Consulting /ShorePlan

- introduction of more native vegetation
- opportunity to add green space and community space

In process - other technical work near completion
 - other opportunities in process of being determined

Stakeholder Meeting Comments (May 22, 2012)

- boat launch - great location for access to both the river and lake
- users of launch ramps like the current location - easy to launch, parking convenient
- a lot of activity/congestion on the river, but boaters work together to minimize conflict
- Atlantic salmon fishery is growing so use of this area will also grow
- fish disposal/cleaning location is an excellent service
- parking improvements - parking busy and unorganized for boat trailers
- active harbour - offers focal point/vibrancy
- reduce conflicts between non-motorized boats and motorized boats
- suggestion to separate motorized boat launch from the canoe/kayak launch to minimize congestion

Challenges & Opportunities



J.C. Saddington Park

Waterfront Parks Strategy, 2008

- shoreline should be re-engineered to control erosion and promote fish habitat as well as pedestrian access to the water's edge and be considered for coastal wetland restoration in Hacienda Bay
- protect the natural features and processes of the Credit River and Lake Ontario
- possible location for small, non-motorized watercraft launching facilities in Hacienda Bay - requires further study
- opportunity for a connection to Marina Park via an on-land walkway along the shoreline - require further study of Rivergate easement
- adaptive re-use of existing washroom and heritage buildings, potential formation of outdoor square

RIVERGATE EASEMENT

- * EXISTING RIVERGATE APARTMENT
- * PEDESTRIAN WALKWAY CONNECTION FROM J.C. SADDINGTON PARK TO MARINA PARK

P167 - J.C. SADDINGTON

- * POTENTIAL NON-MOTORIZED BOAT RAMP OPT. 2
- * OPEN GREEN SPACE
- * EXISTING FORMER PUMPING STATION BLDGS
- * NATURALIZATION
- * PARKING AREA
- * PICNIC AREA
- * OPEN GREEN SPACE
- * PARK PAVILION OPT. 1
- * PARK PAVILION OPT. 2
- * PICNIC AREA
- * MULTI-USE SPACE
- * OPEN GREEN SPACE
- * POTENTIAL COASTAL WETLAND (HACIENDA BAY)
- * TRANSITIONAL ZONE



Dillon Consulting /ShorePlan

- separated from Marina Park
- coastal wetland opportunity in Hacienda Bay
- cobble beach at Hacienda Bay
- naturalization of pond and surroundings
- introduction of more native vegetation
- opportunity to improve shoreline structure
- opportunity to improve shoreline fishing
- natural heritage linkage improvements between the water and park interior
- passive and active goose management techniques
- habitat creation for wildlife, singing birds and amphibians

Stakeholder Meeting Comments (May 22, 2012)

- potential location for fish hatchery
- concerns with walkway on the Rivergate easement and how it will relate to the existing apartment building

- In process
- other technical work near completion
 - other opportunities in process of being determined

Next Steps

Timeline

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Understanding the Context													
Shoreline Investigation													
Natural Heritage Characterization													
Site Servicing Investigation													
Structural Investigation													
Issues and Options													
Identify Problems/Opportunities													
Identify Improvement Options													
Public Information Centre #1						★							
Evaluate Improvement Options													
Develop Concepts													
Public Information Centre #2										★			
Documentation													
Prepare Environmental Study Report													
Prepare Large Block Concept Plan													

Work to be Completed Summer-Fall 2012

1. Additional data collection - will include ongoing natural environment field work
2. Identification and assessment of options for shoreline, natural heritage and infrastructure using the criteria proposed - incorporating input received at PIC
3. Identification of preliminary preferred options for infrastructure improvements
4. Preliminary revisions to large block concept plan as necessary to reflect the technical work

These steps will result in the information to be presented at the Public Information Centre # 2 in the fall.

Key Contacts

Jane Darragh, OALA, MCIP, RPP
 Planner, Park Planning Section
 Parks and Forestry Division
 Community Services Department
 800
 City of Mississauga
 905-615-3200 ext. 4946
Jane.Darragh@mississauga.ca

Eha Naylor, OALA, MCIP, RPP
 Project Manager
 Dillon Consulting Limited
 235 Yorkland Boulevard Suite
 Toronto, ON, M2J 4Y8
 416-229-4647 ext. 2362
enaylor@dillon.ca

PUBLIC INFORMATION CENTRE # 1 COMMENT FORM

Date:	
Name:	
Group/Organization:	
Email Address:	
Mailing Address:	
Telephone:	

1. How did you hear about this Project?

- ☐ Newspaper
 ☐ Received information in the mail
☐ From a friend or neighbour (word of mouth)
 ☐ Other (please specify) _____

2. What do you like the most about the Port Credit Harbour West Parks?

Port Credit Memorial Park West _____

Marina Park _____

J.C. Saddington Park _____

3. What would you change about the Port Credit Harbour West Parks?

Port Credit Memorial Park West _____

Marina Park _____

J.C. Saddington Park _____

4. We presented information on the existing conditions. Do you have other information that could contribute to the existing conditions analysis of the study area?

5. We proposed evaluation criteria that will be used in comparison of the park improvement options. Are there other criteria we should consider during the evaluation of options?

6. Do you have any additional comments?

Mail to: Eha Naylor, Project Manager, Dillon Consulting Limited, 235 Yorkland Blvd., Suite 800, Toronto, ON., M2J 4Y8 **OR Email to:** enaylor@dillon.ca

*Under the Freedom of Information and Protection of Privacy Act, **all comments and questions submitted regarding this project will be used for the purposes of creating an environmental assessment report** that will be a part of the public record and will be made available to individuals or organizations with an interest in this project. **Personal information such as name, address, and telephone number will not be included in the environmental assessment report** but will be released, if requested, to any person as part of the review of the environmental assessment report.*

Public Information Centre # 2

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



PUBLIC NOTICE

NOTICE OF PUBLIC INFORMATION CENTRE

Port Credit Harbour West Parks Pre-Engineering Studies & Environmental Assessment

The City of Mississauga has initiated this study to assess the shoreline, natural heritage and servicing infrastructure needs of the Port Credit Harbour West Parks (Port Credit Memorial Park (West), Marina Park and J.C. Saddington Park).

The 2008 Waterfront Parks Strategy established a series of objectives, program requirements and concepts for the Port Credit Harbour West Parks. The current work involves more detailed technical investigations which will be used to confirm the concept designs for the parks.

The first Public Information Centre, held on June 19, 2012, provided information on the existing conditions and the opportunities and challenges that will guide the development of the parks.

We invite you to the second Public Information Centre to provide your feedback on the project. At this event we will have information on technical alternatives considered for the parks, including shoreline improvements and pedestrian access, and revised concept plans. Project staff look forward to answering your questions and receiving your comments.

The Public Information Centre will take place at the following date, time and location:

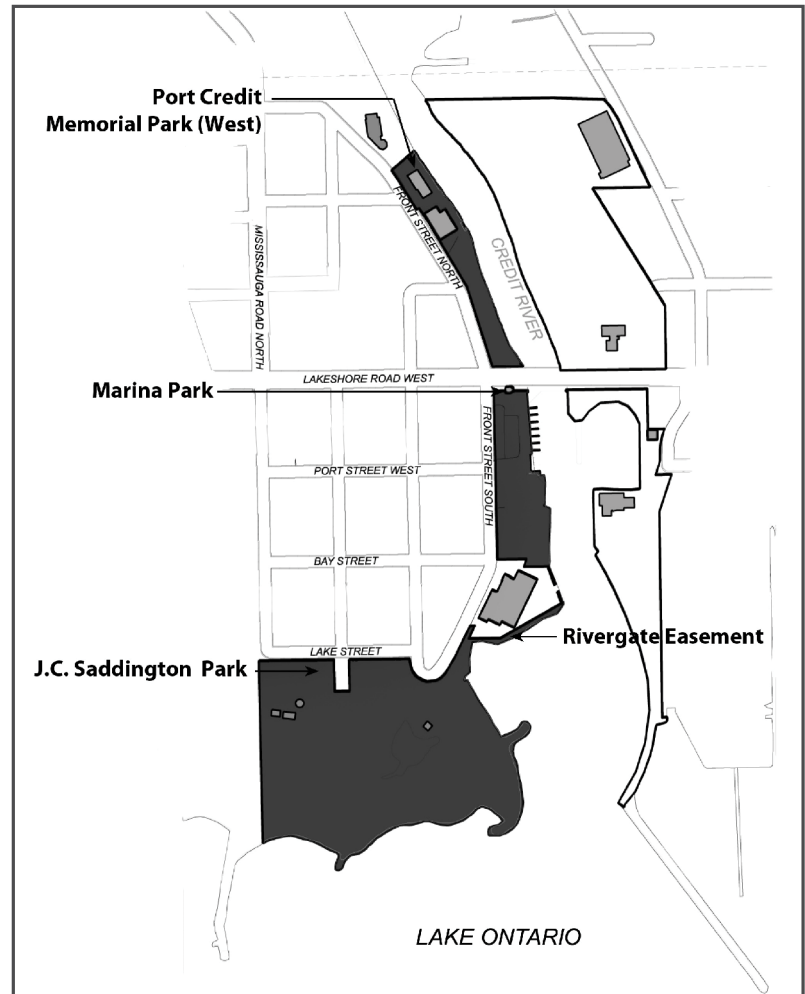
Date: **Wednesday, October 24, 2012**
 Time: **6:30 pm to 8:30pm (with a presentation at 7:00 pm)**
 Location: **Clarke Hall, 161 Lakeshore Road West**

This study is being conducted in accordance with the Municipal Class Environmental Assessment process, which is an approved process under the Environmental Assessment Act.

If you have any comments, questions or require further information regarding the study, please contact either of the individuals below:

Jane Darragh, OALA, MCIP, RPP
 Planner, Park Planning Section
 Parks and Forestry Division
 Community Services Department
 City of Mississauga
 905-615-3200 ext. 4946
Jane.Darragh@mississauga.ca

Eha Naylor, OALA, MCIP, RPP
 Project Manager
 Dillon Consulting Limited
 235 Yorkland Boulevard Suite 800
 Toronto, ON, M2J 4Y8
 416-229-4647 ext. 2362
enaylor@dillon.ca





Port Credit Harbour West Park

Engineering Studies & Environmental Assessment

Public Information Centre # 2

October 24, 2012

PRESENTATION

Purpose

To gain community input on:

- Park area alternatives
- Preliminary preferred options
- Preliminary large block concept plan



This Public Information Centre will:

- Provide June consultation summary
- Present evaluation findings for park area alternatives
- Present preliminary preferred options and large block concept plan
- Present study process and timeline

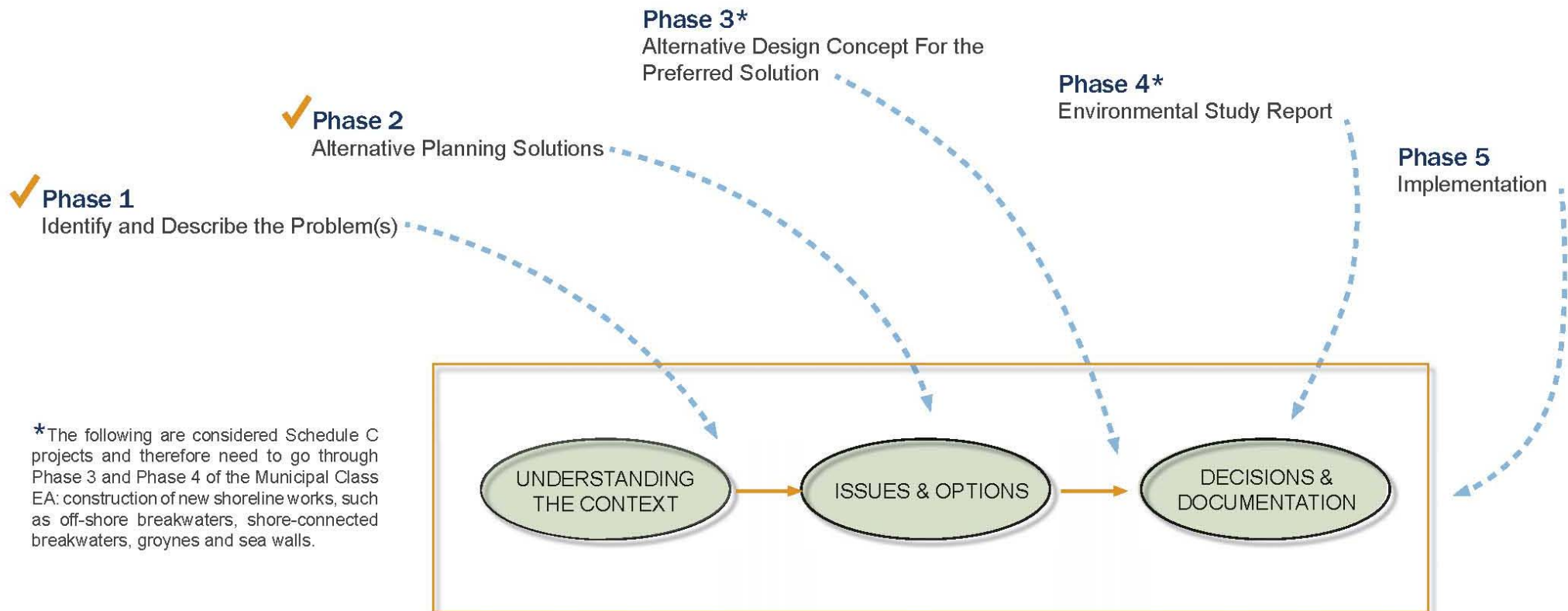
Study Approach

Municipal Class Environmental Assessment

•Traceable & Easy
Decision-Making

•Public
Involvement

•Consideration of
Alternatives

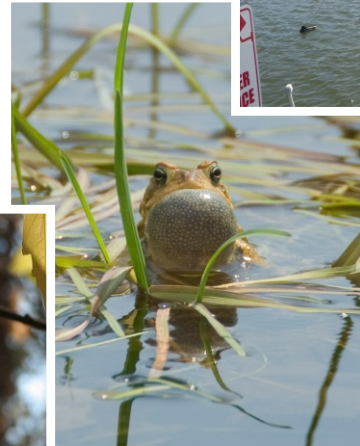


Study Approach - Details Shown on Panel 2

Study Approach

Decision Making – Criteria Groups for Evaluating Options

- Natural Environment
- Socio-Economic and Cultural Environment
- Technical
- Cost



June Consultation Summary

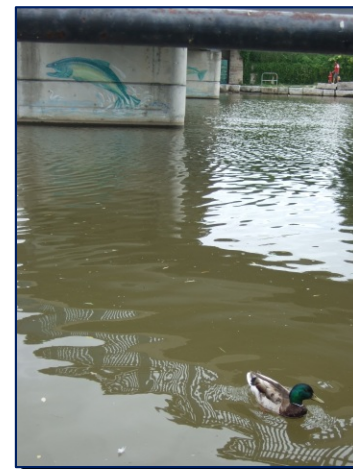
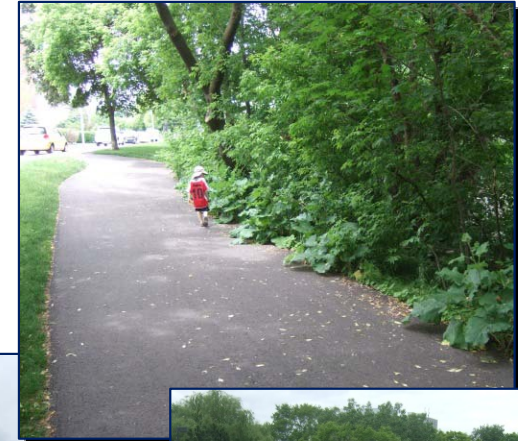
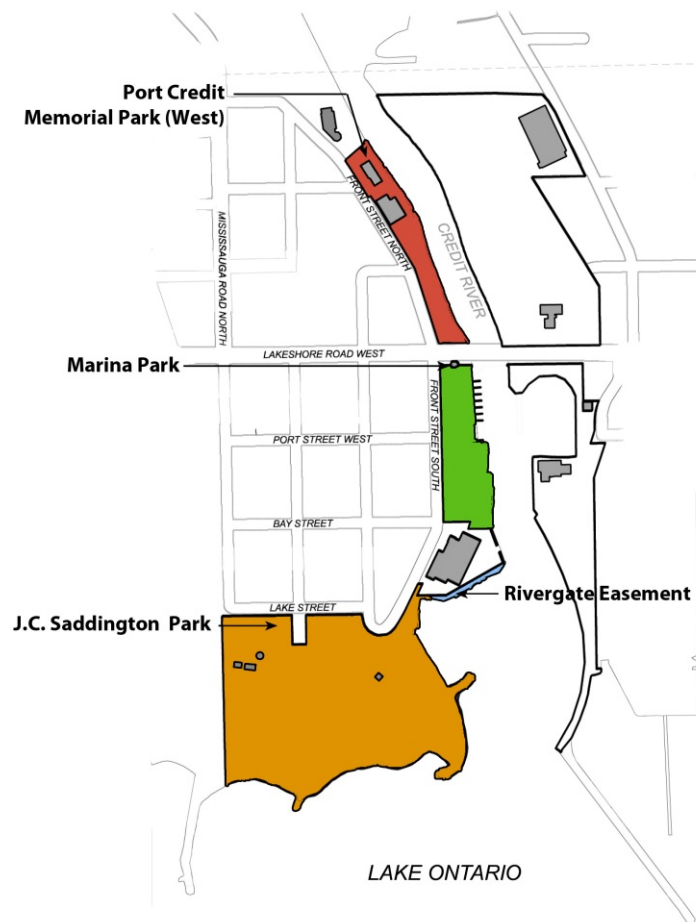
Key Issues and Comments

- Importance of waterfront/riverfront accessibility
- Need to improve park facilities and programs
- Importance of the boat launch and commercial fishing activities at Marina Park

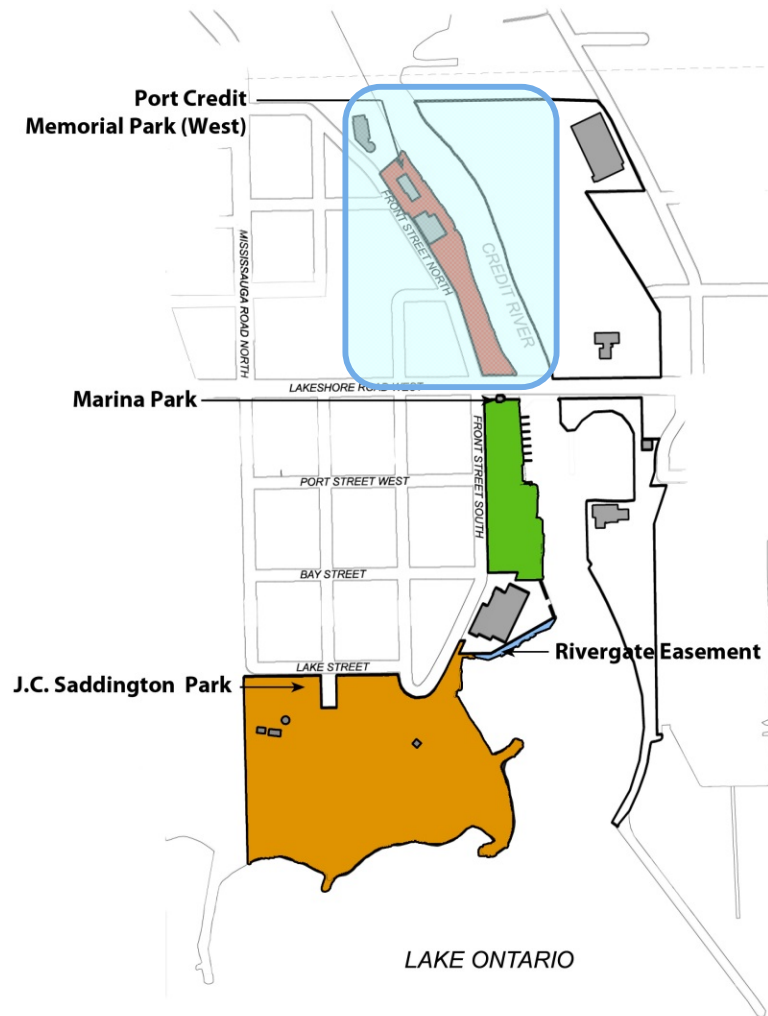


Project Context

- 3 Parks and Rivergate Easement
- Focus on opportunities for improvement to municipal infrastructure to support parks
- Alternatives considered and evaluated



Port Credit Memorial Park (West)



- Approximately 1 hectare (2.47 acres)
- Approximately 327 metres of shoreline (1,073 feet)



Port Credit Memorial Park (West)

Evaluation of Alternatives

Shoreline Improvement

We Considered:

- Do Nothing
- Hard Shore
- Natural Shore
- Combination

The combination alternative is preferred:

- Best serves a variety of users
- Meets technical needs and naturalization objectives



Better Connection

We Considered:

- Do Nothing
- At Grade
- Underpass
- Overpass

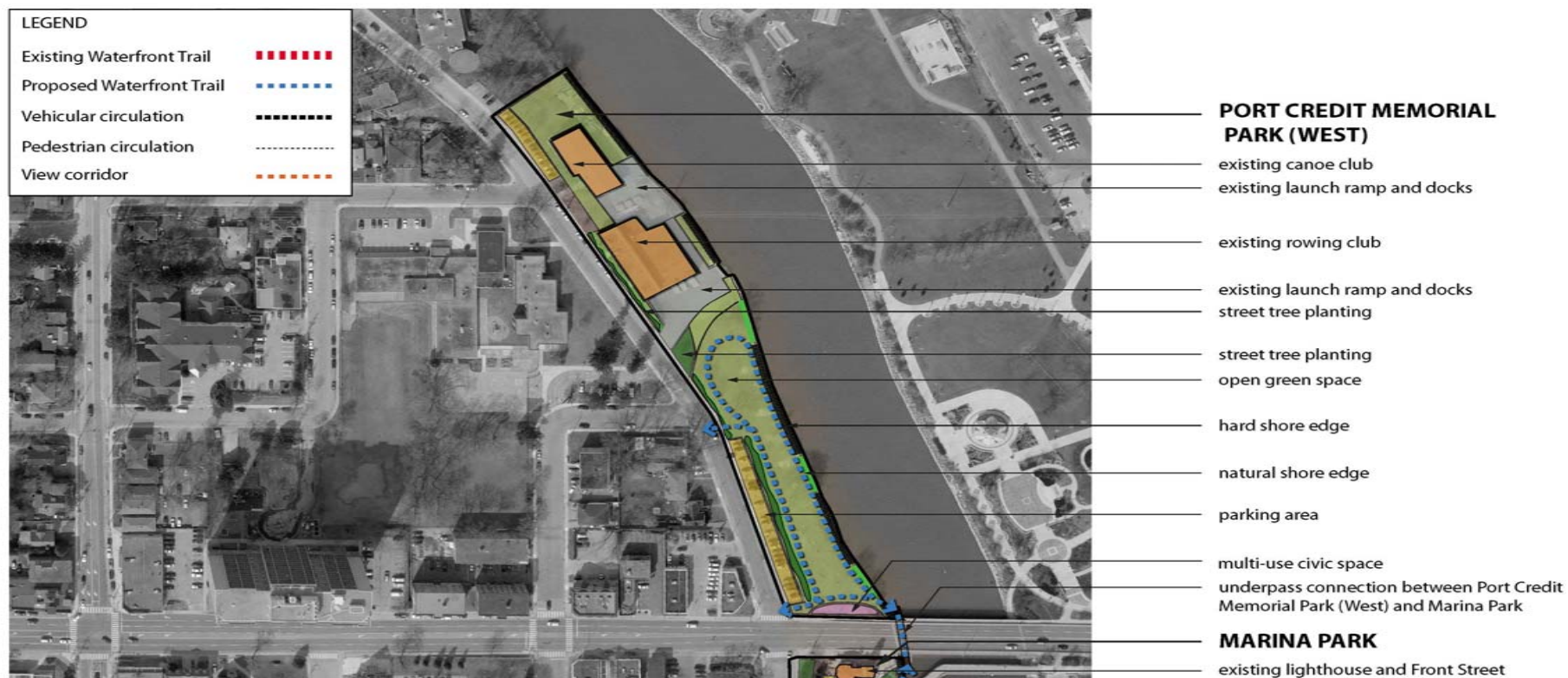
The underpass is preferred:

- Limited construction challenges
- Moderate maintenance needs
- Least impact on park uses during construction and operation

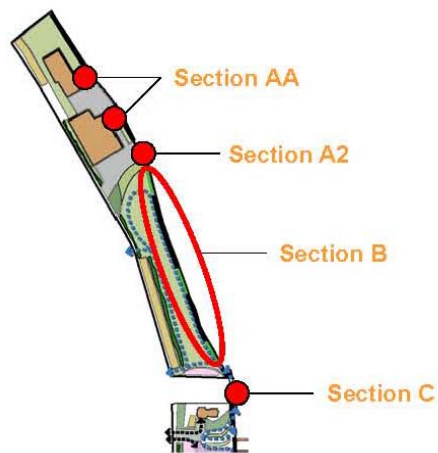


Port Credit Memorial Park (West)

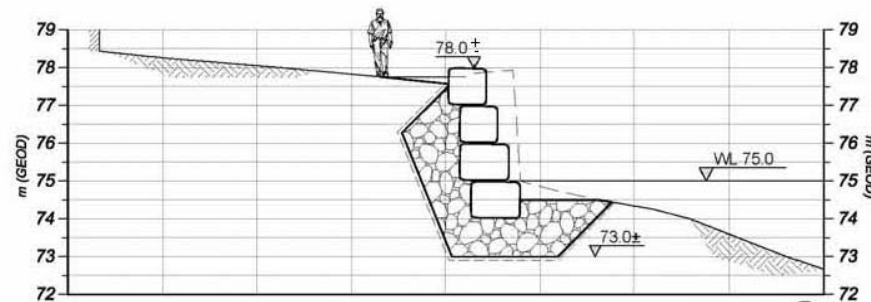
Large Block Concept Plan



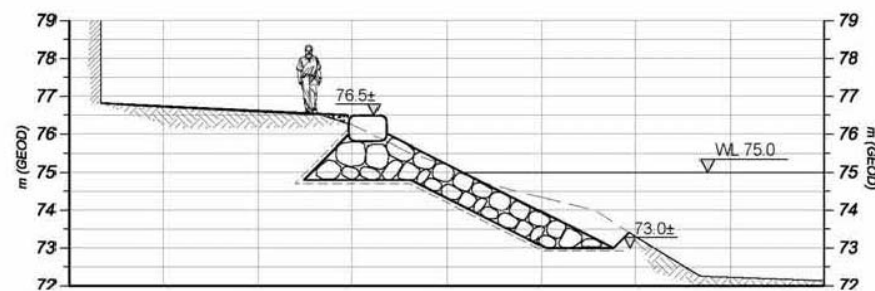
Port Credit Memorial Park (West) Shoreline Cross Sections



Section AA BOAT CLUBS - HARD SHORE

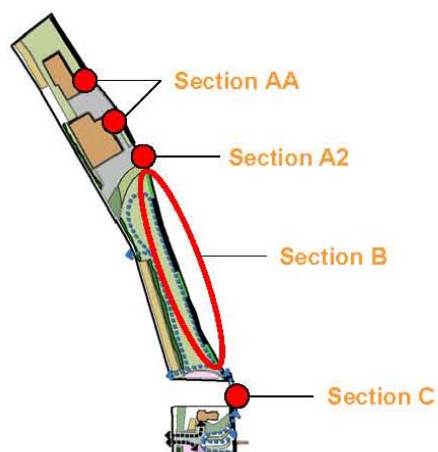


Section A2 HARD SHORE OPTION

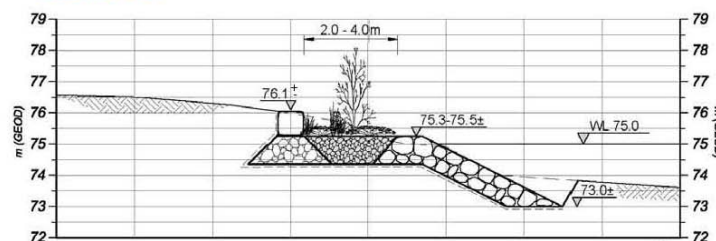


Port Credit Memorial Park (West)

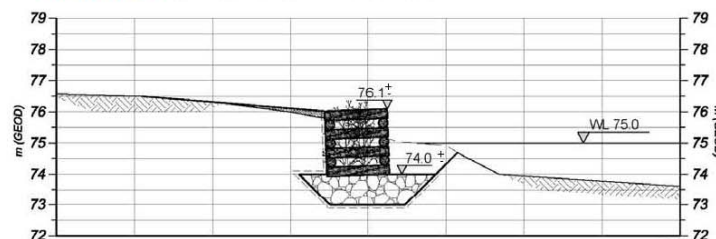
Shoreline Cross Sections



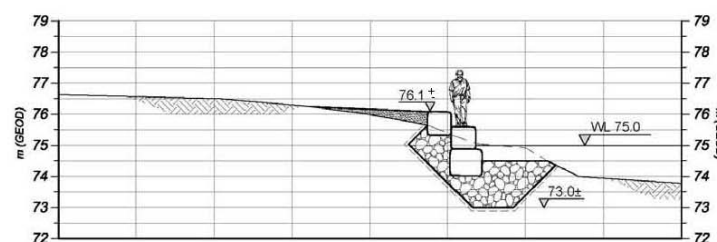
Section B1 SOFT SHORE OPTION



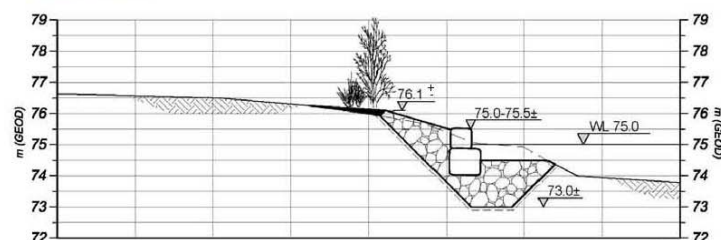
Section B2 SOFT SHORE OPTION



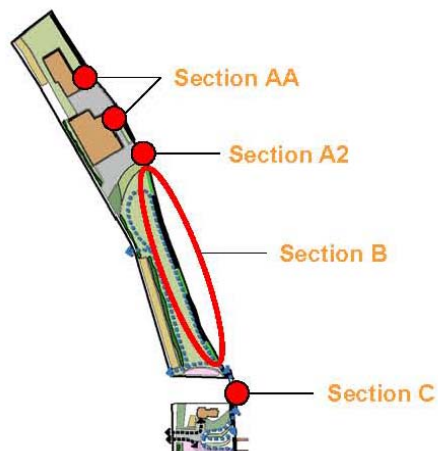
Section B3 HARD SHORE OPTION



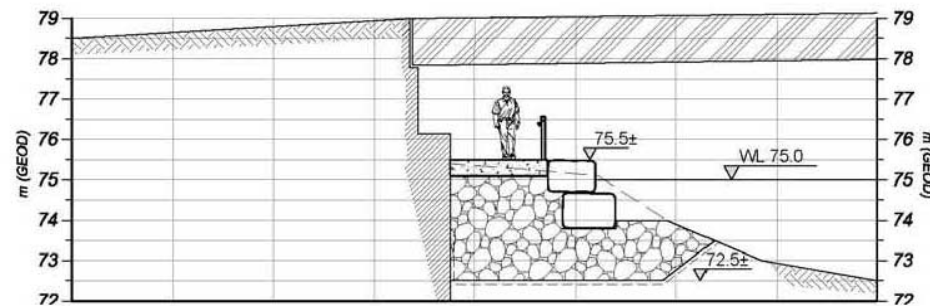
Section B4 HARD SHORE OPTION



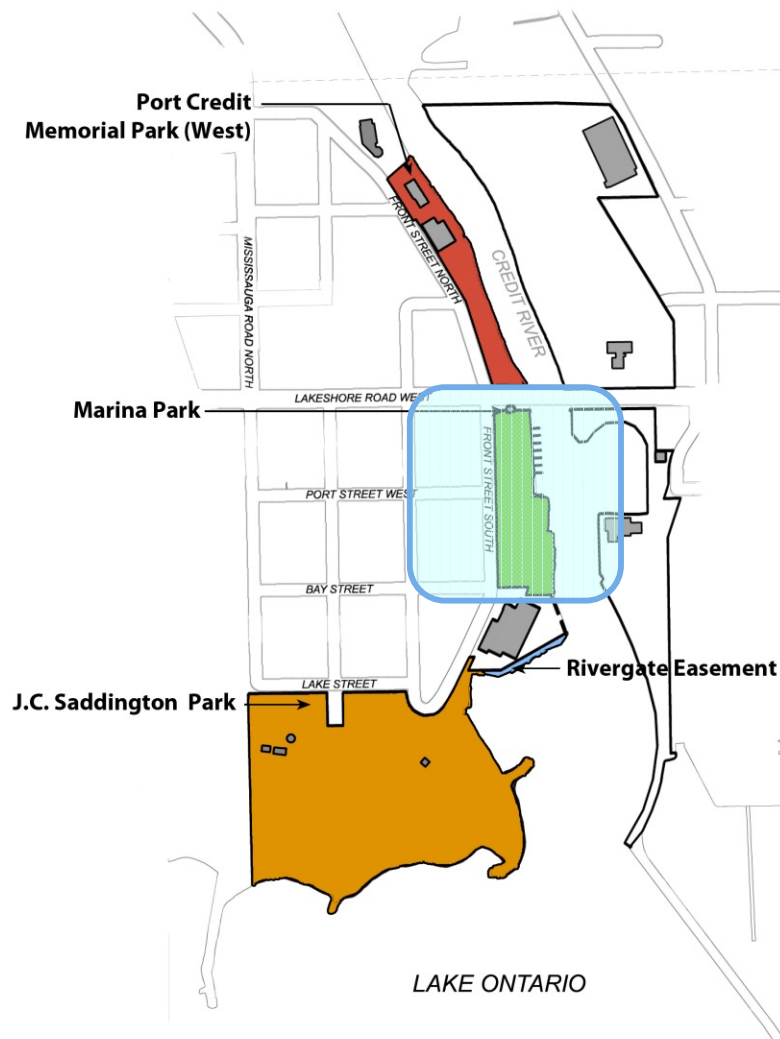
Port Credit Memorial Park (West) Shoreline Cross Sections



Section C LAKESHORE ROAD UNDERPASS



Marina Park Shoreline



- Approximately 1.27 hectares (3.13 acres)
- Approximately 264 metres of shoreline (866 feet)



Marina Park

Evaluation of Alternatives

Protection From Flood Risk

We Considered:

- Do Nothing
- Flood Proof at South End Only
- Flood Proof North and South End

Flood proofing of both the north and south is preferred:

- Improves year round usability and function



Separation of Motorized & Non-Motorized Boats

We Considered:

- Do Nothing
- Marina Park
- Port Credit Memorial Park (West)
- Hacienda Bay

Separate non-motorized launch in Marina Park is preferred:

- Keeps boating focus in the Park
- Maintains access to parking



Marina Park

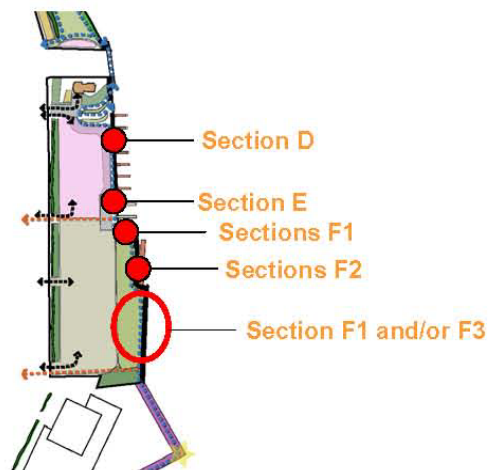
Large Block Concept Plan



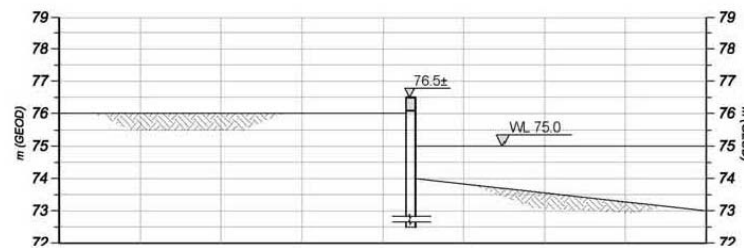
LEGEND	
Existing Waterfront Trail	■■■■■
Proposed Waterfront Trail	■■■■■
Vehicular circulation	■■■■■
Pedestrian circulation	■■■■■
View corridor	■■■■■

Marina Park

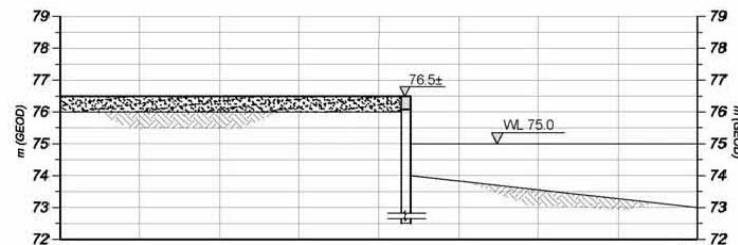
Shoreline Cross Sections



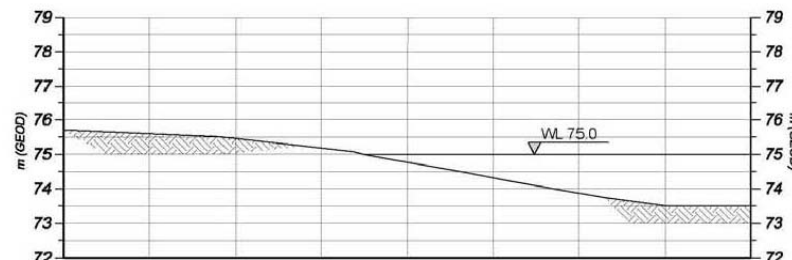
Section D1 EXISTING SHORE WALL WITH NEW CAP



Section D2 PROPOSED SHORE WALL WITH NEW CAP

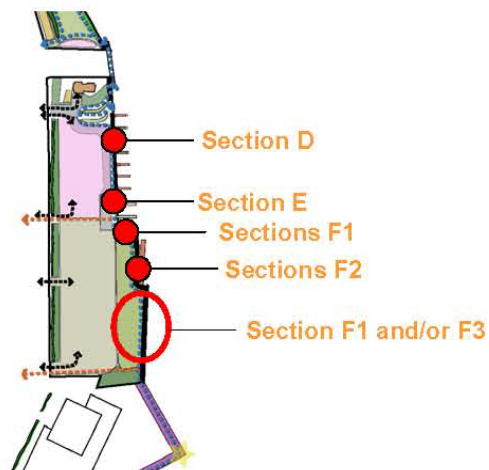


Section E EXISTING LAUNCH RAMP

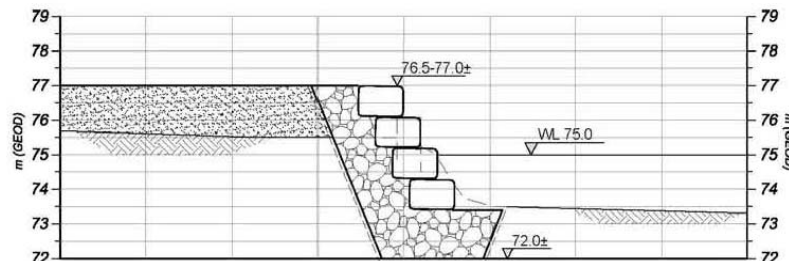


Marina Park

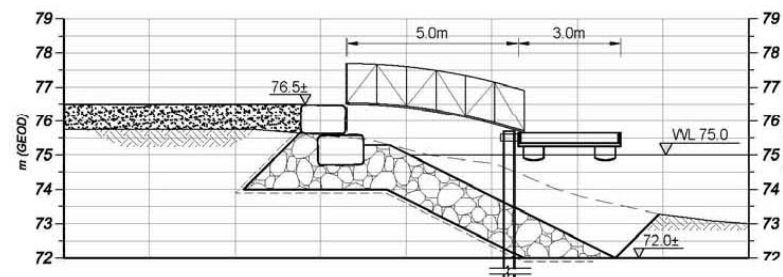
Shoreline Cross Sections



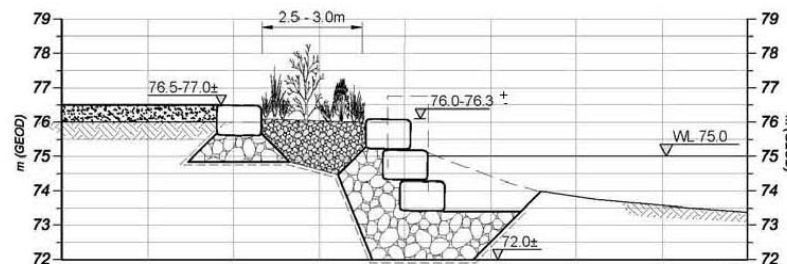
Section F1 MARINA PARK SHORELINE



Section F2 NON-MOTORIZED LAUNCH



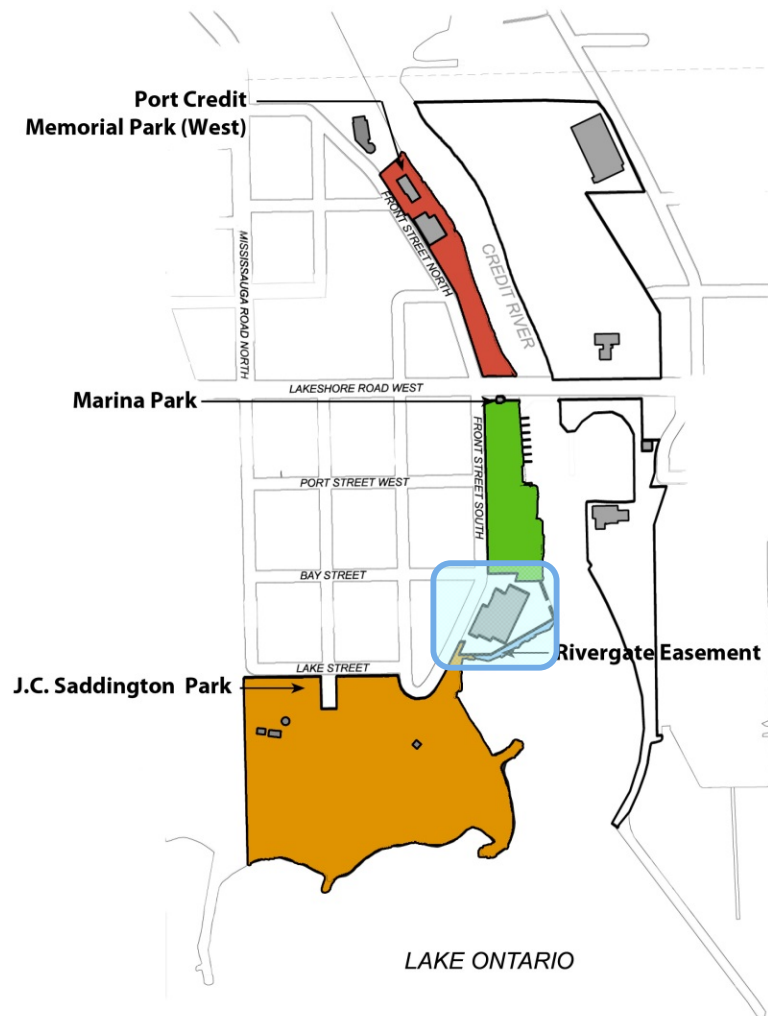
Section F3 MARINA PARK SHORELINE*



*hard shore required for stabilization but is naturalized where possible

Rivergate Easement Pedestrian Crossing

- Approximately 6 metre width (20 feet)
- Approximately 193 metres of shoreline (633 feet)



Rivergate Easement Evaluation of Alternatives

Better Connection

We Considered:

- Waterside Walkway
- Do Nothing/Enhanced Streetscape Link

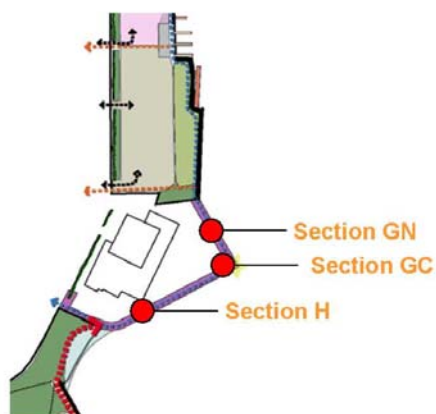
The waterside walkway is preferred:

- Better visual access to water
- Shore fishing and interpretive potential
- Cost outweighed by benefits

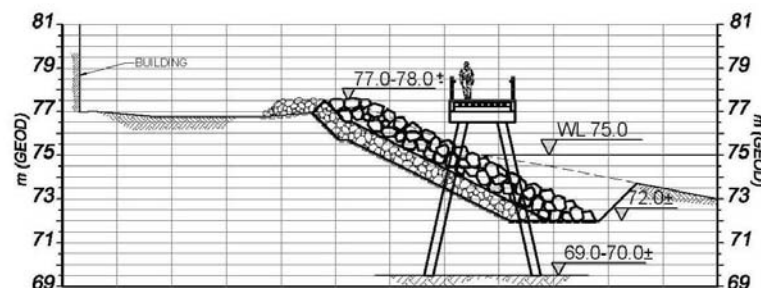


Rivergate Easement

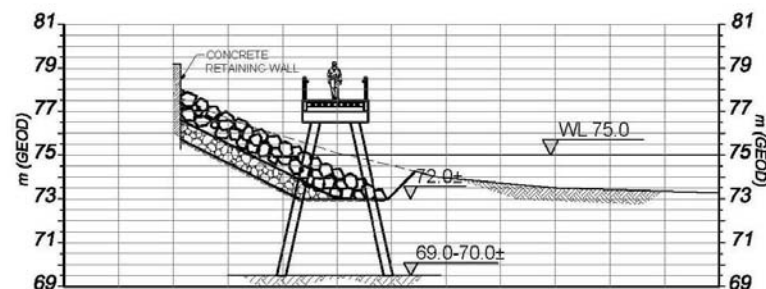
Large Block Concept Plan



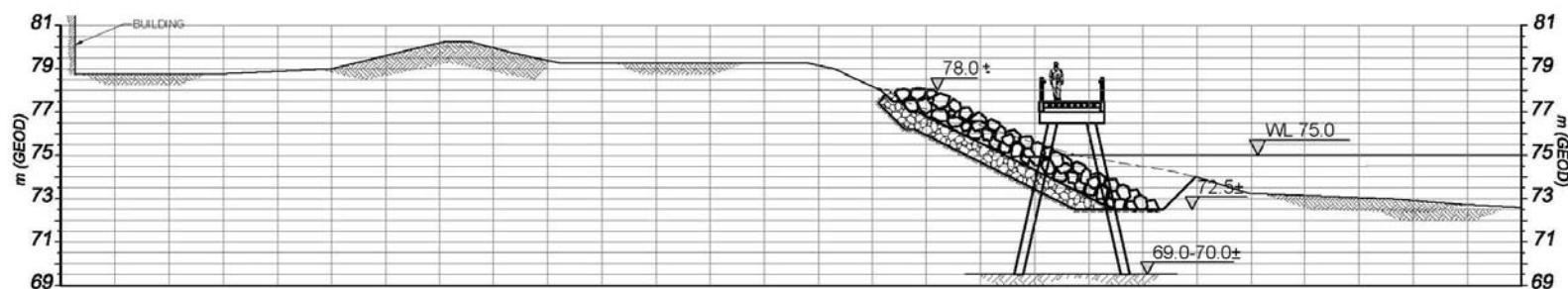
Section GN RIVERGATE WALKWAY



Section H RIVERGATE WALKWAY

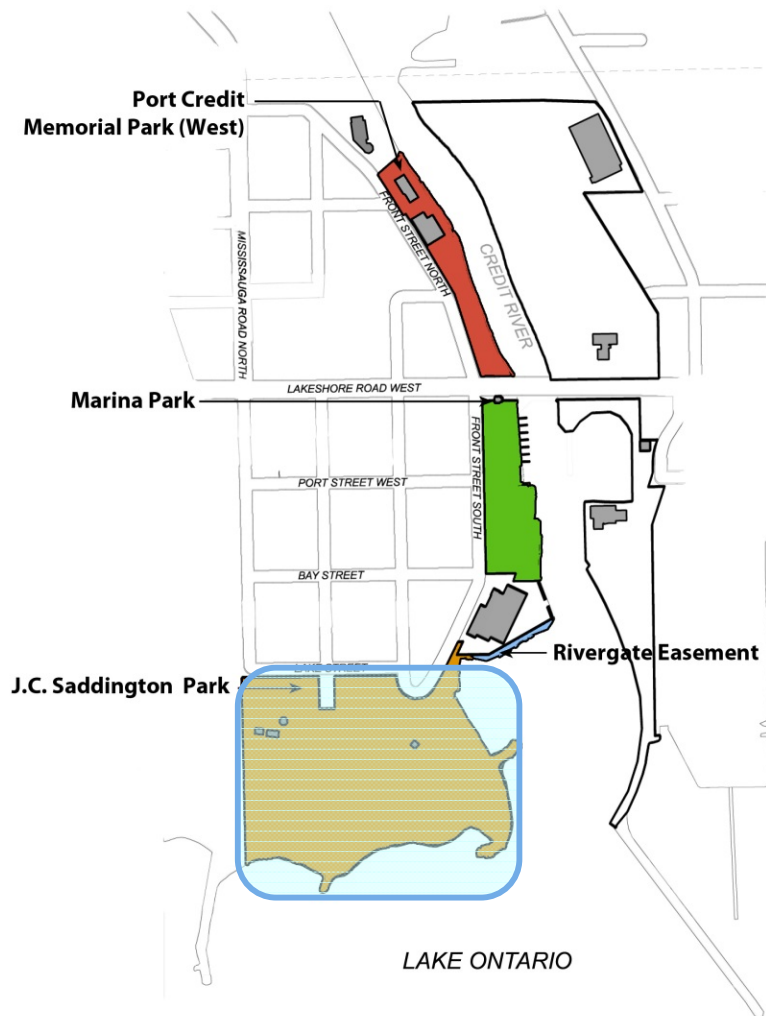


Section GC RIVERGATE WALKWAY



J.C. Saddington Park Shoreline

- Approximately 10 hectares (25 acres)
- Approximately 810 metres of shoreline (2,658 feet)



J.C. Saddington Park

Evaluation of Alternatives

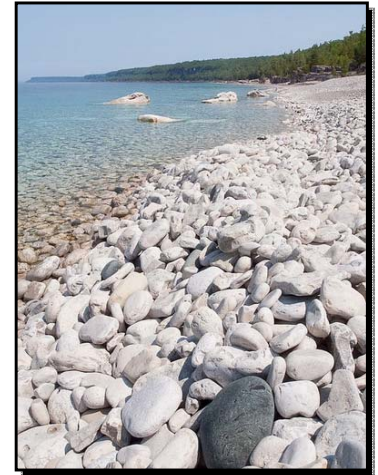
Shoreline Improvements

We Considered:

- Do Nothing
- Cobble Beach
- Improve Existing

The cobble beach (where appropriate) is preferred:

- Improved habitat
- Safer access to the water's edge



Pond Improvements

We Considered:

- Do Nothing
- Naturalized
- Urban/Concrete

A naturalized pond is preferred:

- Improved habitat and water quality
- Minimal maintenance



Hacienda Bay

We Considered:

- Coastal Wetland
- Cobble Beach

The cobble beach is preferred:

- Technically feasible
- Provides access to water



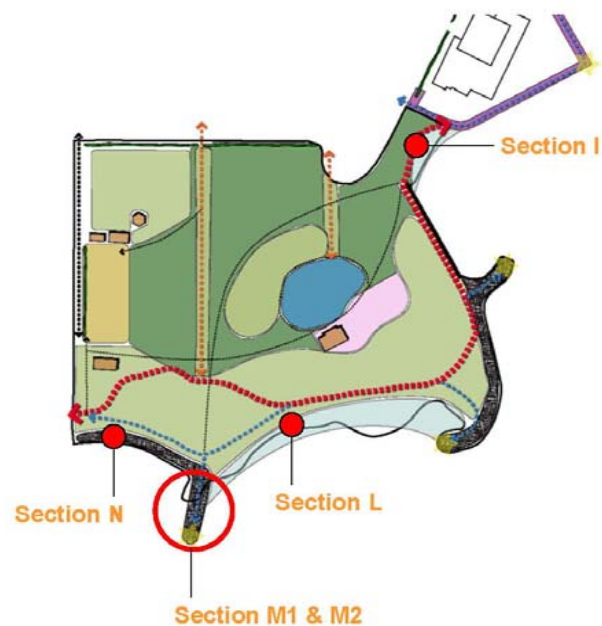
J.C. Saddington Park

Large Block Concept Plan

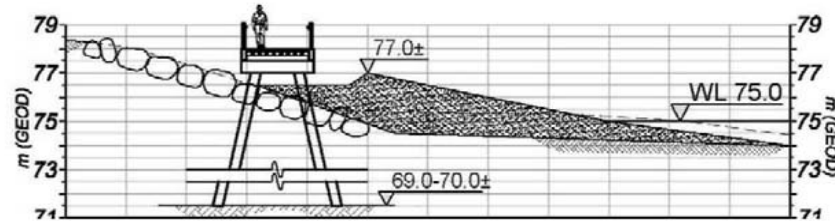


J.C. Saddington Park

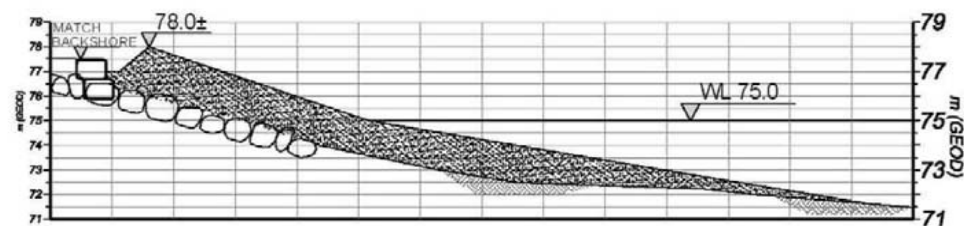
Shoreline Cross Sections



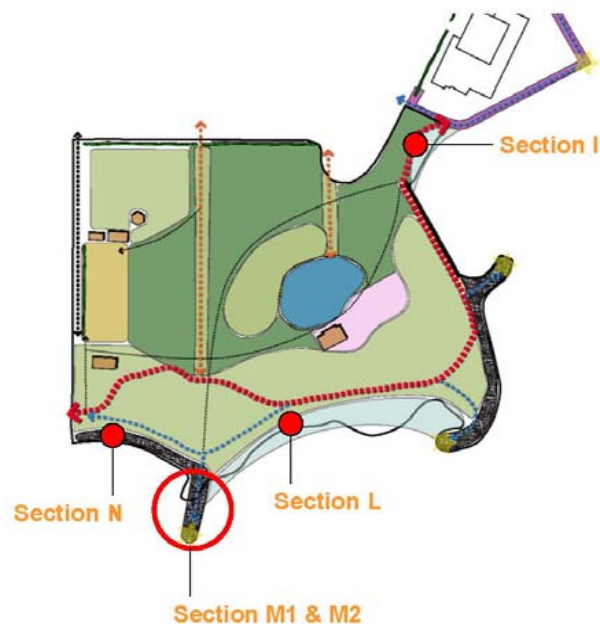
Section I COBBLE BEACH



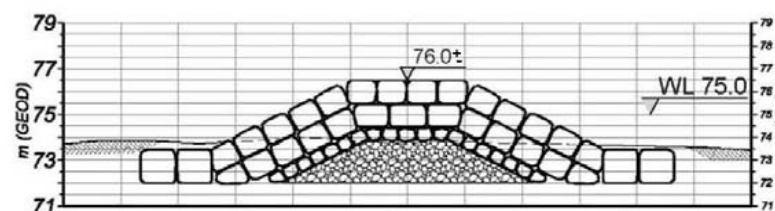
Section L COBBLE BEACH



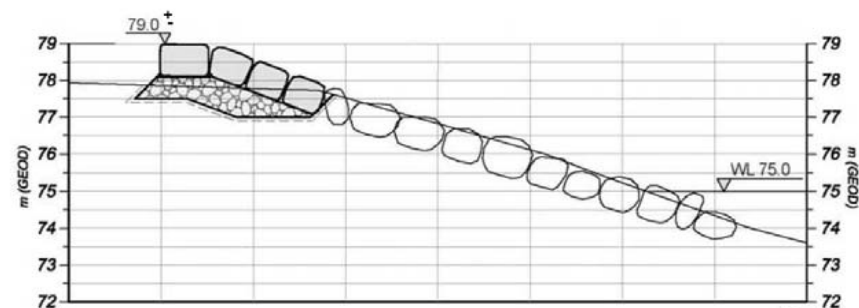
J.C. Saddington Park Shoreline Cross Sections



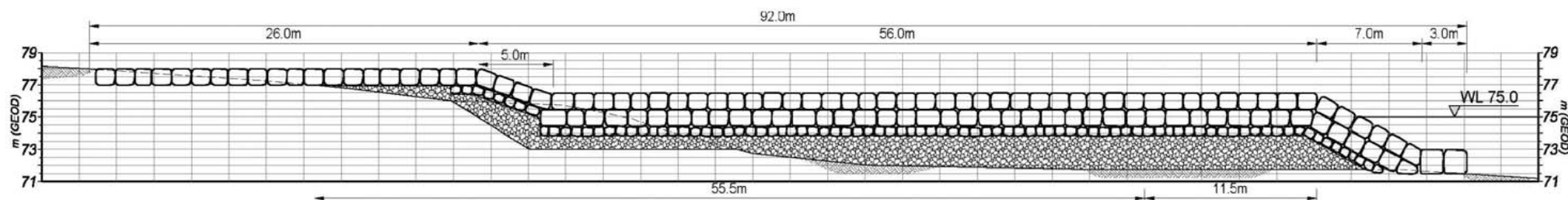
Section M1 GROUYNE



Section N HARD SHORE



Section M2 GROUYNE

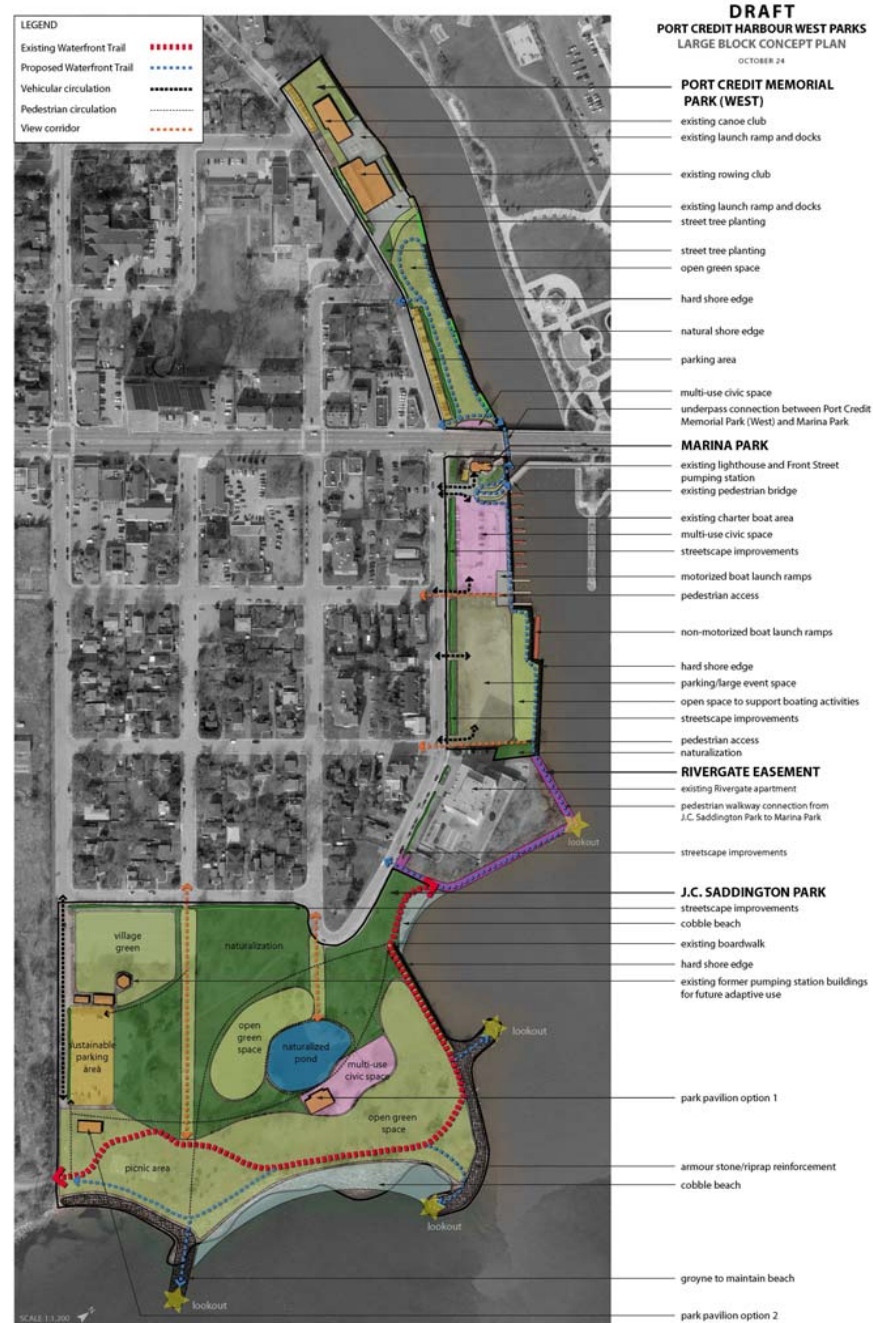


Preliminary Proposed Improvements

- **Port Credit Memorial Park (West)** - live cribs/live stakes and armour stone shorewall
- **Underpass** under Lakeshore Road on the west bank of the Credit River
- **Marina Park** - raise the shoreline and construct new shorewall
- **Non-Motorized Boat Launch** - relocate further south in Marina Park
- **Rivergate Easement** – construct waterside boardwalk around the easement
- **Hacienda Bay** - enhancement of the cobble beach
- **J.C. Saddington Park** - cobble beach along the Lake Ontario shore; additional armour stone along the west side where required
- **J.C. Saddington Park Pond** – naturalize the pond by re-lining, adding substrate and plantings

Other Key Park Improvements:

- Re-organizing parking to address circulation and conflict, and incorporate sustainable features in Marina Park
- Adding open space to support boating activities in Marina Park and multi-use civic space
- Streetscape improvements
- Maintaining and enhancing views
- Naturalizing areas of J.C. Saddington Park over time



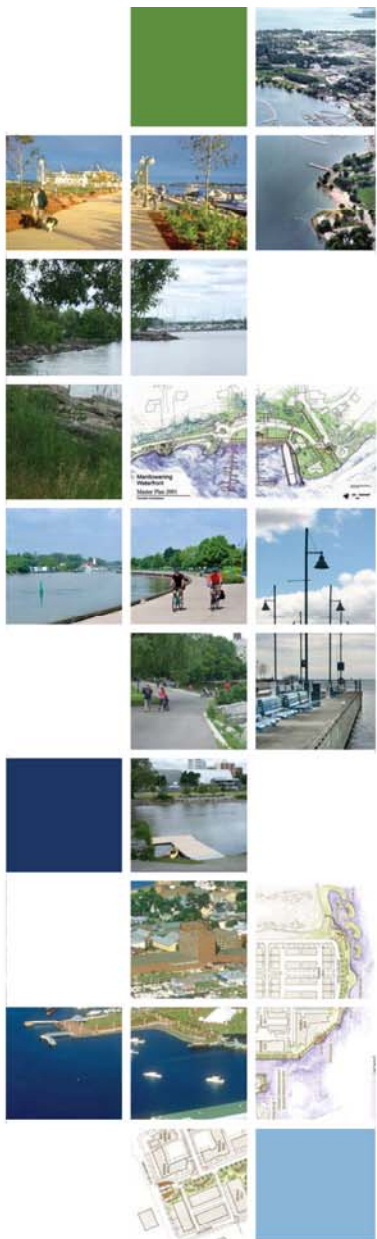
Next Steps

Study Process & Timeline

1. Preparation of the Environmental Report
2. Public review period (30 days) of the Environmental Report
3. Finalize the Environmental Report
4. Finalize Large Block Concept Plan

Timeline

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Understanding the Context													
Shoreline Investigation													
Natural Heritage Characterization													
Site Servicing Investigation													
Structural Investigation													
Issues and Options													
Identify Problems/Opportunities													
Identify Improvement Options													
Public Information Centre #1						★							
Evaluate Improvement Options													
Develop Concepts													
Public Information Centre #2										★			
Documentation													
Prepare Environmental Study Report													
Prepare Large Block Concept Plan													



Port Credit Harbour West Parks

Engineering Studies & Environmental Assessment

Welcome To Public Information Centre # 2

October 24, 2012

PANELS



Study Objectives

P106 - PORT CREDIT MEMORIAL PARK (WEST)

- EXISTING CANOE CLUB
- EXISTING LAUNCH RAMP AND DOCKS
- EXISTING ROWING CLUB
- EXISTING LAUNCH RAMP AND DOCKS
- PLANTING AREA
- POTENTIAL NON-MOTORIZED BOAT RAMP OPT. 1
- OPEN GREEN SPACE
- PARKING AREA
- TRANSITIONAL ZONE
- POTENTIAL UNDERBRIDGE CONNECTION TO MARINA PARK

P112 - MARINA PARK

- EXISTING LIGHTHOUSE AND FRONT STREET PUMPING STATION
- SEASONAL KIOSK
- POTENTIAL UNDERBRIDGE CONNECTION TO PORT CREDIT MEMORIAL PARK (WEST)
- MULTI-USE CIVIC SPACE
- EXISTING CHARTER BOAT AREA
- EXISTING BOAT LAUNCH RAMPS
- EXISTING PEDESTRIAN BRIDGE
- TRANSITIONAL ZONE
- OPEN GREEN SPACE
- MULTI-USE CIVIC SPACE

RIVERGATE EASEMENT

- EXISTING RIVERGATE APARTMENT
- PEDESTRIAN WALKWAY CONNECTION FROM J.C. SADDINGTON PARK TO MARINA PARK

P167 - J.C. SADDINGTON

- POTENTIAL NON-MOTORIZED BOAT RAMP OPT. 2
- OPEN GREEN SPACE
- EXISTING FORMER PUMPING STATION BLDGS
- NATURALIZATION
- PARKING AREA
- PICNIC AREA
- OPEN GREEN SPACE
- PARK PAVILION OPT. 1
- PARK PAVILION OPT. 2
- PICNIC AREA
- MULTI-USE SPACE
- OPEN GREEN SPACE
- POTENTIAL COASTAL WETLAND (HACIENDA BAY)
- TRANSITIONAL ZONE



Preliminary Large Block Concept Plan - Waterfront Parks Strategy, 2008

Study Purpose

Three parks frame Port Credit's west harbour and provide great opportunities for passive and active recreation, boating and fishing. The three urban parks offer a dynamic opportunity for interaction and enjoyment of the city's water edge.

Port Credit Memorial Park (West)

Marina Park

J.C. Saddington Park

The 2008 Waterfront Parks Strategy established a series of objectives, program requirements and concepts for the Port Credit Harbour West parks. This study will assess the shoreline, natural heritage and infrastructure needs of the parks to inform the concept design and planning of the park redevelopment.

Public Information Centre Purpose

To gain community input on:

- park area alternatives
- preliminary preferred options
- preliminary large block concept plan

This Public Information Centre (PIC) will:

- provide a summary of what we heard at the June 19, 2012 Public Information Centre
- present information for review and comment:
 - park area alternatives
 - preliminary preferred options for park infrastructure
 - park large block concept plan
- present study process and the schedule

Study Approach

Big Picture Planning 2008 Waterfront Parks Strategy

Site Specific Planning **TODAY** Technical Studies
Large Block Concept Plan **ENVIRONMENTAL ASSESSMENT**

Detailed Design and Construction **Next Steps** Detailed design and construction*

*subject to budget review and other planning initiatives

PUBLIC CONSULTATION

- ☒ stakeholder meeting
- ☒ ongoing consultation

- ☒ Public Information Centre #1
~to review existing conditions & challenges/
opportunities

- ☐ Public Information Centre #2
~to review the evaluation of options + refined
large block concept plan

- ☐ public review of documentation

UNDERSTANDING
THE CONTEXT

ISSUES & OPTIONS

DECISIONS &
DOCUMENTATION

TECHNICAL WORK

- ☒ data collection on existing conditions
- ☒ identification of challenges & opportunities
- ☒ identification of infrastructure needs

- ☒ confirmation of challenges & opportunities
- ☒ development & evaluation improvement options
- ☒ refinement of large block concept plan
- ☒ identification of positive & negative effects of proposed improvements

- ☐ draft & final report

Key Deliverables

- approval in principle for shoreline, natural heritage and infrastructure improvements
- large block concept plan

Study Approach

Municipal Class Environmental Assessment

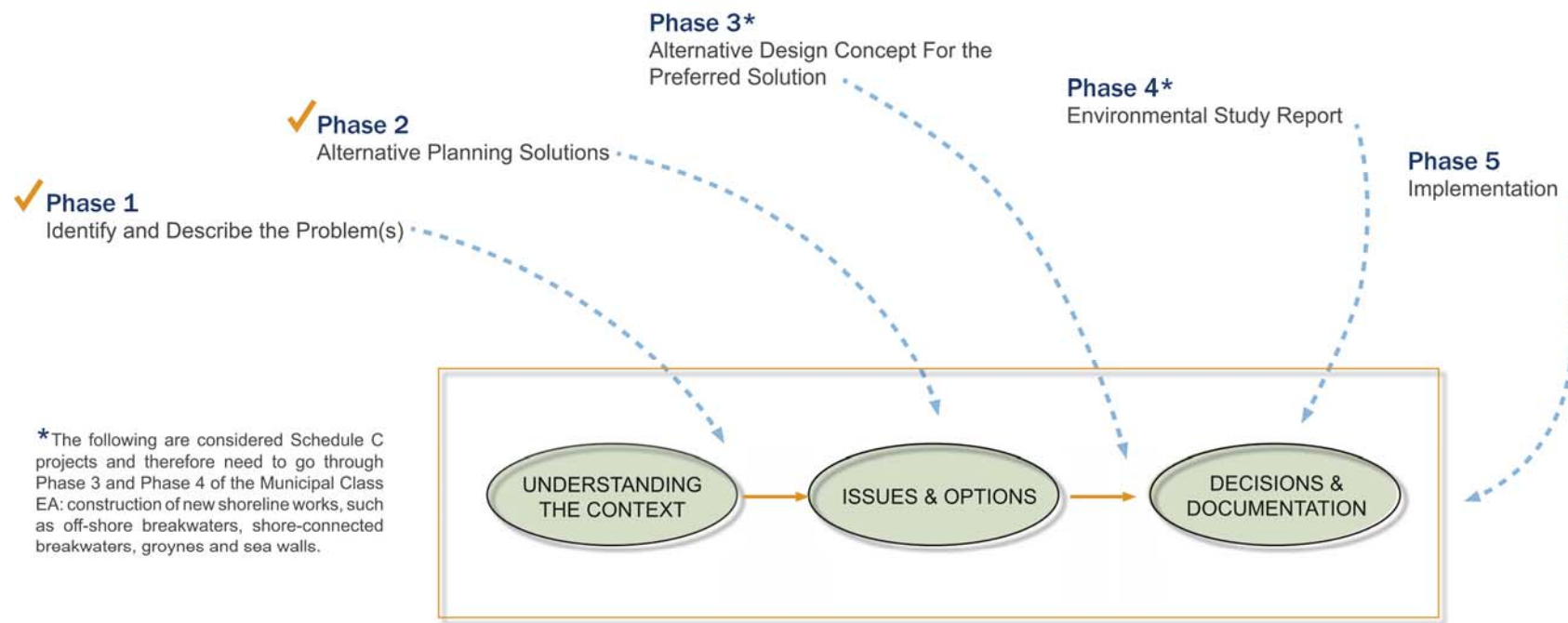
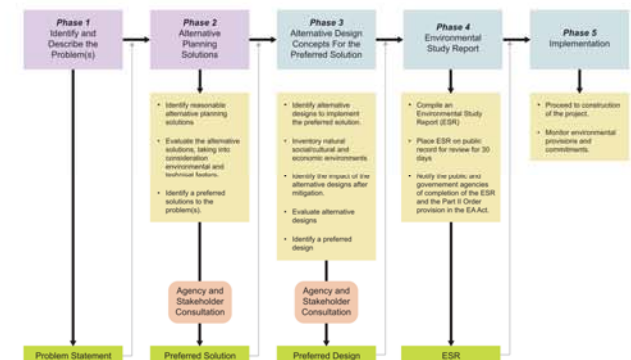
The Municipal Class Environmental Assessment process is a key part of the planning process for municipal infrastructure projects that have potential for effects on the environment. The process is focused on:

- providing traceable and easy to understand decision-making
- involving the public
- considering alternatives

Municipal infrastructure projects such as shoreline improvements to the Port Credit Harbour West Parks must follow the Municipal Class Environmental Assessment (Class EA) process.

The study approach for this project has been designed to incorporate the phases of the Class EA.

General Class EA Process



*The following are considered Schedule C projects and therefore need to go through Phase 3 and Phase 4 of the Municipal Class EA: construction of new shoreline works, such as off-shore breakwaters, shore-connected breakwaters, groynes and sea walls.

Study Approach - Details Shown on Panel 2

Study Approach

Decision Making

This project involves the comparison of different ways to improve the parks. When considering options it is important to have a clear set of things to consider or 'evaluation criteria', as presented below.

This set of criteria have been developed for use in comparing the park area alternatives and are based on consideration of all aspects of the natural environment, socio-economic and cultural environment, technical investigations and cost.

Port Credit Harbour West Parks Criteria for Evaluating Options	
Criteria Groups	Evaluation Criteria
Natural Environment	Opportunity to improve fish habitat
	Opportunity to increase areas of naturalization
	Potential for impact to aquatic or terrestrial habitat during construction
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>
	Potential for impact to water quality
	Potential for improvement to connectivity
Socio-Economic and Cultural Environment	Potential for disruption during construction
	Potential for disruption during operation
	Potential for improvement to pedestrian connectivity
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)
	Opportunity to improve safety
	Opportunity to improve economic benefits to the community
	Cultural heritage character
Technical	Level of protection provided from wave, river and ice conditions
	Design life/ maintenance requirements
	Potential for contamination issues
	Potential impact on utilities
	Constructability
Cost	Relative cost differences (including capital, property, operational and maintenance)

Project Context

Port Credit Memorial Park (West)

- approximately 1 hectare (2.47 acres)
- approximately 327 metres of shoreline (1073 feet)
- Mississauga Canoe and Don Rowing Clubs lease facilities at the north end of the park
- open green space is used as a viewing area for river activities

P106 - PORT CREDIT MEMORIAL PARK (WEST)

- EXISTING CANOE CLUB
- EXISTING LAUNCH RAMP AND DOCKS
- EXISTING ROWING CLUB
- EXISTING LAUNCH RAMP AND DOCKS
- PLANTING AREA
- POTENTIAL NON-MOTORIZED BOAT RAMP OPT. 1
- OPEN GREEN SPACE
- PARKING AREA
- TRANSITIONAL ZONE
- POTENTIAL UNDERBRIDGE CONNECTION TO MARINA PARK



J.C. Saddington Park

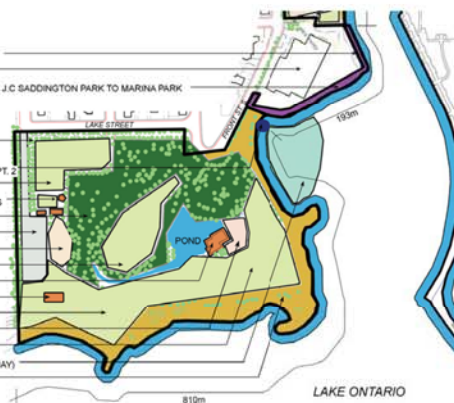
- approximately 10 hectares (25 acres)
- approximately 810 metres of shoreline (2,658 feet)
- City leases the park from Credit Valley Conservation
- park was constructed in the 1970s and primarily consists of lake fill
- great proximity and views to Lake Ontario
- family oriented activity areas, including children's play facilities, picnic facilities, a pond and public washrooms
- multi-use trails
- Waterfront Trail
- within the Old Port Credit Village Heritage Conservation District

RIVERGATE EASEMENT

- EXISTING RIVERGATE APARTMENT
- PEDESTRIAN WALKWAY CONNECTION FROM J.C. SADDINGTON PARK TO MARINA PARK

P167 - J.C. SADDINGTON

- POTENTIAL NON-MOTORIZED BOAT RAMP OPT. 2
- OPEN GREEN SPACE
- EXISTING FORMER PUMPING STATION BLDGS
- NATURALIZATION
- PARKING AREA
- PICNIC AREA
- OPEN GREEN SPACE
- PARK PAVILION OPT. 1
- PARK PAVILION OPT. 2
- PICNIC AREA
- MULTI-USE SPACE
- OPEN GREEN SPACE
- POTENTIAL COASTAL WETLAND (HACIENDA BAY)
- TRANSITIONAL ZONE



Marina Park

- approximately 1.27 hectares (3.13 acres)
- approximately 264 metres of shoreline (866 feet)
- lighthouse that contains the Region of Peel's Front Street Pumping Station, as well as offices for the Port Credit BIA and public washrooms
- charter boats occupy several timber docks at the north end of the site
- public launch ramps are used for both motorized and non motorized boats
- south section of the park is currently a gravel parking lot
- within the Old Port Credit Village Heritage Conservation District
- Waterfront Trail
- Location of Salmon Derby

P112 - MARINA PARK

- EXISTING LIGHTHOUSE AND FRONT STREET PUMPING STATION
- SEASONAL KIOSK
- POTENTIAL UNDERBRIDGE CONNECTION TO PORT CREDIT MEMORIAL PARK (WEST)
- MULTI-USE CIVIC SPACE
- EXISTING CHARTER BOAT AREA
- EXISTING BOAT LAUNCH RAMP
- EXISTING PEDESTRIAN BRIDGE
- TRANSITIONAL ZONE
- OPEN GREEN SPACE
- MULTI-USE CIVIC SPACE



Rivergate Easement

- approximately 193 metres of shoreline (633 feet)
- City leases a 6 metre wide easement around the perimeter of the 20 storey apartment building from Credit Valley Conservation
- links Marina and J.C. Saddington Parks on the western bank of the Credit River

June Consultation Summary

Key Comments and Discussion Highlights

Thank you for your engaged involvement at the Stakeholder Meeting (May 22nd, 2012) and the Public Information Centre #1 (June 19th, 2012), as well as your feedback forms, comments and e-mails.

The **key issues and comments** raised included:

- importance of waterfront/riverfront accessibility
- the need to improve park facilities and programs
- importance of the boat launch and commercial fisheries activities at Marina Park



Port Credit Memorial Park (West)

- Great multi-functional open space
- Preserve existing mature trees
- Enhance the tree canopy while respecting views to the river
- Improve connections to the river by opening up views
- Increase public accessibility to water
- Soften the shoreline treatment to absorb wave action
- Consider park programming enhancements
- Canoe and rowing clubs train primarily on the river north of Lakeshore Road bridge
- Club regattas are a tourism draw
- Boating community helps to keep the river clean and free of debris
- Keep launching of public non-motorized boats separate from club launch areas
- Additional landscaping may impede large boats at the Don Rowing Club that need the room available to launch the boats
- New underpass connection to Marina Park
- Incorporate the carved totem pole into the park redevelopment plan



June Consultation Summary



Marina Park

- Great boat launch location for access to both the river and lake
- Active harbour – offers focal point/vibrancy
- Important community fishing nucleus
- Fish disposal/cleaning location is an excellent service
- Proximity of parking to boat launch is important
- Users of launch ramps like the current location –easy to launch, parking convenient
- A lot of activity/congestion on the river, but boaters work together to minimize affect
- To reduce conflicts between non-motorized boats and motorized boats consider separation of non-motorized and motorized boat launch
- Parking improvements – parking busy and unorganized for boat trailers
- Commercial fishing and boat launches have cultural and heritage significance
- Atlantic salmon fishery is growing so use of this area will also grow
- Improve existing facilities
- Consider landscape improvements
- Built structures would impede views

J.C. Saddington Park

- Well liked multi-purpose park
- Increase access to the lake
- Improve the park including the pond and washrooms
- Add food services at the park
- Consider potential locations for a boat launch
- Provide signage
- Improve park connectivity from adjacent neighbourhoods
- Concerns with walkway on the Rivergate easement and how it will relate to the existing building



Other Comments



- Concerns with sedimentation and river depth and potential dredging
- Consider streetscape improvements in the study
- Maintain existing park programs
- East/west connection on the north side of Lakeshore Road to connect Port Credit Memorial Park East and West
- Consider new tourism/economic opportunities (pedi-cabs/buggies/rent-by-hour non-motorized watercrafts)
- Improve parking opportunities in the parks
- Maintain opportunities for on shore fishing
- Repurpose the old pumping station (fish hatchery)

Summary of Proposed Improvements

The following infrastructure improvements form the basis for the large block concept plan:

- A combination of hard and soft shoreline treatments in Port Credit Memorial Park (West)
- Construction of an underpass under Lakeshore Road West on the west bank of the Credit River
- Adding fill to raise the shoreline and constructing a new shoreline at Marina Park
- Relocating the non-motorized boat launch further south in Marina Park
- Constructing a waterside boardwalk around the Rivergate Easement
- Enhancement of the cobble beach in Hacienda Bay
- Adding a cobble beach on the Lake Ontario shore along the east side of J.C. Saddington Park; adding additional armour stone along the west side where required
- Naturalizing the pond in J.C. Saddington Park by re-lining, adding substrate and planting

Other Key Park Improvements:

- Re-organizing parking in Marina Park to address circulation and conflict, and incorporate sustainable features where appropriate
- Adding open space to support boating activities in Marina Park
- Multi-use civic space in Marina Park
- Streetscape improvements
- Maintaining and enhancing views
- Naturalizing areas of J.C. Saddington Park over time

Large Block Concept Plan

DRAFT

**PORT CREDIT HARBOUR WEST PARKS
LARGE BLOCK CONCEPT PLAN**

OCTOBER 24

PORT CREDIT MEMORIAL
PARK (WEST)

- existing canoe club
existing launch ramp and docks

- existing rowing club

- existing launch ramp and docks

- street tree planting

- 10

- parking area

- multi-use civic space

- Memorial Park (West) and Marina Park

MARINA PARK

- existing lighthouse and Front Street
pumping station
existing pedestrian bridge

- multi-use civic space
existing character boat area

- pedestrian access

- non-motorized boat launch ramps

- hard shore edge

- open space to support boating activities

- pedestrian access

- RIVERGATE EASEMENT I

- existing rivergate apartment

- J.C. Saddington Park to Marina Park

- streetscape improvements

J.C. SADDINGTON PARK

- streetscape improvements

- existing boardwalk

- existing former pumping station buildings

- mark pavillion option 1

- armour stone/riprap reinforcement

- response to unstable host

- 100



SCALE 1:1,200

Project Implementation

Potential Impact of Park Infrastructure Improvements	City Commitment to Minimizing Potential Impacts
Improved habitat in some areas	<ul style="list-style-type: none"> Design concepts enhance habitat in many locations
Improved park experience	<ul style="list-style-type: none"> Improved park connection; water's edge access incorporated into proposed improvements
Truck traffic associated with fill and/or stone transport	<ul style="list-style-type: none"> Material deliveries to be scheduled during regular business hours Traffic control to be used if necessary
Impact on near shore fish habitat	<ul style="list-style-type: none"> Timing of in-water construction to be scheduled to minimize impacts in fishing
Potential conflict with boating activities	<ul style="list-style-type: none"> Construction to be scheduled during the non-boating season where possible; boat launching may need to be temporarily moved to Lakefront Promenade Park A water use circulation plan to be prepared during detailed design
Dust and noise during construction	<ul style="list-style-type: none"> Construction to be scheduled during regular business hours Noise by-laws to be adhered to Dust management to be put in place where necessary
Limited access to the waterfront and pond during construction	<ul style="list-style-type: none"> Appropriate signage and fencing to be put in place for safety Construction to be phased over time and completed as quickly as possible
Potential for spills/sedimentation	<ul style="list-style-type: none"> Fuelling of construction equipment away from the water Exposed soils to be covered immediately
Potential for increased wave refraction in Credit River	<ul style="list-style-type: none"> Addition of cribs and live stakes at Port Credit Memorial Park (West) will minimize the potential for increased wave refraction

Next Steps

Timeline

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Understanding the Context													
Shoreline Investigation													
Natural Heritage Characterization													
Site Servicing Investigation													
Structural Investigation													
Issues and Options													
Identify Problems/Opportunities													
Identify Improvement Options													
Public Information Centre #1						★							
Evaluate Improvement Options													
Develop Concepts													
Public Information Centre #2										★			
Documentation													
Prepare Environmental Study Report													
Prepare Large Block Concept Plan													

Work to be Completed Fall 2012 - Winter 2013

1. Preparation of the Environmental Report.
2. Public review period (30 days) of the Environmental Report.
3. Finalize the Environmental Report.
4. Finalize Large Block Concept Plan.

Key Contacts

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enaylor@dillon.ca

www.mississauga.ca/portcreditharbourwestparks

Port Credit Memorial Park (West) Shoreline

Alternatives Considered



Do Nothing

- Existing concrete slab revetments will remain
- No changes or impacts to the Natural Environment
- No change or disruption to the Socio-Economic and Cultural Environment; misses opportunity to improve shoreline use
- Existing structure will continue to deteriorate



Hard Shore

- Upgrades could include stone revetment; sea walls; steel sheet piles; and concrete structures
- Less opportunity for naturalization and habitat
- Enhance access and visibility of the river and activities on the river
- Design life between 25 to 50 years; likely low maintenance



Natural Shore

- Upgrades include live cribs and live stakes
- Softening the shoreline increases potential fish habitat
- Allows for educational components
- Protection from wave, river and ice conditions low to moderate
- Design life between 10 to 20 years



Combination

- Combination of both natural and hard shore
- Habitat opportunities in some areas
- Can appeal to a variety of users
- Moderate protection provided from wave, river and ice conditions
- Areas with different design life and maintenance requirements



Evaluation of Alternatives

ALTERNATIVES				
	Do Nothing	Natural Shore	Hard Shore	Combination (Natural and Hard Shore)
Natural Environment	○	●	⊘	⊘
Socio-Economic and Cultural Environment	○	⊘	⊘	●
Technical	○	⊘	●	⊘
Construction Cost for the Park Area	N/A	Moderate to High (\$600,000)	Moderate to High (\$600,000)	Moderate to High (\$600,000)
Summary	The combination alternative is preferred as it provides the best opportunity to enhance the park for a variety of users and can provide a good mix of hard shore and soft shore to meet the technical needs and the naturalization objectives. The "do nothing" alternative misses out on the opportunity to improve the shoreline use and thus, is least preferred.			

LEGEND

Least Preferred



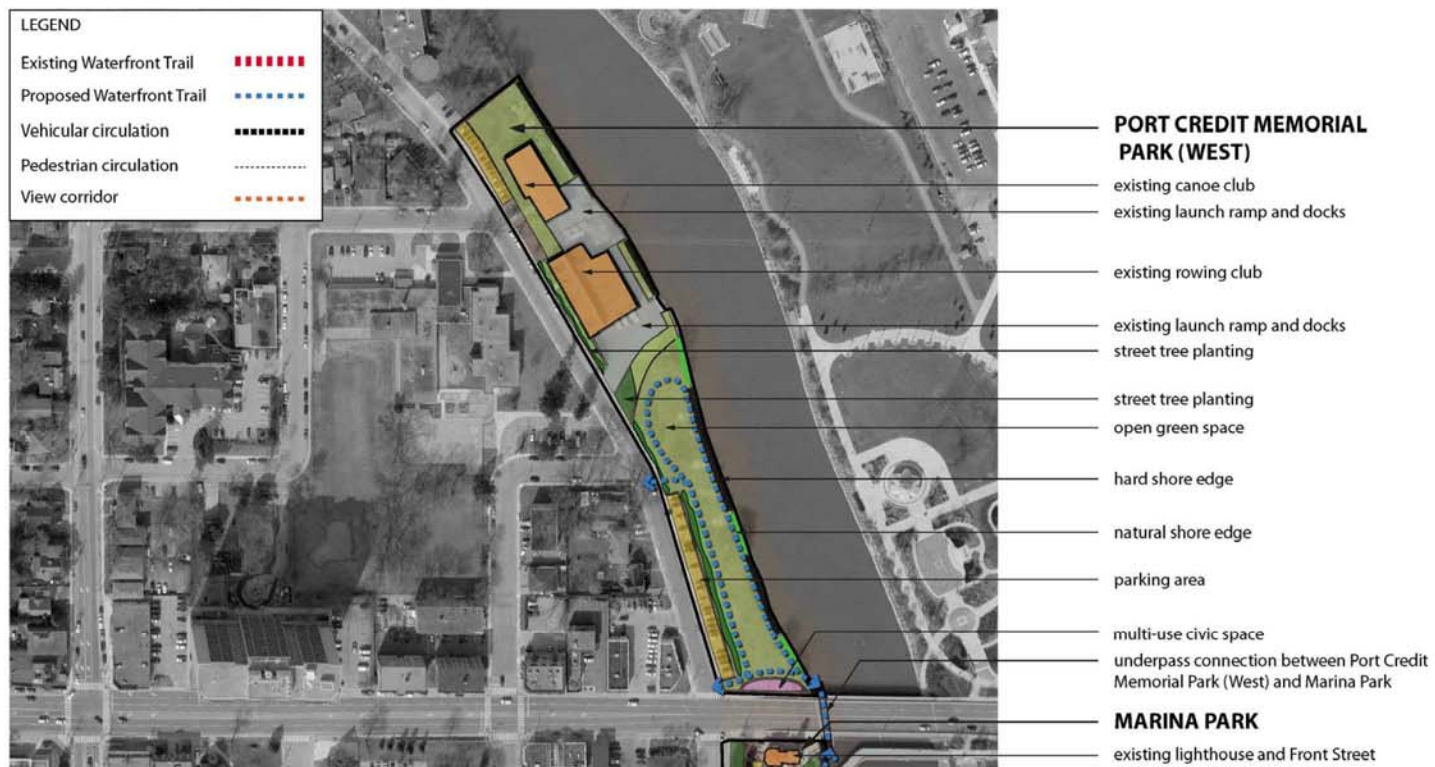
Preferred



Most Preferred

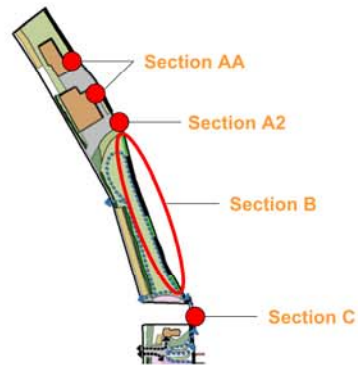


Port Credit Memorial Park (West) Large Block Concept Plan

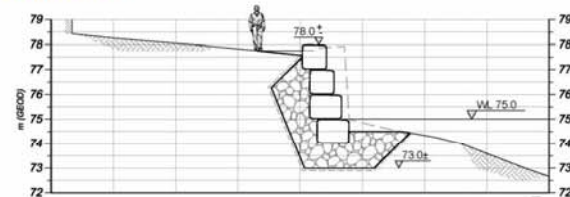


Port Credit Memorial Park (West) Shoreline

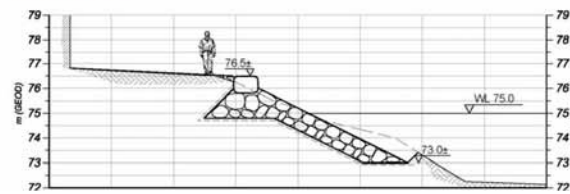
Shoreline Cross Sections



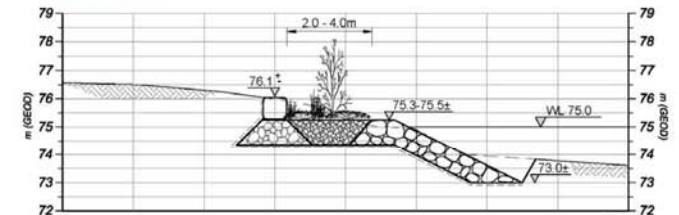
Section AA BOAT CLUBS - HARD SHORE



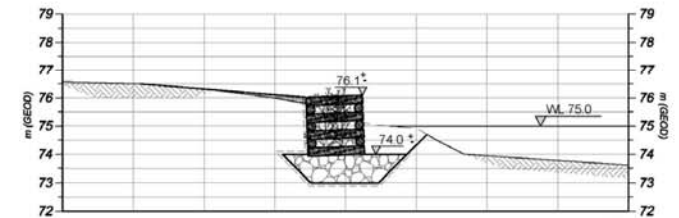
Section A2 HARD SHORE OPTION



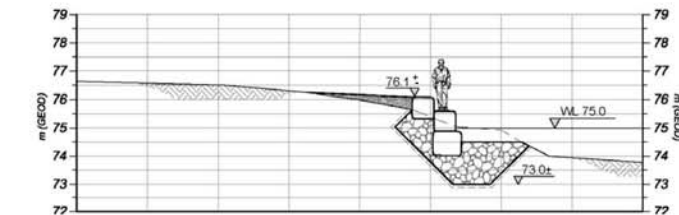
Section B1 SOFT SHORE OPTION



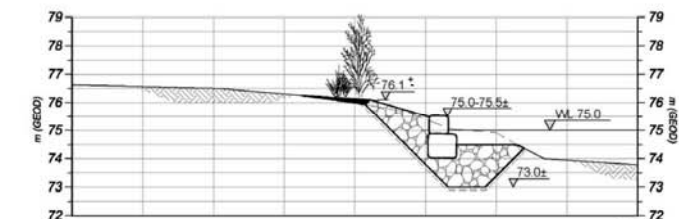
Section B2 SOFT SHORE OPTION



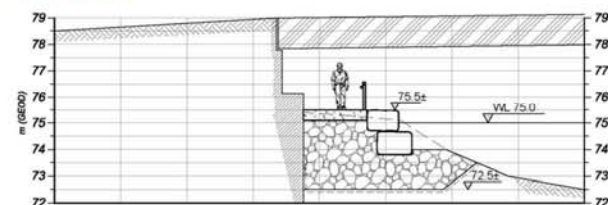
Section B3 HARD SHORE OPTION



Section B4 HARD SHORE OPTION



Section C LAKESHORE ROAD UNDERPASS



Port Credit Memorial Park (West) Connection

Alternatives Considered



Do Nothing

- Indirect crossing at lights will remain
- No changes or impacts to the Natural Environment
- No change or disruption to the Socio-Economic and Cultural Environment
- Limits continuous circulation between the two parks
- Limited technical challenges
- Does not provide safe access across Lakeshore Road West



At Grade

- Upgrades include lights and a crosswalk
- No changes or impacts to the Natural Environment
- Limited impact to the community and park users during construction
- Modest improvement to pedestrian connectivity; some safety concerns remain
- Easy to construct
- Limited maintenance anticipated



Underpass

- Upgrades include concrete ramp under Lakeshore Road with access ramps at both sides
- Potential to negatively impact water quality and fish habitat during construction
- Minimal, if any impact to traffic and park users during construction
- Provides continuous, safer pedestrian connectivity between two parks
- Easy to moderate construction
- Regular maintenance required



Overpass

- Upgrades include an overpass with ramps or elevator
- No changes or impacts to the Natural Environment
- Construction requires temporary closure of existing pedestrian crossing of the Credit River
- Provides continuous, safe pedestrian connectivity between two parks
- Access ramps could use valuable park space
- Difficult construction
- Long-term maintenance required



(Source: City of Burnaby, 2008)

Evaluation of Alternatives

ALTERNATIVES				
	Do Nothing	At Grade	Underpass	Overpass
Natural Environment	●	●	○	▨
Socio-Economic and Cultural Environment	○	▨	●	▨
Technical	●	●	▨	○
Approximate Cost (Capital)	N/A	Low (\$100,000)	Moderate (\$200,000)	Very High (\$4,000,000)
Summary	The underpass is preferred as it provides the needed safe connection with limited construction challenges, moderate maintenance needs and has the least impact on park uses during construction and operation. While the existing condition and at-grade crossing have limited technical challenges and impacts to the Natural Environment, they do not provide the safe access across Lakeshore Road West required to better connect the parks.			

LEGEND

Least Preferred



Preferred



Most Preferred



Marina Park Shoreline

Alternatives Considered



Do Nothing

- Leave current site layout and programs
- No changes or opportunity to improve the Natural Environment
- Potential for park areas to flood and south end of park will continue to erode
- Current site layout and functions are not welcoming to non-fishing community and tourists



Flood Proof North & South Ends

- Raise elevation and improve shore wall throughout
- Opportunity to increase vegetation and landscaping throughout
- Disruption of whole park during construction
- Potential for improved off-season programming
- Design life 25 to 50 years
- Extent of maintenance likely low
- 2-3 month longer construction period



Do Nothing at North End & Flood Proof South End

- Raise elevation and improve shore wall at south end
- Opportunity to increase vegetation and landscaping where elevation is raised
- Minimal disruption at north end during construction
- Design life 25 to 50 years
- Extent of maintenance is likely low



Evaluation of Alternatives

ALTERNATIVES			
	Do Nothing	Do Nothing at North End & Flood Proof South End	Flood Proof North & South Ends
Natural Environment	○	⊘	●
Socio-Economic and Cultural Environment	○	⊘	●
Technical	○	⊘	●
Approximate Cost (Capital)	N/A	Moderate (\$500,000)	High (\$1,000,000 to \$1,500,000 – not including backshore grading)
Summary	Flood proofing all of Marina Park is preferred in the long term as it allows for year round usability and opportunity for enhancement. Flood proofing in the south end is proposed in the short term. The "do nothing" option is least preferred as sections of the existing shoreline protection have failed.		

LEGEND	
Least Preferred	○
Preferred	⊘
Most Preferred	●

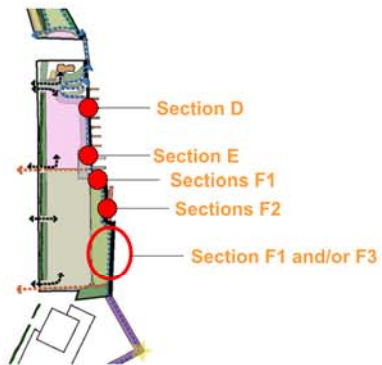
Marina Park & Rivergate Easement Large Block Concept Plan



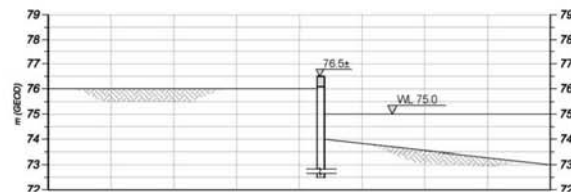
LEGEND	
Existing Waterfront Trail	■■■■■
Proposed Waterfront Trail	■■■■■
Vehicular circulation	—————
Pedestrian circulation
View corridor

Marina Park Shoreline

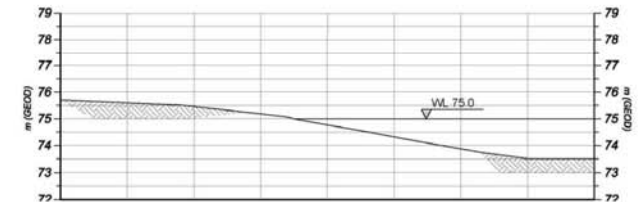
Shoreline Cross Sections



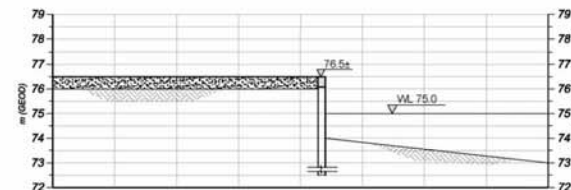
Section D1 EXISTING SHORE WALL WITH NEW CAP



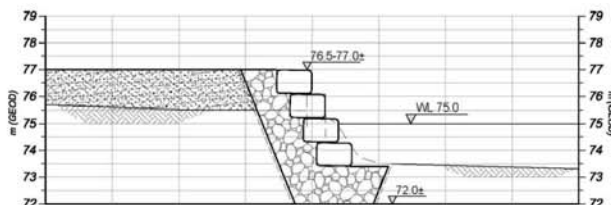
Section E EXISTING LAUNCH RAMP



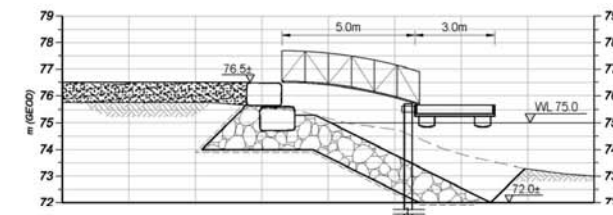
Section D2 PROPOSED SHORE WALL WITH NEW CAP



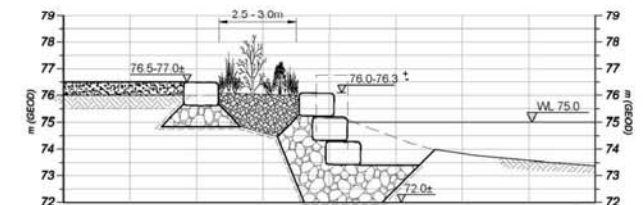
Section F1 MARINA PARK SHORELINE



Section F2 NON-MOTORIZED LAUNCH



Section F3 MARINA PARK SHORELINE*



*hard shore required for stabilization but is naturalized where possible

Rivergate Easement Pedestrian Connection

Alternatives Considered

✓ Do Nothing/Enhance Streetscape Link

- Enhancement of streetscape link; improve signage
- No changes to the Natural Environment including no opportunity to increase naturalization
- Away from water's edge
- Minimal maintenance required



✓ Shoreline Connection

- Development of an elevated fixed walkway along the shore
- Increased turbidity and sedimentation in Credit River during construction
- Significant improvement in continuous connectivity along the water's edge between J.C. Saddington Park and Marina Park
- Enhances the waterfront trail experience
- Design life 25 to 50 years; maintenance would be required



(Source: Steve Creek, 2010)



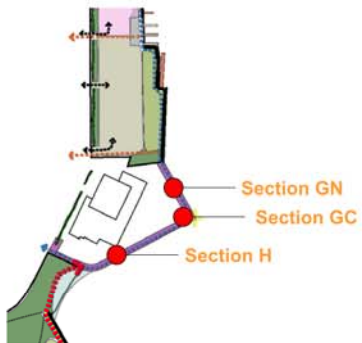
Evaluation of Alternatives

ALTERNATIVES		
	Do Nothing/Enhance Streetscape Link	Shoreline Connection
Natural Environment	○	●
Socio-Economic and Cultural Environment	○	●
Technical	●	○
Construction Cost for the Park Area	Low (\$150,000)	High (\$2,500,000)
Summary	The shoreline connection is preferred as it enhances the experience for trail users and provides some opportunity for aquatic habitat enhancement.	

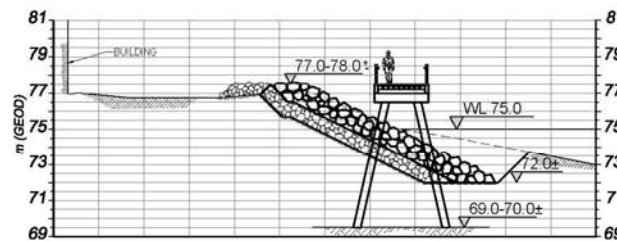
LEGEND	
Least Preferred	○
Preferred	◐
Most Preferred	●

Rivergate Easement Walkway Connection

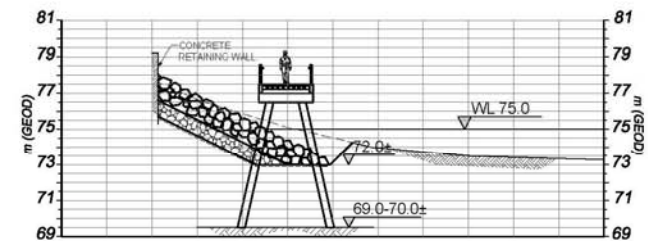
Walkway Cross Sections



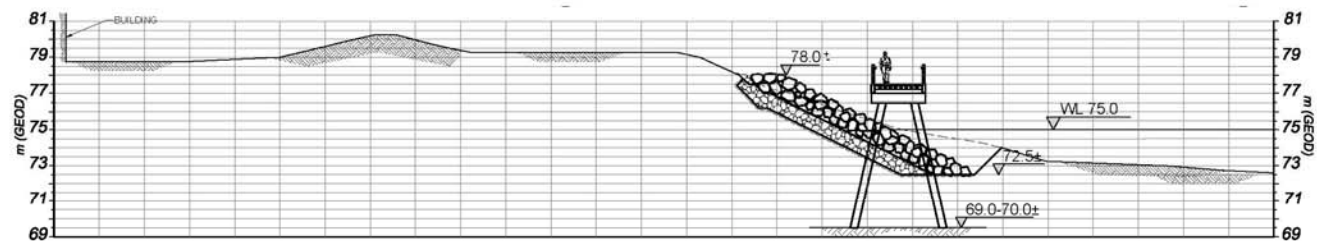
Section GN RIVERGATE WALKWAY



Section H RIVERGATE WALKWAY



Section GC RIVERGATE WALKWAY



J.C. Saddington Park Shoreline

Alternatives Considered

✓ Do Nothing

- Existing stacked and rough random placed armour stone remains
- No changes or impacts to the Natural Environment
- No change or disruption to the Socio-Economic and Cultural Environment however, it misses out on the opportunity to enhance the park and waterfront
- Existing shoreline only provides a moderate level of protection



✓ Improve Existing

- Upgrades include placement of stone in upper parts of revetment
- Enhancement of riparian cover in selected areas; potential to improve wildlife habitat
- No change in access to water's edge
- Design life 25 to 50 years; low maintenance requirements



✓ Cobble Beach

- Upgrades include placement of cobble where suitable and improved revetment through remainder
- Greater enhancement of riparian vegetation and potential to improve wildlife habitat
- Safer access to the water's edge
- Allows for some flexibility in programming
- Design life 25 to 50 years; beach will require ongoing maintenance
- A cobble beach is feasible at the location given the water depths and wave exposure



(Source: Terry McDonald, 2010)

Evaluation of Alternatives

ALTERNATIVES			
	Do Nothing	Improve Existing	Cobble Beach
Natural Environment	○	◐	●
Socio-Economic and Cultural Environment	○	◐	●
Technical	○	◐	◐
Approximate Cost (Capital)	Low and Periodic	Moderate to High (\$550,000)	High (\$3,000,000)
Summary	Including a cobble beach, where appropriate, is preferred as it allows for the creation of diversity in wildlife habitat and provides improved safe access to the water's edge.		

LEGEND	
Least Preferred	○
Preferred	◐
Most Preferred	●

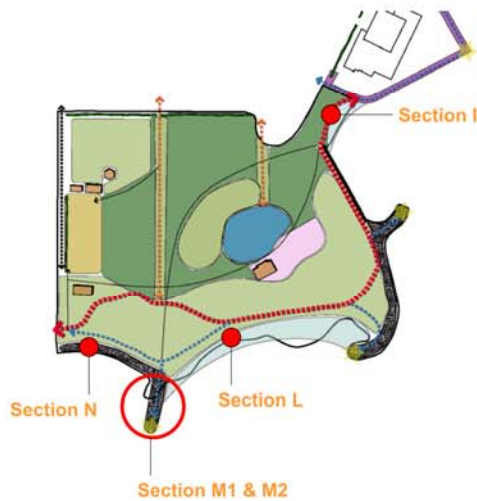
J.C. Saddington Park Large Block Concept Plan



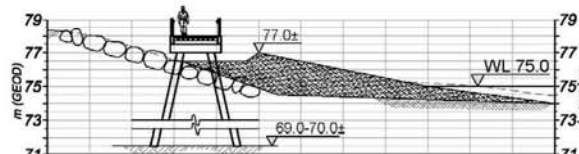
- pedestrian walkway connection from J.C. Saddington Park to Marina Park
- streetscape improvements
- J.C. SADDINGTON PARK**
- streetscape improvements
- cobble beach
- existing boardwalk
- hard shore edge
- existing former pumping station buildings for future adaptive use
- park pavilion option 1
- armour stone/riprap reinforcement
- cobble beach
- groyne to maintain beach
- park pavilion option 2

J.C. Saddington Park Shoreline

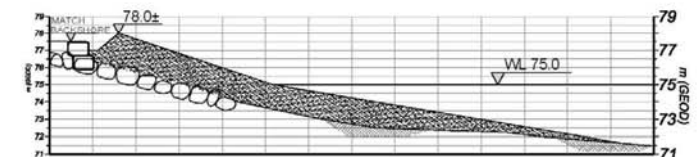
Shoreline Cross Sections



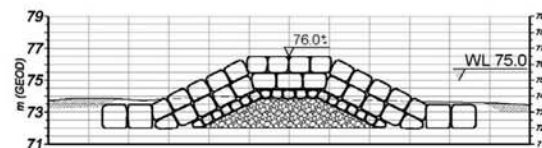
Section I COBBLE BEACH



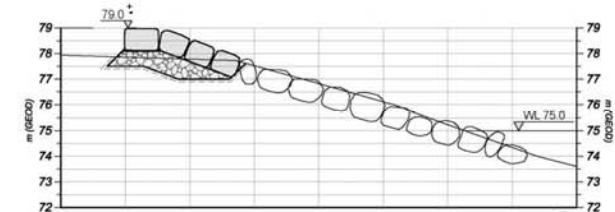
Section L COBBLE BEACH



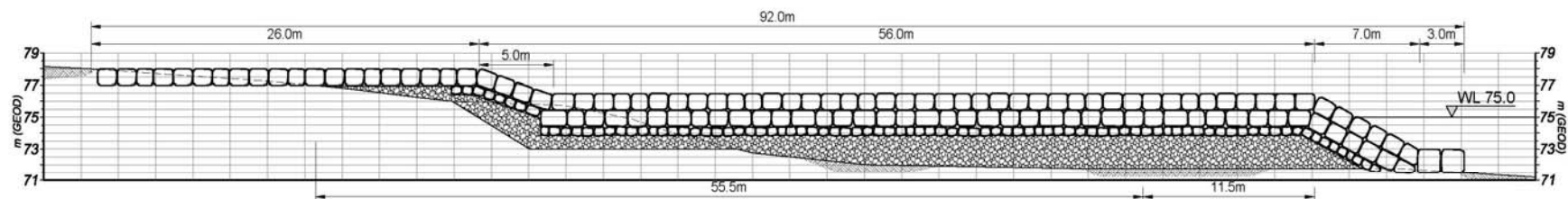
Section M1 GROUYNE



Section N HARD SHORE



Section M2 GROUYNE



J.C. Saddington Park Pond

Alternatives Considered

✓ Do Nothing

- Existing pond will remain
- No changes or impacts to the Natural Environment
- No change or disruption to the Socio-Economic and Cultural Environment

✓ Naturalized

- Altering surfaces and depths, and re-lining of pond to support naturalized environment
- Vegetation and plantings in and around the pond to promote a naturalized system and increase wildlife habitat and function
- Provides some opportunity to improve water quality
- Does not provide an opportunity to improve the cultural heritage character
- Longer design life and potentially less maintenance



✓ Urban/Concrete

- Maintaining urban water features (e.g. wading pool, skating rink); adding landscaping around the pond
- Landscaping would provide limited improvement to wildlife habitat and function
- Provides significant flexibility for programming
- Provides an opportunity to incorporate cultural heritage themes
- Shorter design life and potentially more maintenance (between seasons)
- Improvements to existing pond infrastructure would be needed



(Source: www.melanieotg.ca, 2011)

Evaluation of Alternatives

ALTERNATIVES			
	Do Nothing	Naturalized	Urban/Concrete
Natural Environment	○	●	○
Socio-Economic and Cultural Environment	○	◐	●
Technical	○	◐	◐
Construction Cost for the Park Area	N/A	Moderate (\$400,000)	Moderate (\$400,000*) *cost may vary depending on design features
Summary	A naturalized pond is preferred as it provides improved habitat and an opportunity to introduce a natural area into the Port Credit Waterfront.		

LEGEND	
Least Preferred	○
Preferred	◐
Most Preferred	●

Hacienda Bay

Alternatives Considered

✓ Do Nothing

- Existing shoreline will remain; provides no access to the public
- No changes or impacts to the Natural Environment
- No change or disruption to the Socio-Economic and Cultural Environment however, it misses out on the opportunity to enhance the park and waterfront
- Existing shoreline provides a moderate level of protection



✓ Cobble Beach

- Upgrades would include enhancement of the beach
- Opportunity to increase naturalization, including potential for some refuge and spawning habitat for fish
- Provides greater pedestrian connectivity along the water's edge
- Some construction impacts to park users
- Moderate to high protection; beach will adjust with wave, river and ice conditions



✓ Coastal Wetland

- Upgrades would include development of a wetland
- Provide refuge habitat for fish and the opportunity for significant naturalization
- Provides greater pedestrian connectivity along the water's edge
- Some construction impacts to park users
- Wetland is sensitive to wave action and water fluctuations; breakwater would be required to protect wetland
- Challenging area for wetland development due to wave action and water depth



Evaluation of Alternatives

ALTERNATIVES

	Do Nothing	Cobble Beach	Coastal Wetland
Natural Environment	○	⊘	●
Socio-Economic and Cultural Environment	○	⊘	⊘
Technical	●	●	⊘
Approximate Cost (Capital)	N/A	Moderate (\$600,000)	High (\$3,000,000)
Summary	A cobble beach in this location is preferred as it enhances the natural habitat and access to water. While a coastal wetland potentially provides more habitat, it is technically challenging for a significant cost.		

LEGEND

Least Preferred	○
Preferred	⊘
Most Preferred	●

Non-Motorized Boat launch

Alternatives Considered

✓ Do Nothing

- Current location at Marina Park
- No changes or impacts to the Natural Environment
- No change or disruption to the Socio-Economic and Cultural Environment
- Sheltered from waves; potential for boat generated waves



✓ Marina Park

- Separate non-motorized boat launch location at Marina Park
- Increased turbidity and sedimentation during construction
- Reducing congestion and conflict on site
- Requires shore parallel floating dock



✓ Port Credit Memorial Park (West)

- Move non-motorized boat launch to Port Credit Memorial Park (West)
- Decreased opportunity for areas of naturalization
- Increase vehicular traffic on Front Street North
- Decreased congestion and conflicts between motorized and non-motorized boats in Marina Park
- Sheltered from open lake; small potential for boat generated waves
- Potential conflict with clubs



✓ Hacienda Bay

- Move non-motorized boat launch to Hacienda Bay
- Decreased opportunity for areas of naturalization
- Closer to parking but park space needed for loading and drop-off
- Decreased congestion and conflicts between motorized and non-motorized boats in Marina Park
- Semi-sheltered from open lake; greater exposure to wave action



Evaluation of Alternatives

ALTERNATIVES				
	Do Nothing	Marina Park	Port Credit Memorial Park (West)	Hacienda Bay
Natural Environment	●	●	○	○
Socio-Economic and Cultural Environment	○	●	◐	◐
Technical	◐	●	◐	○
Approximate Cost (Capital)	N/A	Low (\$50,000)	Low (\$50,000)	Low (\$50,000*) <small>*cost may vary depending on Hacienda Bay design details</small>
Summary	A separate non-motorized boat launch at Marina Park is the preferred alternative as it has the potential to improve the current on-land conflicts and keeps the boating use in Marina Park.			

LEGEND

Least Preferred ○

Preferred ◐

Most Preferred ●

Date:	
Name:	
Group/Organization:	
Email Address:	
Mailing Address:	
Telephone:	

☐ Newspaper

☐ Received information in the mail

☐ From a friend or neighbour (word of mouth)

☐ Other (please specify) _____

[illegible]

3. Do you have any concerns about the implementation and construction of these improvements?

4. Did this event provide you with the information you were looking for?

5. Did you like the format of this Public Information Centre?

6. Do you have any additional comments?

Mail to: Eha Naylor, Project Manager, Dillon Consulting Limited, 235 Yorkland Blvd., Suite 800, Toronto, ON., M2J 4Y8 **OR Email to:** enaylor@dillon.ca by **November 7, 2012.**

For more information, go to: www.mississauga.ca/portcreditharbourwestparks

*Under the Freedom of Information and Protection of Privacy Act, **all comments and questions submitted regarding this project will be used for the purposes of creating an environmental assessment report** that will be a part of the public record and will be made available to individuals or organizations with an interest in this project. **Personal information such as name, address, and telephone number will not be included in the environmental assessment report** but will be released, if requested, to any person as part of the review of the environmental assessment report.*

Large Block Concept Plan

LEGEND	
Existing Waterfront Trail	-----
Proposed Waterfront Trail	-----
Vehicular circulation	-----
Pedestrian circulation	-----
View corridor	-----

PLEASE FEEL FREE TO
PROVIDE US WITH YOUR
COMMENTS ON THE STICKY
NOTES PROVIDED BELOW.

THANK YOU.

DRAFT PORT CREDIT HARBOUR WEST PARKS LARGE BLOCK CONCEPT PLAN OCTOBER 24

PORT CREDIT MEMORIAL PARK (WEST)

existing canoe club
existing launch ramp and docks

existing rowing club

existing launch ramp and docks

street tree planting

street tree planting

open green space

hard shore edge

natural shore edge

parking area

multi-use civic space

underpass connection between Port Credit
Memorial Park (West) and Marina Park

MARINA PARK

existing lighthouse and Front Street

pumping station

existing pedestrian bridge

existing "arter" boat area

multi-use civic space

streetscape improvements

launch ramps

launch ramps

launch ramps

launch ramps

launch ramps

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launch ramps

Walking distance
from house
to park
with dog
parking
area
safe for dog
and people

No buildings
No large
structures
Please

Fish Cleaning
Station?
Keep it!

Planting
A big garden
with a lot of
flowers
and trees
to make it
look like a
park

YAY!
Bout launch!
No structures!
Like views!
River views!
Naturalization!

keep it
minimalist

MAKE
QUARTLY
FISHING,
MARINE
edge to all
3 PARKS

Hatchery?

swimming
playground?

Will there still
be a
fountain
in the Pond?
NIX IT

Keep the 3
"lookouts"
minimalist
&
natural

CANOE
KAYAK
LAUNCH?

Pond/
Skating
Rink

Lots of
Recycle
Bins
Raccoon proof!

Large Block Concept Plan

LEGEND	
Existing Waterfront Trail	-----
Proposed Waterfront Trail	-----
Vehicular circulation	-----
Pedestrian circulation	-----
View corridor	-----

PLEASE FEEL FREE TO
PROVIDE US WITH YOUR
COMMENTS USING THE
STICKY NOTES.

THANK YOU!

DRAFT PORT CREDIT HARBOUR WEST PARKS LARGE BLOCK CONCEPT PLAN OCTOBER 24

PORT CREDIT MEMORIAL PARK (WEST)

- existing canoe club
- existing launch ramp and docks
- existing rowing club
- existing launch ramp and docks
- street tree planting
- street tree planting
- open green space
- hard shore edge
- natural shore edge
- parking area
- multi-use civic space
- underpass connection between Port Credit Memorial Park (West) and Marina Park

MARINA PARK

- existing lighthouse and Front Street pumping station
- existing pedestrian bridge
- existing charter boat area
- multi-use civic space
- streetscape improvements
- motorized boat launch ramps
- pedestrian access
- non-motorized boat launch ramps
- hard shore edge
- parking/large event space
- open space to support boating activities
- streetscape improvements
- pedestrian access
- naturalization

RIVERGATE EASEMENT

- existing Rivergate apartment
- pedestrian walkway connection from J.C. Saddington Park to Marina Park
- streetscape improvements

J.C. SADDINGTON PARK

- streetscape improvements
- cobble beach
- existing boardwalk
- hard shore edge
- existing former pumping station buildings for future adaptive use

park pavilion option 1

armour stone/riprap reinforcement
cobble beach

groyne to maintain beach

park pavilion option 2

Front St South
- maintain - increase
Street views to river
- Boulevard planting
down centre w/
Street Calming
- angled parking
opportunities for
character

Biking
Separate from
Walking
Keep some
areas rustic

need boulders
& deep water
4'-5' at
shoreline for
fishing

Agencies & Region of Peel

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



MEETING MINUTES

Project: **Port Credit Harbour West Parks**
Pre-Design Studies & Environmental Assessment
Introductory Meeting and Site Walk with Agency Representatives

Project No: 12-5881

Location: Port Credit Memorial Arena
40 Stavebank Road

Date: Mon., Mar. 26, 2012

Time: 8:30 to 11:30 AM

Present:	<u>Name</u>	<u>Company</u>	<u>Email</u>
	Dorothy Moszynski	Ministry of the Environment	dorothy.moszynski@ontario.ca
	Dan Minkin	Ministry of the Environment	dan.minkin@ontario.ca
	Kate Hayes	Credit Valley Conservation	khayes@creditvalleyca.ca
	Jesse DeJager	Credit Valley Conservation	jdejager@creditvalleyca.ca
	Rizwan Haq	Credit Valley Conservation	rhaq@creditvalleyca.ca
	Liam Marray	Credit Valley Conservation	lmarray@creditvalleyca.ca
	Jane Darragh	City of Mississauga	jane.darragh@mississauga.ca
	Ruth Marland	City of Mississauga	ruth.marland@mississauga.ca
	Janet Lack	City of Mississauga	janet.lack@mississauga.ca
	Eha Naylor	Dillon Consulting Limited	enaylor@dillon.ca
	Karla Kolli	Dillon Consulting Limited	kkolli@dillon.ca
	Mark Brobbel	Dillon Consulting Limited	mbrobbel@dillon.ca
	Martina Braunstein	Dillon Consulting Limited	mbraunstein@dillon.ca
	Milo Sturm	Shoreplan Engineering Limited	msturm@shoreplan.com
	Derek Weckers	Dillon Consulting Limited	dweckers@dillon.ca
Cc:	Geoff Smith	City of Mississauga	geoff.smith@mississauga.ca
	Jeff Hirvonen	Dillon Consulting Limited	jhirvonen@dillon.ca
	Doug Onishi	Dillon Consulting Limited	donishi@dillon.ca

<u>Item</u>	<u>Description</u>	<u>Action</u>
1.0	Introductions	
1.1	Round table introductions included the individual's role and responsibility, either for the project or for the Agency represented.	
2.0	Overview of Scope, Questions and Answers	
2.1	The City of Mississauga with Dillon Consulting and Shoreplan are undertaking an EA for parklands on the west side of the Credit River. The scope constitutes Memorial Park West, Marina Park, the Rivergate Apartment Easement, and JC Saddington Park.	
2.2	The EA is looking at the technical challenges of making the Waterfront Parks Strategy (WPS) concepts a reality, seeking opportunities to enhance natural heritage and maintain existing elements of value.	
2.3	Work will include in-water works to improve habitat and water quality, including a wetland in Hacienda Bay at JC Saddington Park.	
2.4	Kate noted that CVC background studies are up and available on the CVC's website and offered CVC fact sheets for the PIC.	
2.5	Kate commented that this project may offer opportunities for off-site compensation from the Lakeview infill. Ensuing discussion on this acknowledged that there would be some potential in places, but that these are urban sites with goals to balance recreational uses.	
2.6	With respect to the MNR and the Lakes and Rivers Improvement Act, the project team will ensure that all Agencies are on side with the project with approvals in principle. The MNR declined to attend this meeting.	
2.7	Noted that a pedestrian underpass is being considered at Lakeshore's western bridge abutment. A question was raised about a pedestrian overpass at this location, however, given that this option is not in the WPS it is correspondingly not in this EA's scope.	

- 2.8 Noted the intent to leave the Marina Park charter boats in place to promote/include commercial uses in the park. Options for relocating the motorized boat launches adjacent to the charters will be considered over the course of the EA.
- 2.9 Karla noted that the project team is following a Municipal Class EA format for this project, presenting problems and opportunities at PIC No. 1 complete with thoughts on ways to address issues. The issue of whether or not the wetland breakwater requires a Schedule B or C under the Act will be dealt with at PIC No. 2, given that shoreline works and breakwaters need Cass EA approval. It was noted that servicing requires Schedule A.
- 2.10 Regarding the timing of implementation, it was noted that the intent is to undertake detailed design in 2013 and construction in 2014/15. It was further noted that work would be phased from the north to the south and that the City may push the timing back by a year.
- 2.11 Kate offered a list of First Nations contacts to the project team for consultation if needed.
- 2.12 Regarding stormwater improvements, it was asked whether or not water off of Lakeshore (at the bridge) drains into the river and whether or not there will be opportunities for improvement. It was assumed that Lakeshore is currently adequately addressed and noted that the team will confirm where the street system outlets. It was further noted that the parking lots within the scope might not be adequately addressed and that the team would look into opportunities to improve them.
- 2.13 An overview of the WPS concepts was provided with the following commentary:
- Memorial Park West - It is premature to state what shoreline treatments are being considered for this stretch of the Credit River.
 - Marina Park – The long-term objective is to have the motorized boat launch ramps removed once an alternate solution/location for them is found. Ongoing commercial activity in this park is desired.
 - Rivergate Easement – A pedestrian walk along the river is being considered to link JC Saddington Park and Marina Park.
 - JC Saddington Park – Shoreline restorations and stabilizations are being considered with a wetland in Hacienda Bay.
 - The goal of this EA is not to re-open the WPS concepts but to confirm or catch items that are not implementable.
- 2.14 Discussion on Marina Park brought forward the following:
- Hazard lands/flood lines will be confirmed and mapped through this EA.
 - It was noted that the CVC would not support intensifications of use within hazard lands in response to the notion of a farmer's market with in the park.
 - It was asked whether or not Marina Park would require re-zoning to accommodate more commercial uses. The answer to this was no given that the park already accommodates and will likely maintain commercial uses that are appropriate to the site
- 2.15 Discussion on JC Saddington Park brought forward the following:
- The existing pumping station buildings are being considered for adaptive reuse as a fish hatchery.
 - The park has been constructed on an MNR water lot and is owned by the Ministry.
 - The MNR has a mandate to seek value from their water lots and have the right to ask for everything to be removed and returned to a natural state, however unlikely in this/many cases.
 - It was noted that the MNR has not patented this water lot to the CA.
- 2.16 Regarding natural heritage characterizations, Mark confirmed that Dillon staff will coordinate their work with surveys already completed by the CVC (i.e.: migratory bird studies).

3.0 Schedule

- 3.1 Eha provided a brief overview of the project schedule.
- Presently reviewing and summarizing background documentation, anticipating completion by late March.
 - Natural heritage characterization currently underway; tree inventory almost complete.
 - Geotechnical and topographic statements of work to be issued this week for work to be undertaken in April.
 - Late April: summary of conclusions.
 - Mid-May: shoreline/site servicing/structural investigation related to the underpass at Lakeshore complete.

- Late May: options for the site.
- Late June: PIC to present the site characterization and issues that have arisen since the Waterfront Parks Strategy was undertaken.

4.0 Site Walk

4.1 Following an overview of the project's scope and schedule a review of the physical site was undertaken by the attendees. A site walk began at the Mississauga Canoe Club and progressed southward through Memorial Park West toward Lakeshore. The site walk recommenced at the southern corner of JC Saddington Park and progressed along the shoreline and Front Street South to conclude at the lighthouse.

Attachments

None.

Prepared by: Derek Weckers

The above minutes are considered to be a true and accurate recording of all items discussed. Should any discrepancies be noted, please advise Dillon Consulting Limited in writing within 48 hours of distribution. If no notifications are recorded, the contents of these minutes will be assumed correct.



MEETING MINUTES

Project: Port Credit Harbour West Parks
Pre-Design Studies & Environmental Assessment
Project Review Meeting #2 with Agency Representatives

Project No: 12-5881

Location: Rick Hanson Meeting
201 City Centre Drive

Date: Mon., September 17, 2012

Time: 2:30 to 4:30 PM

Present:	<u>Name</u>	<u>Company</u>	<u>Email</u>
	Dorothy Moszynski	Ministry of the Environment	dorothy.moszynski@ontario.ca
	Kate Hayes	Credit Valley Conservation	khayes@creditvalleyca.ca
	Jesse DeJager	Credit Valley Conservation	jdejager@creditvalleyca.ca
	Rizwan Haq	Credit Valley Conservation	rhaq@creditvalleyca.ca
	Liam Marray	Credit Valley Conservation	lmarray@creditvalleyca.ca
	Jane Darragh	City of Mississauga	jane.darragh@mississauga.ca
	Eha Naylor	Dillon Consulting Limited	enaylor@dillon.ca
	Karla Kolli	Dillon Consulting Limited	kkolli@dillon.ca
	Mike Enright	Dillon Consulting Limited	menright@dillon.ca
	Martina Braunstein	Dillon Consulting Limited	mbraunstein@dillon.ca
	Milo Sturm	Shoreplan Engineering Limited	msturm@shoreplan.com

Cc:	Janet Lack	City of Mississauga	janet.lack@mississauga.ca
	Geoff Smith	City of Mississauga	geoff.smith@mississauga.ca
	Jeff Hirvonen	Dillon Consulting Limited	jhirvonen@dillon.ca
	Doug Onishi	Dillon Consulting Limited	donishi@dillon.ca

<u>Item</u>	<u>Description</u>	<u>Action</u>
1.0	Introductions	
1.1	The meeting today is to review the preliminary results of the technical assessment for the natural heritage and shoreline conditions and to discuss the hazard limits.	
2.0	Natural Heritage Evaluation	
2.1	<p>Dillon has completed the natural heritage field assessments including a breeding bird survey, spring and fall migratory assessments, three season vascular plant survey, species at risk investigations, and fish and wildlife habitat surveys. This has been documented in the Existing Conditions Report (attached).</p> <p>Although requested, the team has not received CVC's survey or data on the natural heritage features in the park or along the shoreline. CVC indicated that there was data available on snapping turtle habitat and that this material would be made available to the team.</p> <p>Some funding may be available from the Nature Conservancy to be applied to restoration initiatives along the shoreline including habitat restoration to support native species and migratory bird habitat. This funding for the region is in the order of \$250K.</p> <p>The Region of Peel has data on significant wildlife habitat and MNR has expressed concern for Atlantic Salmon.</p> <p>CVC is interested in softening the shorelines and enhancing naturalization where possible. Hacienda Bay has been identified as a potential site for better quality, native riparian vegetation and wetland creation.</p> <p>Shoreline Conditions and Coastal Evaluation</p> <p>Shoreplan has completed the shoreline investigation including the conditions assessment of the structures. The work has documented the bathymetry, wave conditions and sediment transport in</p>	

the Existing Conditions Report (attached). The evaluation has considered the conditions of the structures to support the uses described in the waterfront master plan.

The Rivergate Easement has a portion of the shoreline structure that has failed and is in need of replacement sooner rather than later. The shoreline along Marina Park south is in need of replacement. The shore walls are in poor condition. The Hazard Limit assessment has been completed and the mapping will be provided (attached).

The Hazard Limit along the shoreline of the river is governed by wave up rush from the lake rather than by river flooding. The flood elevation is 75.8 where the lake influence extends to the railway bridge north of the project limit.

To protect Marina Park from flooding, the reconstructed shoreline will need to be raised modestly. The launch ramps will continue to be with the hazard limit. There were questions regarding how much fill would be needed to protect against lake flooding (wave overtopping). This volume needs to be quantified.

Evaluation Tables

The tables in the Environmental Assessment report will evaluate alternatives to the shoreline improvements for each park including Port Credit Memorial Park West, Marina Park, the crossing of Lakeshore Road, non-motorized boat launch location, Rivergate easement, Hacienda Bay and J.C. Saddington Park. The content of the Evaluation Tables to be presented at the second Public Information Centre were discussed (attached).

Following discussion regarding the alternatives, the team will apply 'softer' alternatives where possible, including enhancing and expanding areas that have native, naturalized vegetation, softer vegetated shoreline treatments and softened edges including wetland pockets and beaches that provide diversity in habitats.

CVC noted that there is opportunity to provide content to the LOISS Newsletter.

The second PIC is on October 24th and the draft report will be ready towards the end of November.

Attachments

Existing Conditions Report – Natural Heritage Conditions & Shoreline and Wave Conditions
Hazard Line Mapping
PIC # 2 Evaluation Tables

Prepared by: Eha Naylor

Distributed by: Martina Braunstein

The above minutes are considered to be a true and accurate recording of all items discussed. Should any discrepancies be noted, please advise Dillon Consulting Limited in writing within 48 hours of distribution. If no notifications are recorded, the contents of these minutes will be assumed correct.



MEMO

To: Jane Darragh
Planner, Park Planning Section
City of Mississauga
From: Liam Marray
Manager Planning Ecology
Date: November 26, 2012
Re: West Credit Parks EA

Jane

Please find CVC preliminary comments with respect to the West Credit Parks EA. These comments are based on the review of:

- 1) Port Credit Parks- EA, Draft –Section 4.0 Existing Conditions, November 2012
- 2) Public Information Centre #2, October 24, 2012
- 3) Meeting with Project Team at City of Mississauga, September 17, 2012

General Comments

Overall CVC has no major concerns with the submission and the proposed options outlined in the submitted documents. However, CVC would like softer approaches rather than armour stone be considered in some locations. We recognize that armour stone is required in areas where there is infrastructure at risk. However in locations where there is no infrastructure, CVC staff believe that softer approaches may be suitable and will provide better opportunities for natural process to occur, improve fish and wildlife habitat and provide a better connection from the land to the water. At a minimum, we would be looking for opportunities to incorporate habitat creation/enhancements within the context of the new shoreline (e.g. L.U.N.K.E.R.S - <ftp://ftp-fc.sc.egov.usda.gov/NDCSMC/Stream/LunkerOptions.pdf>)

Specific Comments

Section 4 – Existing Conditions

- 4.1.3 – notwithstanding the focus of this section on key City-led planning initiatives, CVC's Lake Ontario Integrated Shoreline Strategy (LOISS) provides an important regional context for the PC Harbour West Parks EA and should be referenced accordingly within this section. Many of the goals and objectives are synergistic, particularly as far as natural heritage conservation and restoration (e.g. Sections 7.1.2, 7.1.3, 7.2.1, 7.3.2) of the OP policies for Port Credit West Parks; Vision Statement and key goals of WPS)

...2/

- 4.2.2.1: Background Review – as discussed in the September 17th meeting, the consultant is strongly encouraged to follow up with both CVC: Natural Heritage and CVC: Restoration and Stewardship to obtain additional and more up-to-date information. Please confirm if this follow up was undertaken. Specific to LOISS, a large number of surveys have been conducted since the completion of the *Background Review and Data Gap Analysis* reports that should be reviewed as part of this study including but not necessarily limited to:
 - Aquatic
 - Fisheries boat electrofishing (summer; fall lake trout)
 - Benthic invertebrates (ponar; scuba divers)
 - Terrestrial
 - Shoreline vegetation
 - Odonates
 - Turtles
 - Bats
 - Migratory Bird (spring) - land; waterfowl
 - Migratory Bird (fall) – waterfowl
 - Water Quality
 - Credit River
 - Lake Ontario: near/off shore
 - Coastal Processes
 - Erosion monitoring (2011 and 2012)
 - Geomorphic Solutions. 2011. Lake Ontario Shoreline Recession Monitoring Program. Prepared for CVC
 - Geomorphic Solutions. 2012. Lake Ontario Shoreline Recession Monitoring Program. Prepared for CVC (In Preparation)
- 4.2.2.2: Field Investigations – please ensure that the data from the various surveys are provided to CVC: NHP
- Table 4.2: Fish Habitat Existing Conditions and Potential Enhancement Opportunities.
 - In all cases it is understood that only native, non invasive vegetation will be used in any restoration efforts
 - Section 4 as noted in Sep 17th meeting, it will be critical to ascertain whether or not there is any risk of exposing contaminants by removing the concrete liner to the pond. CVC would not advocate the inadvertent creation of a wildlife ‘sink’ as a result of attempts to improve habitat that focuses only on existing biophysical and not chemical considerations
 - Section 5: Hacienda Bay – CVC strongly supports the potential creation of a coastal wetland with associated riparian vegetation and habitat creation (e.g. cobble beach) with a view to maximizing habitat quantity/quality and diversity
 - Section 6 – Shoreline between JC Saddington Park and Marina Park. As noted in the meeting on September 17th, 2012, we would be looking for maximum opportunities to reduce the linear extent of engineered approaches to shoreline (re)development. At a minimum, we would be looking for opportunities to incorporate habitat creation/enhancements within the context of the new shoreline (e.g. L.U.N.K.E.R.S - <ftp://ftp-fc.sc.egov.usda.gov/NDCSMC/Stream/LunkerOptions.pdf>)
 - Section 8 – Credit River adjacent to Port Credit Memorial Park West – CVC strongly advocates the proposed softening of the shoreline with vegetated slopes and mixed substrate sizes. Clarification is requested as to whether this option proposes the removal of the concrete slabs in favour of softer treatments that would allow for greater habitat diversity and quality
 - Section 9 – Don Rowing Club and Mississauga Canoe Club. While CVC generally supports the use of vegetated pockets, consideration should be given to replacement of the existing gabion baskets with treatments that would contribute to overall gains in aquatic (and terrestrial) habitat quality and diversity
- 4.2.4 – did the consulting team review potential of turtles as SAR

- 4.2.5 – Challenges and Opportunities
 - PC Memorial Park (West) – CVC would generally support the identified opportunities with the notable exception of the use of ‘natural cut rip-rap stone’ that is typically considered less desirable from a habitat perspective. Is there an opportunity to use some form of river-run stone?
 - Marina Park – what is the intention behind the recommendation that of ‘expanding or replacing existing natural vegetation’. It is assumed that this would translate to replacement of non-native/invasive species with native alternatives; however, clarification is requested as CVC would not want to see the unnecessary loss of any existing native vegetation

It is unclear what the purpose of the last paragraph of Section 4.3.4. CVC has many roles when commenting on this project (e.g. landowner, regulatory, fulfilling our responsibilities under our MOU’s with the Province, Region of Peel and City of Mississauga) and will use the best available information to fulfil these roles. We would recommend that this paragraph be not included.

CVC would like the opportunity to review and comment on all technical documents when they are completed.

Evaluation Matrix: Park Area Alternatives

Marina Park: CVC has concern with the underpass option as it results in the greatest negative effects to both aquatic and terrestrial habitat and species. As well, filling within the floodplain may result in added flooding, erosion and ice jam hazard, which need to be assessed. A hydraulic and geomorphic analyses needs to be undertaken to ensure that this option is viable. These added hazards may require regular maintenance. Additionally, underpass may expose pedestrian to regular flooding, depending upon grades, which may require consideration for public safety.

JC Saddington Park – CVC notes cobble beach restoration option will translate to maximum gains in habitat quantity and quality, and is consistent with LOISS: goals and objectives A naturalized option for J.C. Saddington Park Shoreline is not considered. Opportunities should be explored to limit the hardening, where possible.

Hacienda Bay – CVC notes the coastal wetland restoration option will translate to maximum gains in habitat quantity and quality, and is consistent with LOISS: goals and objectives

Rivergate Easement - Impacts of filling within the floodplain and lake processes including ice damage on proposed infrastructure in the lake or on shoreline such as bridge structures are not addressed in the evaluation.

Yours truly,

Liam Marray
Manager Planning Ecology
Credit Valley Conservation

December 21, 2012

Liam Marray
Credit Valley Conservation
Manager Planning Ecology
1255 Old Derry Road West
Meadowvale, ON L5N 6R4

Re: Port Credit Harbour West Parks EA

Dear Liam:

Thank you for providing us with Credit Valley Conservation's (CVC) preliminary comments memo (dated November 26, 2012) with respect to the **Port Credit Harbour West Parks Environmental Assessment**, which were based on the Existing Conditions Draft Report, Public Information Centre panel content and the Project Team meeting discussions on September 17, 2012.

We are pleased that CVC has no major concerns with the submission and the proposed alternatives for this project. We recognize the importance of having softer shore treatments that improve aquatic and terrestrial habitat and connectivity, and we certainly recommend and support this approach where there is no infrastructure at risk.

We have carefully reviewed the Specific Comments section of CVC's memo. The table below provides our responses to your comments.

CVC Comment	Dillon's Response
Section 4 –Existing Conditions 4.1.3 – notwithstanding the focus of this section on key City-led planning initiatives, CVC's Lake Ontario Integrated Shoreline Strategy (LOISS) provides an important regional context for the PC Harbour West Parks EA and should be referenced accordingly within this section. Many of the goals and objectives are synergistic, particularly as far as natural heritage conservation and restoration (e.g. Sections 7.1.2, 7.1.3, 7.2.1, 7.3.2) of the OP policies for Port Credit West Parks; Vision Statement and key goals of WPS)	We will include a sub-section referencing Lake Ontario Integrated Shoreline Strategy in the Planning Context section of the Environmental Study Report.
4.2.2.1: Background Review – as discussed in the September 17th meeting, the consultant is strongly encouraged to follow up with both CVC: Natural Heritage and CVC: Restoration and Stewardship to obtain additional and more up-to-date information. Please confirm if this follow up was undertaken. Specific to LOISS, a large number of surveys have been	Several attempts have been made to acquire recent information that CVC deems relevant to this study. Upon reviewing the draft findings of the study with CVC at the Project Team meeting on September 17 th , an email was

...cont'd



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Dillon Consulting
Limited

<p>conducted since the completion of the Background Review and Data Gap Analysis reports that should be reviewed as part of this study including but not necessarily limited to:</p> <ul style="list-style-type: none">o Aquatic<ul style="list-style-type: none">• Fisheries boat electrofishing (summer; fall lake trout)• Benthic invertebrates (ponar; scuba divers)o Terrestrial<ul style="list-style-type: none">• Shoreline vegetation• Odonates• Turtles• Bats• Migratory Bird (spring) - land; waterfowl• Migratory Bird (fall) – waterfowlo Water Quality<ul style="list-style-type: none">• Credit River• Lake Ontario: near/off shoreo Coastal Processes<ul style="list-style-type: none">• Erosion monitoring (2011 and 2012)• Geomorphic Solutions. 2011. Lake Ontario Shoreline Recession Monitoring Program. Prepared for CVC• Geomorphic Solutions. 2012. Lake Ontario Shoreline Recession Monitoring Program. Prepared for CVC (In Preparation)	<p>sent to CVC staff on September 20th, 2012 to request the specific information noted in the comments. We did not receive a response.</p> <p>We have reviewed the Background Review and Data Gap Analysis and this material has been included.</p>
<p>4.2.2.2: Field Investigations – please ensure that the data from the various surveys are provided to CVC: NHP</p>	<p>Field sheets will be forwarded separately from the report. Data contained in the Environmental Study Report will list species occurrences observed while on site.</p>
<p>Table 4.2: Fish Habitat Existing Conditions and Potential Enhancement Opportunities</p> <p>In all cases it is understood that only native, non invasive vegetation will be used in any restoration efforts.</p> <p><u>Section 4</u> as noted in Sep 17th meeting, it will be critical to ascertain whether or not there is any risk of exposing contaminants by removing the concrete liner to the pond. CVC would not advocate the inadvertent creation of a wildlife 'sink' as a result of attempts to improve habitat that focuses only on existing biophysical and not chemical considerations.</p>	<p>We will clarify that only native, non-invasive vegetation will be used in any restoration efforts.</p> <p><u>Section 4</u>: Pond infrastructure is currently under technical review.</p>

<p><u>Section 5:</u> Hacienda Bay – CVC strongly supports the potential creation of a coastal wetland with associated riparian vegetation and habitat creation (e.g. cobble beach) with a view to maximizing habitat quantity/quality and diversity .</p> <p><u>Section 6 –</u> Shoreline between JC Saddington Park and Marina Park. As noted in the meeting on September 17th, 2012, we would be looking for maximum opportunities to reduce the linear extent of engineered approaches to shoreline (re)development. At a minimum, we would be looking for opportunities to incorporate habitat creation/enhancements within the context of the new shoreline (e.g. L.U.N.K.E.R.S - ftp://ftp-fc.sc.egov.usda.gov/NDCSMC/Stream/LunkerOptions.pdf)</p> <p><u>Section 8 –</u> Credit River adjacent to Port Credit Memorial Park West – CVC strongly advocates the proposed softening of the shoreline with vegetated slopes and mixed substrate sizes. Clarification is requested as to whether this option proposes the removal of the concrete slabs in favour of softer treatments that would allow for greater habitat diversity and quality</p> <p><u>Section 9 –</u> Don Rowing Club and Mississauga Canoe Club. While CVC generally supports the use of vegetated pockets, consideration should be given to replacement of the existing gabion baskets with treatments that would contribute to overall gains in aquatic (and terrestrial) habitat quality and diversity</p>	<p><u>Section 5:</u> The Environmental Study Report provides details regarding the issues that form the basis of the decision making process with respect to the coastal wetland and cobble beach in Hacienda Bay.</p> <p><u>Section 6:</u> The shoreline improvements proposed will need to be designed and engineered in accordance with site conditions. The elevated fixed walkway through this section is proposed as a stand-alone structure. Aquatic habitat elements will be incorporated along the shore.</p> <p><u>Section 8:</u> The proposed shore improvement in this section is a combination of soft shore and hard shore treatments. The soft shore sections will still involve some structural reinforcement but will be designed to facilitate greater habitat diversity and quality.</p> <p><u>Section 9:</u> The gabion basket walls are proposed to be ultimately replaced edge treatments that allow the clubs to use the shoreline for boating access and club activities. The cross section is similar to the existing and any other treatment will impact the club's use of the site. We will soften where possible and will achieve gains in aquatic habitat quality and diversity.</p>
<p>4.2.4 – did the consulting team review potential of turtles as SAR</p>	<p>Yes, we reviewed the potential for turtles.</p>

<p>4.2.5 – Challenges and Opportunities</p> <ul style="list-style-type: none">• PC Memorial Park (West) – CVC would generally support the identified opportunities with the notable exception of the use of ‘natural cut rip-rap stone’ that is typically considered less desirable from a habitat perspective. Is there an opportunity to use some form of river-run stone?• Marina Park – what is the intention behind the recommendation that of ‘expanding or replacing existing natural vegetation’. It is assumed that this would translate to replacement of non-native/invasive species with native alternatives; however, clarification is requested as CVC would not want to see the unnecessary loss of any existing native vegetation.	<p>Yes, we will use river-run stone.</p> <p>All planting will be native; some existing native species may need to be removed/disturbed during construction but we will keep to a minimum and replant.</p>
<p>It is unclear what the purpose of the last paragraph of Section 4.3.4. CVC has many roles when commenting on this project (e.g. landowner, regulatory, fulfilling our responsibilities under our MOU’s with the Province, Region of Peel and City of Mississauga) and will use the best available information to fulfil these roles. We would recommend that this paragraph be not included.</p>	<p>This paragraph is removed from the report text.</p>
<p>CVC would like the opportunity to review and comment on all technical documents when they are completed.</p>	<p>We will provide the technical reports as part of the Draft Environmental Study Report.</p>
<p>Evaluation Matrix: Park Area Alternatives</p> <p><u>Marina Park:</u> CVC has concern with the underpass option as it results in the greatest negative effects to both aquatic and terrestrial habitat and species. As well, filling within the floodplain may result in added flooding, erosion and ice jam hazard, which need to be assessed. A hydraulic and geomorphic analyses needs to be undertaken to ensure that this option is viable. These added hazards may require regular maintenance. Additionally, underpass may expose pedestrian to regular flooding, depending upon grades, which may require consideration for public safety.</p>	<p>It is not anticipated that the construction of the underpass connection will require additional fill. It will replace the existing width of the stone bed, not encroaching further into the river. Thus, we do not believe any further hydraulic or geomorphic analysis is needed. The underpass will have similar accessibility constraints during flood season as the underpass on the east bank of the river. Mitigation measures will be in place to minimize the impact to the water quality and fish habitat during construction.</p>

Evaluation Matrix: Park Area Alternatives <u>J.C. Saddington Park</u> – CVC notes cobble beach restoration option will translate to maximum gains in habitat quantity and quality, and is consistent with LOISS: goals and objectives. A naturalized option for J.C. Saddington Park Shoreline is not considered. Opportunities should be explored to limit the hardening, where possible.	A cobble beach is the most naturalized and soft approach for a lakefront beach to sustain itself without being quickly eroded by the high-energy waves. The cobble beach represents the most appropriate opportunity to reduce hardening of the shoreline in this location.
Evaluation Matrix: Park Area Alternatives <u>Hacienda Bay</u> – CVC notes the coastal wetland restoration option will translate to maximum gains in habitat quantity and quality, and is consistent with LOISS: goals and objectives.	The evaluation of alternatives for Hacienda Bay considered doing nothing, a coastal wetland and a cobble beach. A coastal wetland has not been identified as the preferred alternative. The construction of a coastal wetland in Hacienda Bay comes at exceptionally high cost and we believe that there is no guarantee that the potential benefits will actually be realized. We commend CVC for their efforts and dedication in identifying coastal wetland restoration opportunities along the Credit River, but the Hacienda Bay site is not well suited for this important ecological function. The cobble beach provides a softer shoreline and habitat enhancements that are both feasible and implementable in the near term.
Evaluation Matrix: Park Area Alternatives <u>Rivergate Easement</u> - Impacts of filling within the floodplain and lake processes including ice damage on proposed infrastructure in the lake or on shoreline such as bridge structures are not addressed in the evaluation.	The elevated fixed walkway along the shore does not require additional fill within the floodplain. The walkway will be on piers, separate from the shoreline. The design will however include stabilization and protection of the existing shoreline. The walkway

Liam Marray, Credit Valley Conservation

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December 21, 2012

	supports will be designed to deal with ice conditions.
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We trust that our response letter satisfies the questions and comments raised in your memo dated November 26, 2012. We are finalizing the Draft Environmental Study Report which will be sent for your review upon completion in the New Year.

Thank you for all of your insight and commitment to this project.

Yours sincerely,

Dillon Consulting Limited



Eha Naylor, FCSLA, RPP
Partner



MEETING MINUTES

Project: **Port Credit Harbour West Parks**
Pre-Design Studies & Environmental Assessment
Project Review Meeting #3 with Credit Valley Conservation

Project No: 12-5881

Location: 1255 Old Derry Road
Mississauga

Date: Friday, February 1, 2013

Time: 9:00 AM to 10:30 AM

Present:	<u>Name</u>	<u>Company</u>	<u>Email</u>
	Liam Marray	Credit Valley Conservation	lmarray@creditvalleyca.ca
	Kate Hayes	Credit Valley Conservation	khayes@creditvalleyca.ca
	Rizwan Haq	Credit Valley Conservation	rhaq@creditvalleyca.ca
	Paul Biscaia	Credit Valley Conservation	pbiscaia@creditvalleyca.ca
	Bob Morris	Credit Valley Conservation	bmorris@creditvalleyca.ca
	Jane Darragh	City of Mississauga	jane.darragh@mississauga.ca
	Janet Lack	City of Mississauga	janet.lack@mississauga.ca
	Eha Naylor	Dillon Consulting Limited	enaylor@dillon.ca
	Martina Braunstein	Dillon Consulting Limited	mbraunstein@dillon.ca
	Milo Sturm	Shoreplan Engineering Limited	msturm@shoreplan.com

Cc:	Geoff Smith	City of Mississauga	geoff.smith@mississauga.ca
	Karla Kolli	Dillon Consulting Limited	kkolli@dillon.ca
	Jeff Hirvonen	Dillon Consulting Limited	jhirvonen@dillon.ca
	Doug Onishi	Dillon Consulting Limited	donishi@dillon.ca

<u>Item</u>	<u>Description</u>	<u>Action</u>
1.0	Introductions	
1.1	The meeting today is to provide an update on the project and discuss Credit Valley Conservation's (CVC) preliminary comments (attached) received on November 26, 2012. The meeting is to also provide a review of the technical assessments completed and used in establishing the recommended preferred alternatives for the Port Credit Harbour West Parks. CVC acknowledged the recreation aspect of the parks and the need to plan for human activities as well as opportunities to enhance the natural heritage.	
2.0	Port Credit Harbour West Parks Dillon noted how highly valued the parks' shorelines are by the public, as documented during the consultation process, and that the commercial and shore fishing, range of access points to the water's edge and green spaces are considered as equally important as the establishment of softer shoreline treatments and habitats that support fish and other populations. Through this environmental assessment process, the preferred alternatives were equally evaluated across the technical, natural and socio-economic and cultural environments.	
2.1	Hacienda Bay CVC is not opposed to the preferred cobble beach alternative at Hacienda Bay, but there is concern that the technical documentation does not conclude that the coastal wetland alternative is not feasible. Shoreplan noted that wave conditions in the bay are such that wave protection for the wetland is required on the south and east sides. The recommendations of the geotechnical engineer for construction method, based on the geotechnical investigations, are to displace soft material by surcharging and to ensure that breakwaters are founded on bedrock. This could produce structures approximately eight meters high. This size of breakwater structure leads to very high capital costs. The construction cost is significant and the success in keeping the silt out and the wetland functional is unknown. CVC noted that wetlands need to have silt, but that other locations for a wetland need to be looked	

at. Ryerson's study identified Hacienda Bay as a potential wetland area in concept only. CVC also noted that Map Turtles are rarer than Snapping Turtles, being the one and only location in the watershed where Snapping Turtles are much more widespread. More research needs to be done on nesting locations for Snapping Turtles and Map Turtles to build appropriate habitats.

CVC also questioned if there were alternatives to constructing a wetland. Shoreplan's assessments confirmed that a rip rap/armour stone structure system would provide the best protection for the wetland and that is what the construction cost estimate is based on. Pipe supported structure (steel or concrete) are more expensive and they would have more issues with ice and other conditions. Floating structures were also assessed and deemed ineffective due to the larger wave and wave energy at this location.

Dillon noted that even if a coastal wetland was established, cattails would be most likely predominant - this poses a question on the integrity and suitability of a coastal wetland at Hacienda Bay. An example of a successful wetland is Cootes Paradise, but this is due to a lower energy environment.

Shoreplan noted that the cobble beach alternative is the more sustainable design as it can have variability in the substrate for productivity, in comparison to a sand beach. Creation of a 'boulder garden' with smaller cobble and anchored wooden debris would improve habitat for aquatic species.

2.2 **Rivergate Easement - Elevated Walkway**

CVC asked for a clarification on the shoreline impacts due to the construction of the elevated walkway. Shoreplan noted the existing revetment would be restored and there are many opportunities to create habitat through future detailed design work.

2.3 **J.C. Saddington Park – Cobble Beach**

CVC questioned why there isn't a cobble beach on the west end of the park. Shoreplan noted a major stormwater outlet at that end of the shoreline, which would be heavily impacted with the placement of a cobble beach; a new outlet would need to be constructed or an additional groyne to provide protection.

Shoreplan also clarified that the cobble beach will be constructed with 4:1 or 5:1 underwater slopes, with 10 to 15 metres of the cobble beach submerged in water creating habitat opportunities. Currently, the shoreline consists of shale.

2.4 **J.C. Saddington Park – Naturalization**

CVC noted that the current Large Block Concept Plan (attached) shows a good percentage of naturalized park space and shoreline, and would like to see how these benefits can be maximized; planting considerations should be integrated for migrating birds, goose control and a greater connectivity between the Port Credit Harbour West Parks and Imperial Oil Lands to the west. Dillon agreed that the Large Block Concept Plan needs to show greater considerations for future east/west corridor connections for bird/wildlife movement to the adjacent Imperial Oil Lands and that this will be reflected in the report as well.

Dillon

CVC suggested that the amount of naturalization be redistributed to include more riparian vegetation along the shores while still accommodating breaks for public access to the shore. The redistribution of the vegetation to break up manicured areas and provide shoreline buffers will also help with goose management. Appropriate sections of the report will note that these programmatic and environmental considerations will be resolved through detailed design.

Dillon

2.5 **J.C. Saddington Park – pond**

CVC asked for clarification on the naturalization measures of the pond. Dillon explained that a liner capping the soils would provide more flexibility in creating varying depths and shapes to enhance the pond's productivity and ecological integrity.

CVC noted that there are discussions on the fish hatchery proposal and that it may provide

additional opportunities for naturalization of the pond by introducing fish and/or wetland plants. The considerations for this would be explored through detailed design of the pond, but it was not addressed as part of this EA process.

2.6 Port Credit Memorial Park (West)

CVC asked for a clarification as to why the preferred alternative for this park was a combination of soft and hard shoreline measures, and if structures, such as Lunkers, can be incorporated into the design. Dillon noted that the existing natural areas with clustered vegetation along the shoreline are being kept and enhanced with other natural functions. Shoreplan explained that the cross-section B1 (attached) shows the necessary protection up to the water level and that detailed design would address the incorporation of a boulder garden or other structural habitats. Wording within the report should reflect this intent for future detailed design work.

Dillon

2.7 Port Credit Memorial Park (West) Connection

CVC expressed concerns for potential flooding/erosion and hazard to the public with an underpass connection between Port Credit Memorial Park (West) and Marina Park. Shoreplan noted that the walkway is similar to the one found on the east end of the Lakeshore Bridge and that it not uncommon in other parts of the Greater Toronto Area. The intent of the underpass design is to maintain the existing elevations but to improve and stabilize the slopes, and that future detailed design would undergo appropriate hydraulic modeling only if the cross-section is altered. CVC indicated that walkways are normally located above the 25 years flood line.

2.8 Artificial Shoreline Reference

CVC expressed concerns with the reference to the Port Credit Harbour West Parks as an artificial shoreline. Shoreplan noted that this site may be an artificial shoreline, and although the study provides the definition and information on artificial shorelines, the artificial shoreline designation is not being applied to Port Credit Harbour West Parks' shoreline under this study at this time. The wording within the report will reflect this.

Dillon

2.9 Marina Park

CVC asked for a clarification on why fill was necessary for this park. Shoreplan noted that the fill is minimal and that calculations on the potential impacts would be determined during detailed design. The flood extent in this area is controlled by Lake Ontario, not Credit River.

Attachments

CVC's Preliminary Comments (dated November 26, 2012)

Dillon's Response Letter to CVC's Preliminary Comments (dated December 21, 2012)

Large Block Concept Plan

Preferred Alternative Cross-Sections (Shoreplan)

Prepared by: Martina Braunstein

Distributed by: Martina Braunstein

The above minutes are considered to be a true and accurate recording of all items discussed. Should any discrepancies be noted, please advise Dillon Consulting Limited in writing within 48 hours of distribution. If no notifications are recorded, the contents of these minutes will be assumed correct.

January 21, 2013

Ms. Jane Darragh, OALA, MCIP, RPP
Planner, Park Planning Section
Community Services Department
City of Mississauga

Dear Ms. Darragh

**Subject: Port Credit Harbour West Parks
Class Environmental Assessment**

On behalf of Peel Region, I am pleased to offer the following comments on the Port Credit Harbour West Parks Mississauga Class Environmental Assessment. I note that this Class EA is intended to carry forward the results of the City's Waterfront Parks Strategy, 2008.

The subject lands are located entirely within the Urban System area that is designated for Mississauga by Schedule D, The Regional Structure, of our Regional Official Plan. Within designated Urban System areas, our Regional Official Plan encourages local municipalities to prepare policies that address land uses and natural hazards. It also encourages the establishment of healthy communities which respect the natural environment. Therefore, this Class EA supports our Plan's Urban System's general objective of conserving the Region's environmental and resource attributes.

The subject lands are also located within an area designated as a Core Area of the Greenlands System in Peel as shown in Schedule A in our Plan, including both sides of the Credit River valley. Within the Core Areas, site alteration and development are prohibited, but there are exceptions including passive recreation, which is defined as low intensity outdoor pastimes with minimal modification of land surfaces and relatively few buildings. In my view, this Class EA also supports the goals and objectives of the Core Areas of the Greenlands System.

Further, our Regional Official Plan, Figure 10, Waste Management Sites, identifies a closed public landfill in or nearby to your study area. Regional staff recommend that reference to this closed landfill and an appropriate provisions for soil and geotechnical testing be included in your Class EA.

A Regional Official Plan Amendment is not required to accommodate this Class EA.

Thanks again for the opportunity to comment. I request that you keep me on your stakeholder list for this Class Environmental Assessment process. Please contact me if anything further is required in the meantime.

Yours truly,



Brock Criger, Manager
Peel Region Development Services

Cc: Eha Naylor Dillon Consulting

Public Works

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APPENDIX 7 - Evaluation of Alternatives

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



The Municipal Class Environmental Assessment requires consideration of alternatives and the traceable documentation of decisions to support preferred infrastructure. This section documents the comparison of different ways to improve the Port Credit Harbour West Parks to accomplish the vision set out in the *Waterfront Parks Strategy (2008)* (WPS). As discussed in **Section 3.3**, the evaluation criteria established to compare alternatives are based on the potential for positive or negative impact in the following four categories or criteria groups: natural environment, socio-economic and cultural environment, technical, and cost. The preferred alternatives and identification and evaluation of the alternatives for the Port Credit Harbour West Parks are presented by park area in the following sub-sections.

1.1. Port Credit Memorial Park (West) Shoreline

The existing shoreline of Port Credit Memorial Park (West) consists of concrete slab revetments that are in poor condition and require upgrading to provide better pedestrian access and seating along the riverfront, fish habitat improvements, absorption of the wake, non-motorized water-craft access to the river, education and interpretation area, a variation in planted areas and a new trail connection to Marina Park, as discussed in the WPS.

The evaluation of alternatives documents the relative difference and potential impacts of each of the improvement alternatives. **Tables A to G** and the text below provide the detailed evaluation for the Port Credit Harbour West Parks.

1.1.1. Alternatives Considered

Four shoreline alternatives were considered for Port Credit Memorial Park (West): do nothing, upgrade to a natural shoreline, upgrade to a hard shoreline and a combination of both natural and hard shore features.

Do Nothing

The “do nothing” alternative leaves the existing concrete slab revetments “as is” with no improvements made to the shoreline.



Natural Shore

The “natural shore” alternative involves the construction of live cribs and live stakes to create a natural shore. Stakes are live woody cuttings of a species that have the ability to root and grow, and over time can provide slope stabilization, improve aesthetics of a shoreline and provide habitat for wildlife. A live crib wall is a box-like, interlocking arrangement of log walls with live vegetation placed between the seams of each layer.



Hard Shore

This shoreline alternative involves the replacement of the current shoreline with a hard shore. There are a number of different types of hard shore including:

- stone revetments - sloping structures extend from the shore into the water to protect the shore from the action of waves
- seawall - a protective vertical or near vertical structure of stone, concrete or steel that protects the shore from the action of waves
- steel sheet piles - interlocking steel piles commonly used to construct a seawall with deep foundations providing protection from the action of waves
- concrete – a structure providing protection as a vertical retaining wall



All types of hard shore treatments stabilize the shore by mostly reflecting the energy of incoming waves and helping to preserve the existing uses of the park and to protect against erosion.

Combination

This shoreline alternative improves the existing shoreline with a “combination” of both natural and hard shoreline elements discussed above.



1.1.2. Evaluation of Alternatives

Table A: Evaluation of Alternatives for Port Credit Memorial Park (West)

ALTERNATIVES				
	Do Nothing	Natural Shore	Hard Shore	Combination (Natural and Hard Shore)
Natural Environment ¹	○	●	○	⊖
Socio-Economic and Cultural Environment	○	⊖	⊖	●
Technical	○	⊖	●	⊖
Cost ²	N/A	Moderate (\$600,000)	High (\$900,000)	Moderate to High (\$800,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

Natural Environment

The “natural shore” alternative has the greatest opportunity for increasing fish habitat, naturalizing of the shore and other areas, as well as improving the connectivity of the natural corridor between the park and the Credit River valley upstream. The “combination” alternative allows for strategic placement of natural shoreline treatments in Port Credit Memorial Park (West) which provides a relatively moderate benefit to the natural environment, given that a portion of the shoreline would also feature harder

¹ The least preferred alternative for the ‘natural environment’ group has been updated since last presented at the Public Information Centre in October, 2012. The “hard shore” alternative is least preferred as it has minimal contributions to the natural environment.

² The cost for each alternative has been updated since last presented at the October 24th, 2012 Public Information Centre. The final geotechnical report (dated November 30, 2012) identified the slopes as marginally stable; therefore any shoreline work thus will impact the stability, needing deeper stabilization work than originally anticipated.

structural elements. The “hard shore” alternative has limited opportunities to improve the natural environment conditions due to the hard-edge treatments, and as there is no change over existing conditions, the “do nothing” alternative also does not provide an opportunity for improvement related to fish habitat, naturalization or natural corridor connectivity.

All shoreline alternatives except “do nothing” involve work in the water which has the potential to impact aquatic and terrestrial habitat and result in sedimentation during construction. These impacts are temporary and can be mitigated through best management practices and the replacement of shoreline vegetation. Furthermore, there are no impacts to the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat.

Changing the Port Credit Memorial Park’s (West) shoreline to a “natural shore” is the preferred alternative from the natural environmental perspective as it provides the most significant opportunity to increase fish habitat and naturalized park areas. It is noted that the “combination” alternative also provides natural environment advantages.

Socio-Economic and Cultural Environment

None of the shoreline alternatives provide a significant opportunity for economic benefit to the Port Credit community. They all share the cultural heritage character of the totem pole donated in 1967 in honour of the Centennial and the “natural shore”, “hard shore” and “combination” alternatives provide an opportunity for further incorporation of the totem pole into the park redevelopment plan; public support for this was evident during public consultations.

During construction, all shoreline alternatives but the “do nothing” alternative could potentially cause some disruption, but the construction impacts would be temporary and could be staged to limit any anticipated effects on park programming. The “natural shore”, “hard shore” and “combination” alternatives improve the accessibility and visibility to the Credit River, which was expressed during public consultations as important.

The “do nothing” alternative does not contribute to improved safety and pedestrian connectivity, unlike the other three alternatives which provide the structural changes along the shoreline that allow for the extension of the Waterfront Trail along the shore and the anticipated connection to Marina Park.

Many of the programming elements for Port Credit Memorial Park (West) identified in the WPS require improvements to the shoreline. The “natural shore” alternative provides educational opportunities, and the enjoyment of a tree-shaded shoreline, whereas the “hard shore” alternative provides a more direct access and enjoyment of the river, including fishing or water’s edge sitting. The “combination” alternative provides a mixture of both hard and natural shore programming elements. The need for park programming improvements was articulated and supported by the public during community consultations for this Study.

Although the “natural shore” and “hard shore” alternatives individually provide a very distinct list of programs and advantages, it is the “combination” alternative that is preferred from a socio-economic and cultural environment perspective because it

provides the best opportunity to enhance the park for a variety of users with flexible park programs. The “do-nothing” alternative is least preferred as it is least supportive of the improvements and programming changes suggested in the WPS.

Technical

The existing shoreline at Port Credit Memorial Park (West) is at the end of its life, therefore the “do nothing” alternative provides low protection of the shoreline and will require significant maintenance in the future to provide the necessary protection. The greatest level of protection provided from wave, river and ice conditions is derived from the construction of a hard shore, moderate protection from the “combination” alternative and low to moderate protection from the “natural shore” alternative. Similarly, the longest design life and lowest maintenance is achieved with a “hard shore” alternative, and the “natural shore” and “combination” alternatives provide a variety of shorter design life and maintenance considerations.

For all four shoreline alternatives the potential for any soil contamination issues (due to the park’s close proximity to an old landfill) during construction is unknown, and the amount of excavation required for any structural improvements would be the same for all three alternatives. There are no impacts on utilities for the “do nothing” alternative, and the impacts are fairly low for the “natural shore”, “hard shore” and “combination” alternatives.

The “natural shore” alternative has potential to be more difficult to construct as general contractors do not have much experience with these types of structures, whereas contractors have more experience on the construction of hard shore structures. The “combination” alternative provides a variety of options for contractors with different levels of construction experience.

The “natural shore”, “hard shore” and “combination” alternatives provide an improved level of protection over the existing shoreline conditions, however, the “hard shore” alternative is preferred from a technical perspective as it is a well-known method of providing shoreline protection, provides the most protection from the physical environment, and its constructability is the easiest and most understood by contractors. The do-nothing alternative is least preferred as it will require significant maintenance in the future.

Cost

The “do nothing” alternative has no initial capital costs because there are no changes made to the park. The “natural shore” alternative has the lowest relative construction costs for shoreline improvements, whereas the “hard shore” alternative holds the highest cost due to the additional slope stabilization efforts. The “combination” alternative is of moderate to high construction cost due to the varying shoreline treatments.

Although the “do nothing” alternative has no capital costs, it does not provide any improvements to the Port Credit Memorial Park (West). Therefore, the “natural shore” alternative is the preferred alternative for Port Credit Memorial Park (West) as it is of lowest relative cost to construct.

1.1.3. Preferred Alternative

The “combination” alternative is the preferred solution for the Port Credit Memorial Park (West) shoreline as it provides the best opportunity to enhance the park at a medium to high cost for a variety of users and programmatic functions, and it provides a balanced mix of hard and soft shoreline treatments to meet both the technical requirements for slope stabilization and the naturalization objectives that provide improved quality and diversity of terrestrial and aquatic habitat.

The “do nothing” alternative misses out on the opportunity to improve the shoreline stability and programming, and is clearly least preferred for all criteria groups.

For the remaining alternatives there are no significant disadvantages and all are identified as most preferred or preferred on the basis of the natural environment, socio-cultural environment and technical criteria groups:

- The “natural shore” alternative is most preferred from a natural environment perspective, accommodating many of the WPS park recommendations, but providing the lowest protection from a technical perspective.
- The “hard shore” alternative is most preferred technically but is considered to be poor from a natural environment perspective with limited habitat improvements, and adequate from a socio-cultural perspective as it could accommodate many of the WPS park recommendations.
- The “combination” is most preferred from a socio-cultural perspective as it provides the greatest flexibility for uses and programming. It also provides adequate shoreline protection and does provide areas of enhanced habitat.

From a Cost perspective there is relatively modest difference between the alternatives.

The “natural shore” and “combination” alternatives fair equally in preference, however, it was considered reasonable to identify the “combination” alternative as preferred overall because it meets the most WPS recommendations and provides the greatest flexibility to address the many different uses in this park. Its mid-range cost was also considered desirable.

1.2. Port Credit Memorial Park (West) and Marina Park Connection

Port Credit Memorial Park (West) is located directly north of Marina Park but is separated by Lakeshore Road West with no direct and continuous linkage between the two parks. There is an indirect crossing west of the park at a traffic light at the intersection of John Street and Lakeshore Road West. The WPS identified an opportunity for a better link between the two parks to improve the movement and connectivity between the parks, as well as to increase pedestrian safety.

1.2.1. Alternatives Considered

Four alternatives were considered for the Port Credit Memorial Park (West) and Marina Park Connection: do nothing, provide an at-grade connection, construct an underpass connection, and construct an overpass connection.

Do Nothing

The “do nothing” alternative leaves the connection between Port Credit Memorial Park (West) and Marina Park “as is”, with no improvements made to the current indirect crossing at the traffic lights located at John Street and Lakeshore Road West.



At Grade

The “at grade” alternative involves improving the connection between Port Credit Memorial Park (West) and Marina Park by constructing an at-grade crosswalk with lights across Lakeshore Road West at Front Street



Underpass

The “underpass” alternative involves construction of an underpass passage below Lakeshore Bridge connecting Port Credit Memorial Park (West) and



Marina Park with concrete access ramps. This underpass would be similar to the existing underpass on the east side of the Credit River.



Overpass

The “overpass” alternative involves constructing an overpass with elevators above Lakeshore Road West, connecting Port Credit Memorial Park (West) and Marina Park.



(Source: City of Burnaby, 2008)

1.2.2. Evaluation of Alternatives

Table B: Evaluation of Alternatives for Port Credit Memorial Park (West) Connection

ALTERNATIVES				
	Do Nothing	At Grade	Underpass	Overpass
Natural Environment	●	●	○	⊖
Socio-Economic and Cultural Environment	○	⊖	●	⊖
Technical ³	●	⊖	⊖	○
Cost	N/A	Moderate (\$200,000)	Moderate (\$200,000)	Very High (\$4,000,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

³ The cost for the “at grade” alternative has been updated since last presented at the October 24th, 2012 Public Information Centre. A more detailed analysis of the construction requirements to implement this alternative informed this change. The “at grade” alternative preference was also changed from most preferred to preferred after the October 24th, 2012 Public Information Centre reflecting the change in cost.

Natural Environment

None of the four alternatives provide opportunities for improvement of the natural environment given their structural requirements and location. The “do nothing” and “at grade” alternatives are within the Lakeshore Road West right-of-way and thus have no anticipated disruption or impact on the aquatic and terrestrial habitat or water quality. The “overpass” alternative has minimal impacts to the limited terrestrial habitat on the north side of the Lakeshore Bridge at Port Credit Memorial Park (West) and no impacts on the water quality during construction.

During construction, the “underpass” alternative has potential for indirect and direct impacts on fish habitat and impacts to the water quality, but the impacts would be mitigated through best management practices. There is also a potential for Barn Swallows (an *Endangered Species* considered *Threatened*), identified at J.C. Saddington Park, to nest underneath the bridge, in which case the design would need to either avoid disturbance of these birds or, prior to construction, a nesting survey will need to be completed to confirm the presence or absence of nests.

None of the alternatives provide an opportunity to increase areas of naturalization or have potential for improvement to connectivity.

None of the alternatives contribute to the naturalization, natural corridor connectivity or improvements to fish habitats in Port Credit Memorial Park (West) or Marina Park, but the “at grade” and “do-nothing” alternatives are located within Lakeshore Road West and will have no impact on the aquatic and terrestrial habitats, nor water quality during construction, and are therefore preferred from the natural environment perspective.

Socio-Economic and Cultural Environment

Under this criteria group the biggest differences between the alternatives relate to their potential for improving the park connection, providing pedestrian safety, disruption during construction and use of park area. None of the four alternatives contribute to the cultural heritage character or provide additional economic benefits to the community.

The “do nothing” alternative does not present any potential improvements to pedestrian safety or change in-park connectivity as park users would continue to use the indirect traffic light crossing at Lakeshore Road West and John Street. This alternative is least preferred from a socio-economic and cultural perspective.

The “at grade” alternative is preferred over the “do-nothing” alternative as it has the advantage of very limited impacts to the community, traffic and park users. However, it does not provide the same level of public safety as the other two alternatives that separate pedestrians and cars. The “overpass” alternative is also preferred over the “do-nothing” alternative as it provides an improvement in safety, however it has the potential to cause significant disruption to park users due to construction related closures. The “overpass” alternative involves a permanent removal of park land for ramps or elevators and to traffic on Lakeshore Road West as a result of visual distraction during construction.

The “underpass” is most preferred as its construction of the underpass would have minimal impacts on traffic, and only temporary park area closures are anticipated.

The “underpass” and “overpass” alternatives provide additional programming opportunities due to the presence and proximity of the Credit River.

The “underpass” alternative is preferred from a socio-economic and cultural environment perspective as it provides the necessary connection between the two parks, significantly improves safety, has only moderate disruptions during construction and requires no reduction in park space.

Technical

The “do nothing” alternative is most preferred as it has no technical challenges.

The “underpass” and “at grade” alternatives are preferred as they are relatively straight forward to construct. The underpass would require a moderate degree of maintenance and the existing utilities and a storm sewer outfall in the area that can be incorporated into the reconstruction. This alternative will also provide a moderate to high level of protection from wave, river and ice conditions, but would be prone to occasional flooding (similar to limitations of the underpass on the east side of the Lakeshore Road Bridge).

The maintenance requirements are the highest for the “overpass” alternative. This alternative involves the most complex construction requiring a long ramp or elevator and has the highest potential impact on utilities as it needs to accommodate the pumping station in the lighthouse building and other infrastructure. The “overpass” alternative is least preferred from a technical criteria group perspective.

It is noted that both the “underpass” and “overpass” alternatives have a small potential for soil contamination issues during construction due to their proximity to an old landfill, whereas the “at grade” alternative has minimal potential due to its low construction demands.

The “at grade” and “do-nothing” alternatives are the most preferred from a technical perspective as they do not present any technical design or constructability challenges and will result in minimal impacts.

Cost

The “do nothing” alternative has no initial capital costs because there are no changes to the existing indirect connection between the two parks. The costs associated with “at grade” and “underpass” alternatives are moderate (approximately \$200,000), whereas the cost is very high for the “overpass” alternative (approximately \$4,000,000).

The “do nothing” alternative has no capital costs, however, it does not provide any improvements to the Port Credit Memorial Park (West) connection. The construction of the “at grade” or “underpass” alternatives are preferred from a cost perspective as they provide improvements to the park connection at a much lower cost in comparison to the “overpass” alternative.

1.2.3. Preferred Alternative

Although the “do nothing” alternative was evaluated as the overall most-favoured alternative for the Port Credit Memorial Park (West) connection, the “underpass” alternative was selected as the preferred as this moderate construction cost provides a significant improvement to the safety, programming and operation of the park system. The advantages of the “underpass” alternative outweigh those associated with the “at grade” alternative, and any potential impacts during construction would be minimized through best management practices.

The specific preferences for each criteria group vary:

- From a *Natural Environment* perspective the “do nothing” and “at grade” alternatives are equally preferred as they have no impacts on the natural environment during construction, but neither alternative contributes to the natural environment.
- From a *Socio-Economic and Cultural Environment* perspective the “underpass” alternative is preferred as it provides the continuous connection between the two parks with minimal disruption and potential impact on park uses and programs during construction and operation.
-
- From a *Technical* perspective the “do nothing” and “at grade” alternatives are preferred as they have no to limited construction challenges and only moderate maintenance needs.

From a *Cost* perspective, the “at grade” and “underpass” alternatives are preferred as they require a relatively low cost to improve the pedestrian connection.

While there are distinctions in the preferred alternative selections for all criteria groups, the two strongest alternative preferences were “at grade” and “underpass”. The “underpass” alternative was selected as the most preferred overall because it allows for additional socio-economic and cultural improvements to the park area and an uninterrupted pedestrian connection between the parks for the same cost as the “at grade” alternative.

1.3. Marina Park

The shoreline at the north end of Marina Park is protected by a steel sheet pile wall which provides a moderate to high level of protection from flooding, and the south end of Marina Park consists of a mix of shoreline protection measures in varying states of disrepair, providing low to no protection from flooding. The WPS identified many improvement opportunities for this park, including shoreline protection that promotes fish habitat, and pedestrian access to the river, minimizing conflicts between fishing activities and creation of a multi-use civic space. As discussed in **Section 4.2.2**, for the purposes of this Study the boat launch ramps for motorized boats will remain in their existing location at the north section of the park.

1.3.1. Alternatives Considered

Three alternatives were considered for Marina Park: do nothing, do nothing at the north end of Marina Park and flood proof the south end, and flood proof both the north and south ends of Marina Park.

Do Nothing

The “do nothing” alternative leaves both the north end and south end shorelines “as is”, with no improvements made to the existing shoreline conditions and park programs.



Do Nothing at North End and Flood Proof South End

This alternative leaves the current north end shoreline “as is”, but flood proofs and improves the shoreline at the south end by raising the backshore elevation of the existing topography and providing stone revetment and armour stone along the shore.












Flood Proof North and South Ends

This alternative involves flood proofing and improving the shoreline for both the north and south sections of Marina Park by raising the backshore elevation of the existing topography for both the north and south ends, reconstructing and repairing the existing steel sheet pile wall along the shoreline in the north section of the park, and providing stone revetment and armour stone along the south shoreline.



1.3.2. Evaluation of Alternatives

Table C: Evaluation of Alternatives for Marina Park

ALTERNATIVES			
	Do Nothing	Do Nothing at North End and Flood Proof South End	Flood Proof North and South Ends
Natural Environment			
Socio-Economic and Cultural Environment			
Technical			
Cost	N/A	Moderate (\$500,000)	High (\$1,000,000 to \$1,500,000 – not including backshore grading)

LEGEND		
Least Preferred	Preferred	Most Preferred
		

Natural Environment

The “do nothing” alternative does not present any potential improvements to the natural environment over the current conditions as no changes over existing conditions are being made to Marina Park, therefore this alternative has no impact on existing terrestrial vegetation or aquatic habitat. In general, it is noted that vegetation is limited in the park as most of it is currently found around the parking. There are no impacts to the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat.

There is limited opportunity to improve fish habitat for both “do nothing at north end and flood proof south end” and “flood proof north and south ends” alternatives due to frequent boating activities. There is some potential for both of these alternatives to impact water quality and aquatic habitat during construction, which would be minimized through the use of best management practices.

Flood proofing the whole park provides the greatest opportunity to increase areas of naturalization and improves the vegetative connection.

Flood proofing both the north and south ends of Marina Park is the preferred alternative from a natural environment perspective as it provides the greatest extent of improvements and opportunities for the natural environment.

Socio-Economic and Cultural Environment

All alternatives except “do nothing” could potentially result in some disruption of programs, staged park area closures and visual and noise impacts during construction, however the “do nothing at north end and flood proof south end” alternative would only have disruption in the south end.

The “do nothing” alternative does not provide any opportunities to improve safety, enhance park infrastructure and programs, nor to improve the enjoyment of Marina Park. The other two alternatives provide improved flexibility in programming and improvements to the visual aesthetics of Marina Park, and the improvement of both north and south ends provides additional opportunities and flexibility for year-round programs and an improved space for large events. Improvements to the north and south end shorelines of Marina Park provide an opportunity for continuous improved safe access along the river’s edge, whereas the improvement of south end only would provide partial improvements to safety.

The “flood proof north and south ends” alternative has the greatest potential to improve pedestrian connectivity within Marina Park, future connections to Port Credit Memorial Park (West) and J.C. Saddington Park, and provides opportunities for inclusion of cultural heritage themes, interpretation and education components.

The three alternatives will maintain the current economic draw of the boat and fishing related activities that are supported by the community, and any improvements to the north end of the park could improve the economic draw during the off-season by introducing flexibility in programming.

The potential for flooding and operational disruptions are eliminated for the “flood proof north and south ends” alternative, partially resolved for the “do nothing at north end and flood proof south end”, and remain problematic for the “do nothing” alternative

Flood proofing both the north and south ends of Marina Park is preferred from a socio-economic and cultural environment perspective as it will improve safe water’s edge access for the overall park and the year round usability and functions of the park.

Technical

The greatest level of protection provided from wave, river and ice conditions in Marina Park comes from flood proofing and making shoreline improvements at both the north and south ends, moderate to high protection from addressing the south end and low to no protection from the “do nothing” alternative. The longest design life and lowest maintenance is achieved with flood proofing and shoreline improvements at both ends of Marina Park, and the “do nothing” and “do nothing at north end and flood proof south end” alternatives result in shorter design life and the likelihood of greater maintenance considerations. The existing south end shoreline structure is at the end of its life requiring significant improvements to provide the necessary shoreline protection.

All alternatives have some potential for contamination issues during construction due to the site's proximity to the old landfill. The impacts on utilities are moderate when flood proofing the north and/or south ends, and the “do nothing” alternative does not have any impact on utilities.

Flood proofing and shoreline improvement at the north and/or south ends is of easy to moderate constructability, however construction at both ends of the park would require a more involved and timely construction period.

The “flood proof north and south ends” alternative is preferred from a technical perspective as it provides the highest level of protection from the physical environment.

Cost

The “do nothing” alternative has no initial capital costs because there are no changes made to the parks, however, it is the least preferred alternative from a cost perspective as it will require long term maintenance costs particularly to address the shoreline erosion at the south end of the park. Flood proofing both ends of the park has the highest construction cost but minimal maintenance costs, whereas flood proofing only the south end has a moderate cost associated with it.

From a cost perspective the “do nothing at north end and flood proof south end” alternative is the most preferred as it has a moderate cost and will address the need for significant and ongoing maintenance costs to address the immediate failures of the south end shoreline infrastructure.

1.3.3. Preferred Alternative

Flood proofing and associated shoreline improvements for both the north and south ends is the preferred long-term alternative for Marina Park as it allows for year-round usability and opportunity for park enhancement, including improved connectivity between J.C. Saddington Park and the Rivergate easement. It also presents the most protection from the physical environment and provides the most improvements to the natural environment.

The “do nothing” alternative misses out on the opportunity to improve the shoreline stability and programming, and is clearly least preferred for all criteria groups. The “flood proof north and south ends” alternative is preferred in all criteria groups, but cost.

From a *Cost* perspective “do nothing at north and flood proof south end” alternative is preferred because it provides immediate resolution of a failed shoreline infrastructure at a moderate cost. Despite the high cost of the overall preferred alternative, it will eliminate long term maintenance costs associated with the shoreline and the flood proofing provides opportunity to invest in improvements to the park to increase functionality, improve user enjoyment, and create a multi-purpose event space.

1.4. Non-Motorized Boat Launch

The current boat launch located in Marina Park is shared between motorized and non-motorized boats which may create potential conflicts for boaters when the ramps are busy. The WPS indicates that access to the water for boating is an essential component of a connected waterfront system. Providing easy access to the water's edge in various locations throughout the waterfront can help facilitate the accessibility of the park system via water transportation.

1.4.1. Alternatives Considered

Four alternatives were considered for the non-motorized boat launch: do nothing, create a separate non-motorized boat launch location in Marina Park, move the non-motorized boat launch to Port Credit Memorial Park (West) and move the non-motorized boat launch to Hacienda Bay in J.C. Saddington Park.

Do Nothing

The “do nothing” alternative leaves the non-motorized boat launch in its current location in Marina Park. The boat launch continues to be shared between motorized and non-motorized boats.

Marina Park

The “Marina Park” alternative involves creating a separate non-motorized boat launch location in the south end of Marina Park.

Port Credit Memorial Park (West)

The “Port Credit Memorial Park (West)” alternative involves moving the non-motorized boat launch along the shoreline of the Credit River within Port Credit Memorial Park (West).













Hacienda Bay

The “Hacienda Bay” alternative involves moving the non-motorized boat launch to Hacienda Bay in J.C. Saddington Park.



1.4.2. Evaluation of Alternatives

Table D: Evaluation of Alternatives for the Non-Motorized Boat Launch

ALTERNATIVES				
	Do Nothing	Marina Park	Port Credit Memorial Park (West)	Hacienda Bay
Natural Environment ⁴				
Socio-Economic and Cultural Environment				
Technical ⁵				
Cost	N/A	Low (\$50,000)	Low (\$50,000)	Low ⁶ (\$50,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
		

Natural Environment

All alternatives except the “do nothing” have potential for temporary displacement of fish and their habitat during construction, but they also provide an opportunity to improve fish habitat with the addition of a new dock. The construction of a non-motorized boat launch for these alternatives has generally minimal impacts on water quality, and any impacts would be minimized through best management practices. There are no impacts to the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat.

None of the alternatives can provide opportunities to increase areas of naturalization and there is limited potential for improvements to vegetative connectivity. A non-motorized boat launch in Marina Park would have the least riparian habitat displacement.

The “Port Credit Memorial Park (West)” and “Hacienda Bay” alternatives have a lower ability to increase areas of naturalization, and a potential for greater vegetative

⁴ Upon further technical analysis and evaluation of the “do nothing” alternative was changed from most preferred to least preferred (as presented at the Public Information Centre # 2 on October 24th, 2012).

⁵ The preferred alternatives for the ‘technical group’ have been updated since last presented at the Public Information Centre # 2 on October 24th, 2012. Both “Marina Park” and “Port Credit Memorial Park (West)” alternatives are preferred from the technical perspective (previously shown as only “Marina Park”).

⁶ The cost for the Hacienda Bay alternative may vary as it is dependent on the Hacienda Bay design details.

connectivity as well, but that would be minimized through the use of best management practices.

Creating a separate non-motorized boat launch location in Marina Park is the preferred alternative from a natural environmental perspective as it has the least riparian habitat displacement.

Socio-Economic and Cultural Environment

The “do nothing” alternative does not improvement the potential for conflict with a shared boat launch location for motorized and non-motorized boats at Marina Park. Further, none of the four alternatives present an opportunity for economic benefits to the community, have potential for improvement to pedestrian connectivity, nor have the ability to improve the cultural heritage character within the overall park system.

A new separate non-motorized boat launch dock will result in temporary disruptions during construction. During operation it is anticipated that the Marina Park location would provide the least disruption given that a parking area is already available.

All alternatives except “do nothing” would improve the safety for those using the launch facilities. The “Marina Park” alternative provides the most opportunity for park enhancement and waterfront enjoyment, as there would be a continued social interaction between the non-motorized and motorized boat users given the close proximity of the two launch areas. The “Port Credit Memorial Park (West)” and “Hacienda Bay” alternatives would require redistribution of park programming and potential park area loss for parking and drop-off areas.

The “Port Credit Memorial Park (West)” and “Hacienda Bay” alternatives provide an opportunity to redistribute the overall flow of boating traffic along the Credit River, however, the “Marina Park” alternative is most preferred from a socio-economic and cultural perspective as it has the potential to improve the current on-land conflicts, can provide a convenient access for non-motorized boats and maintains the use of the boat docks in Marina Park.

Technical

All four alternatives offer some level of protection from wave, river and ice conditions, with the potential for some boat generated waves. The “Hacienda Bay” alternative is semi-sheltered from the open lake, whereas the other three alternatives are on the river and fully sheltered. All alternatives except “do nothing” have a longer design life of approximately 25 to 50 years.

The “do nothing” alternative does not have a potential for soil contamination issues or impact on utilities as there is nothing new constructed. The other three alternatives have potential for contamination issues as excavation is required. There is some potential for impact on utilities depending on the specific location but the launch ramps can be designed and constructed to minimize the potential for impact.

With regards to constructability, the “Marina Park” and “Port Credit Memorial Park (West)” alternatives would result in loss of table land, while the “Hacienda Bay” alternative is

potentially more difficult to construct as a groyne may be required to keep the boat launch ramp clear of beach material.

From a technical perspective, “Marina Park” and “Port Credit Memorial Park (West)” alternatives are the most preferred as they provide an improvement to the existing conditions without the additional construction of a groyne for protection.

Cost

The “do nothing” alternative has no initial capital costs because there are no changes made to the current non-motorized boat launch in Marina Park. The remaining three alternatives have a relatively low cost and therefore rank equally in preference from a cost perspective. It is important to note however, that the cost for “Hacienda Bay” alternative may increase if it is determined during detailed design that a groyne is required for protection of a non-motorized boat launch in this location.

The “Marina Park” and “Port Credit Memorial Park (West)” alternatives provide improvements at a low cost and are therefore equally preferred. The “Hacienda Bay” alternative is also preferred if the detailed design provides a relatively low cost of construction.

1.4.3. Preferred Alternative

The “Marina Park” alternative is preferred overall as it will improve potential on-land conflicts between motorized and non-motorized boats while still maintaining the social interactions within Marina park as well as easy access to parking amenities for boaters.

Marina Park was identified as the preferred location for a separate non-motorized boat launch for all criteria groups.

- From a *Natural Environment* perspective the “do nothing” and “Marina Park” alternatives are both preferred as they have the least amount of impact on the natural environment.
- From a *Socio-Economic and Cultural* perspective the “Marina Park” alternative is preferred as it has the potential to improve on-land conflicts, can provide a convenient access for non-motorized boats and keeps the use of the boat dock in Marina Park.
- From a *Technical* perspective the “do nothing” alternative is most preferred, although “Marina Park” and “Port Credit Memorial Park (West)” are also technically feasible and preferred.

1.5. Rivergate Easement Pedestrian Connection

There is no direct and continuous linkage between Marina Park and J.C. Saddington Park along the water's edge, which limits park circulation and connectivity. The two parks are currently connected via municipal sidewalks in front of the Rivergate apartment building. The WPS indicates that a proposed waterside walkway connection be considered to connect J.C. Saddington Park and Marina Park. The technical studies, including a geotechnical report, prepared for this report, determined that an elevated fixed walkway is a more appropriate design for this park location and it was therefore identified as an alternative to be evaluated below.

1.5.1. Alternatives Considered

Two alternatives were considered for the Rivergate easement pedestrian connection: do nothing and creating a shoreline connection.

Do Nothing

The “do nothing” alternative continues to use the municipal sidewalks to allow for a pedestrian connection between Marina Park and J.C. Saddington Park, however it allows for improved user enjoyment by better connecting the two parks, as well as appropriate signage.



Shoreline Connection

The “shoreline connection” alternative involves creating a shoreline pedestrian connection between Marina Park and J.C. Saddington Park through the construction of an elevated fixed walkway.



1.5.2. Evaluation of Alternatives

Table E: Evaluation of Alternatives for Rivergate Easement Pedestrian Connection

ALTERNATIVES		
	Do Nothing	Shoreline Connection
Natural Environment	○	●
Socio-Economic and Cultural Environment	○	●
Technical	●	○
Cost	Low (\$150,000)	High (\$2,500,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

Natural Environment

The “do nothing” alternative does not provide any opportunities to improve fish habitat and increase areas of naturalization given its site location, whereas the “shoreline connection” alternative provides such opportunities along its riparian edge. Neither alternative has potential to impact the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat. However, the “shoreline connection” alternative could have potential impact to water quality, and aquatic or terrestrial habitat during construction. These impacts would be mitigated through best management practices.

The “shoreline connection” has potential to improve the vegetation connectivity and achieve greater plant diversity.

The “shoreline connection” alternative is preferred from a natural environmental perspective as it provides opportunities to improve fish habitat and increase areas of naturalization, along with potential for greater plant diversity.

Socio-Economic and Cultural Environment

Both alternatives have potential for temporary disruption during construction. It is anticipated that the “shoreline connection” alternative would have a longer temporary park area closure and greater potential for construction related disruption such as visual and noise impacts. There were some concerns at the Public Information Centres about privacy invasion with the “shoreline connection” alternative but this was resolved by

locating the elevated walkway away from the shoreline and in many instances placing it below the grade of the Rivergate apartment building which in combination with the existing vegetation decreases the overall visibility.

The “shoreline connection” alternative has potential to significantly improve pedestrian connectivity, programming and the overall pedestrian experience.

It is anticipated that neither of the two alternatives present a direct opportunity for economic benefits to the community or to contribute to the cultural heritage character. The opportunity to improve safety is equal for both alternatives.

The “shoreline connection” is preferred from a socio-economic and cultural perspective as it provides continuous water’s edge connection between the two parks, provides flexibility in programs and resolves the privacy concerns from the residents. The potential construction impacts are temporary and are outweighed by the overall advantages of this alternative.

Technical

The “do nothing” alternative does not need to be protected from wave, river and ice conditions as it is not located on the water, however the “shoreline connection” would be more susceptible to these conditions and would require appropriate design considerations to withstand these conditions. The design life of the “shoreline connection” is 25 to 50 years, but both alternatives require regular maintenance.

For both alternatives there is potential for soil contamination issues during construction due to the park’s proximity to an old landfill. The impacts on utilities are fairly low for the “shoreline connection” alternative and the “do nothing” alternative would not have any impact.

With regards to constructability, the “shoreline connection” alternative is more difficult to construct and may potentially require marine-based construction, whereas the “do nothing” alternative is much easier implement.

Although the “shoreline connection” alternative is feasible, the “do nothing” alternative is preferred from a technical perspective as it is the most straightforward to construct and contractors have experience with these types of improvements.

Cost

The improvements under the “do nothing” alternative have a relatively low cost in comparison to the “shoreline connection” alternative which requires more structural engineering work and potential marine-based construction which comes at a higher cost.

There is a substantial difference in cost between the two alternatives and due to the fact that the “do nothing” alternative has significantly lower costs, it is preferred from a cost perspective.

1.5.3. Preferred Alternative

The “shoreline connection” alternative is the preferred solution overall as it the most preferred alternative from both the natural environment and socio-economic environment perspective, providing opportunities to improve fish habitat and increase areas of naturalization, and a more continuous connection along the water’s edge. Despite the high cost, the overall long term benefits of the “shoreline connection” alternative are considered to be greater than the “do nothing” alternative.

The specific preferences for each criteria group vary:

- From a *Natural Environment* perspective the “shoreline connection” alternative is preferred as it has the most opportunities to improve fish habitat and areas of naturalization.
- From a *Socio-Economic and Cultural* perspective the “shoreline connection” alternative is preferred as it improves connectivity and enhances the experience for trail and park users.
- From a *Technical* perspective the “do nothing” alternative is preferred as it does not require protection from the natural environment and is the most straightforward to construct.

From a *Cost* perspective, the “do nothing” alternative is preferred as it demands a lower cost for streetscape enhancements that allow some connectivity improvements.

1.6. J.C. Saddington Park

The shoreline at J.C. Saddington Park consists of stacked and rough random stone which is prone to overtopping and limits the access to the water’s edge. The WPS identified many improvement opportunities for this park, but specific to the shoreline improvements it noted that alternative stabilization techniques need to be considered in the future to allow better access to the water.

1.6.1. Alternatives Considered

Three alternatives were considered for J.C. Saddington Park: do nothing, improve existing conditions and the creation of a cobble beach.

Do Nothing

The “do nothing” alternative leaves the existing conditions “as is”, consisting of stacked and rough random placed armour stone.



Improve Existing

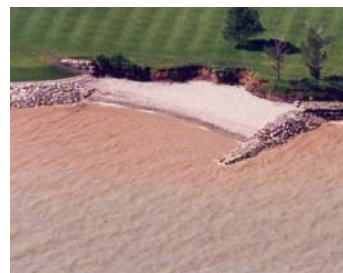
The “improve existing” alternative involves additional placement of armour stone or riprap in the upper part of the revetment to provide a better level of protection.

Cobble Beach



(Source: Terry McDonald, 2010)

The “cobble beach” alternative involves the placement of cobble where suitable, and otherwise improving the existing conditions.



1.6.2. Evaluation of Alternatives

The alternatives for shoreline improvements in J.C. Saddington Park were comparatively evaluated using the criteria previously established (see **Section 3.3**) to understand the relative differences and potential impacts of each of the improved alternatives and identify a preferred option. **Table F** and the text below summarize the evaluation.

Table F: Evaluation of Alternatives for J.C. Saddington Park

ALTERNATIVES			
	Do Nothing	Improve Existing	Cobble Beach
Natural Environment	○	◐	●
Socio-Economic and Cultural Environment	○	◐	●
Technical	○	◐	◐
Cost ⁷	Low and Periodic	Moderate (\$550,000)	High (\$1,600,000)

⁷ The cost for the “cobble beach” alternative has been updated since last presented at the October 24th, 2012 Public Information Centre due to more detailed technical analysis; the construction of this alternative was originally costed at \$3,000,000 and since revised to \$1,600,000.

LEGEND		
Least Preferred	Preferred	Most Preferred
	⊖	●

Natural Environment

The “do nothing” alternative does not present any opportunities to improve fish habitat or increase areas of naturalization as no changes are being proposed, therefore it does not impact water quality, and terrestrial or aquatic habitats. The “cobble beach” alternative provides the most habitat complexity out of all the alternatives with some temporary and limited impacts to water quality, and the aquatic and terrestrial habitat during construction of the beach and the groyne. These impacts would be minimized through best management practices and the post-construction habitat conditions would be improved with the proposed enhancements.

The greatest opportunities to increase areas of naturalization and vegetative connectivity are present in the “cobble beach” alternative through the placement of riparian vegetation and improvements to the wildlife habitat, whereas the “improve existing” alternative provides limited opportunities.

Neither alternative has potential to impact the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat.

The “cobble beach” alternative is the preferred where possible to implement as it allows for an increase in naturalized areas and wildlife habitat creation.

Socio-Economic and Cultural Environment

The “do nothing” alternative provides no additional improvements to the socio-economic and cultural environment and is least preferred from a socio-economic and cultural perspective. In addition, none of the alternatives have potential for disruption during operation, contribution to the cultural heritage character of the site nor provide additional economic benefits to the community apart from those associated with an improved Port Credit Harbour West parks system.

The “improve existing” and “cobble beach” alternatives have potential for temporary disruption during construction. The “cobble beach” alternative provides a more enhanced experience and access to the water’s edge, greatly supported by the public during public consultations. This alternative provides some flexibility in programming, whereas the “improve existing” alternative provides limited use of the waterfront.

The “cobble beach” alternative encourages and provides a safer access to the water’s edge, whereas the “improve existing” alternative has limited change over current conditions.

The “cobble beach” alternative is preferred from the socio-economic and cultural environment perspective as it provides considerable improvements to the safety and direct accessibility to the water’s edge.

Technical

The “do nothing” alternative currently provides a moderate level of protection along the shoreline, while the other two alternatives improve the shore protection from a moderate to high level. In addition, the “cobble beach” alternative is able to better adjust to the wave and ice conditions.

The “cobble beach” and “improve existing” alternatives extend the design life, however the cobble beach will require ongoing maintenance requirements. The ‘do nothing’ alternative also requires ongoing maintenance of the existing stacked and rough random placed armour stone.

All three alternatives have no to low potential impact on utilities, and the “improve existing” and “cobble beach” alternatives have minimal potential for soil contamination issues during construction. Both “improve existing” and “cobble beach” alternatives are constructible and marine contractors have experience with these types of structures.

Both “improve existing” and “cobble beach” alternatives are preferred from a technical perspective as they are equally feasible.

Cost

The “do nothing” alternative has periodically low cost to maintain the structures, whereas the “improve existing” alternative involves the placement of armour stone or riprap in upper parts of the revetment at a moderate to high cost. The highest cost is associated with the “cobble beach” alternative given the greater extent of required construction.

Although the “do nothing” alternative has the lowest cost, the “improve existing” alternative is preferred from a cost perspective as it provides an improvement to the existing conditions at a moderate cost.

1.6.3. Preferred Alternative

Constructing a cobble beach at J.C. Saddington Park was selected as the preferred alternative as it provides the greatest opportunity to improve the safety, enjoyment and access to the water’s edge, and has wildlife habitat and naturalization advantages over the other alternatives.

The specific preferences for each criteria group are:

- From a *Natural Environment* perspective, the “cobble beach” alternative is preferred as it provides the greatest opportunities for improvement to the natural environment.

- From a *Socio-Economic and Cultural* perspective, the “cobble beach” alternative is preferred as it will improve the safety and usability of the park’s waterfront.
- From a *Technical* perspective, both the “cobble beach” and “improve existing” alternatives are equally preferred.

From a *Cost* perspective, “improve existing” alternative is preferred because it provides improvement to the shoreline structure at a moderate to high cost.

The “cobble beach” alternative is overall ranked as the most preferred for the natural environment and socio-economic and cultural environment criteria groups, and ranked equally with the “improve existing” alternative for the technical criteria. The cost is high for constructing this alternative, but the overall advantages of the preferred alternative support the objectives from the WPS.

1.6.4. Consideration of Alternative Design Concepts (*Schedule C Projects*)

The preferred solution of a cobble beach requires the construction of an appropriate structure to stabilize or anchor the beach and protect it from wave action. The two standard means of stabilizing or anchoring a cobble beach are:

Groynes - Groynes are shore connected structures that extend out perpendicular to the shore to the toe of the proposed beach.

Headlands - Detached headlands are shore parallel structures separated from the shore.

A review of these stabilization options clearly identified that there were no advantages to a detached headland over groyne extension. A detached headland would need to be more than double the length of the groyne extension. It would also be built in deeper water and thus result in over double the cost of the groyne extension. From the perspective of natural environment, a detached headland has a greater impact due to its footprint. Overall, it was determined that the groyne option is the only reasonable design for anchoring the proposed cobble beach.



For this project it is suggested that the end of the groyne be angled to the south east more directly into the direction of the large easterly waves to minimize wave reflection into the beach. The proposed cobble beach requires a 40-metre long extension to the existing groyne (see **Figure A**)

Figure A: Groyne Option for Cobble Beach, J.C. Saddington Park

1.7. J.C. Saddington Park Pond

The pond located in J.C. Saddington Park is an asset to the park. The design of the existing pond limits ecosystem functions and habitat creation, and it has high maintenance requirements. The WPS identified many improvement opportunities for the pond, including enhancements for additional seasonal uses, stabilization of the edges, planting to improve aesthetic and interpretation opportunities.

1.7.1. Alternatives Considered

Three alternatives were considered for J.C. Saddington Park pond: do nothing, creating a more natural pond and creating an urban/concrete pond.



Do Nothing

The “do nothing” alternative leaves the existing conditions “as is”, consisting of a concrete liner.



Natural

The “naturalized” alternative involves an alteration of the pond surface and depth to support naturalized environment, and natural vegetation around the pond.

Urban/Concrete










The “urban/concrete” alternative involves other urban water features (e.g., wading pool, skating, etc.), and adding landscaping around the pond.



(Source: www.melanieotg.ca, 2011)

1.7.2. Evaluation of Alternatives

Table G: Evaluation of Alternatives for J.C. Saddington Park

ALTERNATIVES			
	Do Nothing	Naturalized	Urban/Concrete
Natural Environment			
Socio-Economic and Cultural Environment			
Technical			
Cost	N/A	Moderate (\$400,000)	Moderate ⁸ (\$400,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
		

Natural Environment

The “do nothing” alternative does not provide any improvements to the natural environment as there are no changes to the existing conditions. The “natural” and “urban/concrete” alternatives have the potential to result in limited impact to the existing aquatic or terrestrial impact during construction. Neither alternative has potential to impact the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat.

The “naturalized” pond alternative provides the best opportunity to improve fish habitat as well as terrestrial habitat, and supports connectivity of the natural environment. There is also an opportunity to improve water quality in the naturalized pond setting.

The “naturalized” alternative provides the most opportunities to increase areas of naturalization, promoting the development of aquatic and riparian vegetation that increase wildlife habitat and functions.

The “naturalized” pond alternative is preferred at J.C. Saddington Park from a natural environment perspective as it provides an array of improvements to the aquatic and terrestrial habitats.

⁸ Cost may vary depending on design features of the urban/concrete pond.

Socio-Economic and Cultural Environment

The “do nothing” alternative does not provide any benefits from a socio-economic and cultural perspective as the existing conditions stay “as is”.

The “naturalized” and “urban/concrete” alternatives would likely result in temporary disruption to that park area during construction, and no disruption during operation is anticipated. There is no difference in the improvement of safety between the “naturalized” and “urban/concrete” alternatives. Neither alternative impacts pedestrian connectivity, but both enhance the visual aesthetics of the pond and provide opportunities for interpretative signage.

The key difference between the “naturalized” and “urban/concrete” alternatives for the socio-economic criteria group is that the “urban/concrete” alternative provides significant flexibility in programming and has greater opportunities to incorporate cultural heritage themes into the design. Through public consultations, it was clear that running of the model boats is an important activity on the pond, and neither of the above alternatives would have impact on that.

The “urban/concrete” alternative is preferred from a socio-economic and cultural perspective as it provides the best opportunity to enhance the pond with both cultural and program flexibility.

Technical

The “naturalized” alternative has the longest design life and potentially the least maintenance, whereas the other two alternatives are likely to require higher maintenance due to the end of its operational life for “do nothing” alternative and seasonal program changes for the “urban/concrete” alternative.

The “naturalized” and “urban/concrete” alternatives have similar potential for contamination issues and low potential for impact on utilities during construction. The constructability of both of these alternatives is relatively easy.

Both “naturalized” and “urban/concrete” alternatives are technically feasible and preferred from a technical perspective.

Cost

The cost of maintaining the pond as it currently exists are likely to increase as the pond continues to approach the end of its design life. If the pond at J.C. Saddington Park was to be redeveloped the costs would be relatively equal for both “naturalized” and “urban/design” pond alternatives. It is important to also note that the “urban/concrete” alternative cost may vary depending on the design features incorporated into the site.

The “do nothing” alternative is of lowest capital cost but could involve significant maintenance over time. From a cost perspective the “naturalized” and “urban/concrete” alternatives are considered to be equal and preferred over the “do-nothing” as they improve the pond, extend the design life and reduce maintenance for a reasonable cost.

1.7.3. Preferred Alternative

The “naturalized” pond alternative is overall the most preferred alternative as it provides the most opportunities for habitat creation and naturalization of the site and the Port Credit Harbour, and requires the least maintenance. The significant benefit of a naturalized area within an urban park is considered to outweigh the socio-economic and cultural environment advantages of the “urban/concrete” pond alternative associated with program flexibility.

The specific preferences for each criteria group are:

- From a *Natural Environment* perspective, the “naturalized” alternative is preferred as it provides the greatest opportunities for creation of aquatic and terrestrial habitats, as well as naturalization around the pond.
- From a *Socio-Economic and Cultural* perspective, the “urban/concrete” alternative is preferred as it provides the most flexibility in programming and seasonal uses.
- From a *Technical* perspective, both the “naturalized” and “urban/concrete” alternatives are equally preferred and constructible.

From a *Cost* perspective both “naturalized” and “urban/concrete” pond alternatives are of relatively equal cost and preference.

The “naturalized” alternative meets the most WPS objectives and provides the most advantages for each criteria group. As such, it was reasonable to identify the “naturalized” alternative as the preferred alternative overall.

1.8. Hacienda Bay

Hacienda Bay, located in J.C. Saddington Park, does not have direct and safe access to the water's edge for the public, and the existing conditions provide a moderate level of shoreline protection. The WPS noted this area be considered for a potential wetland restoration, and identified that a potential future coastal engineering study could evaluate and develop an alternative for beach access at the northeast corner of J.C. Saddington Park.

1.8.1. Alternatives Considered

Three alternatives were considered for Hacienda Bay: do nothing, creating a cobble beach and creating a coastal wetland.

Do Nothing

The “do nothing” alternative leaves the existing conditions “as is”, inaccessible to the public with limited protection of the shore from natural processes.

Cobble Beach

The “naturalized” alternative involves an enhancement of the area with a cobble beach.

Coastal Wetland

This alternative involves the development of a coastal wetland that would also require wave protection through construction of a breakwater.



1.8.2. Evaluation of Alternatives

Table H: Evaluation of Alternatives for Hacienda Bay

ALTERNATIVES			
	Do Nothing	Cobble Beach	Coastal Wetland
Natural Environment	○	⊖	●
Socio-Economic and Cultural Environment	○	⊖	⊖
Technical ⁹	●	●	○
Cost	N/A	Moderate (\$600,000)	High (\$3,000,000)

LEGEND		
Least Preferred	Preferred	Most Preferred
○	⊖	●

⁹ A more detailed technical analysis of the Hacienda Bay alternative altered the evaluation from what was presented at the October 24th, 2012 Public Information Centre: it was identified as a preferred alternative and now changed to least preferred given the technical challenges of its construction.

Natural Environment

The “do nothing” alternative does not provide additional improvement opportunities to the natural environment as there are no changes to the existing conditions. Any impact during construction to the aquatic and terrestrial habitats, or water quality can be minimized through best management practices. Neither alternative has potential to impact the Barn Swallows, an *Endangered Species* considered *Threatened*, as none of the alternatives will affect the individual species or their habitat.

The “coastal wetland” alternative provides the most significant opportunity to improve fish habitat and act as a refuge habitat for fish, as well as to increase the diversity, quantity and connectivity of vegetation. A cobble beach also provides aquatic habitat complexity, with opportunities to increase areas of naturalization and vegetative connectivity through the placement of riparian vegetation.

From a natural environment perspective the “coastal wetland” alternative is the most preferred considering its overall contributions to species diversity and habitat creation.

Socio-Economic and Cultural Environment

Limited disruption to residents and park users during construction would occur for the “cobble beach” and “coastal wetland” alternatives; park user access to this area is already limited and construction could be timed to avoid busy park times; and the area is relatively removed from residences. It is noted that the length of construction is anticipated to be less for creating a coastal wetland.

Both the “cobble beach” and “coastal wetland” alternatives have potential for improved pedestrian connectivity along the water’s edge, some flexibility in programming and significant improvement in the waterfront enhancement, whereas the “do nothing” alternative misses out on these opportunities.

None of the alternatives contribute to the cultural heritage character. There isn’t a difference in safety considerations or economic benefits between the “cobble beach” and “coastal wetland” alternatives.

From a socio-economic and cultural perspective both the “cobble beach” and “coastal wetland” provide opportunities to improve the function, connectivity and use of this park area in J.C. Saddington Park.

Technical

The “do nothing” alternative does not provide additional shoreline protection, and nothing changes over the existing conditions as there is no impact on utilities or technical issues with constructability.

The “cobble beach” alternative provides moderate to high shoreline protection and a longer design life, with the ability to adjust to wave, river and ice conditions. The “coastal wetland” alternative is sensitive to wave action and water fluctuations requiring a breakwater, and although the design life of the breakwater is longer-term the wetland design life is unknown.

There is minimal potential for contamination issues as very little excavation work is anticipated for both “cobble beach” and “coastal wetland” alternatives, and the impact on utilities is very low.

With regards to constructability, the cobble beach is the most feasible at this location given the water depths, subsurface composition and wave exposure, requiring easy to moderate construction efforts. Hacienda Bay is a challenging location for a coastal wetland due to the wave energy and subsurface composition that requires deep and relatively interventions to reach bedrock for stability.

Although both the “cobble beach” and “coastal wetland” alternatives are both constructible, the “cobble beach” alternative is the most preferred from a technical perspective as it requires the most straightforward construction and provides a very high level of protection. The uncertainty in the wetland’s design life and challenging construction make this alternative less preferred for Hacienda Bay.

Cost

The “coastal wetland” alternative has the highest relative cost and is least preferred from a cost perspective. The “cobble beach” alternative for Hacienda Bay comes at a moderate relative cost and the “do nothing” alternative has no cost associated as there is no change to the existing conditions.

The “cobble beach” is the preferred alternative from the cost perspective as it provides necessary improvements to Hacienda Bay at a relatively moderate cost.

1.8.3. Preferred Alternative

The “cobble beach” alternative is overall the most preferred alternative for Hacienda Bay when assessing across all criteria groups. Although not the most preferred alternative from a natural environment perspective, a cobble beach still provides moderate improvements to the existing natural environment conditions. The “cobble beach” alternative is more easily constructed and meets the objectives to provide public accessibility and improved shoreline protection at a reasonable cost.

The specific preferences for each criteria group are:

- From a *Natural Environment* perspective, the “coastal wetland” alternative is preferred as it provides the greatest opportunities for creation of aquatic and terrestrial habitats, as well as naturalization.
- From a *Socio-Economic and Cultural* perspective, both “cobble beach” and “coastal wetland” alternatives were equally preferred as they provided flexibility in programming and pedestrian connectivity.
- From a *Technical* perspective, both the “cobble beach” and “do nothing” alternatives were preferred as they have no to limited construction challenges.

From a *Cost* perspective the “cobble beach” alternative is preferred as it provides considerable park improvements at the lowest relative price.

The “cobble beach” alternative is the most preferred alternative amongst most criteria groups.

Area		Port Credit Memorial Park (West)			
Problem		Existing shoreline consists of concrete slab revetments and requires upgrading to provide better park facilities.			
Alternatives		Do Nothing	Natural Shore	Hard Shore	Combination
		<i>existing concrete slab revetments</i>	<i>live cribs and live stakes</i>	<i>stone revetment and seawalls; steel sheet pile and concrete structures could be considered</i>	<i>combination of both a natural and hard shore</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Natural Environment	Opportunity to improve fish habitat	- no change over current conditions	- softening shoreline will increase potential fish habitat and utilization along the shore - live stakes will increase riparian vegetation and cover along the shore of the Credit River	- limited habitat will be similar to current conditions along Credit River shoreline	- some habitat opportunities within softened shorelines and live cribs
	Opportunity to increase areas of naturalization	- no change over current conditions	- re-establish a naturally sloped and vegetated shoreline; - river edge improvements can provide locations for fish habitat and education elements; - goose management plan to deter presence from the park; - additional planting of natural shrubs and trees to recreate a green corridor through the river valley; and - where possible and based on space available, consider incorporating small stormwater management wetlands near stormwater outfalls in the park to increase opportunities for wetland plant and animal species and improve water quality. This could be developed in conjunction with other shoreline treatments	- hard shoreline provides less opportunity for naturalization - goose management plan to deter presence from the park; - additional planting of natural shrubs and trees to recreate a green corridor through the river valley	- limited opportunity for naturalization within softened shorelines that will allow for live stakes or plantings - re-establish a naturally sloped and vegetated shoreline; - river edge improvements can provide locations for fish habitat and education elements; - goose management plan to deter presence from the park; - additional planting of natural shrubs and trees to recreate a green corridor through the river valley
	Potential for impact to aquatic or terrestrial habitat during construction	- no impact during construction	- potential for temporary displacement of fish and fish habitat along the shoreline that will be minimized through best management practices - native mature trees which are in good to fair condition should be maintained along the shoreline where possible	- potential for temporary displacement of fish and fish habitat along the shoreline that will be minimized through best management practices - native mature trees which are in good to fair condition should be maintained along the shoreline where possible	- potential for temporary displacement of fish and fish habitat along the shoreline that will be minimized through best management practices - native mature trees which are in good to fair condition should be maintained along the shoreline where possible
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- no impact to species at risk	- no aquatic species at risk have been identified in the area	- no aquatic species at risk have been identified in the area, terrestrial species identified during field work will not be impacted	- no aquatic species at risk have been identified in the area, terrestrial species identified during field work will not be impacted
	Potential for impact to water quality	- no impact during construction	- potential for increased turbidity and sedimentation due to construction adjacent to the Credit River; these impacts will be mitigated through best management practices	- potential for increased turbidity and sedimentation due to construction adjacent to the Credit River; these impacts will be mitigated through best management practices	- potential for increased turbidity and sedimentation due to construction adjacent to the Credit River; these impacts will be mitigated through best management practices
	Potential for improvement to connectivity	- no change over existing	- increased vegetation will have a limited contribution to a natural corridor between the park and the Credit River valley upstream	- none	- limited contribution to a natural corridor
Natural Environment Summary		Changing the Port Credit Memorial Park's (West) shoreline to a "natural shore" is the preferred alternative from the natural environmental perspective as it provides the most significant opportunity to increase fish habitat and naturalized park areas. It is noted that the "combination" alternative also provides natural environment advantages.			

Area		Port Credit Memorial Park (West)			
Problem		Existing shoreline consists of concrete slab revetments and requires upgrading to provide better park facilities.			
Alternatives		Do Nothing	Natural Shore	Hard Shore	Combination
		<i>existing concrete slab revetments</i>	<i>live cribs and live stakes</i>	<i>stone revetment and seawalls; steel sheet pile and concrete structures could be considered</i>	<i>combination of both a natural and hard shore</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Socio-Economic and Cultural Environment	Potential for disruption during construction	- no disruption	- potential for some disruption to those using the park and the river during construction - construction can be staged to limit programming impacts	- potential for some disruption to those using the park and the river during construction - construction can be staged to limit programming impacts	- potential for some disruption to those using the park and the river during construction - construction can be staged to limit programming impacts
	Potential disruption during operation	- current conditions limit direct public access and views to the river	- anticipated to provide improved wave climate for non-motorized boats - limited access points and visibility to the river and activities on the river	- anticipated to provide increased wave refraction which is of concern for non-motorized boats using the river - will likely provide the best access and visibility of the river and activities on the river	- wave refraction would be reduced with strategic natural shore areas and a partial hard shore would allow for improved access and visibility to the river - improved access and visibility of the river and activities on the river
	Potential for improvement to pedestrian connectivity	- none	- potential to further integrate the park's circulation with the Waterfront Trail and future connection to Marina Park	- potential to further integrate the park's circulation with the Waterfront Trail and future connection to Marina Park	- potential to further integrate the park's circulation with the Waterfront Trail and future connection to Marina Park
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	- no change over existing condition	- benefit of shaded areas to enjoy the views and activities on the river - natural enhancement to the park allows for educational components - some flexibility for programming - anticipated to provide opportunities for water's edge furniture, such as benches	- water's edge facilities, such as seating, allows for additional programming flexibility in the park and river - potential to incorporate water's edge facilities, such as seating along the hard shore; providing more organized and functional seating space for club regattas	- natural environment can provide the ecological and aesthetic functions, while allowing for more flexibility in programming with a partial hard shore - provides greatest opportunity for waterfront enjoyment in the park for variety of users - natural enhancement to the park allows for educational components - great opportunity to incorporate a combination of water's edge facilities to suit all park users and programs; providing a more organized and functional seating space for club regattas - opportunity to provide areas with shade for fishing
	Opportunity to improve safety	- n/a	- will improve the safety along the river's edge	- will improve the safety along the river's edge	- will improve safety along the river's edge
	Opportunity to improve economic benefits to the community	- none	- no additional economic benefits are anticipated with a natural shore	- no additional economic benefits are anticipated with a hard shore	- no additional economic benefits are anticipated with the combination of natural and hard shore
	Cultural heritage character	- carved totem pole donated in 1967 in honour of the Centennial	- potential to incorporate the carved totem pole into the park redevelopment plan	- potential to incorporate the carved totem pole into the park redevelopment plan	- potential to incorporate the carved totem pole into the park redevelopment plan
Socio-Economic and Cultural Summary		Although the "natural shore" and "hard shore" alternatives individually provide a very distinct list of programs and advantages, it is the "combination" alternative that is preferred from a socio-economic and cultural environment perspective because it provides the best opportunity to enhance the park for a variety of users with flexible park programs. The "do-nothing" alternative is least preferred as it is least supportive of the improvements and programming changes suggested in the WPS.			

Area		Port Credit Memorial Park (West)			
Problem		Existing shoreline consists of concrete slab revetments and requires upgrading to provide better park facilities.			
Alternatives		Do Nothing	Natural Shore	Hard Shore	Combination
		<i>existing concrete slab revetments</i>	<i>live cribs and live stakes</i>	<i>stone revetment and seawalls; steel sheet pile and concrete structures could be considered</i>	<i>combination of both a natural and hard shore</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Technical <i>Operational Flexibility Criteria removed</i>	Level of protection provided from wave, river and ice conditions.	- existing structures provides low protection; particularly vulnerable to ice damage and high river flow -existing structures will continue to deteriorate	- structures provide low to moderate protection; particularly vulnerable to ice damage - waves generated from boat traffic, specific design procedures for waves and river flow not well documented or understood	- structures provide moderate to high protection; ice damage is possible - design procedures for waves and river flow well understood	- structures provide moderate protection; ice damage is possible - better for wave refraction than the hard shore but not as beneficial as the natural shore -design procedures for natural components of the system are not well documented or understood, however, design procedures for waves and river flow are well understood for a hard shore
	Design life/ Maintenance requirements	- existing protection is at the end of its life -bank will continue to erode requiring maintenance	- design life not well documented but expected to be in the order of 10 to 20 years - extent of maintenance required is unknown	- design life 25 to 50 years (similar to all civil engineering structures) - extent of maintenance required is likely low	- combination alternative provides a variety of areas with different design life and maintenance requirements
	Potential for contamination issues	- unknown bank will continue to erode	- unknown - requires about the same amount of excavation as any retaining wall structure / revetment	- unknown -requires about the same amount of excavation as any retaining wall structure / revetment	- unknown -requires about the same amount of excavation as any retaining wall structure / revetment
	Potential impact on utilities	-existing storm outfalls not impacted	-low, limited impact on existing storm outfalls	-low-moderate impact on existing storm outfalls	-low-moderate impact on existing storm outfalls
	Constructability	- n/a	-general contractors do not have much experience with these types of structures and pre-qualification process with limited number of prequalified contractors may result	- general contractors have a lot of experience with these types of structures	- combination alternative provides a variety of areas with different levels of construction experience -special selection process or construction requirements may be needed for natural approach
Technical Summary		The “natural shore”, “hard shore” and “combination” alternatives provide an improved level of protection over the existing shoreline conditions, however, the “hard shore” alternative is preferred from a technical perspective as it is a well-known method of providing shoreline protection, provides the most protection from the physical environment, and its constructability is the easiest and most understood by contractors. The do-nothing alternative is least preferred as it will require significant maintenance in the future.			
Cost (relative)	Construction Cost for the Park Area	n/a	moderate ~ \$600,000	high ~ \$900,000	moderate to high ~ \$800,000

Area		Port Credit Memorial Park (West) & Marina Park Connection			
Problem		The west shoreline does not have a direct and continuous linkage between the two parks.			
Alternatives		Do Nothing	At Grade	Underpass	Overpass
		<i>indirect crossing at lights</i>	<i>lights/crosswalk</i>	<i>concrete ramp under Lakeshore Road with access ramps at both sides</i>	<i>overpass with ramps or elevator</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Natural Environment	Opportunity to improve fish habitat	- n/a, no work in water	- n/a, no work in water	- limited opportunity to increase cover or habitat along Credit River shoreline under bridge	- n/a, no work in water
	Opportunity to increase areas of naturalization	- none	- none	- none	- none
	Potential for impact to aquatic or terrestrial habitat during construction	- none	- none	- there is potential for indirect impacts on fish habitat during construction; impact would be minimized through best management practices	-minimal terrestrial habitat impact on the north side, constrained primarily to landscape vegetation
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- none	- there is potential for Barn Swallows (a Endangered Species considered Threatened) to nest under the bridge. Design would either need to avoid disturbance of these birds or, prior to construction a nest survey completed to confirm presence/absence of nests	- none
	Potential for impact to water quality	- none	- none	- potential for increased turbidity and sedimentation due to construction adjacent to the Credit River; these impacts will be mitigated through best management practices.	- none
	Potential for improvement to connectivity	- none	- none	- none	- none
Natural Environment Summary		None of the alternatives contribute to the naturalization, natural corridor connectivity or improvements to fish habitats in Port Credit Memorial Park (West) or Marina Park, but the “at grade” and “do-nothing” alternatives are within Lakeshore Road West and will have no impact on the aquatic and terrestrial habitats and water quality during construction, and are therefore preferred from the natural environment perspective.			

Area		Port Credit Memorial Park (West) & Marina Park Connection			
Problem		The west shoreline does not have a direct and continuous linkage between the two parks.			
Alternatives		Do Nothing	At Grade	Underpass	Overpass
		<i>indirect crossing at lights</i>	<i>lights/crosswalk</i>	<i>concrete ramp under Lakeshore Road with access ramps at both sides</i>	<i>overpass with ramps or elevator</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Socio-Economic and Cultural Environment	Potential for disruption during construction	- n/a	- could be constructed with limited impact to the community and park users - non-intrusive on the parks' space	- minimal if any impact to traffic (visual distraction) - minimal impact to park users; would likely require temporary closure of the existing pedestrian crossing of the Credit River during construction.	- construction would require temporary closure of existing pedestrian crossing of the Credit River -likely a longer closure than required for an underpass and would cover a larger area as a result of construction of accessible ramps - considerable disruption of traffic due to visual impact
	Potential disruption during operation	- current conditions limit continuous circulation between the two parks	- provides some improvement for pedestrians - potential for disruption to traffic during operation	- provides operational improvement for pedestrians by avoiding conflicts with traffic on Lakeshore Road	- provides operational improvement for pedestrians by avoiding conflicts with traffic on Lakeshore Road
	Potential for improvement to pedestrian connectivity	- none	- modest improvement to pedestrian connectivity as flow is still determined by traffic volumes and ability to safely cross at crosswalk	- continuous pedestrian connectivity between two parks	- continuous pedestrian connectivity between two parks
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	- none	- none	- better connection of the two parks - improved flexibility for programming with proximity to the river (i.e., feeding ducks)	- better connection of the two parks - opportunity to provide a lookout - this option will remove park space in both Marina Park and Memorial Park (west) for accessibility ramps
	Opportunity to improve safety	- n/a	- some improvement to pedestrian safety	- significantly improves pedestrian safety	- significantly improves pedestrian safety
	Opportunity to improve economic benefits to the community	- none	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system
	Cultural heritage character	- n/a	- none	- none	- none
Socio-Economic and Cultural Summary		The "underpass" alternative is preferred from a socio-economic and cultural environment perspective as it provides the necessary connection between the two parks, significantly improves safety, has only moderate disruptions during construction and requires no reduction in park space.			

Area		Port Credit Memorial Park (West) & Marina Park Connection			
Problem		The west shoreline does not have a direct and continuous linkage between the two parks.			
Alternatives		Do Nothing	At Grade	Underpass	Overpass
		<i>indirect crossing at lights</i>	<i>lights/crosswalk</i>	<i>concrete ramp under Lakeshore Road with access ramps at both sides</i>	<i>overpass with ramps or elevator</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Technical	Level of protection provided from wave, river and ice conditions.	- n/a	- n/a	- shoreline protection required to accommodate underpass - structures provide moderate to high level of protection; ice damage possible - existing outfalls need to be accommodated in structure - underpass will be prone to flooding	- n/a
Operational Flexibility Criteria removed					
	Design life/ Maintenance requirements	- n/a	- limited maintenance anticipated - high liability	- moderate - requires regular maintenance - similar structure as east side of river, maintenance requirements well known	- high - long term maintenance responsibility and higher liability
	Potential for contamination issues	- n/a	- minimal as limited construction	- park is in proximity to old landfill	- park is in proximity to old landfill
	Potential impact on utilities	- none	- low	- potential impacts on utilities are moderate to high - outfalls on North and South sides need to be accommodated	- high - needs to accommodate pumping station in lighthouse building - foundations may impact subsurface utilities - opportunity may be limited to construct overpass with existing infrastructure
	Constructability	- n/a	- easy to construct - unlikely able to address issue with sight-line - should consider pedestrian activated signals	- easy to moderate construction; contractors have experience with these types of structures - access ramp/path on north side needs to accommodate outfall - temporary closure of access to pedestrian bridge over the Credit River is likely	- significantly long ramp would be required or an elevator; - may impact existing lighthouse structure and Credit River pedestrian overpass
Technical Summary		The "at grade" and "do-nothing" alternatives are the most preferred from a technical perspective as they do not present any technical design or constructability challenges and will result in minimal impacts.			
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	n/a	low ~\$100,000	moderate ~ \$200,000	very high ~\$4,000,000

Area		Marina Park		
Problem		The shoreline at the north end provides moderate to high level of protection and the shoreline at the south end provides low to no protection.		
Alternatives		Do Nothing	Do Nothing at North End & Flood Proof South End	Flood Proof North & South Ends
		<i>leave current site layout and programs</i>	<i>leave current site layout and programs at north end raise backshore elevation and provide stone revetment and armour stone along shore in south end</i>	<i>reconstruct existing protection at north end, raise backshore elevation in both north and south ends and provide stone revetment and armour stone along shore in south end</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Natural Environment	Opportunity to improve fish habitat	- none	- limited opportunity to enhance fish habitat due to frequent boating uses	- limited opportunity to enhance fish habitat due to frequent boating uses
	Opportunity to increase areas of naturalization	n/a	- opportunity to increase terrestrial vegetation in backshore area where elevations are raised	- greater opportunity to increase vegetation cover and quality in areas where backshore is elevated
	Potential for impact to aquatic or terrestrial habitat during construction	- none	- there is potential for some small impact to aquatic habitat in the south end of the park, depending on the final design of the shoreline treatment	- there is potential for some small impact to aquatic habitat depending on the final design of the shoreline treatment (i.e. displacing river bottom)
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- none	- none
	Potential for impact to water quality	n/a	- some potential for water quality impact during construction. This can be curtailed or eliminated through the use of best management practices.	- some potential for water quality impact during construction. This can be curtailed or eliminated through the use of best management practices.
	Potential for improvement to connectivity	- none	- greater opportunity to provide a continuous vegetative connection between J.C. Saddington Park and Rivergate easement in areas where backshore is elevated	- greater opportunity to provide a continuous vegetative connection between J.C. Saddington Park and Rivergate easement in areas where backshore is elevated
Natural Environment Summary		Flood proofing both the north and south ends of Marina Park is the preferred alternative from a natural environment perspective as it provides the greatest extent of improvements and opportunities for the natural environment.		

Area		Marina Park		
Problem		The shoreline at the north end provides moderate to high level of protection and the shoreline at the south end provides low to no protection.		
Alternatives		Do Nothing	Do Nothing at North End & Flood Proof South End	Flood Proof North & South Ends
		<i>leave current site layout and programs</i>	<i>leave current site layout and programs at north end raise backshore elevation and provide stone revetment and armour stone along shore in south end</i>	<i>reconstruct existing protection at north end, raise backshore elevation in both north and south ends and provide stone revetment and armour stone along shore in south end</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Socio-Economic and Cultural Environment	Potential for disruption during construction	- n/a	- no disruption at north end - some visual and noise impact to the community and park users at the south end - construction would require temporary closures of south end areas - flood proofing would need to be managed to minimize impact to existing uses	- disruption to the boating/parking uses at both ends - construction should be done off-season - construction would require temporary closures of park areas - considerable visual and noise impact to the community and park users - flood proofing would need to be managed to minimize impact to existing uses
	Potential disruption during operation	- potential for park areas to be flooded	- eliminate potential for flooding in south end	- eliminate potential for flooding in south end
	Potential for improvement to pedestrian connectivity	- none	- potential to further integrate the park's circulation with the Waterfront Trail and future potential connection to J.C. Saddington Park and Port Credit Memorial Park (West)	- potential to further integrate the park's circulation with the Waterfront Trail and future potential connection to J.C. Saddington Park and Port Credit Memorial Park (West)
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	- site layout and functions not welcoming to non-fishing community and tourists	- anticipated flexibility in programming in south end over what is there now - anticipated improvement to the visual aesthetic of the north and south ends of the park	- anticipated improvement to the visual aesthetic of the north and south ends of the park - potential to include features that could be used year-round in north end (e.g., civic space) - significant flexibility in site programming - improved space for large events (i.e., Salmon Derby, farmer's market, etc.) - anticipated new park programs
	Opportunity to improve safety	- n/a	- improvement of the shoreline at the south end	- improvement of the shore wall at the north and shoreline at the south end
	Opportunity to improve economic benefits to the community	- none	- will maintain the current economic draw of the commercial boats, private launching and boating related events	- will maintain the current economic draw of the commercial boats, private launching and boating related events - this option has the potential to improve the economic draw during the off season
	Cultural heritage character	- no change over existing	- opportunities for inclusion of cultural heritage themes - opportunity for interpretive educational components	- opportunities for inclusion of cultural heritage themes - opportunity for interpretive educational components
Socio-Economic and Cultural Summary		Flood proofing both the north and south ends of Marina Park is preferred from a socio-economic and cultural environment perspective as it will improve safe water's edge access for the overall park and the year round usability and functions of the park.		

Area		Marina Park		
Problem		The shoreline at the north end provides moderate to high level of protection and the shoreline at the south end provides low to no protection.		
Alternatives		Do Nothing	Do Nothing at North End & Flood Proof South End	Flood Proof North & South Ends
		leave current site layout and programs	leave current site layout and programs at north end raise backshore elevation and provide stone revetment and armour stone along shore in south end	reconstruct existing protection at north end, raise backshore elevation in both north and south ends and provide stone revetment and armour stone along shore in south end
CRITERIA GROUPS		EVALUATION CRITERIA		
Technical Operational Flexibility Criteria removed	Level of protection provided from wave, river and ice conditions.	- existing protection at north end of park provides moderate to high level of protection - existing protection along south end of park provides low to no protection	- existing protection at north end of park provides moderate to high level of protection - protection of south end of park will provide moderate to high protection; ice damage possible	- protection improvements at north end of park will provide high level of protection - protection would include raising backshore elevation, may result in loss of flood storage area - protection at south end of park will provide moderate to high protection; ice damage possible
	Design life/ Maintenance requirements	- existing protection at north end of park has remaining design life - protection at south end of park has no design life, it has failed	- existing protection at north end of park has remaining design life - maintenance of north park expected to be same or increase over time - design life of 25 to 50 years for south end of park - extent of maintenance is likely low	- design life for both north and south end of park 25 to 50 years. - extent of maintenance for both north and south ends is likely low
	Potential for contamination issues	- unknown -south end of park will continue to erode -park in proximity to old landfill	- minimal excavation anticipated - park in proximity to old landfill	- minimal excavation anticipated - park in proximity to old landfill
	Potential impact on utilities	- none	- flood proofing could have some impact on buried utilities (to be confirmed) - storm outfalls may need to be reconfigured	- flood proofing could have some impact on buried utilities (to be confirmed) - storm outfalls may need to be reconfigured
	Constructability	- n/a	- easy to moderate construction, contractors have experience with these types of structures	- easy to moderate construction; likely to require replacement of existing steel sheet pile wall, extension to launch ramp, backshore grading, and stepped the edge in south end - will take 2-3 months longer than other alternatives
Technical Summary		The "flood proof north and south ends" alternative is preferred from a technical perspective as it provides the highest level of protection from the physical environment.		
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	n/a	moderate ~ \$500,000	high ~ \$1,00,000 - 1,500,000 (not including backshore grading)

Area		Non-Motorized Boat Launch			
Problem		Marina Park may have potential conflicts with shared boat launch location for motorized and non-motorized boats.			
Alternatives		Do Nothing	Marina Park	Port Credit Memorial Park (West)	Hacienda Bay
		<i>current location at Marina Park</i>	<i>separate non-motorized boat dock location</i>	<i>non-motorized boat launch location</i>	<i>non-motorized boat launch location</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Natural Environment	Opportunity to improve fish habitat	- n/a	- docks may provide additional fish cover	- docks may provide additional fish cover	- docks may provide additional fish cover
	Opportunity to increase areas of naturalization	- n/a	- none	- decreased ability to add areas of naturalization	- decreased ability to add areas of naturalization
	Potential for impact to aquatic or terrestrial habitat during construction	- n/a	-potential for temporary displacement of fish and minimal fish habitat during construction	-potential for temporary displacement of fish and minimal fish habitat during construction - would displace sections of riparian habitat	-potential for temporary displacement of fish and minimal fish habitat during construction - would displace sections of riparian habitat and possibly areas of new wetland depending on the alternative choosen for Hacienda Bay.
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- none	- none	- none
	Potential for impact to water quality	- none	- potential for increased turbidity and sedimentation during construction which can be minimized using best management practices	- potential for increased turbidity and sedimentation during construction which can be minimized using best management practices	- potential for increased turbidity and sedimentation during construction which can be minimized using best management practices
	Potential for improvement to connectivity	- none	- none	- adding a dock in this area likely decreases the ability to maintain connectivity.	- adding a dock in this area likely decreases the ability to maintain connectivity.
Natural Environment Summary		Creating a separate non-motorized boat launch location in Marina Park is the preferred alternative from a natural environmental perspective as it has the least riparian habitat displacement.			

Area		Non-Motorized Boat Launch			
Problem		Marina Park may have potential conflicts with shared boat launch location for motorized and non-motorized boats.			
Alternatives		Do Nothing	Marina Park	Port Credit Memorial Park (West)	Hacienda Bay
		<i>current location at Marina Park</i>	<i>separate non-motorized boat dock location</i>	<i>non-motorized boat launch location</i>	<i>non-motorized boat launch location</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Socio-Economic and Cultural Environment	Potential for disruption during construction	- n/a	- impacts to park users and may remove access to that area temporarily	- impacts to park users and may remove access to that area temporarily	- impacts to park users and may remove access to that area temporarily
	Potential disruption during operation	- none	- congestion and conflicts on the river may not be reduced - parking area is available	- anticipated additional need for loading/unloading and parking - more vehicular traffic on Front Street North - congestion and conflicts on the river may not be reduced	- anticipated need for loading/unloading and parking - traffic volume the same on Front Street South, just redistributed from Marina Park
	Potential for improvement to pedestrian connectivity	- n/a	- n/a	- n/a	- n/a
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	- none	- improved accessibility to the water would reduce congestion and conflicts on the site - continued social interaction with non-motorized and motorized boat users	- would decrease congestion and conflicts between motorized and non-motorized boat launch in Marina Park - redistribution of the park programming - may reduce enjoyment/increase impact at Memorial Park (West) - ability for easy non-motorized boat launch access - some park space removed for parking and drop-off	- would decrease congestion and conflicts between motorized and non-motorized boat launch in Marina Park - redistribution of the park programming - closer to parking but will need park space for loading and drop-off - increased access at Hacienda Bay
	Opportunity to improve safety	- n/a	- would provide safer access to water's edge for non-motorized boats	- would provide safer access to water's edge for non-motorized boats	- would provide safer access to water's edge for non-motorized boats
	Opportunity to improve economic benefits to the community	- none	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system
	Cultural heritage character	- n/a	- none	- none	- none
Socio-Economic and Cultural Summary		The "Port Credit Memorial Park (West)" and "Hacienda Bay" alternatives provide an opportunity to redistribute the overall flow of boating traffic along the Credit River, however, the "Marina Park" alternative is most preferred from a socio-economic and cultural perspective as it has the potential to improve the current on-land conflicts, can provide a convenient access for non-motorized boats and keeps the use of the boat dock in Marina Park.			

Area		Non-Motorized Boat Launch			
Problem		Marina Park may have potential conflicts with shared boat launch location for motorized and non-motorized boats.			
Alternatives		Do Nothing	Marina Park	Port Credit Memorial Park (West)	Hacienda Bay
		<i>current location at Marina Park</i>	<i>separate non-motorized boat dock location</i>	<i>non-motorized boat launch location</i>	<i>non-motorized boat launch location</i>
CRITERIA GROUPS	EVALUATION CRITERIA				
Technical Operational Flexibility Criteria removed	Level of protection provided from wave, river and ice conditions.	- sheltered from waves from open lake, potential for boat generated waves - waves generated from local boat traffic and other users - reduced water depth due to siltation not significant issue for non-motorized boats	- sheltered from the open lake, potential for boat generated waves - prone to siltation - maybe prone to ice damage - requires a shore parallel floating dock similar to docks at canoe and rowing clubs	- sheltered from the open lake, potential for boat generated waves however less than Marina Park - existing launch ramps along this shore - not prone to siltation - maybe prone to ice damage - may require a shore parallel floating dock similar to docks at canoe and rowing clubs	- semi-sheltered from open lake exposed to wave action, possible with breakwater - waves generated from boat traffic - location prone to siltation - if wetland preferred alternative, may difficult to maintain ramp here - if cobble beach alternative preferred, structure required to keep ramp clear of cobble.
	Design life/ Maintenance requirements	- existing ramp may require reconstruction if improvements are made to Marina Park - design life of ramp approximately 25 years - maintenance similar to existing maintenance requirements	- designed for 25 to 50 years - maintenance similar to existing maintenance requirements such installation of floating docks	- designed for 25 to 50 years - maintenance similar to Marina Park such installation of floating docks	- ramp designed for 25 to 50 years, 20 to 25 years for floating docks - maintenance similar to Marina Park such as installing floating docks
	Potential for contamination issues	- n/a	-excavation required	-excavation of the bank is required	- excavation required
	Potential impact on utilities	- n/a	- moderate, potential for relocation of utilities depending on location of ramp - lighting may be needed	- moderate, potential for relocation of utilities depending on location of ramp - lighting improvements may be needed - possible impacts to existing storm outfalls	- low - lighting improvements may be needed - potential for impact to existing storm outfall
	Constructability	- n/a	- contractors have experience with this type of structure - loss of table land to accommodate launch ramp	- contractors have experience with this type of structure - loss of table land to accommodate launch ramp	- contractors have experience with this type of structure - groyne required to keep launch ramp clear of beach material
Technical Summary		From a technical perspective, “Marina Park” and “Port Credit Memorial Park (West)” alternatives are the most preferred as they provide an improvement to the existing conditions without the additional construction of a groyne for protection.			
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	n/a	low ~ \$50,000	low ~ \$50,000	low ~ \$50,000 *cost may vary depending on Hacienda Bay design details

Area		Rivergate Easement Pedestrian Connection	
Problem		Marina Park and J.C. Saddington Park do not have a direct and continuous connection along the water's edge.	
Alternatives		Do Nothing	Shoreline Connection
		<i>use of municipal sidewalks to connect to park system; some improved signage</i>	<i>elevated fixed walkway</i>
CRITERIA GROUPS	EVALUATION CRITERIA		
Natural Environment	Opportunity to improve fish habitat	- none, not in water work	- creation of additional fish habitat enhancement during the design of the boardwalk
	Opportunity to increase areas of naturalization	- none	- provide additional diversity of tree and shrub vegetation along the riparian areas
	Potential for impact to aquatic or terrestrial habitat during construction	- limited impact as existing sidewalks/walkways would be used	- potential impact to existing vegetation during construction - native mature trees which are in good to fair condition should be maintained along the shoreline where possible to maintain a natural corridor along the Credit River shoreline - temporary displacement of fish and impact to fish habitat
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- none
	Potential for impact to water quality	- none, no in water work	- increased turbidity and sedimentation within the Credit River which can be mitigated through best management practices
	Potential for improvement to connectivity	- none	- overall similar condition to existing however, there is potential for greater plant diversity with this option
Natural Environment Summary		The "shoreline connection" alternative is preferred from a natural environmental perspective as it provides opportunities to improve fish habitat and increase areas of naturalization, along with potential for greater plant diversity.	

Area		Rivergate Easement Pedestrian Connection	
Problem		Marina Park and J.C. Saddington Park do not have a direct and continuous connection along the water's edge.	
Alternatives		Do Nothing	Shoreline Connection
		<i>use of municipal sidewalks to connect to park system; some improved signage</i>	<i>elevated fixed walkway</i>
CRITERIA GROUPS	EVALUATION CRITERIA		
Socio-Economic and Cultural Environment	Potential for disruption during construction	<ul style="list-style-type: none"> - would use existing walkways - temporary closure of existing sidewalks maybe be required 	<ul style="list-style-type: none"> - potential visual and noise impacts to Rivergate apartment tenants during construction - would likely involve temporary restricted access to that area - some impact to users of the water as they will need to remain away from this area for a period of time
	Potential disruption during operation	<ul style="list-style-type: none"> - park users would continue to use the municipal sidewalk to get to J.C. Saddington Park from Marina Park 	<ul style="list-style-type: none"> - concern about invading the privacy of apartment tenants as well as garbage, etc.
	Potential for improvement to pedestrian connectivity	<ul style="list-style-type: none"> - none 	<ul style="list-style-type: none"> - significant improvement in continuous connectivity along the water's edge between J.C. Saddington Park and Marina Park
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	<ul style="list-style-type: none"> - this option provides a less desirable and direct trail experience 	<ul style="list-style-type: none"> - shoreline connection between the parks enhances the waterfront trail experience - flexibility in programming along the new connection (lookout, fishing, etc.)
	Opportunity to improve safety	<ul style="list-style-type: none"> - no difference between options from safety perspective 	<ul style="list-style-type: none"> - no difference between options from safety perspective
	Opportunity to improve economic benefits to the community	<ul style="list-style-type: none"> - none 	<ul style="list-style-type: none"> - not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system
	Cultural heritage character	<ul style="list-style-type: none"> - none 	<ul style="list-style-type: none"> - none
Socio-Economic and Cultural Summary		<p>The "shoreline connection" is preferred from a socio-economic and cultural perspective as it provides continuous water's edge connection between the two parks, provides flexibility in programs and resolves the privacy concerns from the residents. The potential construction impacts are temporary and are outweighed by the overall advantages of this alternative.</p>	

Area		Rivergate Easement Pedestrian Connection	
Problem		Marina Park and J.C. Saddington Park do not have a direct and continuous connection along the water's edge.	
Alternatives		Do Nothing	Shoreline Connection
		<i>use of municipal sidewalks to connect to park system; some improved signage</i>	<i>elevated fixed walkway</i>
CRITERIA GROUPS	EVALUATION CRITERIA		
Technical	Level of protection provided from wave, river and ice conditions.	-not near water	- option is more susceptible to wave, river and ice conditions, structure will be designed to withstand these conditions
Operational Flexibility Criteria removed	Design life/ Maintenance requirements	- maintenance requirements similar to other civil structures.	- design life 25 to 50 year - structure will require maintenance
	Potential for contamination issues	-park in proximity to old landfill	- excavation for on land footings is required - park in proximity to old landfill
	Potential impact on utilities	-none	- low impact on existing utilities - additional lighting would be required
	Constructability	- easy to construct; contractors have experience with these types of improvements	- harder to construct, marine based construction may be required
Technical Summary		Although the "shoreline connection" alternative is feasible, the "do nothing" alternative is preferred from a technical perspective as it is the most straightforward to construct and contractors have experience with these types of improvements.	
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	low ~\$150,000	high ~ \$2,500,000

Area		J.C. Saddington Park		
Problem		Existing shoreline is prone to wave overtopping and the rough random armour stone is limiting the access to the water edge.		
Alternatives		Do Nothing	Improve Existing	Cobble Beach
		<i>stacked and rough random placed armour stone</i>	<i>placement of armour stone/riprap in upper parts of revetment</i>	<i>placement of cobble where suitable (potentially area east of the middle groyne and west part of park waterfront)</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Natural Environment	Opportunity to improve fish habitat	- none	- enhancement of riparian cover - habitat would be similar to existing conditions which includes potential rearing habitat, juvenile cover and feeding area	- habitat complexity can be achieved by softening the shoreline and varying shoreline substrates
	Opportunity to increase areas of naturalization	- no change over existing	- Some limited placement of riparian vegetation within areas of replacement have the potential to improve wildlife habitat.	- cobble will allow greater placement of riparian vegetation and have the potential to improve wildlife habitat.
	Potential for impact to aquatic or terrestrial habitat during construction	- no change over existing	-some temporary and limited impact to aquatic/terrestrial habitat is likely to occur during construction. -best management practices employed during construction would limit this impact -proposed habitat improvements would improve conditions post-construction.	-some temporary and limited impact to aquatic/terrestrial habitat is likely to occur during construction of groyne -best management practices employed during construction would limit this impact -proposed habitat improvements would improve conditions post-construction.
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- none	- none
	Potential for impact to water quality	- no change over existing	- potential to impact water quality during construction as it will involve work within the water; impact will be minimized through best management practices	- potential to impact water quality during construction as it will involve work within the water impact will be minimized through best management practices
	Potential for improvement to connectivity	- none	- none	-greater opportunity to provide a continuous vegetative connection
Natural Environment Summary		The “cobble beach” alternative is the preferred where possible to implement as it allows for an increase in naturalized areas and wildlife habitat creation.		

Area		J.C. Saddington Park		
Problem		Existing shoreline is prone to wave overtopping and the rough random armour stone is limiting the access to the water edge.		
Alternatives		Do Nothing	Improve Existing	Cobble Beach
		<i>stacked and rough random placed armour stone</i>	<i>placement of armour stone/riprap in upper parts of revetment</i>	<i>placement of cobble where suitable (potentially area east of the middle groyne and west part of park waterfront)</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Socio-Economic and Cultural Environment	Potential for disruption during construction	- n/a	- impacts to park users and may remove access to that area temporarily	- impacts to park users and may remove access to that area temporarily
	Potential disruption during operation	- none	- none	- none
	Potential for improvement to pedestrian connectivity	- none	- anticipated improvement to circulation network	- anticipated improvement to circulation network
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	- none	- improvement to the enjoyment of the park's waterfront - anticipated that the edge would improve safety for those fishing/viewing	- improvement to the enjoyment of the park's waterfront - anticipated facilitation of safe public access to the water's edge which has been expressed by the public as desirable - some flexibility in programming
	Opportunity to improve safety	- n/a	- limited change over current conditions	- would provide safer access to the water's edge
	Opportunity to improve economic benefits to the community	- none	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system
	Cultural heritage character	- none	- none	- none
Socio-Economic and Cultural Summary		The "cobble beach" alternative is preferred from the socio-economic and cultural environment perspective as it provides considerable improvements to the safety and direct accessibility to the water's edge.		

Area		J.C. Saddington Park		
Problem		Existing shoreline is prone to wave overtopping and the rough random armour stone is limiting the access to the water edge.		
Alternatives		Do Nothing	Improve Existing	Cobble Beach
		<i>stacked and rough random placed armour stone</i>	<i>placement of armour stone/riprap in upper parts of revetment</i>	<i>placement of cobble where suitable (potentially area east of the middle groyne and west part of park waterfront)</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Technical <i>Operational Flexibility Criteria removed</i>	Level of protection provided from wave, river and ice conditions.	- moderate level of protection, existing shore prone to wave overtopping	- improve the protection of the shore - moderate to high level of protection, design procedures for wave conditions well known	- improve the protection of the shore - moderate to high level of protection - cobble beach will adjust to wave and ice conditions - design procedures for wave conditions well known
	Design life/ Maintenance requirements	- existing structure at the end of design life will continue to function but at moderate level of protection - revetment along river expected to have longer remaining design life than rough random revetment along lake - maintenance of structure will be required especially during periods of high water	- design life extended to 25 to 50 years - lower maintenance requirements	- design life 25 to 50 years - beach will require ongoing maintenance
	Potential for contamination issues	- none if maintenance of revetment is provided	- minimal excavation anticipated - park is old landfill	- minimal excavation anticipated - park is old landfill
	Potential impact on utilities	- none	- low	- low
	Constructability	- n/a	- marine contractors have experience with these types of structures	- cobble beach is feasible at the location given the water depths and wave exposure - existing outfalls may require modifications (extension / relocation) to accommodate the beach - cobble likely to be in the order of 50mm to 150 mm in diameter - additional headland may be required to retain beach - marine contractors have experience with these types of structures
Technical Summary		Both “improve existing” and “cobble beach” alternatives are preferred from a technical perspective as there are equally feasible.		
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	low and periodic	moderate to high ~ \$550,000	high ~ \$1,600,000

Area		Hacienda Bay		
Problem		Existing shoreline is not accessible by the public and natural processes need to be protected.		
Alternatives		Do Nothing	Cobble Beach	Coastal Wetland
		<i>no access</i>	<i>enhancement of beach</i>	<i>development of wetland; requires wave protection</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Natural Environment	Opportunity to improve fish habitat	- none	- limited refuge and spawning habitat for fish with varying substrates	- wetland would provide refuge habitat for fish
	Opportunity to increase areas of naturalization	- none	- limited naturalization	- significant naturalization including shoreline plantings and abundant aquatic and emergent vegetation
	Potential for impact to aquatic or terrestrial habitat during construction	- none	- potential to impact fish and fish habitat during construction; can be minimized through best management practices - no impact to terrestrial habitat is anticipated	- potential to impact fish and fish habitat during construction; can be minimized through best management practices - no impact to terrestrial habitat is anticipated
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- none	- none
	Potential for impact to water quality	- none	- potential for increased turbidity and sedimentation during construction due to sediment loading within the bay; can be minimized through best management practices -potentially less impacts than coastal wetland alternative	- potential for increased turbidity and sedimentation during construction due to sediment loading within the bay; can be minimized through best management practices
	Potential for improvement to connectivity	- none	- none, may require the removal of trees or vegetation for the beach (to be confirmed)	- riparian plantings would provide a limited contribution to a natural corridor along the Credit River Shoreline
Natural Environment Summary		From a natural environment perspective the “coastal wetland” alternative is the most preferred considering its overall contributions to species diversity and habitat creation.		

Area		Hacienda Bay		
Problem		Existing shoreline is not accessible by the public and natural processes need to be protected.		
Alternatives		Do Nothing	Cobble Beach	Coastal Wetland
		<i>no access</i>	<i>enhancement of beach</i>	<i>development of wetland; requires wave protection</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Socio-Economic and Cultural Environment	Potential for disruption during construction	- none	- would likely involve construction impacts to park users and may remove access to that area temporarily	- the location of construction is in an area where access is currently limited which will minimize impact; construction of this alternative will take a longer period of time - would likely involve construction impacts to park users and may remove access to that area temporarily
	Potential disruption during operation	- area not currently accessible	- none	- none
	Potential for improvement to pedestrian connectivity	- none	- access to the cobble beach would result in expansion of the current J.C. Saddington Park circulation - greater pedestrian connectivity along the water's edge	- access to coastal wetland would result in expansion of the current J.C. Saddington Park circulation - may provide greater pedestrian connectivity along the water's edge
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	- none	- improved Bay and could provide opportunities for public access to the water's edge - some flexibility in programming of the cobble beach area	- improved Bay and could provide opportunities for public access to the water's edge - some flexibility in programming of the coastal wetland (e.g., education)
	Opportunity to improve safety	- n/a	- no difference between options from safety perspective	- no difference between options from safety perspective
	Opportunity to improve economic benefits to the community	- none	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system
	Cultural heritage character	- n/a	- none	- none
Socio-Economic and Cultural Summary		From a socio-economic and cultural perspective both the "cobble beach" and "coastal wetland" provide opportunities to improve the function, connectivity and use of this park area in J.C. Saddington Park.		

Area		Hacienda Bay		
Problem		Existing shoreline is not accessible by the public and natural processes need to be protected.		
Alternatives		Do Nothing	Cobble Beach	Coastal Wetland
		<i>no access</i>	<i>enhancement of beach</i>	<i>development of wetland; requires wave protection</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Technical <i>Operational Flexibility Criteria removed</i>	Level of protection provided from wave, river and ice conditions.	- no change	- moderate to high protection; beach will adjust with wave, river and ice conditions - beach curb along existing bank will provide high level of protection - cobble beach provides low wave refraction reducing wave agitation in the channel (safer boat access)	- wetland is sensitive to wave action and water fluctuations - breakwater would be required to reduce wave action in bay - specific design procedures for wave and river flow not well documented or understood
	Design life/ Maintenance requirements	- n/a	- design life 25 to 50 years - would require ongoing maintenance to remove debris	- wetland design life unknown - structures design life 25 to 50 years - would require ongoing maintenance to remove debris
	Potential for contamination issues	- n/a	- minimal excavation anticipated - park is old landfill	- minimal excavation anticipated - park is old landfill
	Potential impact on utilities	- none	- low	- low
	Constructability	- n/a	- cobble beach is feasible at the location given the water depths and wave exposure - existing groyne at south end of beach may require adjustment to accommodate the pond outflow - existing outlets may require modifications (extension / relocation) to accommodate the beach - easy to moderate construction	- challenging area for wetland development due to wave action and water level depth marginal; - breakwater required to protect wetland - likely will require placement of fill to create ideal water depth for planting
Technical Summary		Although both the “cobble beach” and “coastal wetland” alternatives are both constructible, the “cobble beach” alternative is the most preferred from a technical perspective as it requires the most straightforward construction and provides a very high level of protection. The uncertainty in the wetland’s design life and challenging construction make this alternative less preferred for Hacienda Bay.		
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	n/a	moderate ~ \$600,000	high ~ \$3,000,000

Area		J.C. Saddington Park Pond		
Problem		The design of the existing pond limits ecosystem functions and habitat creation, and requires maintenance.		
Alternatives		Do Nothing	Natural	Urban/Concrete
		<i>concrete lining of pond with central water fountain</i>	<i>altering surfaces and depths of pond to support naturalized environment add natural vegetation around pond</i>	<i>maintain urban water feature (e.g. wading pool, skating), add landscaping around the pond</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Natural Environment	Opportunity to improve fish habitat	- n/a	- removing barriers to fish migration and adding a natural substrate to the pond would create fish habitat in the park where it currently does not exist	- no fish habitat currently exists within the pond and concrete channel and will not be created through this alternative.
	Opportunity to increase areas of naturalization	- none	- opportunity for aquatic vegetation and riparian plantings around the pond to promote a naturalized system and increase wildlife habitat and function	- landscaping around the pond would provided limited improvement to wildlife habitat and function
	Potential for impact to aquatic or terrestrial habitat during construction	n/a	- limited impact	- limited impact
	Potential to impact species at risk in Ontario protected by the <i>Endangered Species Act, 2007</i>	- none	- no impact, but should be confirmed with the MNR prior to construction	- none
	Potential for impact to water quality	- none	- some opportunity to improve water quality	- some activities may add contaminants to the water system which terminates in the Credit river
	Potential for improvement to connectivity	- none	- connectivity between the pond, watercourse and the Credit River - increasing naturalization will create riparian corridor habitat	- none
Natural Environment Summary		The "naturalized" pond alternative is preferred at J.C. Saddington Park from a natural environment perspective as it provides an array of improvements to the aquatic and terrestrial habitats.		

Area		J.C. Saddington Park Pond		
Problem		The design of the existing pond limits ecosystem functions and habitat creation, and requires maintenance.		
Alternatives		Do Nothing	Natural	Urban/Concrete
		<i>concrete lining of pond with central water fountain</i>	<i>altering surfaces and depths of pond to support naturalized environment add natural vegetation around pond</i>	<i>maintain urban water feature (e.g. wading pool, skating), add landscaping around the pond</i>
CRITERIA GROUPS	EVALUATION CRITERIA			
Socio-Economic and Cultural Environment	Potential for disruption during construction	-n/a	- impacts to park users and may remove access to that area temporarily	- impacts to park users and may remove access to that area temporarily
	Potential disruption during operation	-none	- none	- none
	Potential for improvement to pedestrian connectivity	-none	- none	- none
	Opportunity to enhance park/waterfront enjoyment (including flexibility for programming)	-none	- improvement to the visual aesthetic of the park and ecological functions -Interpretive signage	- improvement to the visual aesthetic of the park - significant flexibility for programming
	Opportunity to improve safety	-none	- no difference between options from safety perspective	- no difference between options from safety perspective
	Opportunity to improve economic benefits to the community	-none	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system	- not anticipated to result in additional economic benefits over and above the benefits associated with an improved Port Credit West park system
	Cultural heritage character	-none	- none	- opportunity to incorporate cultural heritage themes and interpretation
Socio-Economic and Cultural Summary		The “urban/concrete” alternative is preferred from a socio-economic and cultural perspective as it provides the best opportunity to enhance the pond with both cultural and program flexibility.		

Area		J.C. Saddington Park Pond		
Problem		The design of the existing pond limits ecosystem functions and habitat creation, and requires maintenance.		
Alternatives		Do Nothing	Natural	Urban/Concrete
		concrete lining of pond with central water fountain	altering surfaces and depths of pond to support naturalized environment add natural vegetation around pond	maintain urban water feature (e.g. wading pool, skating), add landscaping around the pond
CRITERIA GROUPS	EVALUATION CRITERIA			
Technical	Level of protection provided from wave conditions	- n/a	- n/a	- n/a
Operational Flexibility Criteria removed				
	Design life/ Maintenance requirements	- end of its life, high maintenance requirements	- longer design life and potentially less maintenance	- shorter design life but potentially more maintenance (between seasons)
	Potential for contamination issues	- none	- minimal excavation anticipated - park is old landfill	- minimal excavation anticipated - park is old landfill
	Potential impact on utilities	- none	- low	- low - improvements to existing infrastructure to pond would be needed
	Constructability	- n/a	- relatively easy construction	- relatively easy construction
Technical Summary		Both “naturalized” and “urban/concrete” alternatives are technically feasible and preferred from a technical perspective.		
Cost (relative)	Relative approximate cost (capital) Overall Cost TBD	n/a	moderate ~ \$400,000	moderate ~ \$400,000 (cost may vary depending on design features)

APPENDIX 8 - Detailed Costs

Pre-Design Report / Environmental Study Report

Port Credit 2013
Harbour West Parks



Port Credit Harbour West Parks
Cost Estimate - Preferred Alternatives for Shoreline Improvements, Associated Infrastructure and Pond

Area	Sub-Area	Section	Section Length	Treatment	Shoreline Unit Cost	Shoreline Cost	Planting Cost	Construction Subtotal	Construction	Design &	Design &	Total Project
									& Contingency Total	Contingency Total	Construction Sub-Total	Cost
Memorial Park West	Mississauga Canoe Club	A2	20	Boulder Revetment	\$2,400	\$48,000		\$902,000	\$1,118,480	\$161,061	\$1,279,541	\$1,356,314
		AA	55	Stepped Armour Stone Wall	\$3,200	\$176,000		\$48,000	\$59,520	\$8,571	\$68,091	\$72,176
	Dow Rowing Club	A2	70	Boulder Revetment	\$2,400	\$168,000		\$176,000	\$218,240	\$31,427	\$249,667	\$264,647
	Port Credit Memorial	B1	110	Boulder Revetment with Planting Pod	\$2,700	\$297,000	\$75,000	\$168,000	\$208,320	\$29,998	\$238,318	\$252,617
		B3	60	Stepped Wall/Revetment	\$2,300	\$138,000		\$372,000	\$461,280	\$66,424	\$527,704	\$559,367
								\$138,000	\$171,120	\$24,641	\$195,761	\$207,507
Underpass								\$199,500	\$247,380	\$35,623	\$283,003	\$299,983
	Transition North		15		\$2,500	\$37,500		\$37,500	\$46,500	\$6,696	\$53,196	\$56,388
	Lakeshore Road Bridge	C	20	Armour Stone Seawall	\$5,100	\$102,000		\$102,000	\$126,480	\$18,213	\$144,693	\$153,375
	Transition South		30		\$2,000	\$60,000		\$60,000	\$74,400	\$10,714	\$85,114	\$90,220
Marina Park								\$1,226,500	\$1,520,860	\$219,004	\$1,739,864	\$1,844,256
	North Area	D	65	SSP Wall and Concrete Cap	\$7,500	\$487,500		\$487,500	\$604,500	\$87,048	\$691,548	\$733,041
		D		Dock Refurbishing (7)	\$3,500	\$24,500		\$24,500	\$30,380	\$4,375	\$34,755	\$36,840
		E	25	Launch Ramp Upgrade	\$4,300	\$107,500		\$107,500	\$133,300	\$19,195	\$152,495	\$161,645
	South Area	F1	35	Armour Stone Seawall	\$3,200	\$112,000		\$112,000	\$138,880	\$19,999	\$158,879	\$168,411
		F2 and F3	105	Stepped Seawall with Planting Pod	\$4,000	\$420,000	\$25,000	\$445,000	\$551,800	\$79,459	\$631,259	\$669,135
		F2 Doc	20	Floating Launch Ramp and Guides	\$2,500	\$50,000		\$50,000	\$62,000	\$8,928	\$70,928	\$75,184
Rivergate Easement								\$2,444,000	\$3,030,560	\$436,401	\$3,466,961	\$3,674,978
	River Side	GN	45	Armour Stone Revetment Repair	\$3,800	\$171,000		\$171,000	\$212,040	\$30,534	\$242,574	\$257,128
	Transition	GC	40	Armour Stone Revetment Repair	\$4,000	\$160,000		\$160,000	\$198,400	\$28,570	\$226,970	\$240,588
	Hacienda Bay Side	GS	55	Armour Stone Revetment Repair	\$3,800	\$209,000	\$25,000	\$234,000	\$290,160	\$41,783	\$331,943	\$351,860
	Hacienda Bay Side	H	35	Armour Stone Revetment Repair	\$3,400	\$119,000		\$119,000	\$147,560	\$21,249	\$168,809	\$178,937
		All above	160	Elevated Pedestrian Walkway	\$11,000	\$1,760,000		\$1,760,000	\$2,182,400	\$314,266	\$2,496,666	\$2,646,466
Hacienda Bay								\$805,000	\$998,200	\$143,741	\$1,141,941	\$1,210,457
	Beach	I	60	Cobble Beach	\$1,500	\$90,000	\$75,000	\$165,000	\$204,600	\$29,462	\$234,062	\$248,106
	Groyne	I2	20	Groyne/Headland	\$7,000	\$140,000		\$140,000	\$173,600	\$24,998	\$198,598	\$210,514
		I	50	Boardwalk	\$10,000	\$500,000		\$500,000	\$620,000	\$89,280	\$709,280	\$751,837
J C Saddington								\$2,107,500	\$2,613,300	\$376,315	\$2,989,615	\$3,168,992
	Beach	L	250	Cobble Beach (Central Part)	\$3,500	\$875,000		\$875,000	\$1,085,000	\$156,240	\$1,241,240	\$1,315,714
	Central Groyne	M1	50	Groyne/Headland	\$10,000	\$500,000	\$45,000	\$545,000	\$675,800	\$97,315	\$773,115	\$819,502
	West Bay	N	125	Upgrade West Revetment	\$2,300	\$287,500		\$287,500	\$356,500	\$51,336	\$407,836	\$432,306
	Pond						\$150,000	\$400,000	\$496,000	\$71,424	\$567,424	\$601,469

\$12,156,449

NOTES:
Costing does not include back shore conditions such as grading and filling, utilities, parking lot refurbishments, streetscape and site specific park program elements which will be resolved through future detail design
Cost estimates have been updated since October 2012 PIC # 2 to include design and construction, contingencies, general requirements, project administration and applicable taxes.
Estimates for construction costs are based on 2013 pricing.
Assumes the projects are reasonably scheduled to minimize mobilization and demobilization costs.
Modifications of existing outfalls through new shoreline protection works are included in the costs.