

1 Port Street East Proposed Marina Project Draft Environmental Assessment Appendices

Technical Memoranda and
Record of Consultation Supporting Materials



1 Port Street East Proposed Marina Environmental Assessment

Appendix 1 - Technical Memoranda

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sent via email

March 30, 2022

Re: 1 Port Street East Proposed Marina Environmental Assessment

Dear Beata,

MNRFP has reviewed the various proposal alternatives at mississauga.ca/1portstreeteast and the proposed works at 1 Port Street, Mississauga associated with the February 3rd, 2022 Notice of Commencement. It is MNRFP's understanding that through this EA the City aims to investigate expansion of the land base around the eastern breakwater to provide continued marina function and services at this site, as well as create public access to the waterfront, new parkland, and enhance the site's ecological functions.

We note that MNRFP previously provided comments on the draft Terms of Reference on August 19, 2021. At that time the ministry indicated that depending on the alternative selected, and whether or not the lakefill goes beyond the City's existing water lot, an authorization under the Public Lands Act may be required.

It is unclear, based on the existing information provided in the presentation, and available sampling information, how much coldwater habitat (by area and depth) may be impacted by the proposed alternatives.

MNRFP would like to be continue to be circulated on this project as it moves toward detailed design and as more sampling and habitat information becomes available.

Thank you for the opportunity to comment on the proposal. The ministry looks forward to continuing working with the project team as needed to complete this Individual EA.

Regards,
Ken Mott

Ken Mott, District Planner

Please call ahead to make an appointment with our staff.
The local Ministry office is open by appointment only.

Memorandum

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To: Beata Palka
The City of Mississauga

Copy: Credit Valley Conservation

From: M. Sturm, P. Eng.

Date: December 8, 2022

Re: 1 Port Street East Proposed Marina
Coastal Design and Hazards Considerations
Shoreplan File 19-2991

This memo is provided at the request of Credit Valley Conservation (CVC), to facilitate their commenting process during the preparation of the individual environmental assessment for the 1 Port Street Proposed Marina project.

This memo addresses the coastal engineering aspects of the project only, namely:

1. Coastal Conditions
2. Impact on Coastal Processes
3. Shoreline Hazards Assessment

1.0 Coastal Conditions

1.1 Existing Conditions

Various components of coastal conditions at the site were described in the Terms of Reference and further refined during the process of generating alternatives. The existing coastal conditions are described in the attached Appendix A. This appendix contains a draft of the assessment of existing coastal conditions including existing shoreline conditions, bathymetry, lake levels, wave conditions, ice and littoral sediment transport.

1.2 Coastal Design of Preliminary Alternatives

Coastal conditions for the three preliminary alternatives, small, medium and large, were assessed by considering the existing coastal conditions described in Appendix A. A critical aspect of the assessment is the wave conditions and appropriate design conditions were extracted from the analysis of existing condition and applied to

the conceptual design of the protection works and guided the construction methodology development. The design parameters for shore protection will be consistent with requirements of the Provincial Technical Guide (MNR 1998) and consistent with respect to the requirements of the Provincial Policy, specifically with respect to climate change impacts. The design of protection works considered design high water level of 76.1 m GSC. This design high water level was selected by CVC in their updated shoreline management plan. Design waves have a return period of 1 : 100 years. The south side of the small, medium and large alternatives are subjected to design waves in the order of 4.5m, 3.5 m and 2.5 m respectively. The waves along the east side of the fill area delay gradually to reach approximately 1.5 meter near the existing shore.

The protection structures considered in the alternative design stage were armour stone revetments and were designed using standard stability equations. The revetments were assumed to have a slope of 2H:1V and consist of double layer randomly placement armour stone with appropriate underlayers to provide support and filter properties. The crest elevations were approximated by using standard wave run up equations and wave overtopping equations. The further into the lake the lakefill alternative extends, the higher the crest elevation or flatter the slope of the revetment is required.

Quantity estimates for fill material and protection works were developed for the three size alternatives and relative comparison of the three made. Construction times for each of the alternatives were estimated. The quantities of fill and stone materials for coastal protection are presented in Table 1. The estimated construction times are also listed in the table. In the preliminary alternative stage of the design, it was assumed that the lakefill will be completed to an elevation of 78.0 m on average and the crest of shore protection will be in the order of 79.0 m on the south side and gradually reduce to an elevation of 78.0 at the existing shore.

The construction methodology is similar to that applied at the Jim Tovey Lakeview Conservation Area (JTLCA) project. For now, it is assumed that all stone material, including core and berm fill material, will be purchased. Given the relatively small size of the project, in comparison the JTLWC and unknown implementation schedule, the use of concrete rubble was not considered in the planning process but is appropriate if available at the time of construction.

The construction methodology and schedule assume that stone material will be supplied by both truck and by barge. It is assumed that the supply will be split 50/50. Based on recent construction projects completed within the City of Toronto, the supply of stone material by barge or self-unloaders is available and competitively priced. The construction is anticipated to proceed by constructing a berm along the perimeter of the proposed lakefill, creating an enclosed cell that would be filled with core stone material. The

construction of the berms and cell could proceed from both water side and land side simultaneously.

1.3 Coastal Design of Preferred Alternative

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The preferred alternative is a refinement of the large lakefill alternative. The coastal component of the refinement considered the opportunity to enhance aquatic habitat in the area and a refinement of the shore protection structures. It should be noted that the design of shore protection structure is still at the conceptual level. The design wave conditions are illustrated on Figure 1.1. The wave condition at the south end of the lakefill and along the east side are very similar to the existing wave conditions along the existing east breakwater presented in Appendix A.

The construction methodology for the preferred alternative is the same as described above for the preliminary alternatives. The construction methodology and schedule assume that stone material will be supplied by both truck and by barge. It is assumed that the supply will be split 50/50. The construction is anticipated to proceed by constructing a berm along perimeter of the proposed lakefill, creating an enclosed cell that would be filled with core stone material. The construction of the berms and cell could proceed from both water side and land side simultaneously.

The shore protection structures are proposed to be armour stone revetments with 2H:1V slopes, double layer with random placement. The opportunity to undulate the shoreline and create aquatic habitat features along the east side was considered. However, such undulation would reduce the width of the created land and also its functionality. As an alternative, an aquatic habitat feature is proposed at the south end of the lakefill. The proposed feature will create approximately 2,400 sq. m of semi-sheltered moderately shallow water area where substrate can be selected, and structural habitat provided. The concept is presented on Figure 1.2. Details of the substrate and habitat features will be further developed by the project team in consultation with the regulatory agencies. The anticipated wave conditions within this embayment under design storm conditions is shown in Figure 1.3.

2.0 Impact on Coastal Processes

Impacts on coastal processes are typically considered to be either local or regional. Impact may include alteration of sediment transport or waves and wave energy related impacts. These are briefly discussed below.

The impact of the proposed structure on regional sediment transport is null. The proposed structure does not extend any further offshore than the existing structures. Impact on along shore regional transport is controlled by the offshore extent and thus there is no impact on

along shore transport. Impact on cross-shore transport, or on-shore off-shore transport could be caused by creation of a sheltered embayment that creates potential sedimentation areas or concentrate wave energy that would increase transport. The proposed lakefill parallels the existing breakwater alignment and parallels the direction of major incoming waves. As such no such impacts occur.

Local impact can be potentially caused by wave reflections. The south tip of the proposed lakefill is to have a underwater slope between 2h:1v and 3H:1v. This is flatter than the south tip of the existing breakwater. The east side of the proposed fill is to be sloped at 2H:1v. This slope is the same or marginally flatter that the existing east side of the breakwater, thus no change in the local scour pattern along the bottom will occur.

3.0 Shoreline Hazards Assessment

The Provincial Policy Statement (PPS) identifies natural hazards along the shorelines of the Great Lakes and outlines the principles of land management and conservation to ensure public safety. Conservation Authorities or the Ministry of Northern Development, Mines and Natural Resources are responsible for the review of projects under their Regulations and Guidelines. The policy identifies three potential hazards. These are Erosion Hazard, Flood Hazard and Dynamic Beach Hazard. The Technical Guide prepared in 1998 by then Ministry of Natural Resources also identifies Artificial Lands and provides guidance on hazard assessment along these types of shorelines. This is in recognition of the fact that lands may be created that do not have characteristics of natural lands and application of the standard shoreline hazards would be inappropriate. The concept of Artificial Lands is described below.

3.1 Artificial Lands

The concept of "Artificial Lands" is described on the Technical Guide for the Great Lakes –St. Lawrence River System prepared by the Ministry of Natural Resources. The "artificial" classification is noted in the recommended shoreline classification scheme. Requirements and methods of dealing with artificial shores are described in Part 7 of the document entitled "Addressing the Hazard". Despite this recognition of artificial land classification, the Regulations adopted by conservation authorities in the province have not recognized any special regulations or policies that need to be applied to these lands. The regulations and policies of CVC are no different.

Our experience is that artificial lands are treated as special cases and specific agreements consistent with the suggested requirements outlined in the technical guide are applied. The criteria provided in the Technical Guide to define the artificial shore type include those shorelines that:

1. cannot be classified on the basis of their physiographic characteristics due to human activities and/or alterations to the shoreline;
2. involve structural changes that extend inland;
3. involve protection works that exist above and below the waterline and extend alongshore for about 1 km;
4. have the protection works under public ownership and/or are maintained by a public agency or a significant private concern; and
5. have shoreline processes and flood, erosion and dynamic beach hazards which have been significantly altered by the protection work.

It is our professional opinion that the lands created for the support of the marina at 1 Port Street are completely artificial, being constructed by process of lake filling and connections to lands previously created by lake filling. This meets the requirements of point 1, 2, and 5. We also understand that the lands will be ultimately owned by the City of Mississauga, which addresses the requirement of point 4.

We are also of the view that the lakefill meets the requirement of point 3, although the lakefill is only approximately 600 meters long. This landfill is connected to adjacent lands that are already owned by the City of Mississauga or by Crown corporations. The City of Mississauga owns waterfront lands directly to the east up to and including Tall Oaks Park. This is additional approximately 500 meters of shoreline that will become connected to the proposed lakefill. The wharf lands to the west, from which the present marina operates, are owned by Crown Corporation that meets the intent of ownership described in Point 4. This shoreline is also approximately 500 meters long and artificially constructed. Further, the east bank of the Credit River was altered and filled south of Lakeshore Road and is owned by the City of Mississauga. This part of the shore is in the order of 300 meters long and includes J. J. Plaus Park and Snug Harbour.

3.2 Maintenance Access

Since the stability of the artificial lands depends on the structures, the provision of maintenance access is a very critical aspect of any assessment of artificial lands. Very few civil structures are designed to be without the need for some maintenance within the planning horizon. The planning horizon is taken as 100 years within the provincial shoreline hazard context. Maintenance access for shoreline structures is commonly taken as 5 meters to and along the shoreline structure. This travel width allows access for most heavy equipment, such as excavators or cranes.

In the case of 1 Port Street East proposed marina project, a maintenance access of 5 meters is a reasonable width. This site also provides the opportunity to access the works with marine based

equipment. Although marine based construction is generally not considered for shore protection, it is a viable method at this site due to the presence of deep water.

3.3 Maintenance and Monitoring

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Any civil infrastructure works require periodic maintenance and repair and eventual replacement. Shoreline structures, such as shore protection works, are no exception. Design life of coastal infrastructure varies depending on the purpose and nature of the structure. Typically, a design life of 25 to 50 years is used in design. During the design life, maintenance of the structures may be required, but typically is minimal. The potential for maintenance requirements is likely to increase with age of the structure. Thus, monitoring of the condition of the shoreline structures is a prudent practice.

Figure 1.1 Design Wave Conditions, Preferred Alternative

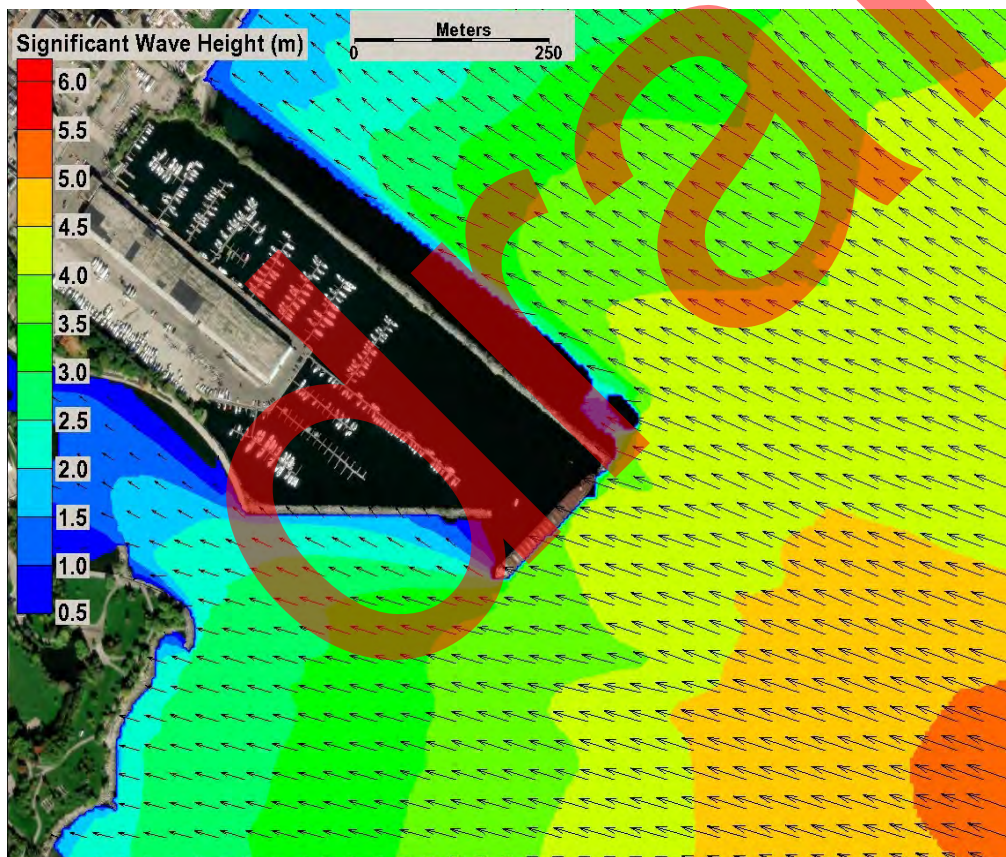
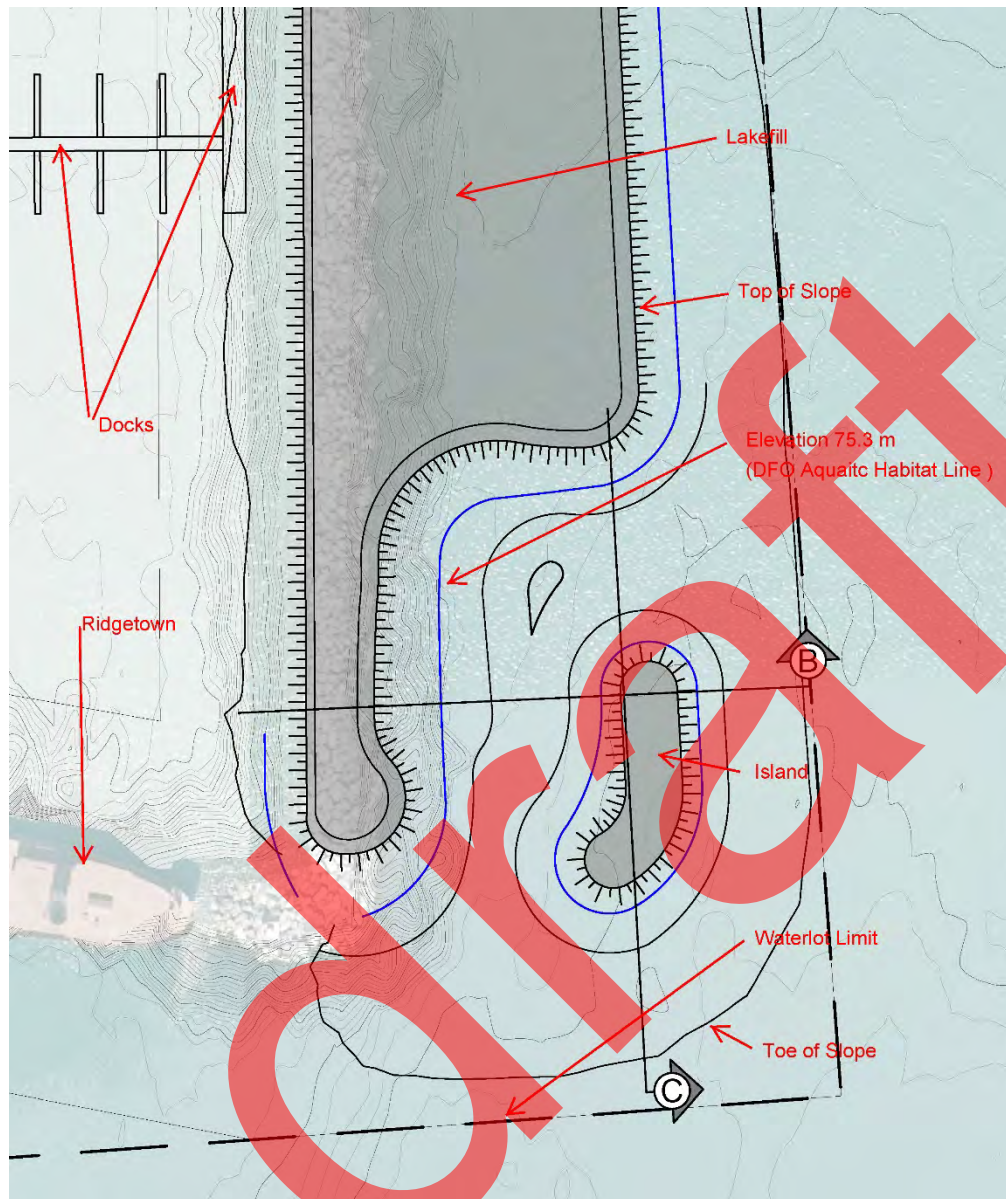
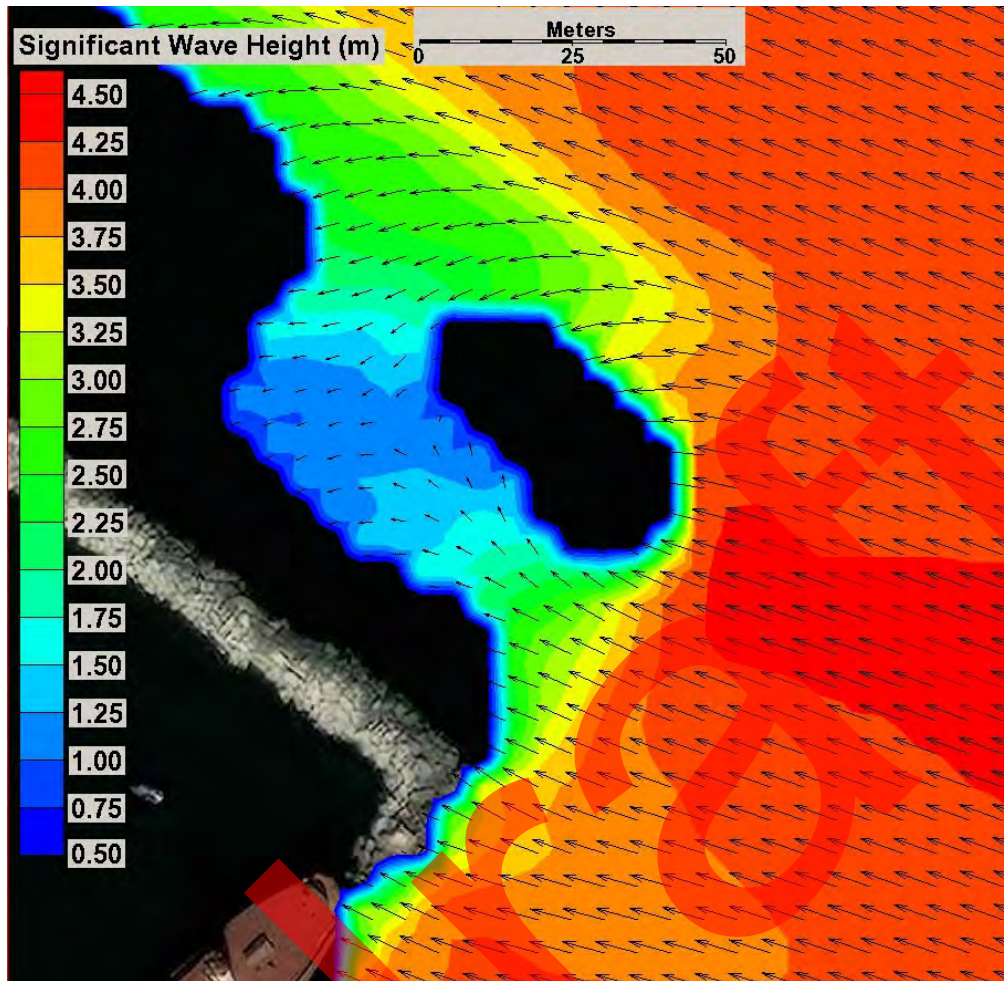


Figure 1.2 Semi-Sheltered Aquatic Habitat Area



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Figure 1.3 Design Wave Conditions In South End Embayment



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Appendix A

draft

**Partial DRAFT REPORT
(Appendix A to CVC Memo 2022 12 08)**

**1 Port Street East Proposed Marina
Environmental Assessment**

Coastal Technical Report



prepared by

**Shoreplan
Engineering Limited**

1 Port Street East Proposed Marina Environmental Assessment Coastal Technical Report

Prepared for

City of Mississauga

by

SHOREPLAN

SHOREPLAN ENGINEERING LIMITED

VERSION	DATE	STATUS	COMMENTS
01	2021-12-08	partial draft	for CVC information only
0			

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Table of Contents

1.0	Introduction	3
1.1	Environmental Assessment Study Areas	3
2.0	Baseline Environmental Conditions	5
2.1	Shoreline	5
2.2	Bathymetry	6
2.3	Lake Water Levels	7
2.3.1	Climate Change	8
2.4	Wave Conditions	9
2.5	Ice and Debris	13
2.6	Littoral Sediment Transport	14
3.0	Development of Alternatives	15
3.1	Dock Layout	15
3.2	Conceptual Shoreline Protection Structures	16
3.2.1	Alternative A	16
3.2.2	Alternative B	16
3.2.3	Alternative C	17
3.3	Volumes Estimates	21
3.4	Capacity of each Alternative	21
	References	23

List of Figures

Figure 1.1	EA Project Study Area.....	3
Figure 1.2	Local Study Area	4
Figure 1.3	Regional Study Area	4
Figure 2.1	Bathymetry in the Project and Local Study Areas.....	6
Figure 2.2	Bathymetry in the Regional Study Area.....	7
Figure 2.3	Distribution of Highest Hindcast Wave Heights and Total Wave Power.....	11
Figure 2.4	Wave Height and Period Exceedance Curves.....	11
Figure 2.5	Peak-Over-Threshold Extreme Value Analysis (Easterly Storms)	12
Figure 2.6	Design Wave Transformation (100-yr wave, 100-yr water level)	12
Figure 2.7	Design Wave Within the Project Study Area.....	13

List of Tables

Table 2.1	General Shoreline Statistics	5
Table 2.2	General Shoreline Protection Statistics	5

1.0 Introduction

The City of Mississauga (City) is undertaking an Individual Environmental Assessment (EA) for the 1 Port Street East Proposed Marina Project (1PSEPM Project). This document describes the coastal engineering work carried out in support of the EA. It describes the baseline inventory of coastal conditions, the development and assessment of alternative concepts, a detailed assessment of the preferred alternative, and the identification of mitigation measures.

1.1 Environmental Assessment Study Areas

The environmental assessment is based on three general study areas; the project study area, the local study area, and the regional study area. The Project Study Area (PSA) is shown in Figure 1.1. It includes a portion of the 1 Port Street East property, inclusive of the water lot, at the mouth of the Credit River in Mississauga. It is bound by Port Street East to the north, Stavebank Road to the west, Helene Street South to the east and Lake Ontario to the south.

The Local Study Area (LSA) is shown in Figure 1.2. It is comprised of the areas within the Port Credit Community Node Character Area and the Old Port Credit Village Heritage Conservation District. The area is bounded by the CN tracks to the north, Mississauga Road to the west, Elmwood Avenue to the east and Lake Ontario to the south. This area includes the primary access roads from the QEW to the project site.

The Regional Study Area (RSA) is shown in Figure 1.3. The RSA extends beyond the LSA. Depending on the particular criterion this may include portions of the Credit River watershed up to approximately 5 km upstream, the Lake Ontario shoreline and shoreline neighbourhoods within the boundaries of the City of Mississauga. This study is used to describe the broader setting for project and to discuss cumulative effects of the project.

Figure 1.1 EA Project Study Area



Figure 1.2 Local Study Area



Figure 1.3 Regional Study Area



2.0 Baseline Environmental Conditions

2.1 Shoreline

Regional Study Area

The majority of the shoreline within the 1PSEPM Regional Study Area has been protected with either formal or informal shoreline protection structures. Some sections of shoreline that have not been intentionally protected appear to be experiencing reduced erosion rates due to the influence of adjacent structures. An example of this is the sand beach shoreline fronting the Lorne Park Estates, immediately adjacent to the northern most headland at Jack Darling Park Shoreplan.

As part of the CVC Lake Ontario Shoreline Hazards study (Shoreplan, 2005) defined a total of 87 shoreline reaches within the CVC watershed. Amongst other attributes, a general shoreline type and shoreline protection type were assigned to each reach. Table 2.1 and Table 2.2 were developed from that data. The shoreline length values were determined from digital mapping provided by the City of Mississauga and exclude major structures such as piers and breakwaters but include the shoreline within the Port Credit marinas and Lakefront Promenade Park.

Table 2.1 General Shoreline Statistics

Shoreline Type	Length (m)	% of Total Length
all reaches	20,145	
artificial shoreline	9,003	45%
cohesive shore with protection structure	7,779	39%
cobble beach	1,454	7%
sand beach	834	4%
cohesive shore with protective beach or rubble	799	4%
unprotected cohesive bank or bluff	276	1%

Table 2.2 General Shoreline Protection Statistics

Shoreline Protection Type	Length (m)	% of Total Length
revetment	6,072	30%
wall	4,332	22%
beach	3,495	18%
wall and revetment	2,924	15%
rubble	1,417	7%
headland-beach (artificial)	904	4%
none	858	4%
rip-rap berm	143	< 1%

The nearshore bottom within the 1PSEPM Regional Study Area is composed mainly of shale bedrock, overlain with erodible cohesive tills varying from low plains to low and moderate height bluffs. Extensive filling has created a number of reaches that are characterized as artificial shores.

Examples of beaches within the 1PSEPM Regional Study Area include cobble beaches at Rattray Marsh, the Petro Canada Clarkson Refinery, Lakeside Park and Fusion Park; and sand beaches at Richard's Memorial Park, Lorne Park Estates and Jack Darling Park, and adjacent to the mouth of Etobicoke Creek.

2.2 Bathymetry

Regional, Local and Project Study Areas

Figure 2.1 illustrates the bathymetry within the local and project study areas. Bathymetry reveals both the depth of water and the topography of the lakebed. This information is important in understanding the cost and effects of placement of lakefill and is a key input to the numerical models used to determine the site wave conditions. Figure 2.2 shows the bathymetry used in the nearshore wave transformation model described in Section 2.4. The data presented in Figure 2.2 was synthesized from a number of Canadian Hydrographic Service survey field sheets.

Figure 2.1 Bathymetry in the Project and Local Study Areas

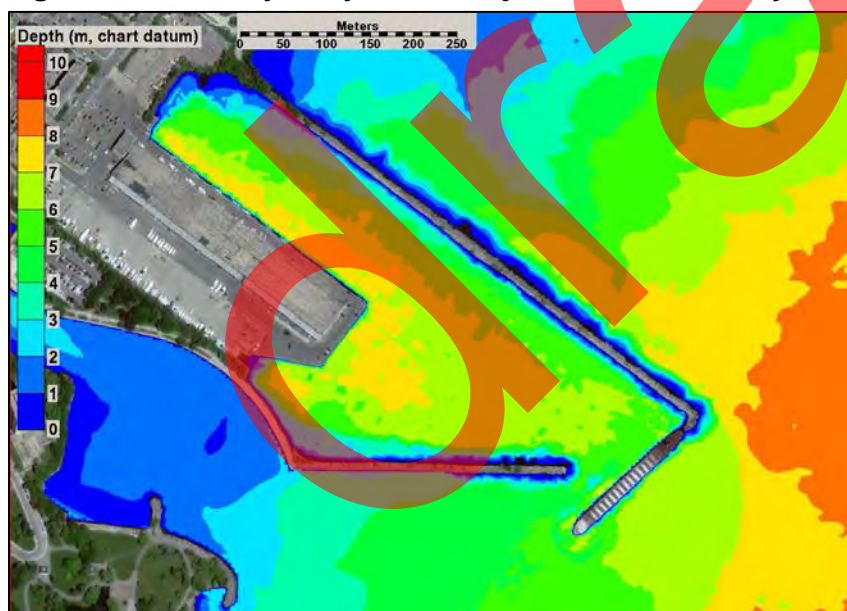
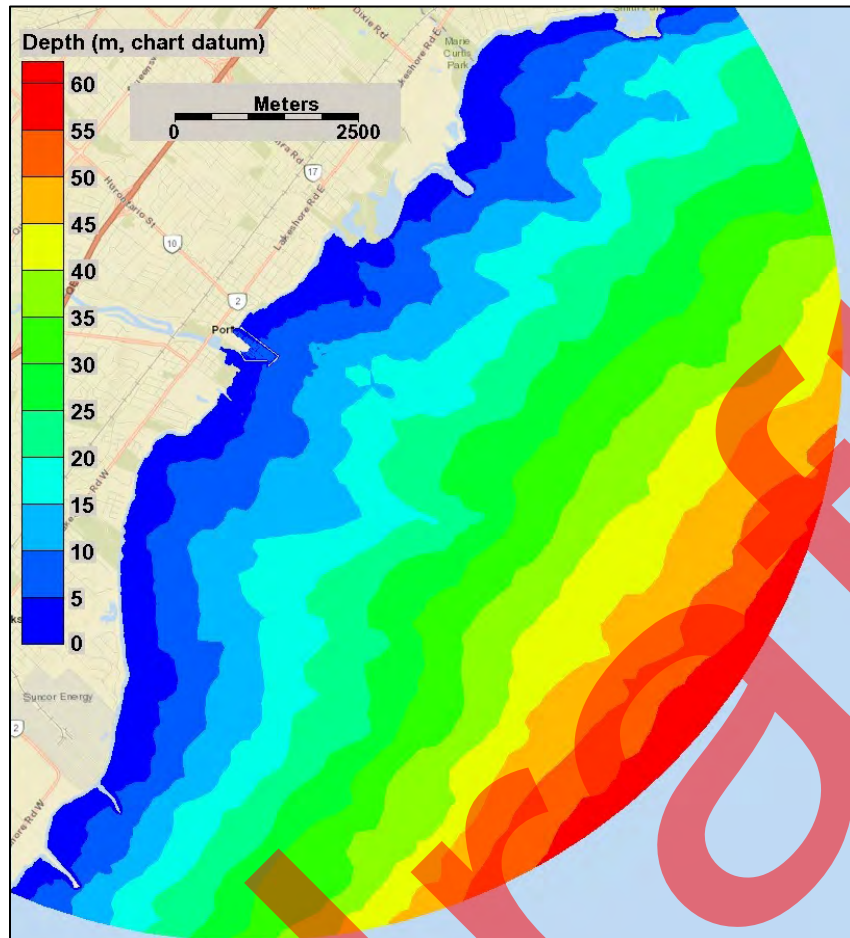


Figure 2.2 Bathymetry in the Regional Study Area



2.3 Lake Water Levels

Regional, Local and Project Study Areas

Water levels on Lake Ontario fluctuate on short-term, seasonal and long-term basis. Water levels of the Great Lakes, including Lake Ontario, are referenced to chart datum. Chart datum is generally selected so that the water level seldom falls below it. The referenced chart datum on the Great Lakes is the International Great Lakes Datum (1985). For Lake Ontario the chart datum is 74.2 m. Nautical charts refer to this datum. The chart datum is periodically adjusted for the differential movement of earth's crust.

Seasonal fluctuations reflect the annual hydrologic cycle which is characterized by higher net basin supplies during the spring and early part of summer with lower supplies during the remainder of the year. Seasonal water levels on Lake Ontario generally peak in the summer (typically in June) with the lowest water levels generally occurring in the winter (typically in December). The average annual water level fluctuation has been approximately 0.6 metres, but this is changing. Although water levels below chart datum are rare, the lowest monthly mean on record was approximately 0.46 metres below chart datum.

Short-term fluctuations last from less than an hour up to several days and are caused by local and regional meteorological conditions. These fluctuations are most noticeable during storm events when barometric pressure differences and surface wind stresses cause temporary imbalances in water levels at different locations on the lake. These storm surges, or wind-setup, are most noticeable at the ends of the Lake, particularly when the wind blows down the length of the Lake.

Long-term water level fluctuations on the Great Lakes are the result of persistently high or low net basin supplies. More than a century of water level records show that there is no consistent or predictable cycle to the long-term water level fluctuations. Some climate change studies that examined the impact of global warming have suggested that long-term water levels on the Great Lakes will be lower than they are today. Those changes, however, are expected to have a lesser impact on Lake Ontario than on the upper lakes because the Lake Ontario water levels are regulated. For the time being most approving agencies, including CVC, require that the 100-year instantaneous water level (the peak water level that has a 1% probability of occurring during any given year) be used for the design and assessment of shoreline protection structures.

MNR (1989) calculated instantaneous water levels for all Canadian shores on the Great Lakes using a combined probability analysis of monthly mean lake levels and storm surges. A coarse grid circulation model was used to interpolate surge values between stations where measured data was used to calculate the surge height return periods. Toronto and Burlington were the data stations either side of the Mississauga sector. The water levels presented in that report were typically used for designs and assessments, but the 2017 and 2019 high water level have led to a re-assessment of those values. CVC recently adopted 100-year design water level values of 76.0m CGVD for development east of the Clarkson Pier and 76.1m CGVD for development west of the Clarkson Pier. Those values are used in the EA. The Project Study Area is east of the Clarkson Pier, where the 100-year design water level is 76.0m CGVD.

2.3.1 Climate Change

Climate change is expected to impact both water levels and storm conditions. A considerable amount of research has been done on climate change and its expected effects on the Great Lakes, but while results vary considerably, there is general consensus on several key points. Overall, storm frequency and intensity are both expected to increase, while mean water levels may fall. Climate change impacts on Lake Ontario water levels are expected to be less than on the other Great Lakes because its water levels are regulated.

Lofgren et al (2002) used two general circulation models to provide input to a suite of hydrologic models for the Great Lakes basin. The Coupled General Circulation Model (CGCM1) from the Canadian Centre for Climate Modelling and Analysis predicted a drier future climate while the HadCM2 model from the United Kingdom Meteorological Office's Hadley Centre for Climate Prediction and Research predicted a wetter future climate. The CGCM1 model results predicted lower lake levels due to a decrease in precipitation, and an increase in air temperature which results in increased evaporation. The HadCM2 model results predicted a small increase in water levels, indistinguishable from the natural variation that occurs on Lake Ontario. The predicted water level increase was caused by increased precipitation and a smaller increase in

air temperature. Table 2.3 shows the predicted changes in annual mean lake levels from the two models, for 2030, 2050, and 2090.

Table 2.3 Predicted Water Level Changes from Lofgren et al (2002)

Predicted Changes in Lake Ontario Annual Mean Water Level (m)			
model	2020	2050	2090
CGCM1	-0.35	-0.53	-0.99
HadCM2	+0.02	+0.04	+0.01

McDermid et al. (2015) synthesized available science on the observed and predicted impacts of climate change in the Great Lakes basin. They reported a lack of clarity in the understanding of multiple factors influencing water level projections for the Great Lakes, and a low confidence in the current projections of future water levels resulting from climate change.

Bonsal et al (2019) noted that disturbances to the water cycle by humans (dams, diversions and withdrawals) make it difficult to discern climate-related changes. They also noted that most studies of future levels used models that include phenomena that can have significant effects on water balance, such as lake-effect snow, which transfers large amounts of water from the lake to the land. Projected net basin supplies showed changes to the season cycles for 2041-2070 compared with 1961-2000 producing an increase in water levels during the winter and early spring and a decrease in summer and early fall. Overall estimates were a decrease in net basin supply of 1.7% to 3.9% in Lakes Superior, Michigan, Huron, and Erie, and 0.7% in Lake Ontario. On average, under a range of emission scenarios, most regional climate model studies project a lowering of future Great Lake levels by 0.2 m for the 30-year time period centred on the 2050s, as compared to the 1971–2000 mean. However, there is a considerable range (from a 0.1 m increase to a 0.5 m decrease). They also noted a low confidence in the estimate of future water levels as a result of climate change. All of the studies they reviewed agreed that there will continue to be large year-to-year and multi-year variability in lake levels, possibly even above and below the historically observed extremes

Given the low confidence in predicted future water levels, the design water level described in Section 2.3 was not changed to account for the potential impacts of climate change.

2.4 Wave Conditions

Regional, Local and Project Study Areas

Due to a scarcity of locally measured wave conditions, a process known as hindcasting is used to develop a long-term wave database suitable for statistical analysis. Hindcasting uses recorded wind data to model the wave conditions expected to have occurred due to those winds. By hindcasting we can produce wave climates which represent expected conditions over a period of years.

Wave conditions within the study area were determined by first hindcasting waves at an offshore location where wave generation is not effected by water depth, then transferring those

waves in to the nearshore region accounting for the effects of refraction, diffraction, and wave breaking.

A 48-year wave hindcast was completed by using Toronto Island wind data to produce deep water wave conditions offshore of the site. Wind data recorded from January 1, 1973 to December 31, 2020 was used to produce hourly estimates of the deep-water significant wave height, peak wave period and mean wave direction. Wind data prior to 1973 was not used due to the relatively high occurrence of missing data.

The hindcast was prepared using Shoreplan's parametric hindcast model PHEW. Toronto Island wind data was selected as the best wind data source for Lake Ontario hindcasting on the basis of extensive calibration and verification exercises carried out on different Shoreplan projects including the Etobicoke Motel Strip (Shoreplan, 1995), Port Union Road (Shoreplan, 1998) and Frenchman's Bay (Shoreplan, 2009). During those projects waves hindcast with Trenton, Toronto Island, Burlington, Hamilton and St. Catharines wind data were compared to measured wave data from a total of twelve buoys deployed at nine locations (Kingston, Point Petre, Main Duck Island, Prince Edward Point, Port Hope, Cobourg, Toronto, Burlington and Grimsby). All measured wind and wave data was obtained from Environment Canada.

The general purpose of the hindcast calibration and verification undertaken was to determine which measured wind data set best represents the actual over-water winds that generate waves. This was done by hindcasting to sites where wave data had been measured then comparing the hindcast and measured waves. Typical calibrations involved scaling wind speeds to improve the overall match. It was found that Toronto Island wind data provided the best hindcasts for Central and Western Lake Ontario.

The PHEW hindcast model has been used for coastal assessments and coastal structure designs at numerous sites along western Lake Ontario including Frenchman's Bay, Port Union Road, the Scarborough Bluffs, Ashbridges Bay, Tommy Thompson Park, Ontario Place, Humber Bay Parks, Mimico Linear Waterfront Park, Lakefront Promenade Park, Port Credit, Oakville Harbour, Shell Park, Burloak Waterfront Park, Burlington Beach, Fifty Point, Grimsby Waterfront Parks and the entrance to the Welland Canal.

The deep-water wave climate offshore of Port Credit has a bi-nodal distribution of the total wave power with predominant easterly and southwesterly peak. Figure 2.3 shows the directional distribution of the highest wave heights and the total wave power from the hindcast data. Figure 2.4 presents wave height and period exceedance curves, which show the percentage of time any given wave height or period is exceeded. Figure 2.5 shows the results of an extreme value analysis completed in order to determine a design wave height. For structural design the 100-year return period wave condition is used. At the upper 90% confidence interval the 100-year wave condition has a significant wave height of 5.9m with a peak wave period of 10.5 seconds. That wave comes from the east.

The 100-year offshore wave was transferred in to the project study area using the SWAN two-dimension spectral wave model developed at Delft University of Technology. The model simulates a steady-state spectral transformation of directional random waves co-existing with ambient currents in the coastal zone. It includes features such as wave generation, wave reflection, wave diffraction, and bottom frictional dissipation. Model bathymetry (described in Section 2.2) was developed from Canadian Hydrographic Service field sheets. A flexible grid

was used with grid spacing ranging from approximately 5m in project study area to 250m at the offshore boundary.

Figure 2.6 shows the 100-year offshore wave condition transferred inshore at the 100-year instantaneous water level. This represents the upper limit of design conditions usually considered in coastal applications. Extreme values of both offshore wave conditions and water levels are typically considered because both play a major role in determining the nearshore wave condition. Figure 2.7 shows the same model results within the project study area.

Figure 2.3 Distribution of Highest Hindcast Wave Heights and Total Wave Power

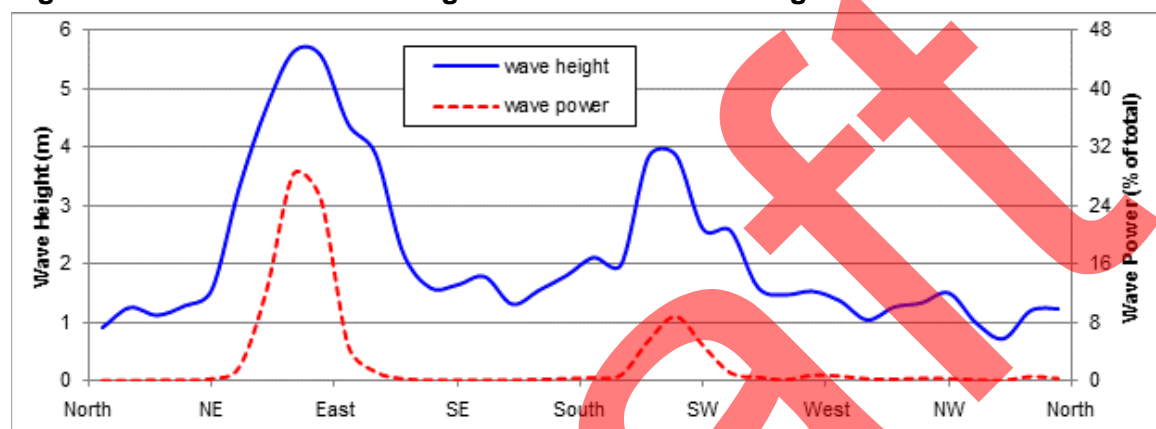


Figure 2.4 Wave Height and Period Exceedance Curves

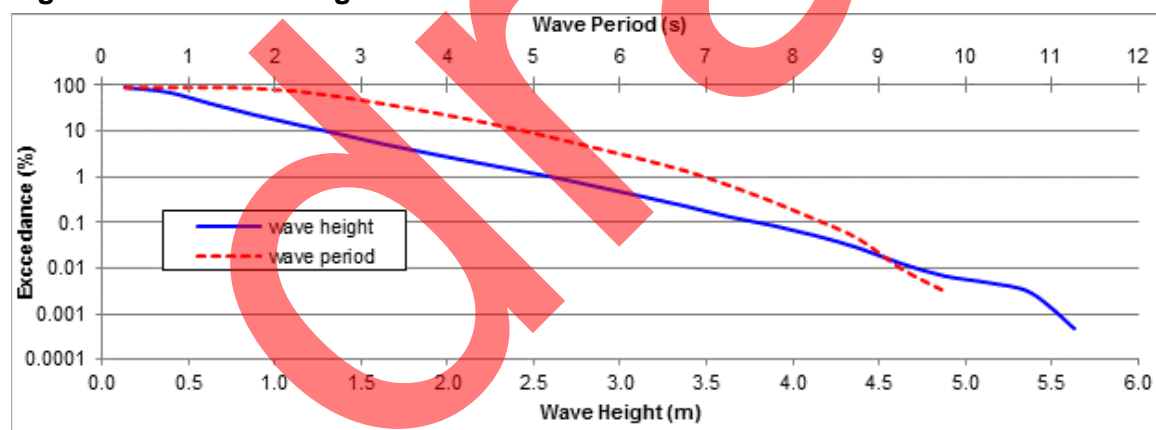


Figure 2.5 Peak-Over-Threshold Extreme Value Analysis (Easterly Storms)

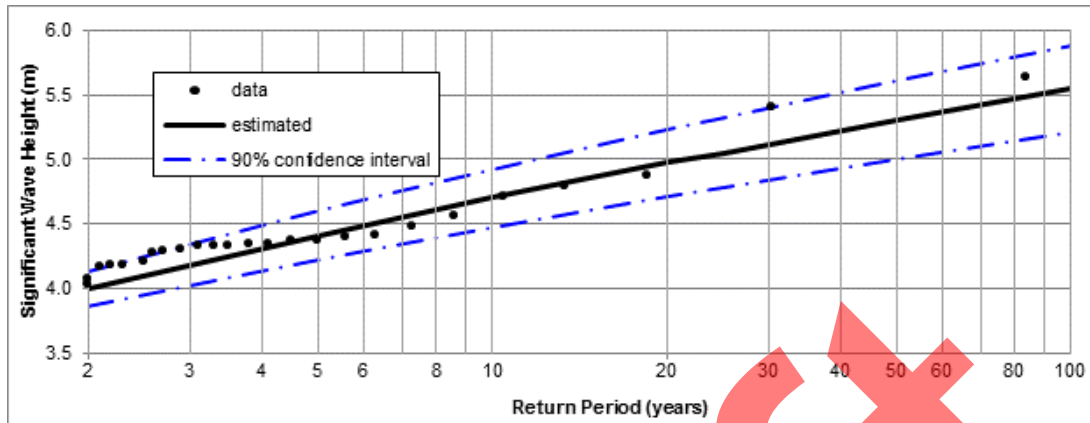


Figure 2.6 Design Wave Transformation (100-yr wave, 100-yr water level)

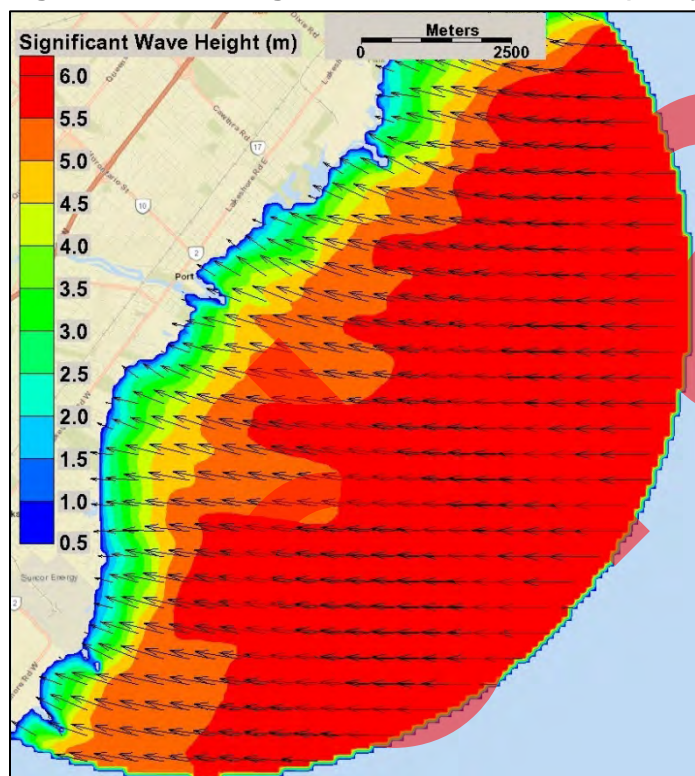
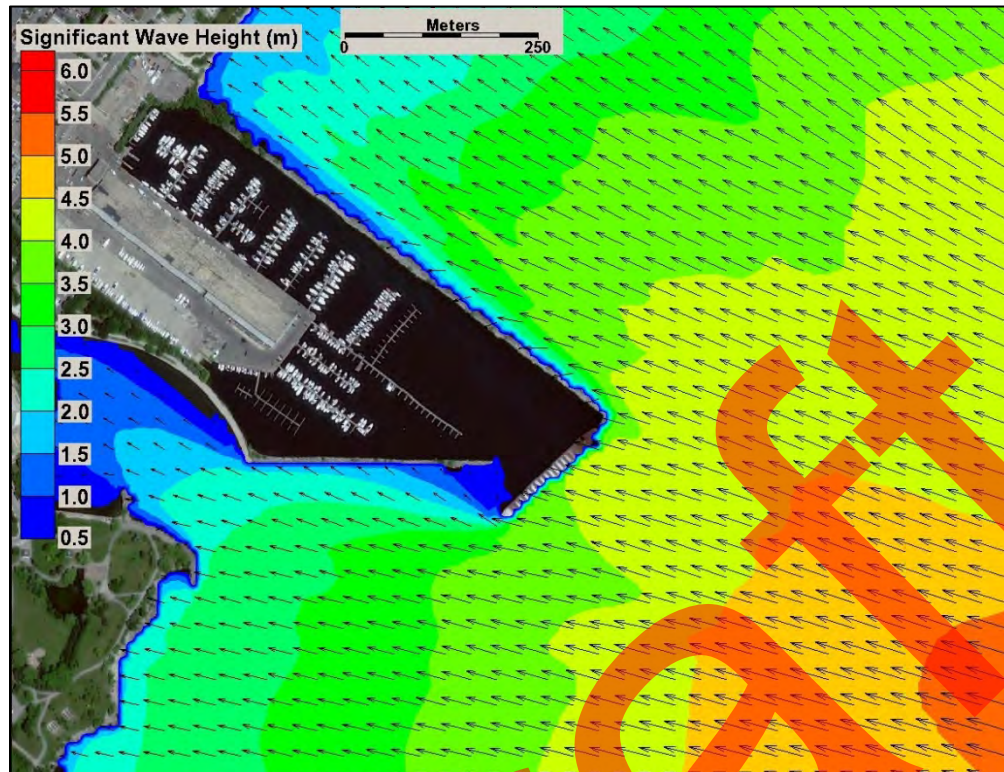


Figure 2.7 Design Wave within the Project Study Area



2.5 Ice and Debris

Regional, Local and Project Study Areas

Ice cover and winter mean ice cover on Lake Ontario has been declining since the early 1970s, and this is attributed to increasing surface water temperatures. Increases in air temperature are generally coincident with increases in water temperature, with the greatest warming and associated reductions in dissolved oxygen anticipated in the nearshore area. Shore ice, which is ice that forms around the perimeter of the lake, can both protect and damage shorelines, depending upon local conditions (Credit Valley Conservation, 2018).

CVC conducted ice monitoring along the shoreline in February 2014 and found that ice accumulation was greatest in protected areas (with complete coverage in the Credit River upstream of Lakeshore Road and in Lakefront Promenade Park embayment and marina) and areas of shallower depth (e.g. Rattray Marsh beach).

Debris from various watercourses and storm sewer systems is typically made up of urban refuse such as plastic bags, water bottles, and take-out containers, as well as woody debris such as sticks and logs which is considered beneficial. Debris is widely scattered across beach shorelines during storm events and tends to collect against structures that extend out into the lake.

2.6 Littoral Sediment Transport

Regional, Local and Project Study Areas

The shoreline from Burlington to Toronto is generally referred to as a non-drift zone due to the lack of littoral (coastal) sediments. On many shores of the Great Lakes, littoral sediment supply originates from erosion of shoreline bluffs and the nearshore lakebed. Within the regional, local and project study areas, the majority of the shoreline has been hardened, essentially eliminating bluff erosion, and the nearshore lakebed is erosion-resistant bedrock. Some sediment transport does take place because of nearshore bottom deposits, but there is no significant source of new littoral material. Sediment introduced via the watercourses (creeks, rivers, etc.) that discharge into Lake Ontario is typically fine grained and tends to deposit in deeper water offshore of the littoral zone. Littoral Sediment Transport patterns will not be notably altered by any of the alternatives considered.

3.0 Development of Alternatives

The three alternative plans of lakefilling are presented on Figures 3.1 to 3.3 and illustrate a range of fill alternatives being considered for assessment, Alternatives A, B, and C. These layouts were developed to allow for comparison of the fill alternatives. The figures also show associated dock layouts within the marina basin. Brief descriptions of the alternatives are provided below.

The size of Alternative A, the smallest of the three, is based on work carried out in the preparation of the Mississauga Marina Business Case Study (2015). A lakefill of this size was required to support the marina repair/maintenance shop operations by providing winter storage for the number of boats that was expected to sustain winter operation of the shop.

Each landform has a “green” public space at the south end. The green space represent land area that remains after the parking requirements for the marina are satisfied. The parking requirements are based, except for the smallest lakefill alternative, on 0.6 ratio of parking spaces to slips as per City’s requirements. Additional 30 spaces are added as suggested on the Planning Partnership report. The smallest alternative is based on a parking ratio of 0.5 and no additional public parking spaces.

The crest elevation of the lakefill structure was established to be 78.0m GSC, which is approximately 3 m above typical summer water level. This was chosen to remain approximately level with Port Street. The conceptual lakefill design for all alternatives involves constructing a stone access berm on the lakebed up to elevation 78.0m with a crest width of 6m to allow for construction equipment to move along the berm. The access berm will be positioned along the eastern and southern boundaries of the lakefill extension, so that the eastern toe of the berm is positioned just inside the existing water lot, with spatial allowances for installing shore protection structures.

The western (interior) slope of the access berm will have a 1.5H:1V slope, while the eastern slope will feature a gentler 2H:1V slope to increase the stability of the shore protection structures. With the access berm completed, the space between the existing breakwater and access berm will be filled. This fill will be placed on top of the existing breakwater as well to bring the lakefill up to an even 78.0m across the structure.

3.1 Dock Layout

The typical dock layout used to assess basin capacity was created using an average slip of 11 m. The dock layout follows the general dock pattern established in the preferred alternative identified in the Mississauga Marina Business Case Study (2015). An access dock parallels the east breakwater/landform. This dock is accessible from the north shore and may be also accessible from the east breakwater/landform. This main access dock will be minimum 4 meters wide. Main docks extend in the westerly direction from the access docks and support finger docks that extend north and south from the main docks. The main docks are proposed to be 2.4 m wide and finger docks are 1.0 m wide. Finger docks are spaced 10 meters apart (clear distance) and are 11 m long. Fairways are set at twice the length of the slips or 22 meters. This results in the main docks being spaced 46.4 meters apart central line to central line. This layout is based on typical design requirements and an adjustment can be made in the detailed design

phase. The actual basin will ultimately have a mix of various sizes of slips to accommodate various sizes of boats expected to populate the basin.

For the small (A) and medium (B) size lakefill alternatives, the dock layout shows seven main dock spines extending from the main access dock in the north part of the basin directly opposite the CLC wharf. Each of these main docks accommodates 28 slips/boats. Each main dock may accommodate 30 boats if boats are added along the side of the main access dock. This is not a desirable location and it is suggested that it is filled only once the capacity of the basin is reached. Using the 28 slip count, the proposed layout accommodates a total of 196 slips.

The large lakefill landform allows for docks to be extended to the south end of the basin. The potential layouts are illustrated on Figures 3.3. The number of slips illustrated in these layouts is 456.

3.2 Conceptual Shoreline Protection Structures

For each alternative, armour stone revetment structures were designed to stabilize and protect the lakefill extension of the pier. Shore protection design assumes that the landforms will be protected with armour stone revetments. Typical cross sections have been developed.

The lake facing slope of the access berm will be covered with a filter layer of rip rap overlain by a double layer of random placement armour stone. The size of the armour stone will increase farther offshore along the lakefill extension where larger waves are expected to break against the structure. In all locations double 4-6 tonne toe armour stones are required to stabilise the revetment structure and to prevent future undermining from scour.

3.2.1 Alternative A- Small Lakefill

For the small alternative, the lakefill would extend approximately 200m offshore. The design wave conditions in this area offshore require the main body of the structure be protected by a double layer of 2-4 tonne random placement armour stone revetment. The southern end of the structure will experience harsher wave conditions and will require 3-5 tonne armour stone. The armour stone revetment will rise to an elevation of 78.0m, in line with the top of the lakefill. The crest width of the revetment will be approximately 4m, backed by a rip rap splash pad to absorb water from wave overtopping. The crest has been designed to reduce wave overtopping water during design conditions while maintaining a low elevation of the structure to avoid blocking sightlines from the park.

3.2.2 Alternative B – Medium Lakefill

For the medium alternative, the lakefill would extend approximately 340m offshore. The design wave conditions in this area offshore require the structure be protected by a double layer of 3-5 tonne random placement armour stone revetment. This armour stone size increase would begin from the point where Alternative B extends beyond Alternative A. The southern end of the structure will be protected by 3-5 tonne armour stone as well. The armour stone revetment will rise to an elevation of 78.5m for the extension beyond Alternative A. The crest width of the revetment will be approximately 4.5m, backed by a rip rap splash pad to absorb water from wave overtopping. The crest has been designed to reduce wave overtopping water during

design conditions while maintaining a low elevation of the structure to avoid blocking sightlines from the park.

3.2.3 Alternative C – Large Lakefill

For the largest alternative, the lakefill would extend approximately 690m offshore. The design wave conditions in this area offshore require the structure be protected by a double layer of 3-5 tonne random placement armour stone revetment. This armour stone size increase would begin from the point where Alternative C extends beyond Alternative B. The southern end of the structure will experience harsher wave conditions and will require 4-6 tonne armour stone. The armour stone revetment will rise to an elevation of 79.0m for the extension beyond Alternative B, as the larger waves pose a greater overtopping threat. The crest width of the revetment will be approximately 5m, backed by a rip rap splash pad to absorb water from wave overtopping. The crest has been designed to reduce wave overtopping water during design conditions while maintaining a low elevation of the structure to avoid blocking sightlines from the park.

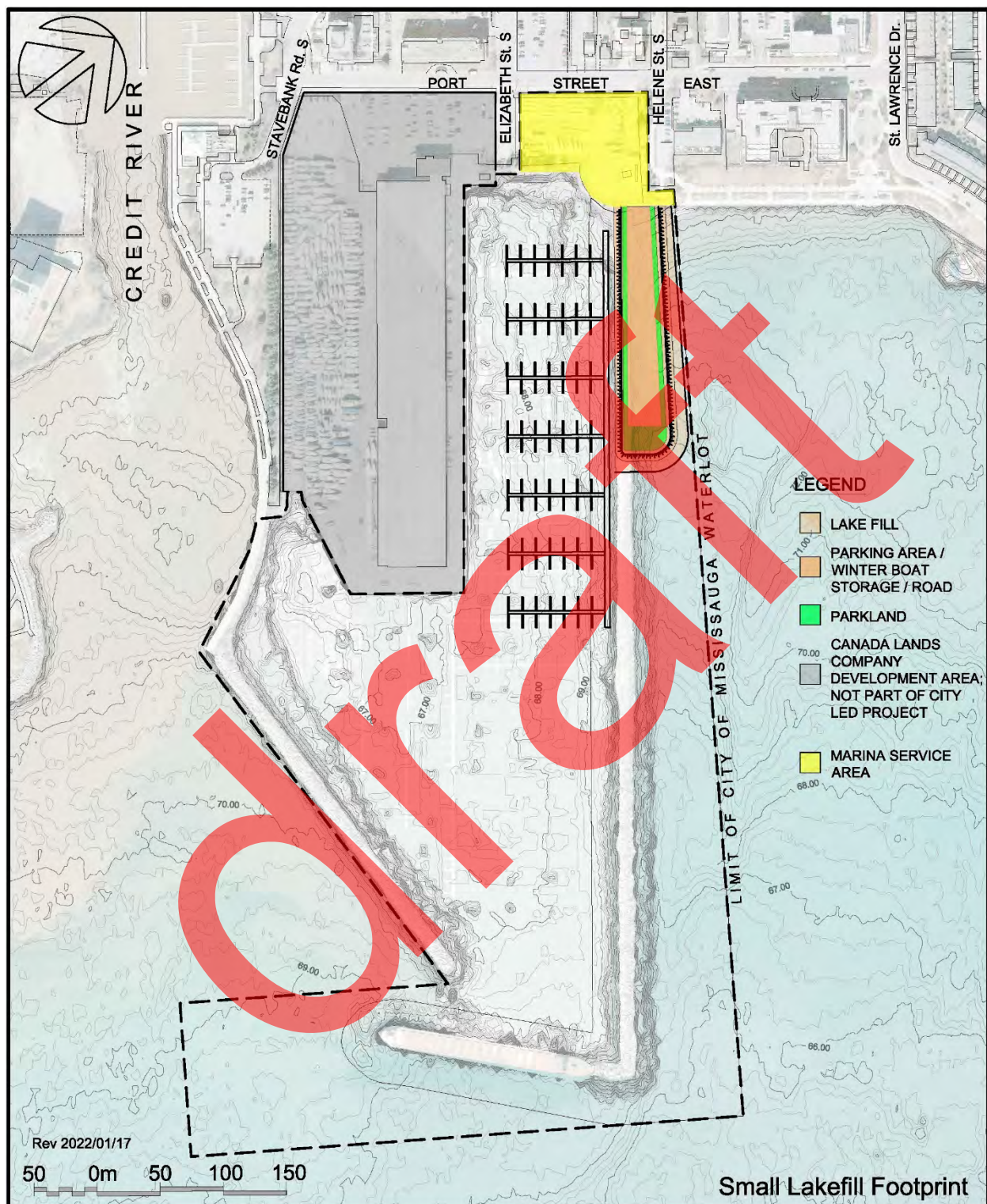


Figure 3.1 Alternative A, Small Lakefill

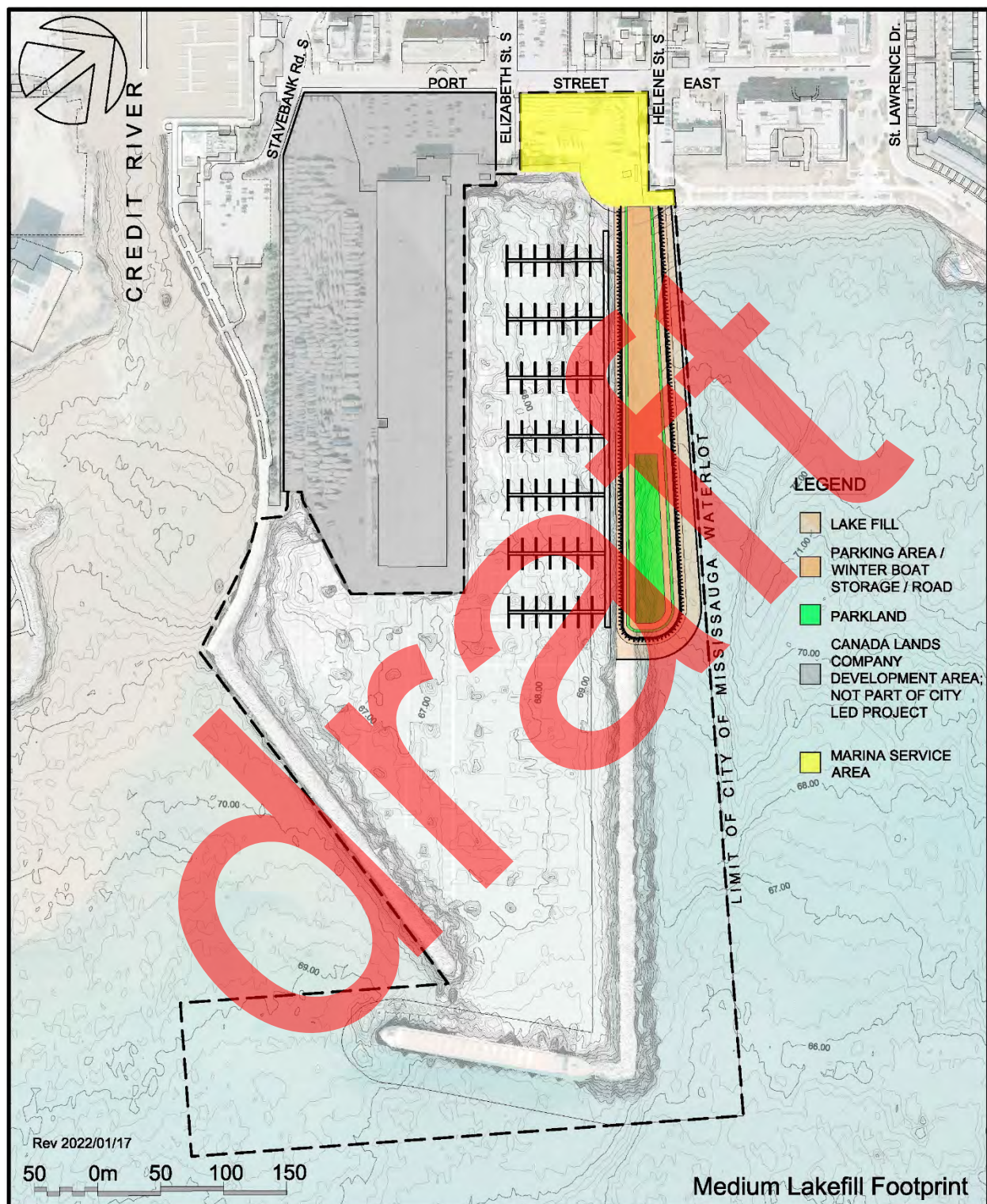


Figure 3.2 Alternative B, Medium Lakefill

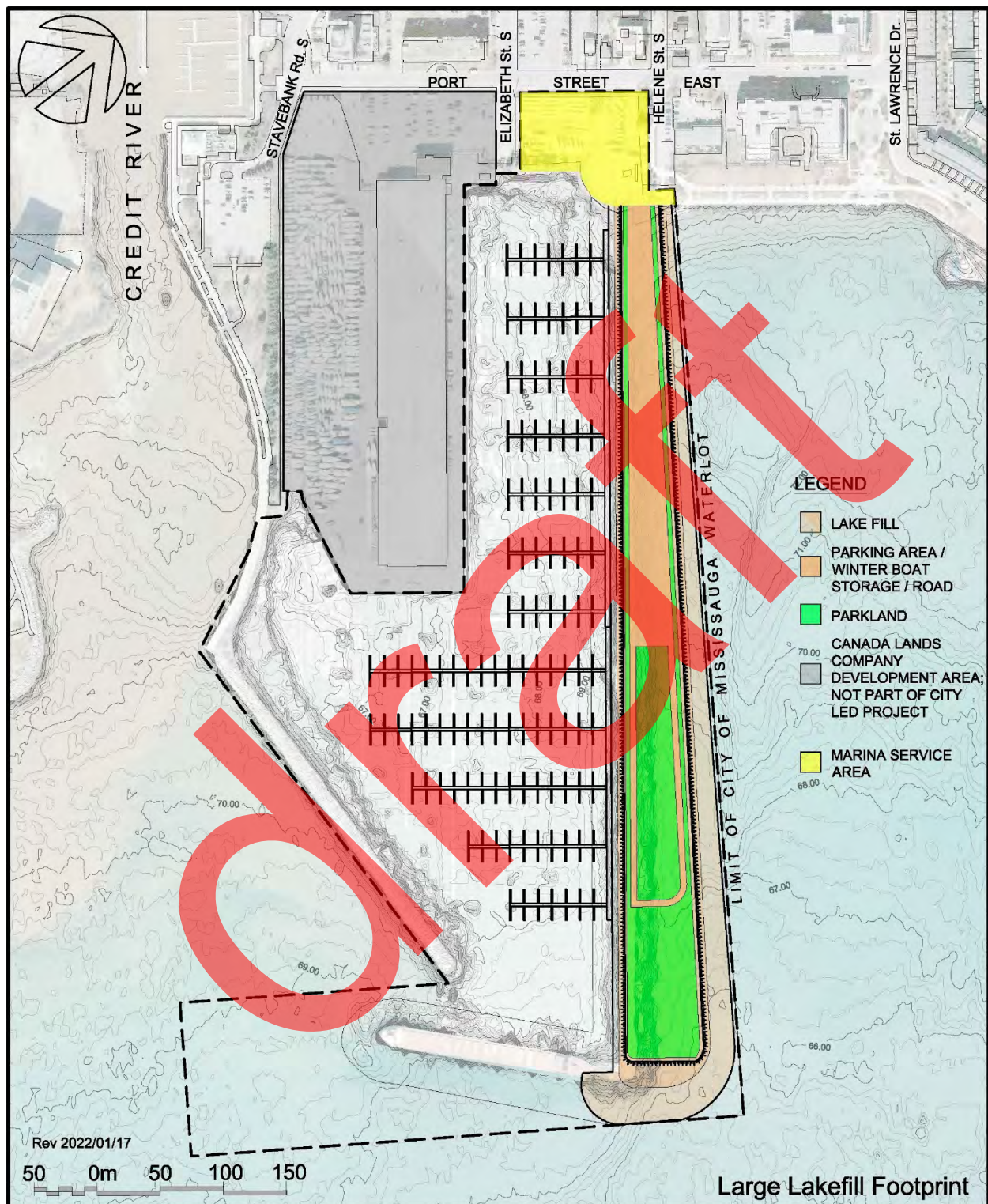


Figure 3.3 Alternative C, Large Lakefill

3.3 Volumes Estimates

The required volumes of material for each alternative were estimated by first drafting a conceptual cross section of the extended pier at the halfway point from shore of the Alternative A extension, halfway between the ends of the A and B extension, and again between the B and C extensions. This cross section was drawn using the average lakebed elevation and pier structure width at each cross section location. With the cross sections drafted, cross-sectional areas of each element (access berm material, confined fill, rip rap, and armour stone), could be measured.

The volumes were then estimated by taking cross-sectional areas from a typical cross section midway along each conceptual pier alternative. According to Figure 2.1, the lakebed elevation decreases linearly along the length of the existing breakwater. Therefore, volumes for each design alternative were obtained by averaging the cross-sectional areas from each midpoint cross section along the length of the proposed design and by multiplying by the length of the extension. For Alternative A, the cross sectional areas were multiplied by the length (195m) to calculate the volumes for the “trunk” of the structure. The volumes required to construct the “head” of the structure were then calculated for the portion where the shore protection structure wraps around the pier into the original breakwater. For Alternative B, the volumes of the trunk for A were added to the volumes of the trunk for B, plus the head of the structure for B. For Alternative C, the trunks of A, B, and C are added to the head of C for the total volume.

Breakwater Structure	ALTERNATIVE A (m ³)	ALTERNATIVE B (m ³)	ALTERNATIVE C (m ³)
<i>Armour Stone (tonnes)</i>	14000	30000	72000
<i>Rip Rap (tonnes)</i>	4000	9000	26000
<i>Access Berm (tonnes)</i>	37000	88000	262000
<i>Confined Fill (tonnes)</i>	33000	79000	216000
TOTALS	88000	206000	576000

3.4 Capacity of each Alternative

The capacity of the small, medium, and large lakefill Alternatives mentioned in the description of the alternatives is summarized in the below table.

Available Features	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
<i>Boat Slips</i>	196	196	456
<i>Parking Spaces</i>	130	150	340
<i>Winter Storage Spaces</i>	50	60	140
<i>Park Area (m²)</i>	500	4600	15000

The reasons for the proposed number of boat layouts for small and medium size lakefill alternatives are as follows. First, although the exact number of slips that were occupied last season or will be occupied this coming season is not known, it is expected that demand in the

order of 200 boats will exist in 2023 when the transition plan will be implemented. A greater number of slips cannot be provided without upgrading the outer part of the existing breakwater or extending the lakefill. The outer part of the existing breakwater is very low and excessive wave overtopping may occur that could damage docks and moored boats.

Relating this dock slip layout to the parking capacity of the lakefill, the small alternative can support the parking requirement for the 196 slips. The requirement is for 100 spaces using a parking ratio of 0.5 with 30 spaces added for general public parking. The parking ratio of 0.5 was suggested in both the Business Plan Study and the Planning Partnership study. The resulting south end park area is very small. The park area is estimated to be in the order of 500 sq. m.

The medium size lakefill can readily accommodate the 196 slips. The requirement is for 120 parking spaces using a parking ratio of 0.6 with 30 spaces added for general public parking. The parking area could accommodate up to 60 boats for winter storage. The park area is estimated to be in the order of 4,600 sq. m.

The 456 slip layout requires 310 parking spaces using a parking ratio of 0.6 with the 30 spaces added for general public parking. The parking area could accommodate up to 140 boats for winter storage. The remaining park area is estimated to be in the order of 15,000 sq. m.

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From: Kilis, Jakub <Jakub.Kilis@cvc.ca>
Sent: Tuesday, January 10, 2023 3:57 PM
To: Beata Palka <Beata.Palka@mississauga.ca>
Cc: Milo Sturm <msturm@shoreplan.com>
Subject: CVC Comments - 1 Port Street East Proposed Marina EA - Coastal Design and Hazards Considerations Memo (CVC File No. EA 19/012)

Hi Beata and Milo,

Happy New Year. CVC staff have completed our review of the Coastal Design and Hazards Considerations memo and offer the following comments for your consideration for the future EA submission:

1. An analysis and discussion of impacts to the existing flooding and erosion hazards as a result of the proposed lakefill. This is to include the delineation of the new hazard limits for the future condition.
2. MNR guidelines (Technical Guide for the Great Lakes – St. Lawrence River System, Part 7 – Addressing the Hazards) states for artificial shorelines that the functional performance and life span of existing structures to be confirmed by engineering study. Will the functional performance of the proposed shoreline protection and life span be confirmed? This should be the same or an improvement to existing conditions.
3. Provide additional details for the monitoring plan of the proposed shoreline protection works. Will this be the City of Mississauga's responsibility or a consultant's responsibility?
4. The new breakwater must consider erosion and include the long-term stable slope inclination of the lakefill material with a factor of safety based on MNR guidelines. Please confirm.

Please let me know if you have any questions about the above,
Jakub

I'm working remotely and in the office. The best way to reach me is by email, mobile phone or Microsoft Teams.

Jakub Kilis | RPP

Senior Manager, Infrastructure and Regulations | Credit Valley Conservation
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Hi Jakub,

Thank you for providing your comments. Our responses to CVC 's comments are as follows below in red:

1. An analysis and discussion of impacts to the existing flooding and erosion hazards as a result of the proposed lakefill. This is to include the delineation of the new hazard limits for the future condition.

The limits of the shoreline hazards for the newly crested lakefill areas will coincide with the back of the shore protection works. As such the exact limits of the hazard cannot be mapped until the final detailed design is completed. The EA document will provide a description of the intended location. It is anticipated that, for the existing north shore of the marina basin, the shoreline structure will be improved to extend above the design high water level, consistent with CVC requirements (1:100 yr. instantaneous), and shoreline hazard will be located at the back of the crest of the structure. Again, the exact locations of the back of the structure will be determined in the detailed design phase and cannot be mapped during the EA preparation.

The EA will not address any changes on shoreline hazards along the existing wharf owned by Canada Lands. The EA can confirm that the lakefill to be created will not have any detrimental impact on shoreline hazards along the wharf.

2. MNR guidelines (Technical Guide for the Great Lakes – St. Lawrence River System, Part 7 – Addressing the Hazards) states for artificial shorelines that the functional performance and life span of existing structures to be confirmed by engineering study. Will the functional performance of the proposed shoreline protection and life span be confirmed? This should be the same or an improvement to existing conditions.

The design standards of the new protection work will exceed the level of protection for the marina offered by the existing breakwater and will exceed the level of stability of the existing breakwater. As a minimum it will meet the Provincial Technical requirements. These are essentially reflected in the CVC Regulations and guidelines. The design will also consider climate change impacts which is now a requirement of the Provincial Policy Statement. Since this structure will need to be maintained in perpetuity, the detailed design phase of the project will consider value engineering where more robust initial design may reduce future maintenance costs. These aspects will be commented on in the EA document.

3. Provide additional details for the monitoring plan of the proposed shoreline protection works. Will this be the City of Mississauga's responsibility or a consultant's responsibility?

The EA document will provide additional details regarding monitoring during construction and post construction. We expect that the work will be carried out by a third party on behalf of the project proponent, the City of Mississauga.

4. The new breakwater must consider erosion and include the long-term stable slope inclination of the lakefill material with a factor of safety based on MNRF guidelines. Please confirm.

The breakwater/lakefill design will consider stable slope aspects of the MNRF guidelines. The outer perimeter berm is proposed to be constructed on quarried material with high stability with respect to stable slope. The actual analysis of stable slopes and factors of safety can be only completed in the detailed design phase. There are many examples of similar successful lakefill projects including the Jim Tovey Lakeview Conservation Area and Lakefront Promenade Park.

We trust this will address your concerns.

M. Sturm, P. Eng.
Shoreplan Engineering Limited
20 Holly Street, Suite 202
Toronto ON M4S 3B1
416-487-4756 ext 222

SHOREPLAN

Ross Henteleff

From: Kilis, Jakub <Jakub.Kilis@cvc.ca>
Sent: Monday, February 06, 2023 11:10 AM
To: Milo Sturm; Beata Palka
Cc: Anneliese Grieve (grievea@rogers.com); Tomasz Wlodarczyk
Subject: CVC Follow up Comments - 1 Port Street East Proposed Marina EA - Coastal Design and Hazards Considerations Memo (CVC File No. EA 19/012)

You don't often get email from jakub.kilis@cvc.ca. [Learn why this is important](#)

Hi Milo and Beata,

CVC staff has completed our review of your responses together with the Coastal Design and Hazards Considerations Memo and find it satisfactory at this stage. Our EA comments have now been addressed and appropriate commitments are in place for the future detailed design portion of the project.

We will provide a separate response on the aquatic ecology technical memo when our review is complete.

Please let us know if you have any questions,
Jakub

I'm working remotely and in the office. The best way to reach me is by email, mobile phone or Microsoft Teams.

Jakub Kilis | RPP

Senior Manager, Infrastructure and Regulations | Credit Valley Conservation

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From: Milo Sturm <msturm@shoreplan.com>
Sent: Monday, January 16, 2023 3:36 PM
To: Kilis, Jakub <Jakub.Kilis@cvc.ca>
Cc: Anneliese Grieve (grievea@rogers.com) <grievea@rogers.com>; Tomasz Wlodarczyk <twlodarczyk@slrconsulting.com>; Beata Palka <Beata.Palka@mississauga.ca>
Subject: [External] RE: CVC Comments - 1 Port Street East Proposed Marina EA - Coastal Design and Hazards Considerations Memo (CVC File No. EA 19/012)

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Markham Office Number: 905 415 7248

January 19, 2023

Memorandum

To: Beata Palka
The City of Mississauga

From: Michael Roy

cc: Credit Valley Conservation

Subject: AQUATIC ECOLOGY TECHNICAL MEMORANDUM FOR THE 1 PORT STREET EAST PROPOSED MARINA PROJECT (1PSEM PROJECT)

1.0 INTRODUCTION

The City of Mississauga (the City) is undertaking the Environmental Assessment (EA) for the 1 Port Street East Proposed Marina Project (1PSEPM Project) to investigate expansion of the land base around the eastern breakwater to provide continued marina services at this site, as well as create public access to the waterfront, new parkland and enhance the site's ecological functions. This section of the Mississauga Waterfront has been the subject of many studies seeking to identify improvements to habitat function, public access, and recreational activities. The 1PSEPM Project was identified by Inspiration Port Credit as a key opportunity to "keep the Port in Port Credit", while enhancing public access and ecological function of the site.

SLR has been retained by Shoreplan Engineering Inc. (Shoreplan) to (among other disciplines) investigate and address the aquatic and terrestrial ecology and habitat conditions within the Study Area in support of the Baseline Conditions Characterization and the Environmental Effects phases of the study. This memo is provided at the request of Credit Valley Conservation (CVC), to facilitate their commenting process during the preparation of the Individual Environmental Assessment for the 1PSEPM Project.

This memo address:

1. Existing aquatic habitat conditions based upon the compilation of secondary source material and underwater field investigations performed by SLR ecologists
2. Potential effects to fish habitat
3. Conceptual fish habitat off-setting and enhancement opportunities
4. Existing terrestrial habitat conditions based upon the compilation of secondary source material and reconnaissance level field investigations
5. Potential effects to terrestrial habitat
6. Conceptual terrestrial habitat creation and enhancement opportunities

1.1 PURPOSE

The objectives of the aquatic and terrestrial ecology work are to provide meaningful input to the EA through the documentation of existing fish and terrestrial habitat conditions, assessing potential project effects, and identifying opportunities to improve the existing aquatic and terrestrial habitat of this location. This work also contributes toward the 1PSEPM Project achieving conformity of the with the *Fisheries Act*. The key tasks include:

- Obtain, review, and synthesize background information and data from Credit Valley Conservation (CVC), Fisheries and Oceans Canada (DFO), Ministry of Natural Resources and Forestry (MNRF), and the Credit River Anglers Association (CRAA), related to existing fish presence, usage, and aquatic habitat within the marina and nearshore area.
- Investigate and characterize the existing aquatic habitat and document critical habitat features.
- Evaluate potential effects to fish and terrestrial habitat.
- Identify habitat restoration and enhancement opportunities.

The challenge associated with this undertaking includes determining the need for, and if required, developing candidate offsetting measures to address potential harm or loss to known fish habitat. While working with CVC on the Lake Ontario Integrated Shoreline Strategy (LOISS) assessment projects, our Team has identified technically feasible opportunities to enhance the aquatic habitat within the CVC watershed. As the 1PSEPM Project moves through the EA process, it will be important to also identify onsite offsetting opportunities as that is typically DFO's preferred approach. SLR is also aware of other nearby projects within the Credit River, that may provide beneficial enhancement to offset this potential impacts of this project.

2.0 AQUATIC ECOLOGY OF THE STUDY AREA

2.1 METHODS

2.1.1 Desktop Analysis

As part of the desktop analysis, SLR ecologists collected, reviewed, and interpreted secondary source materials prepared by private consultants and government agencies, regarding existing fish and aquatic habitat conditions with the Study Area. Additionally, SLR reviewed available open-source reports and databases to support the characterization of existing conditions at the site. Documents reviewed as part of the desktop analysis are presented in Table 1.

Table 1: Information Source Summary and Description

Data Description	Source
LOISS Assessment and Mapping of Coastal Engineering Structures, December 2016	CVC, Shoreplan
LOISS Background Report APP B Fluvial Geomorphology, 2011	Aquafor Beech Limited
LOISS Characterization Final, December 2018	CVC
Credit River Estuary Report Final, March 31, 2014	CVC
Memo One Port Street – Heat Model, July 2017	CVC
Memo – Cost Estimate for One Port Street Fish Habitat Compensation, August 3, 2017	CVC
Aerial Imagery	Google Earth
Bathymetry Mapping	Online website

Data Description	Source
Ministry of Natural Resources and Forestry, Natural Heritage Information Centre (NHIC), Element Occurrences, 2018, Accessed on-line December 1, 2020 “Map A Natural Heritage Map”	Online website
Ministry of Natural Resources and Forestry, Land Information Ontario (LIO), Wetlands, ANSI, Natural Features, GIS shapefiles and metadata Downloaded December 1, 2020	Online website
Fisheries and Oceans Canada Distribution Maps for Fish and Mussel Species at Risk (modified 2019-08-23).	Online website

2.1.2 Agency Consultation

In addition to querying publicly available digital sources, data requests were prepared and submitted to organizations for additional fish and aquatic habitat information. This information will assist SLR in further characterizing flood limits, regulatory or jurisdictional boundaries or limits, surficial geology, wetland delineation and evaluation, fish community data, and known elemental occurrences for Species at Risk (SAR) and regulated habitat mapping within the Study Area. Data requests were submitted to the following organizations:

- Maricris Marinas, Planner, CVC
- Bohdan Kowalyk, District Planner, Aurora District, MNRF
- Ministry of the Environment, Conservation and Parks (MOECP)

To date, SLR has not yet received the requested data.

2.1.3 Aquatic Habitat Field Characterization

Information gathered as part of the desktop analysis was supplemented with observations and data collected by SLR ecologists, during recent field investigations. On May 19th, 2021, SLR ecologists completed an aquatic habitat assessment within the Study Area in Lake Ontario, to document and characterize existing aquatic habitat conditions, critical habitat features, and potential areas or opportunities for aquatic habitat restoration and enhancement. A boat and boat operator were hired and used to access the Study Area and perform habitat characterization activities. The field investigation was completed on a calm and sunny day to maximize the quality of data collected. Data was collected along multiple transects to aid in the translation of field observations to maps and figures, for use later in the EA. SLR ecologists executed transects perpendicular to the breakwater, to collect observations and data at various water depths.

For this field investigation, the Study Area was divided into three primary locations to support the characterization of aquatic habitat: east side of (eastern) breakwater, west side of (eastern) breakwater, and within the marina (basin). The Eastern Breakwater, Western Breakwater, and Marina Basin are presented on Figure 1 for reference.

Data to support the characterization of the existing aquatic habitat was collected using the following equipment:

- Heron Instruments underwater camera with a downrigger;
- Raymarine Axiom 3D Vision and Hummingbird GPS sonar;
- YSI Sonde;
- Fish Hawk wireless X4D temperature and depth console; and,
- Ponar dredge.

Specific habitat parameters recorded in the field, included:

- Substrate classification;
- Water depth;
- In-stream and riparian vegetation;
- Bank stability and cover;
- Areas of critical habitat for potential SAR;
- Habitat for various life stages of fish (e.g., spawning, rearing, migration, overwintering);
- Supplemental habitat features such as nursery or feeding areas; and,
- Presence of fish barriers and system connectivity.

In-situ water quality parameters collected in the field included electrical conductivity, water and air temperature, and dissolved oxygen concentration. Representative photographs of each sampling location were taken. Fish sampling activities were not included within this scope of work.

Substrate type was visually classified as a percentage, using six categories based on particle diameter: boulder (300 – 600 mm); rubble (100 – 300 mm); cobble (75 – 100 mm); gravel (5 – 75 mm); sand (1 – 5 mm); and fine (<1 mm). Aquatic vegetation cover was concurrently assessed, with percent cover classified into one of four categories: none (0%); sparse (0-25%); moderate (25-50%); and dense (50-100%). Substrate and aquatic vegetation cover were assessed at several points along a single transect.

The spatial extent of observed aquatic habitats were recorded by hand on base maps, which included representative aerial imagery of the Study Area. After returning from the field, maps were updated and generated by SLR GIS specialists to illustrate habitat features, functions, and dependencies.

3.0 PRELIMINARY KEY FINDINGS

3.1 DESKTOP ANALYSIS

3.1.1 Bathymetry

Water levels on Lake Ontario fluctuate on short-term, seasonal and long-term basis. Water levels of the Great Lakes, including Lake Ontario, are referenced to chart datum. Chart datum is generally selected so that the water level seldom falls below it. The referenced chart datum on the Great Lakes is the International Great Lakes Datum (1985). For Lake Ontario the chart datum is 74.2 metres above sea level (masl). Nautical charts refer to this datum.

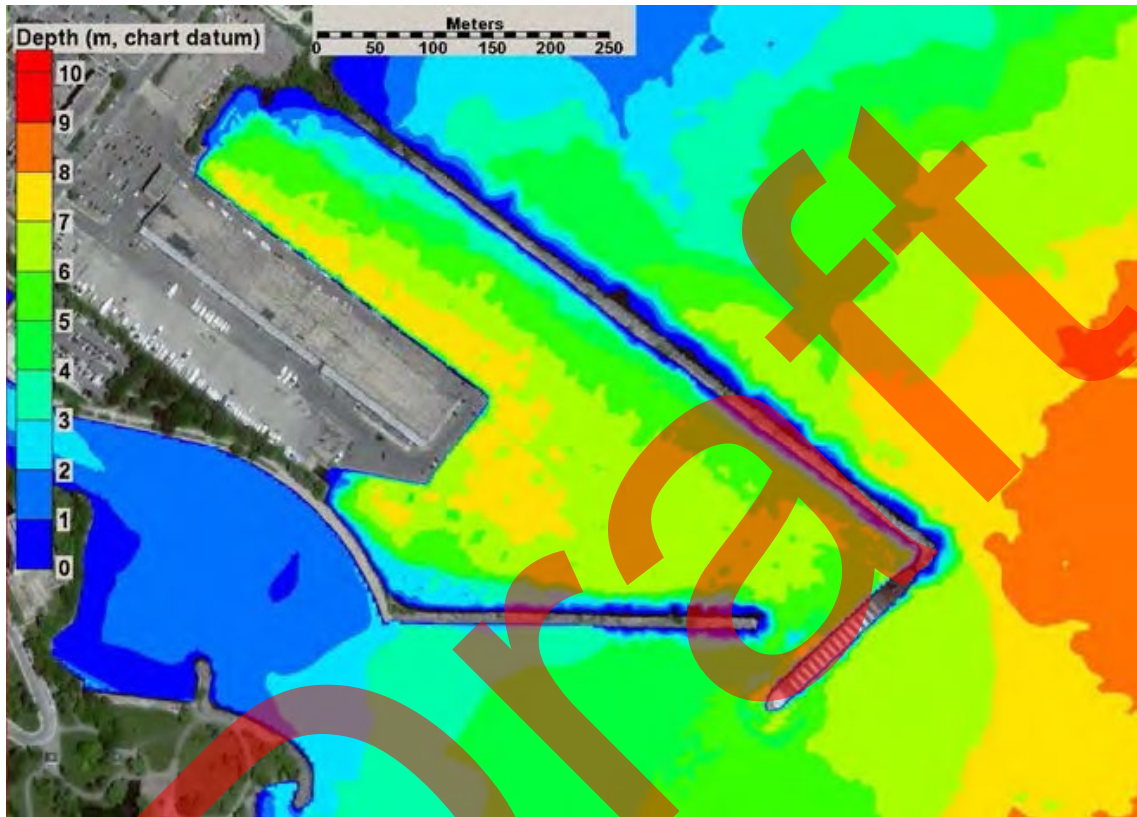
Figure 3.1 illustrates the bathymetry within the local and project study areas. Bathymetry reveals both the depth of water and the topography of the lakebed. This information is a key consideration in the evaluation the potential effects on fish habitat resulting from the placement of lakefill. The lake bottom elevation around the toe of the existing and proposed structures varies between a maximum of approximately 76.0 masl near the interface with the mainland, and a minimum of approximately 66.0 masl at the lakeward most point of the structure.

3.1.2 Littoral Sediment Transport

The shoreline from Burlington to Toronto is generally referred to as a non-drift zone due to the lack of littoral (coastal) sediments. On many shores of the Great Lakes, littoral sediment supply originates from erosion of shoreline bluffs and the nearshore lakebed. Within the regional, local and project study areas, the majority of the shoreline has been hardened, essentially eliminating bluff erosion, and the nearshore lakebed is erosion-resistant bedrock. Some sediment transport does take place because of nearshore bottom deposits, but there is no significant source of new littoral material. Sediment introduced via the watercourses (creeks,

ivers, etc.) that discharge into Lake Ontario is typically fine grained and tends to deposit in deeper water offshore of the littoral zone. Littoral Sediment Transport patterns will not be notably altered by any of the alternatives considered.

Figure 3.1 Bathymetry in the Project and Local Study Areas



3.1.3 Fish Presence

The Credit River and Lake Ontario are home to at least 65 cold, cool, and warm-water fish species, including forage, coarse, and sport fish, which are further identified in the Fishes of the Credit River Watershed document, produced by CVC (2002). It is further understood that of the 65 potential fish species, 58 native fish species have been recorded in the Port Credit region, of which, 23 are considered lake species (CVC 2018). It is anticipated that most fish species found within the Credit River and ultimately, Lake Ontario, may utilize the nearshore areas within the Study Area to complete all or some of the life cycles. It is also known that nearshore fish species diversity and productivity is higher than those of offshore habitats (CVC 2018); two thirds of adult fish species and three quarters of young of the year fish species show a high affinity for sand, gravel or silt substrates, which are often associated with vegetation in the nearshore area (Lane *et al.* 1996 in CVC 2018).

Fish sampling is an ongoing priority for CVC and is conducted using a boat electrofisher, within the Port Credit Coastal Reach (mouth of the Credit River). The results of fish sampling activities between 2008 and 2014 indicate that the Port Credit Coastal Reach has the highest fish species richness (31) and second highest average number of individuals per 1000 seconds (~210), of all assessed locations (CVC 2018). However, when

total fish biomass is considered, the Port Credit Harbour Marina is typically ranked 3rd or 4th, of the 7 locations surveyed. It should also be mentioned that when the total fish biomass is corrected to remove Common Carp from the calculation, the Port Credit Harbour Marina is roughly tied for 1st, with 3 other locations. This would seem to indicate that the Port Credit Harbour Marina provides less optimal aquatic habitat for Common Carp, when compared to other embayment's or river mouths assessed. Additionally, when considering embayment's and river mouth sites, embayment's are often the primary contributor to total biomass values and are known to contribute up to 80% of annual total biomass (CVC 2018). A list of documented fish species with potential presence within the Credit River, at the mouth of the Credit River, or within the vicinity of the Study Area is presented in Table 2. Not all fish species (or required habitats) will be present within the Study Area.

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Table 2: Documented fish presence near or within the Study Area and associated potential habitat usage.

Common Name	Scientific Name	Documented Presence in Credit River (Y/N)	Documented Presence in Port Credit Coastal Reach (Y/N)
Bowfin Family (Family <i>Amiidae</i>)			
Bowfin	<i>Amia calva</i>	Y	N
Catfish Family (Family <i>Ictaluridae</i>)			
Brown Bullhead	<i>Ameiurus nebulosus</i>	Y	Y
Channel Catfish	<i>Ictalurus punctatus</i>	Y	N
Stonecat	<i>Noturus flavus</i>	Y	Y
Drum or Croaker Family (Family <i>Sciaenidae</i>)			
Freshwater Drum	<i>Aplodinotus grunniens</i>	Y	N
Freshwater Eel Family (Family <i>Anguillidae</i>)			
American Eel	<i>Anguilla rostrata</i>	Y	Y
Goby Family (Family <i>Gobiidae</i>)			
Round Goby	<i>Neogobius melanostomus</i>	N	Y
Herring Family (Family <i>Clupeidae</i>)			
Alewife (gaspereau)	<i>Alosa pseudoharengus</i>	Y	Y
Gizzard Shad	<i>Dorosoma cepedianum</i>	Y	Y
Lamprey Family (Family <i>Petromyzontidae</i>)			
American Brook Lamprey	<i>Lethenteron appendix</i>	Y	N
Sea Lamprey	<i>Petromyzon marinus</i>	Y	Y
Minnow Family (Family <i>Cyprinidae</i>)			
Goldfish	<i>Carassius auratus</i>	Y	N
Redside Dace	<i>Clinostomus elongatus</i>	Y	N
Northern Redbelly Dace	<i>Chrosomus eos</i>	Y	N
Finescale Dace	<i>Chrosomus neogaeus</i>	Y	N
Spotfin Shiner	<i>Cyprinella spiloptera</i>	Y	Y
Common Carp	<i>Cyprinus carpio</i>	Y	Y
Brassy Minnow	<i>Hybognathus hankinsoni</i>	Y	N
Common Shiner	<i>Luxilus cornutus</i>	Y	Y

Common Name	Scientific Name	Documented Presence in Credit River (Y/N)	Documented Presence in Port Credit Coastal Reach (Y/N)
Redfin Shiner	<i>Lythrurus umbratilis</i>	Y	N
Northern Pearl Dace	<i>Margariscus nachtriebi</i>	Y	N
Hornyhead Chub	<i>Nocomis biguttatus</i>	Y	Y
River Chub	<i>Nocomis micropogon</i>	Y	Y
Golden Shiner	<i>Notemigonus crysoleucas</i>	Y	Y
Emerald Shiner	<i>Notropis atherinoides</i>	Y	Y
Blacknose Shiner	<i>Notropis heterolepis</i>	Y	N
Spottail Shiner	<i>Notropis hudsonius</i>	Y	Y
Rosyface Shiner	<i>Notropis rubellus</i>	Y	Y
Sand Shiner	<i>Notropis stramineus</i>	Y	N
Mimic Shiner	<i>Notropis volucellus</i>	Y	N
Bluntnose Minnow	<i>Pimephales notatus</i>	Y	Y
Fathead Minnow	<i>Pimephales promelas</i>	Y	Y
Blacknose Dace	<i>Rhinichthys atratulus</i>	Y	Y
Longnose Dace	<i>Rhinichthys cataractae</i>	Y	Y
Creek Chub	<i>Semotilus atromaculatus</i>	Y	Y
Mudminnow and Pike Family (Family <i>Esocidae</i>)			
Northern Pike	<i>Esox lucius</i>	Y	Y
Central Mudminnow	<i>Umbra limi</i>	Y	N
Perch Family (Family <i>Percidae</i>)			
Rainbow Darter	<i>Etheostoma caeruleum</i>	Y	Y
Iowa Darter	<i>Etheostoma exile</i>	Y	Y
Fantail Darter	<i>Etheostoma flabellare</i>	Y	Y
Johnny Darter	<i>Etheostoma nigrum</i>	Y	Y
Yellow Perch	<i>Perca flavescens</i>	Y	Y
Logperch	<i>Percina caprodes</i>	Y	Y
Walleye	<i>Sander vitreus</i>	Y	Y
Salmon Family (Family <i>Salmonidae</i>)			

Common Name	Scientific Name	Documented Presence in Credit River (Y/N)	Documented Presence in Port Credit Coastal Reach (Y/N)
Pink Salmon	<i>Oncorhynchus gorbuscha</i>	Y	N
Coho Salmon	<i>Oncorhynchus kisutch</i>	Y	N
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	Y	Y
Rainbow Trout	<i>Oncorhynchus mykiss</i>	Y	Y
Atlantic Salmon	<i>Salmo salar</i>	Y	Y
Brown Trout	<i>Salmo trutta</i>	Y	N
Brook Trout	<i>Salvelinus fontinalis</i>	Y	N
Sculpin Family (Family <i>Cottidae</i>)			
Mottled Sculpin	<i>Cottus bairdi</i>	Y	N
Slimy Sculpin	<i>Cottus cognatus</i>	Y	N
Smelt Family (Family <i>Osmeridae</i>)			
Rainbow Smelt	<i>Osmerus mordax</i>	Y	N
Stickleback Family (Family <i>Gasterosteidae</i>)			
Brook Stickleback	<i>Culaea inconstans</i>	Y	N
Threespine Stickleback	<i>Gasterosteus aculeatus</i>	Y	N
Sturgeon Family (Family <i>Acipenseridae</i>)			
Lake Sturgeon	<i>Acipenser fulvescens</i>	Y	N
Sucker Family (Family <i>Catostomidae</i>)			
Longnose Sucker	<i>Catostomus catostomus</i>	N	Y
White Sucker	<i>Catostomus commersoni</i>	Y	Y
Northern Hog Sucker	<i>Hypentelium nigricans</i>	Y	Y
Silver Redhorse	<i>Moxostoma anisurum</i>	Y	N
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>	Y	Y
Greater Redhorse	<i>Moxostoma valenciennesi</i>	N	Y
Sunfish Family (Family <i>Centrarchidae</i>)			
Rock Bass	<i>Ambloplites rupestris</i>	Y	Y

Common Name	Scientific Name	Documented Presence in Credit River (Y/N)	Documented Presence in Port Credit Coastal Reach (Y/N)
Pumpkinseed	<i>Lepomis gibbosus</i>	Y	Y
Smallmouth Bass	<i>Micropterus dolomieu</i>	Y	Y
Largemouth Bass	<i>Micropterus salmoides</i>	Y	Y
Black Crappie	<i>Pomoxis nigromaculatus</i>	Y	N
Temperate Bass Family (Family <i>Moronidae</i>)			
White Perch	<i>Morone americana</i>	Y	N
White Bass	<i>Morone chrysops</i>	Y	Y
Trout-Perch Family (Family <i>Percopsidae</i>)			
Trout-perch	<i>Percopsis omiscomaycus</i>	Y	N

3.1.4 Aquatic Habitat

Night-time water temperatures and daytime air temperatures collected in the summer between 2008 and 2014 averaged 20°C and 21°C, respectively (CVC 2018). While these averages are important to consider, they are based on a relatively small sample size (nine).

The shoreline of the Port Credit Coastal Reach, which includes the Study Area, is highly engineered, with only 1% left in a natural state as documented by CVC (2018). This engineered shoreline is made up of rock armouring, the Ridgetown, and other breakwater structures. These erosion protection structures are necessary, due to the deep bathymetry of the area, which reduces the ability for large waves to break on shallow lakebed areas, thereby dissipating energy and reducing sediment transport from shore.

Flows and sediment from the Credit River are transported to the west, as far away as Tecumseh Creek (CVC 2018). Transport of sediment and particle-bound phosphorus from the watershed exceed Provincial Water Quality Objectives (PWQO) and reduce the water quality in the mouth of the Credit River and nearshore Lake Ontario (CVC 2018). These contributions may provide suitable food resources to harmful algae species, which may feed on the excess nutrients. Additional watershed contributions of chloride in the winter months also pose a risk to existing aquatic habitat.

Port Credit is known for historic and ongoing fisheries research and both recreational and commercial fishing activities. Incidental observations indicate that Burbot (*Lota lota*), Lake Whitefish (*Coregonus clupeaformis*), and Herring (*Clupeidae* sp.) were common occurrences in the past, however, both Burbot and Herring are very uncommon sightings in Port Credit today. It is expected that both wetlands and sheltered embayment's play a critical role in reproduction of these species and the loss of wetland habitat (Faulkner Marsh) may have reduced spawning sites for these species near the mouth of the Credit River (CVC 2018). Additional spawning areas, such as off-shore shoals, are important spawning sites for Lake Trout and while historically documented, are typically difficult to locate in present day.

3.2 AQUATIC HABITAT FIELD CHARACTERIZATION – KEY FINDINGS

3.2.1 East Side of (Eastern) Breakwater

Directly east of the existing (eastern) breakwater, large boulders extend into the water lot for several metres, at an estimated a 1.5H:1V slope. The boulders provide stability and erosion protection for the marina and nearshore area, while the bank irregularities and lakebed roughness provide instream cover for a variety of documented fish species. Beyond the large boulders, the lakebed substrate is dominated by coarse sand and cobble, with sand becoming more prevalent along the shoreline. An area of hardpan was documented east of the Study Area and was dominated with gravel. Multiple cobble dominated shoals were documented along the eastern edge of the Study Area and were oriented both parallel and perpendicular to the existing (eastern) breakwater. The composition and distribution of lakebed substrates as determined from the field investigations performed as part of this EA are illustrated on Figure 3-2.

No macrophyte presence was observed at the time of the aquatic habitat assessment, however, an assessment during late summer may provide additional observations on potential seasonal growth that may occur. Algae and Zebra Mussels (*Dreissena polymorpha*) were documented in places along the shoreline, existing (eastern) breakwater, hardpan area. The concentration of Zebra Mussels appeared to increase as water depths increased. Water depths of greater than 8 m were documented within the Study Area east of the existing (eastern) breakwater.

No fish were observed during the aquatic habitat assessment.

Aquatic habitat and substrates documented within the Study Area east of the existing (eastern) breakwater do not appear to be limited to the Study Area orientated parallel to shore and extending east well beyond the water lot boundary. The only exception to this is the large cobble dominated area located toward the terminus of the breakwater which is almost entirely positioned within the water lot. No areas of critical habitat for potential SAR were documented during the field investigation.

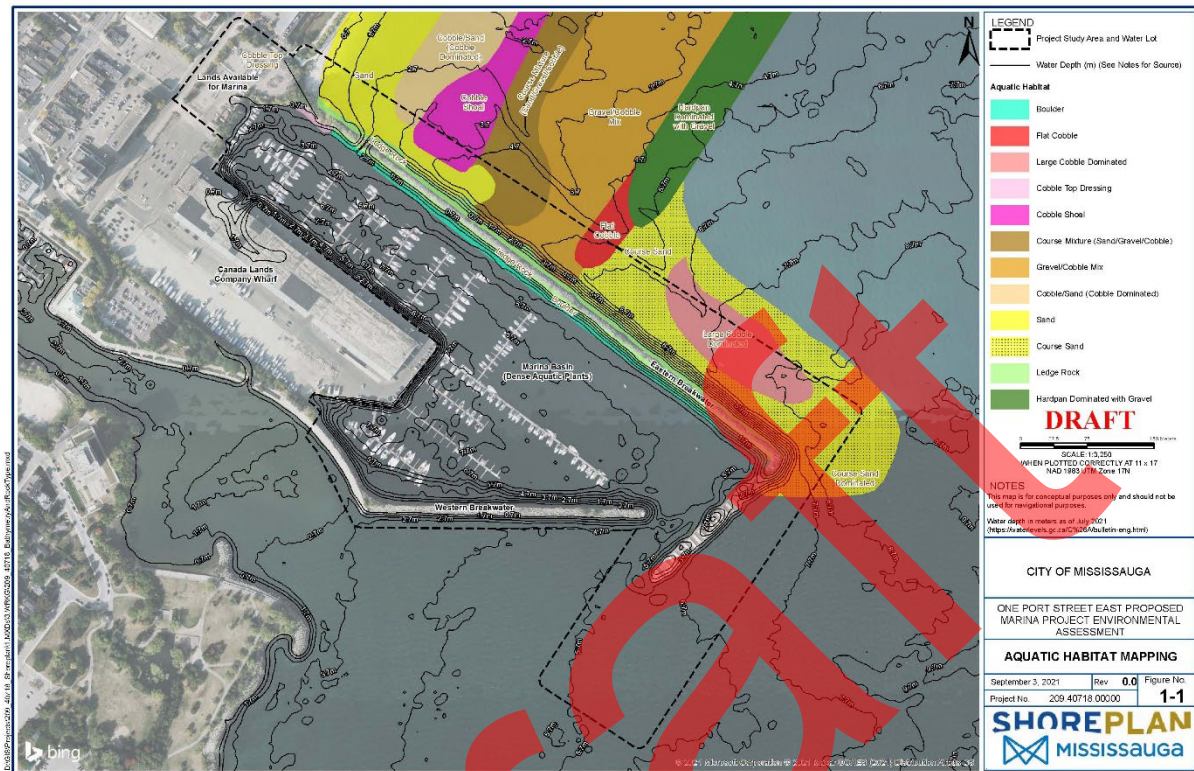
3.2.2 West Side of (Eastern) Breakwater

Directly west of the existing (eastern) breakwater, large boulders extend into the marina for several metres, at an estimated a 1.5H:1V slope. The boulders provide stability and erosion protection for the marina and nearshore area, while the bank irregularities and lakebed roughness provide instream cover for a variety of documented fish species. Based on the placement and organization of the boulders along the west side of the existing (eastern) breakwater, it is assumed that a barge was utilized from the west side. However, depending on the severity of weather events and wave action, the boulders along the east side of the existing (eastern) breakwater may have experienced movement since the time of construction. Beyond the large boulders, the substrate documented along the west side of the existing (eastern) breakwater is dominated by sand and cobble, with areas of soft detritus.

Significant algal and macrophyte growth was documented, when compared to the east side of the existing (eastern) breakwater. This may be due to reduced wave action, flow, and potentially increased residence time of water within the marina. Water depths of greater than 2.5 m were documented within the Study Area west of the existing (eastern) breakwater.

Multiple fish species and individuals were observed within the marina, although only Brown Bullhead and Cyprinids Sp. were identified. It is assumed that many other fish species or families were observed but could not be identified.

Figure 3.2 Bathymetry and Substrate Composition and Distribution in the Project and Local Study Areas



Aquatic habitat and substrates documented within the marina basin appear to be consistent throughout the assessed area. It is assumed that the dense macrophyte growth within the marina basin provides suitable nursery and foraging habitat for many species documented in the Study Area. No areas of critical habitat for potential SAR were documented during the field investigation.

3.2.3 Within the Marina Basin

Within the marina basin, the substrate is dominated by sand, with fine sediments and other particulate matter resting in isolated pockets.

Moderate to dense algal and macrophyte growth was documented within the marina basin and provides significant cover and surfaces for important life process (e.g., refuge and spawning) of some fish species with documented presence in the Study Area. The density of plant life may be in part due to the sheltered nature of the waters within the marina basin and the potential accumulation of nutrients from overland or other sources.

Multiple fish species (e.g., Brown Bullhead, Cyprinid Sp.) were observed within the marina basin and it is expected that multiple life stages are present.

Aquatic habitat and substrates documented within the marina basin do not appear limited and are consistent through the assessed area within the marina basin. No areas of critical habitat for potential SAR were documented during the field investigation. The (eastern) breakwater appears to be stable on both the east and west side of the assessed area.

3.2.4 Fish Habitat Summary

Substrate to the east of the existing (eastern) breakwater are diverse, abundant, and well distributed both within and outside of the local Study Area. No areas of critical habitat for SAR were identified. Based on the findings of the desktop analysis and field investigation it appears that the Study Area provides a variety of substrates at varying depths that likely afford aquatic habitat opportunities for several fish species and life stages of fish with documented presence in or near the study area.

The areas within the existing marina basin and along the west side of the existing (eastern) breakwater provide important nursery and foraging areas for both small-bodied fish and large predaceous fish species. These habitats within the marina basin appear to be well distributed through the assessed area and are not limited to areas that may be impacted by potential short duration construction activities.

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4.0 EVALUATION OF ALTERNATIVES

The three alternative plans of lakefilling are presented on **Figures 4.1 to 4.3** and illustrate a range of fill alternatives considered for assessment, Alternatives A, B, and C. Each landform has a “green” public space at the south end. These layouts were developed to allow for comparison of the fill alternatives. The figures also show associated dock layouts within the marina basin. Brief descriptions of the alternatives are provided below.

4.1 CONCEPTUAL SHORELINE PROTECTION STRUCTURES

For each alternative, armour stone revetment structures were designed to stabilize and protect the lakefill. Each alternative has been designed to be resilient to coastal conditions including high water and changes anticipated because of climate change. Construction of each alternative is assumed to be similar to that used at the Jim Tovey Conservation Area.

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Figure 4.1 Alternative A, Small Lakefill

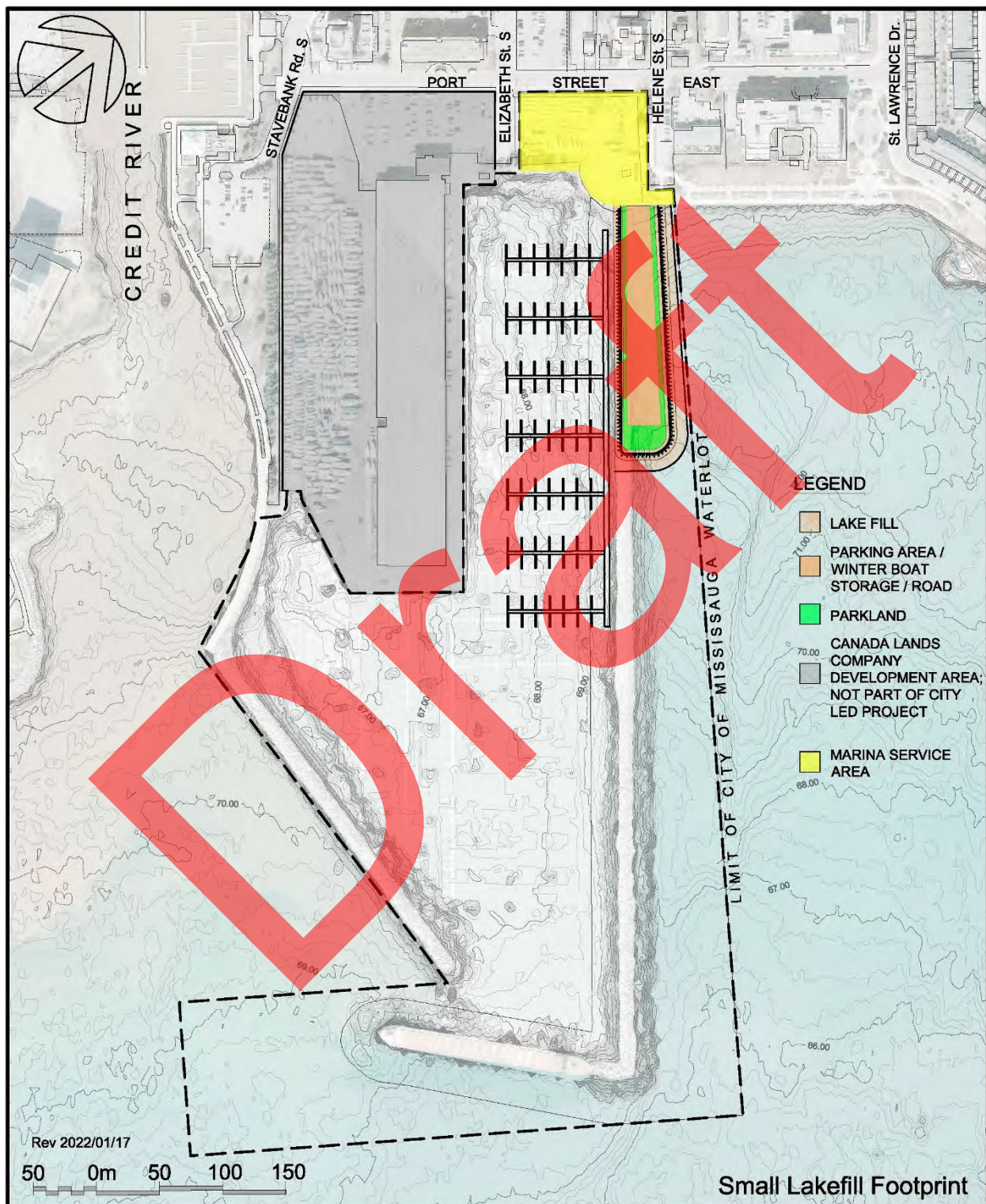


Figure 4.2 Alternative B, Medium Lakefill

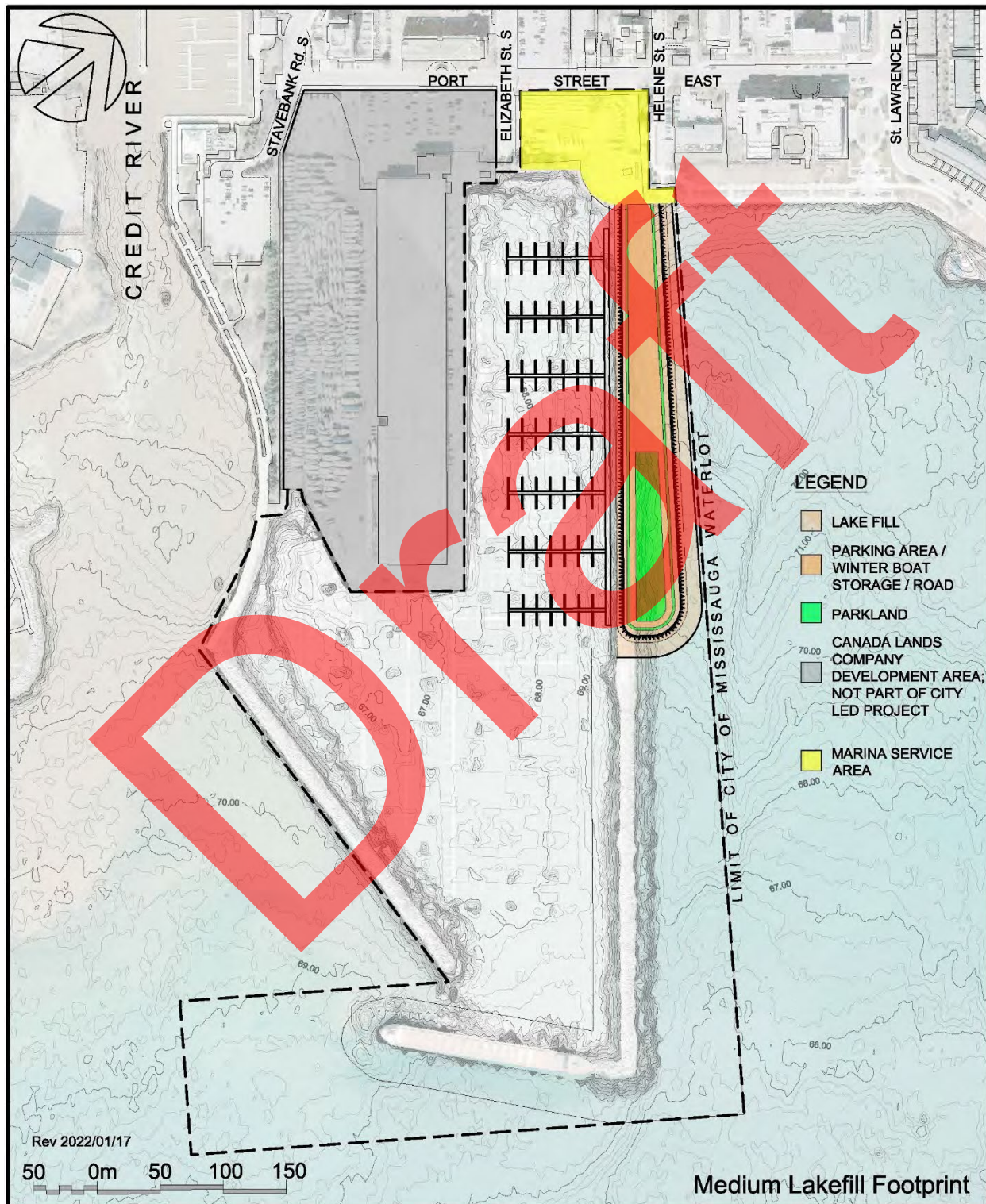
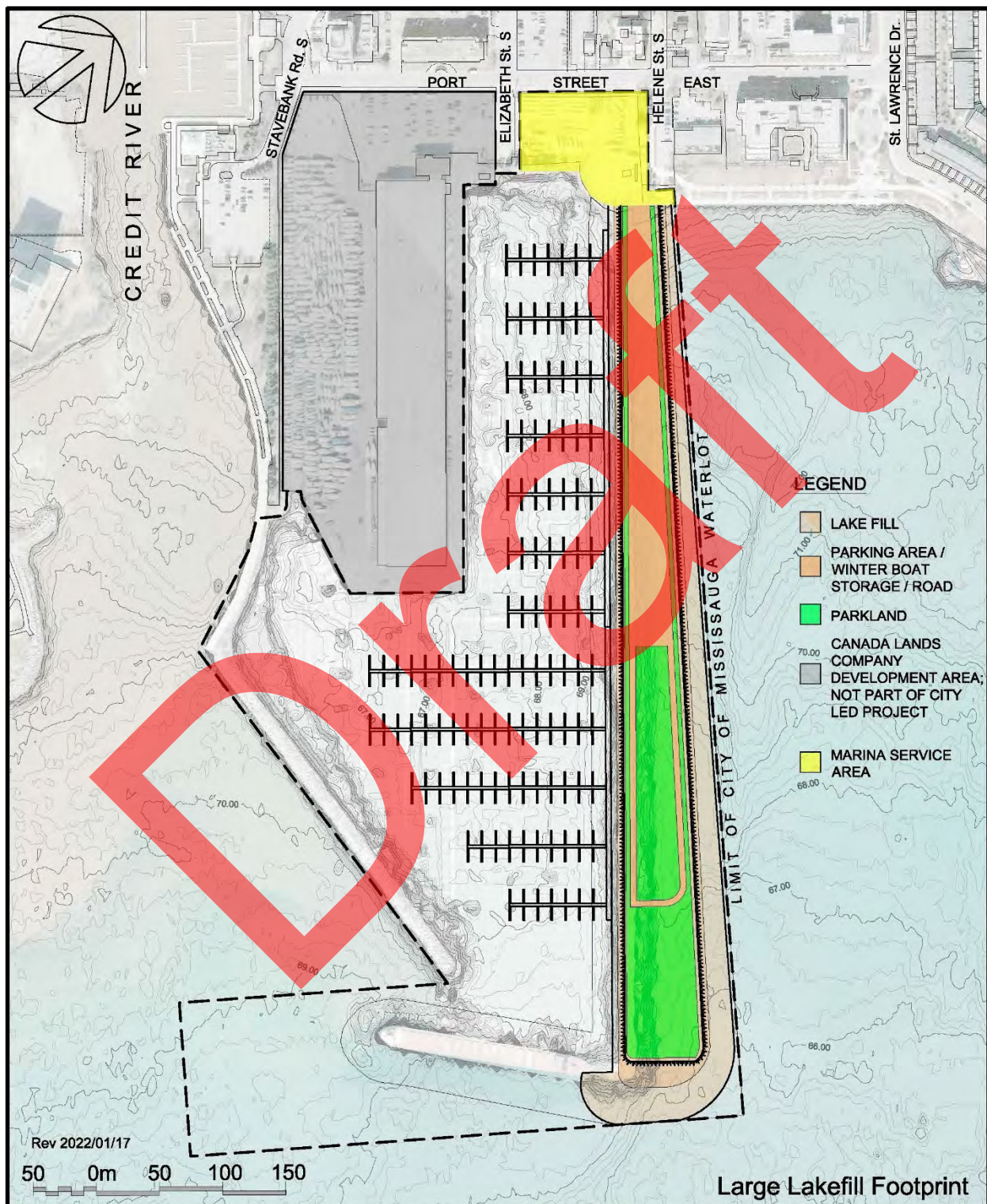


Figure 4.3 Alternative C, Large Lakefill



5.0 PREFERRED ALTERNATIVE

The preferred alternative for the 1 Port Street East Proposed Marina Project (1PSEPM) is the large lakefill alternative. This alternative provides the opportunity to create the largest area of parkland relative to the marina space required for parking, boat storage and marina facilities. It also provides for a similar sized marina to what exists today (greatest number of slips). With a larger footprint, perimeter, and location jetting into deeper waters in Lake Ontario this alternative proposes the largest removal of existing aquatic habitat area. However, baseline studies indicate that existing fish habitat that would be lost is not limiting in Lake Ontario, and opportunities exist to create new habitat of greater quality than what will be lost. With a large land base, this alternative offers the most potential to enhance terrestrial habitat over what exists now. Conversely, as the largest footprint alternative, it also has the highest cost and will take the longest to construct resulting in potential construction nuisance effects for the longest period. However, the effects from construction will be relatively short-term and mitigable while the lakefill area and its benefits will exist for the long-term. Overall, the Large Lakefill Footprint alternative, and therefore the preferred alternative.

5.1 BREAKWATER

The shoreline protection features of the 1PSEPM conceptual design consists of an armour stone revetment as well as a secondary breakwater structure at the lakeward end also protected with an armour stone revetment, which will shelter an aquatic habitat creation area. The slope of the revetment can vary but 2H:1V is the most common and is the proposed slope for most of the 1PSEPM Project, with the exception of certain areas of the structure reaching approximately 3H:1V.

With the lake bottom elevation around the toe of the structure varying between a maximum of approximately 76.0 m near the interface with the mainland, and a minimum of approximately 66.0 m at the lakeward most point of the structure, the depth at the toe of the revetment will vary between 0.2 and 10.2 m under design high water levels. The total area of fish habitat affected by the breakwater construction would include fill that occurs below the nearshore zone of the lake beginning at the shoreline which has been established as 74.2 masl based on the International Great Lakes Datum 1985. (Minns et al. 2005) and accepted by DFO as the elevation below which fish habitat occurs.

Structural aquatic habitat features will be incorporated along the toe of the revetment as described in the following sections.

6.0 IMPACT ANALYSIS

It is anticipated that the extent of some of these aquatic habitats within the water lot may be reduced by the placement of fill, however, these substrates habitat does not appear limiting with regional study area along the shoreline of Lake Ontario.

Habitat compensation will be used to address the proposed removal or disruption of fish habitat to occur due to the construction of the 1 Port Street East Proposed Marina Project.

6.1 EFFECTS OF CONSTRUCTION

6.1.1 Effects on surface water quality in the Local Study Area

Construction activities for the 1PSEPM Project are expected to involve land creation and protection by placing the armour stone shoreline protection and lakefill materials on the lake bottom.

Sediment re-suspension is unavoidable to some extent and occurs whenever materials are placed onto a lake bottom. The placement of armour stone on the lake bottom to create the shore protection structure will result in the disturbance and resuspension of existing sediments from the lake bottom into the water column resulting in increased turbidity and potentially reduced surface water quality. Turbidity is a reduction in water clarity. Water is considered turbid when the presence of suspended particles becomes conspicuous and considered to be impaired or of lower quality.

Sediment / particle size combined with wave action and wind direction are key factors in determining whether, and how far, sediments move and are redistributed within the lake. Lakebed substrate where the lakefill is proposed to be constructed is dominated by coarse sand and cobble, with sand becoming more prevalent along the shoreline. An area of hardpan and multiple cobble dominated shoals along the eastern edge of the placement area also exist. These types of sediment are less likely to be resuspended and will likely resettle quickly near the area of disturbance. For the portion that may be resuspended, sediments are likely to be transported towards the shore and the existing beach by wave action.

Mitigation measures are warranted to minimize adverse effects on surface water quality during construction and will be detailed as part of the on-going effects assessment.

- Follow best management practices in "Fill Quality Guide and Good Management Practices for Shore Infilling in Ontario"
- Utilize only clean fill for lakefill construction. No contaminated fill shall be placed in the lakefill area or in Lake Ontario.
- Restrict operations to calm water days (i.e., suspend operations during periods of high wave action).
- The City will continue to seek the advice and input from Ontario MECP, the CVC and the federal DFO in developing its detailed design and mitigation plan.

6.1.2 Effects on Aquatic Habitat in the Local Study Area

The Study Area provides a variety of substrates at varying depths that likely afford aquatic habitat opportunities for several fish species and life stages of fish with documented presence in or near the study area. The preferred alternative will result in the largest area of lakebed infill and as a result require the removal or overprint of approximately 29,200 m² of fish habitat. This is in addition to the replacement of like for like habitat along the eastern face of the existing breakwater that is replicated in the proposed marina design.

It is important to recognize that the approx. 6,300 m² of this total area consists of fish habitat that would be affected and removed for any of the lakefill alternatives under consideration. This common area represents the portion of the study area with relatively higher productivity potential that occurs in the shallow (1-3m depth) sand dominated and cobble habitat closer to shore. Similarly, approx. 4,700 m² of an additional nearshore habitat in water depth between 3 - 5m with relatively uniform mixture and distribution of cobbles and gravel would also be removed by Alternative 2. The additional required 18,600 m² of lake fill to create Alternative 3 occurs over relatively deep (5m -8m depth) nearshore habitat consisting of cobble apron surrounded by sand (Figure 3.2). While attractive in structure and substrate composition to some open coast fish species, this relatively deeper habitat in an area of high energy wave action (waves colliding with the existing break wall over deeper water generally contain/release greater energy than those that dissipate energy along the lake bottom before reaching shore) is considered less productive than the shallow nearshore habitat common to Alternative 2 and certainly that of Alternative 1.

The fish community likely to be affected by the 1PSEPM project consists of fish species typically found utilizing nearshore habitat with a variety of coarse substrates, including common fish such as White Sucker, Common Carp, Alewife, Lake Chub, Longnose Dace, Emerald Shiner and the invasive Round Goby.

7.0 AQUATIC HABITAT CREATION

The loss of approximately 29,200 m² of fish habitat proposed to create the Preferred Alternative for the 1 Port Street East Proposed Marina Project (1PSEPM) will require the creation of a habitat off-setting strategy in order to conform with the federal *Fisheries Act* and achieve low to none net effect in the context of the EA. A central component of the *Fisheries Act* includes the prohibition against causing the harmful alteration, disruption or destruction (HADD) of fish habitat (section 35) unless the carrying on of the work, undertaking or activity is authorized by the Minister and the work, undertaking or activity is carried on in accordance with the conditions established by the Minister.

An offsetting measure is one that counterbalances unavoidable death of fish and harmful alteration, disruption or destruction of fish habitat resulting from a work, undertaking or activity with the goal of protecting and conserving fish and fish habitat. Offsetting measures should support available fisheries management objectives and local restoration priorities and be conducted in a manner consistent with the department's offsetting policy. Offsetting measures may take a variety of forms ranging from localized improvements to fish habitat to more complex measures that address limiting factors to fish production.

In recognition of the need for habitat offsetting to address the potential loss of productive fish habitat, the development of the natural heritage components of the 1PSEPM project configuration of the Preferred Alternative has incorporated design elements to self-compensate for a portion of the proposed habitat alteration as well as deliberate fish habitat creation components.

7.1 SEMI-SHELTERED EMBAYMENT CREATION

As noted previously, 58 native fish species have been recorded in the Port Credit region, of which, 23 are considered lake species (CVC 2018). It is anticipated that most fish species found within the Credit River and ultimately, Lake Ontario, may utilize the nearshore areas within the Study Area to complete all or some of the life cycles with approximately two thirds of adult fish species and three quarters of young of the year fish species exhibiting a high affinity for sand, gravel or silt substrates.

The opportunity to undulate the shoreline and create aquatic habitat features along the east side was considered. However, such undulation would reduce the width of the created land and its functionality and ability to be programed to its full potential.

The fish habitat creation component of the 1PSEPM design proposes to create and enhance aquatic habitat at the southern (lakeward) terminus of the proposed lakefill. Here, the proposed shoreline will be sculpted westward to create a lakeward facing embayment that will be protected by an armour stone island to be created further out into the lake adjacent to the headland. The proposed feature will create approximately 2,400 sq. m of semi-sheltered moderately shallow water area where substrate can be selected, and structural habitat provided at varying depths. The concept is presented on Figure 6.1 with cross-sections illustrated in Figure 6.2.

The east side of the lakefill will be constructed in the same manner as the remainder of the infill area. Here opportunities may exist to flatten the side slope and or create a shallow underwater terrace along portions of the wall to be sheltered by the island and create littoral areas to provide productive areas for forage fish reproduction and feeding.

The island breakwater will be protected by a layer of randomly placed armour stone. Smaller sized material will line the interior of the berm on the embayment side whereas the larger material will protect the lakeside which is exposed to waves from the open lake. The base of the embayment will be lined with smaller boulder

and cobble sized material over a gravel apron to provide a variety substrate for aquatic vegetation and fish habitat.

It is envisioned that the embayment side will slope down to meet the boulder substrate at the bottom of the fish habitat area. In addition to shallow littoral areas along the side slopes, this will create relatively shallow fish habitat in an area of existing deep water. These elevated bed elevations at the entrance will help to reduce the severity of waves that enter the aquatic habitat area to create a relatively shallow low energy sheltered refuge adjacent to deeper water of the open lake. The lower interior areas will provide variance in depth to maximize habitat diversity similar to that to be removed in the shallow areas. As a result, the lee side of the island habitat will provide quality spawning and foraging fish habitat for open coast fish species such as Alewife, Lake Trout and juvenile salmonids; sheltered habitat for important Lake Ontario feeder fish species such as Emerald Shiner, Lake Chub and Spottail Shiner as well as nearshore fish species such as White Sucker, Common Carp and Longnose Dace. Of note, LIOSS cites Alewife and Emerald Shiner being the most abundant coolwater open coast species along this portion of the shoreline.

It should be noted that the design of the aquatic habitat area and the shore protection structure is still at the conceptual level and details of the substrate and habitat features will be further developed by the project team in consultation with the regulatory agencies.

7.2 CONSISTENCY WITH LIOSS

The Lake Ontario Integrated Shoreline Strategy (LIOSS) (CVC, 2018) aims to provide guidance for local, regional, provincial and federal governments for planning restoration initiatives, developments, and land-use decisions. This study emphasizes opportunities for protecting and restoring ecosystems along the shoreline, inland to the first major barrier on the Credit River, and into Lake Ontario's nearshore environment. A key element of LIOSS is to improve the diversity and quantity of terrestrial and aquatic habitat of the shoreline. In doing so, it identifies fish habitat improvement priorities for the lakeshore and nearshore areas in the vicinity of the Credit River mouth, including the Local and Project Study Areas. The proposed creation of the semi-sheltered embayment aligns with one of the key priorities for the Port Credit Coastal Reach which is to create fish habitat (e.g., spawning, rearing, feeding, cover) along existing shoreline erosion structures and incorporate fish habitat features in design for repair and replacement structures.

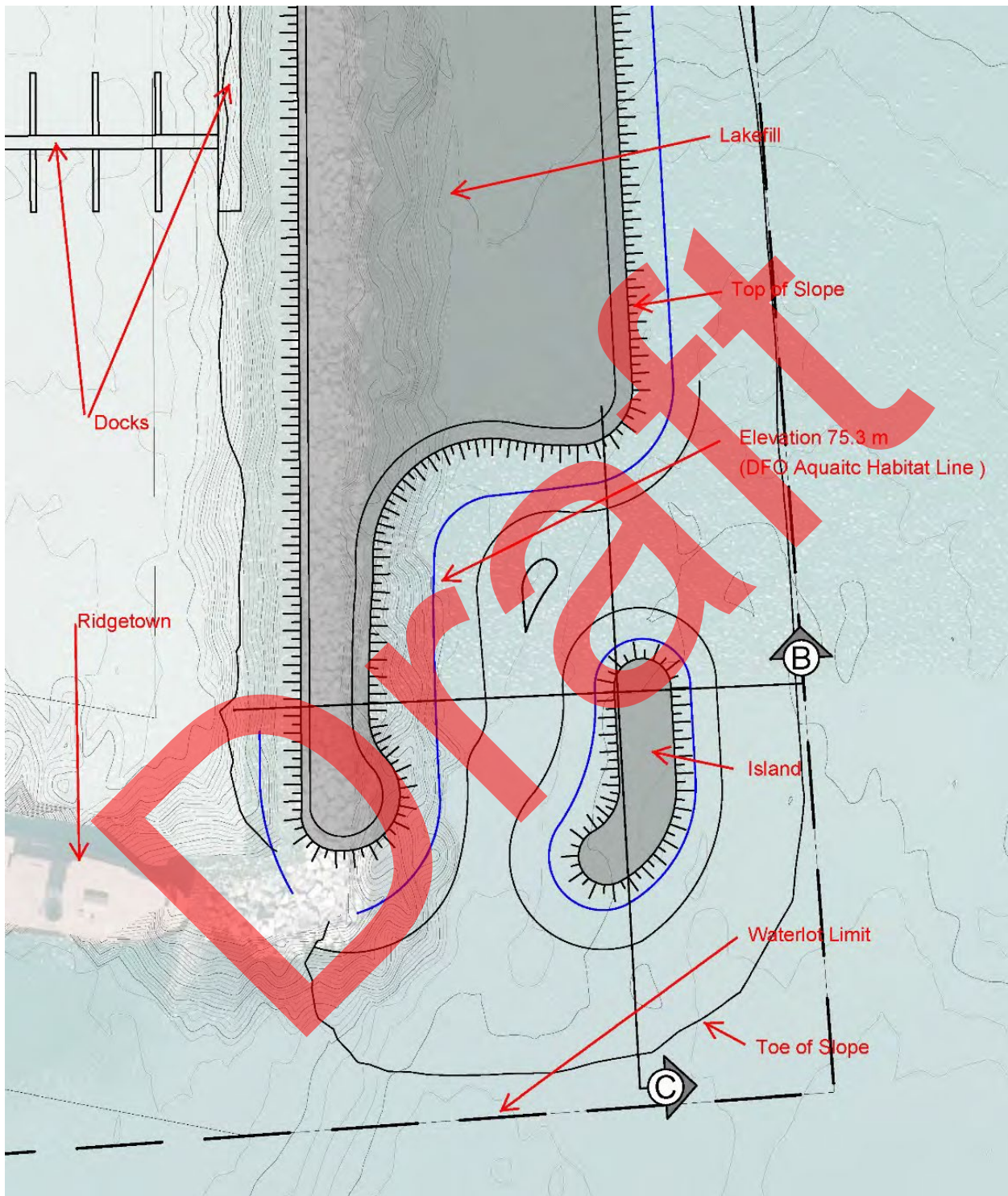


Figure 6.1 Semi-Sheltered Aquatic Habitat Area

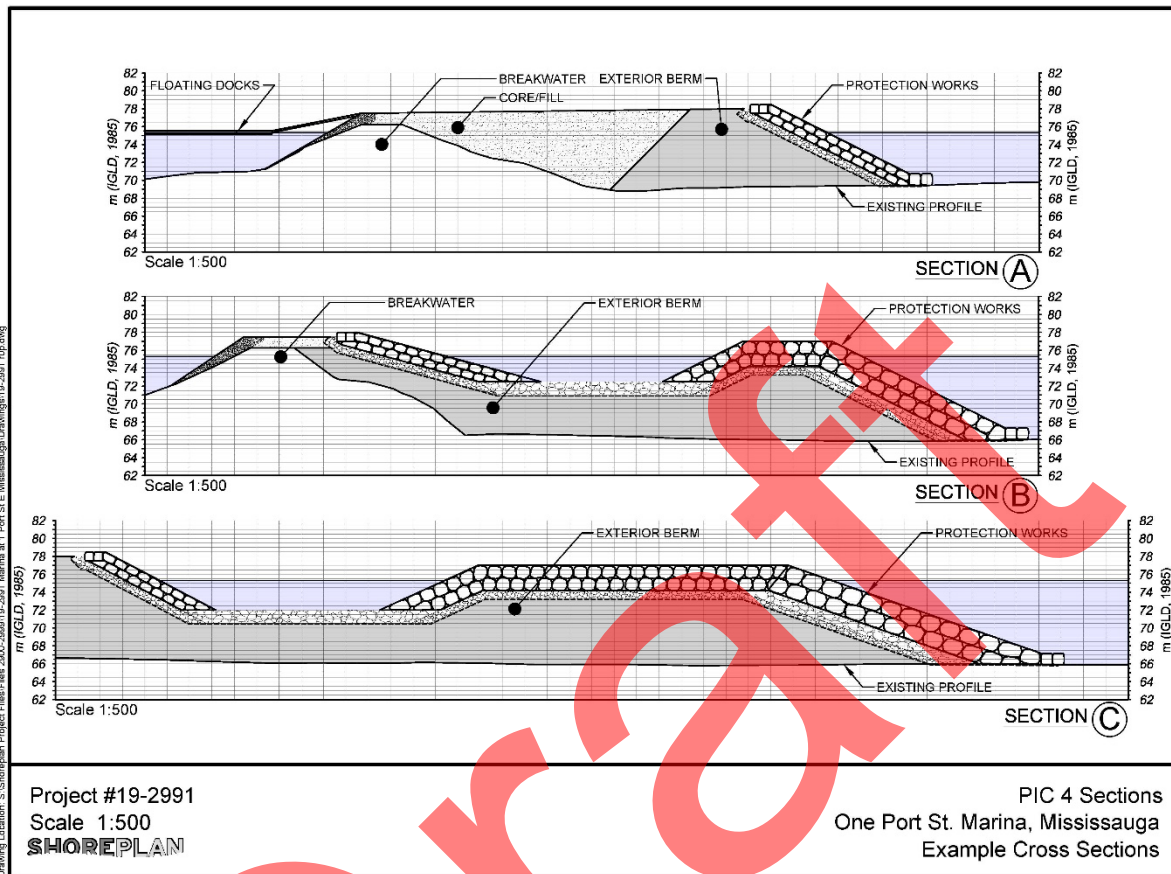


Figure 6.2 Cross-sections of the Proposed Lakefill and Semi-Sheltered Aquatic Habitat Area (see Figure 6.1 for cross-section locations)

7.3 ADDITIONAL HABITAT OFF-SETTING MEASURES AND OPPORTUNITIES TO CREATE FISH HABITAT

7.3.1 Creation of underwater crevices to afford fish cover to create shelter and improve predator/prey interactions

The outer wall of the proposed lake fill will be constructed in a similar manner to the existing break wall and extend no further lakeward. Consisting of armour stone, the slope of the revetment will typically be 2H:1V for most of the 1PSEPM construction. Consequently, the new break wall will replace (like for like) existing fish habitat along the eastern face of the existing armour stone peninsula at greater than a 1:1 area ratio due to the new revetment achieving a marginally less steep than the existing break wall. through the placement of rock fill to create the breakwater structure.

7.3.2 Introduction of Structural aquatic habitat features will be incorporated along the toe of the revetment

Submerged nearshore habitat is important for spawning and feeding. However, the extensive shoreline hardening that has occurred over the past 200 years combined with erosion-resistant bedrock within the

nearshore lakebed (largely a result of historic stonehooking activities), provides for limited habitat diversity in the nearshore area throughout the Regional Study Area.

The toe stones of the revetment are likely to have sizable crevices between them, although the stones should be touching their adjacent stones. These toe stones will be laid upon naturally occurring firm substrates such as sand, gravel and small cobbles. Together, these features (large armour stone and relatively smaller substrates) will create microhabitats for spawning, shelter and predator prey interactions for a variety of fish species known to utilize the nearshore area of the Project Study Area including Smallmouth Bass, White Sucker, Common Carp, Alewife, Lake Chub, Longnose Dace and Emerald Shiner.

In addition, structural aquatic habitat features could be incorporated along the toe of the revetment to replicate and improve the existing habitat along the east side of the breakwall. The habitat features would provide excellent forage, spawning and nursery habitat conditions for fish species such as Emerald Shiner, Yellow Perch and Johnny Darter that are commonly found in the littoral areas of the open coast (LIOSS, 2018). Note: due to the position of the proposed revetment toe to the boundary of the City's waterlot, permission from the provincial Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNR) under the *Public Lands Act* may be required to construct a portion of this habitat improvement measure adjacent to the waterlot.

7.3.3 Off-Site Compensation

Nearshore aquatic habitat consisting of gravel, cobble and small boulder substrates used to occur in abundance along this portion of Lake Ontario. With the extent of historic stonehooking in this portion of Lake Ontario, most of the nearshore habitat elements that may have provided this function are now absent from the Project Study Area and much of the Regional Study Area.

Two other LIOSS priorities: Increase diversity of habitats (e.g., cover, vegetation, shoals, etc.) for suitable target fish species in the Credit River estuary, embayments and open coast; and investigate the feasibility to create shoals off Credit River mouth to enhance existing and historic Lake Trout/Whitefish habitat, provide opportunities for habitat creation in the Local Study Area should the undertaking require additional off-setting measures.

For example, the Lakebed east of the water lot could be augmented through areas surcharged with point shoal and rock piles to create spawning habitat for Lake Trout/Whitefish. Similar to adding structural aquatic habitat features along the toe of the revetment, this option may require permission under the Public Lands Act to these habitat improvement measures adjacent to the waterlot.

A second viable habitat improvement / off-setting option is to manipulate or create habitat structure such as submerged woody cover and /or shoals strategically within the existing harbour in proximity to the western interior wall, away from the primary access/egress boating channel. This shoreline associated with the harbour embayment is fairly protected from coastal processes (waves, currents, erosion, etc.). These habitats support submergent aquatic vegetation containing diverse communities of warmwater species with some top predators. While Northern Pike and Smallmouth Bass are found regularly, LIOSS reports that species such as Largemouth Bass, Bowfin, Black Crappie and Yellow Perch are not found in high numbers in this area (Stewart et al. 2013). Installing or modifying habitat to target some of these less common occurring species would create high value habitat off-setting measures.

8.0 TERRESTRIAL FEATURES

8.1 EXISTING CONDITIONS

In comparison to unaltered natural environments, the ecology of natural heritage systems in urban areas are typically composed of fragmented habitats, isolated woodlands and wetlands, lower biodiversity, impacted hydrology with lowered groundwater levels and flashier surface water hydrology, and the presence of invasive species. Urbanization and associated microclimatic changes affect species composition; thus, as habitats simplify, the resources and competitive requirements of many wildlife species are not met (Credit Valley Conservation, 2018).

The 1PSEPM Project study area occurs in the ecoregion 7E – Lake Erie - Lake Ontario. This ecoregion covers the northern shorelines along Lake Ontario and Lake Erie and is divided into six ecodistricts. The flora and fauna in Ecoregion 7E are the most diverse in Canada and include several provincially significant plants, animals, and vegetation communities.

The Project Study Area is predominately urbanized and paved. Ornamental deciduous and coniferous trees and shrubs exist along most of the perimeter of the 1 PSEPM site with clusters of trees growing on the breakwater near the shoreline. These tree clusters were deciduous trees comprised predominately Silver Maple, (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), elms (genus *Ulmus*), willows (genus *Salix*) and mulberry (*Morus alba*). As shown in Figure 8.1, it is estimated that there exists approximately 1,700 m² (0.17 ha) of vegetation in the Project Study Area.

Figure 8.1: Existing Vegetation in the Project Study Area



While shallow depth in the Credit River due to sedimentation upstream of the CN Rail bridge to just upstream of the QEW overpass has provided suitable conditions for the establishment of the Credit River Marshes coastal wetland complex, no wetlands occur within the Project Study Area.

Waterfront parks offer some of the only remaining habitat within the larger landscape of urban areas to offer habitat supporting food resources and resting / touch-down areas for migrant birds. These parks also act as 'stepping-stones' or isolated islands of natural habitat that provide landscape level connectivity to species in an urban matrix. The Local and Project Study Areas are located within an important migratory zone, which includes portions of both the Atlantic and Mississippi flyways. While the existing vegetation offers approximately 0.17 ha of treed canopy for migrating and urban resident bird species, the mouth of the Credit

River and its eight provincially significant wetland units located immediately west of the project study area offer far more habitat diversity and area for migrating birds. Some existing buildings and structures at the marina and in Port Credit provide roosting and nesting habitat for some bird species including a colony of Common Tern.

In a naturalized setting, the nearshore zone of a lake provides essential habitat for biota by affording both shoreline corridor linkage functions and a link between the terrestrial and open water environments. In urbanized environments, these connections often become disrupted or removed entirely. Aside from the remanent sand beach occurring at the interface of the shoreline and the eastern side of the existing break wall, the existing shoreline within the project study area offers little to no opportunity for wildlife movement along the shore or between the lake and upland areas. The hardened sheet pile shoreline created along the waterfront creates a barrier between terrestrial and nearshore habitats and the extensive use of fences along the shoreline of the Local and Regional Study Areas create further fragmentation along the shoreline corridors for both people and wildlife.

8.2 EFFECTS ON TERRESTRIAL HABITAT IN THE LOCAL STUDY AREA

The construction of any of the 1PSEPM Project alternatives would require the removal of approximately 0.1 ha of trees fronting the shoreline of the existing marina and those positioned along the existing break wall: representing approximately half of the existing trees within the project study area (Figure 8.1). The remnant sand beach occurring at the interface of the shoreline and the eastern side of the existing break wall will also be removed by the construction of any of the three alternatives 1PSEPM Project. Being common elements to be removed under all marina construction alternatives, the opportunity to recreate similar shoreline habitat, canopy cover and wildlife friendly nearshore habitat areas was a strong consideration in the natural heritage evaluation of the alternatives.

8.3 TERRESTRIAL HABITAT CREATION AND NATURALIZATION

In addition to considering the fill required for the site, conceptualizing the topography allows for advantageous (but approximate) placement of landscape features such as primary trails, parkland, naturalized habitat and connections. These amenities and features are conceptual depicted in Figure 8.2.

An important advantage of the 1PSEPM Project preferred alternative is the ability to provide a relatively large parkland and trail system that will include naturalized areas and wildlife friendly elements. A larger parkland and trail system is envisioned to be created as part of the refinement of the preferred alternative. Microhabitat variations in topography, drainage and other habitat structures will be addressed at the detailed design stage.

During detailed design, efforts will be made to use plant species that are phenotypically best suited to the Great Lakes/St. Lawrence Lowlands, including species that are consistent with CVC's approved planting lists and the use of Carolinian species where appropriate. Another important consideration in the selection of plants will be the use of native suitable native trees and shrubs and other flora that are highly suited to meeting the needs of native fauna including fruit- and cone-bearing trees and shrubs and those producing autumn fruit such as Dogwood (*Cornus* sp.), Mountain-ash (*Sorbus* sp.), Nannyberry, Wild Raisin, Highbush Cranberry (*Viburnum* sp.) Winterberry (*Ilex verticillata*) and Staghorn Sumac (*Rhus typhina*).

The resulting mosaic of passive recreational parkland, trails and naturalized microhabitats will serve as a migratory rest and launching habitat for birds and butterflies flying over Lake Ontario, offering additional replacement habitat as compared to the area to be lost under any alternative scenario. The largely un-treed area of the parkland and other amenity areas would also serve as a potential raptor prey habitat.

Figure 8.2 Preliminary Preferred Concept

1 Port Street East Proposed Marina Environmental Assessment

PRELIMINARY PREFERRED CONCEPT



9.0 OTHER CONSIDERATIONS AND NEXT STEPS

9.1.1 Next Steps

The large lakefill footprint alternative will now be subject to refining the undertaking for the purposes of the detailed assessment. The detailed assessment will examine how the preferred alternative meets the purpose of the undertaking; it describes the net environmental effects; how it minimizes adverse effects and/or maximizes positive effects; and summarizes its advantages and disadvantages, according to the components of the environment identified in the study terms of reference namely: Physical Environment; Atmospheric Environment; Biological Environment; Socio-economic Environment; Cultural Environment (including Interests of Indigenous Communities); and Costs.

Through discussions with MNDMNRF, DFO and Conservation Authority biologists during detailed design, it is anticipated that the additional ecological benefits and suitable habitat compensation techniques will be developed to achieve a neutral (no) net effects on fish habitat.

10.0 REFERENCES

- Aquafor Beech Limited. 2011. Lake Ontario Integrated Shoreline Strategy – Background Review and Data Gap Analysis – Appendix B Fluvial Geomorphology.
- Credit Valley Conservation. 2002. Fishes of the Credit River Watershed.
- Credit Valley Conservation. 2014. Credit River Estuary: Species at Risk Research Project.
- Credit Valley Conservation. 2017a. Memorandum (July 27, 2017) – One Port Street – Heat Model (First Run).
- Credit Valley Conservation. 2017b. Memorandum (August 3, 2017) – One Port Street – Cost Estimate for Fish Habitat Compensation.
- Credit Valley Conservation. 2018. Lake Ontario Integrated Shoreline Strategy – Characterization Report.
- Fisheries and Oceans Canada. 2021. Aquatic Species at Risk. Available online: <https://www.dfo-mpo.gc.ca/species-especies/sara-lep/map-carte/index-eng.html>. Accessed: December 3, 2021.
- Lane, J.A., C.B. Portt, and C.K. Minns. 1996. Spawning habitat characteristics of great lakes fishes. Canadian manuscript report of fisheries and aquatic sciences No.2368.
- Ministry of Natural Resources and Forestry. 2020a. Land Information Ontario – Wetlands, ANSI, Natural Features, GIS shapefiles and metadata. Available at: <https://geohub.lio.gov.on.ca/>. Downloaded December 1, 2020.
- Ministry of Natural Resources and Forestry. 2020b. Natural Heritage Information Centre – Map A Natural Heritage Map (Elemental Occurrences). Available at: <https://www.ontario.ca/page/make-natural-heritage-area-map>. Accessed: December 1, 2020.
- Shoreplan Engineering Limited. 2016. Lake Ontario Integrated Shoreline Strategy – Assessment and Mapping of Coastal Engineering Structures.

From: [Kilis, Jakub](#)
To: [Beata Palka](#)
Cc: [Milo Sturm](#); "grievea@rogers.com"
Subject: CVC Comments - Aquatic Ecology Technical Memo (CVC File EA 19/012)
Date: Thursday, February 9, 2023 8:24:51 AM
Attachments: [image001.jpg](#)

Hi Beata,

On January 1, 2023, a new Minister's regulation (Ontario Regulation 596/22: Prescribed Acts – Subsections 21.1.1 (1.1) and 21.1.2 (1.1) of the Conservation Authorities Act) came into effect which provides that Conservation Authorities (CAs) may not provide a municipal (Category 2) or other (Category 3) program or service related to reviewing and commenting on proposals, applications, or other matters under a prescribed Act, including the Environmental Assessment Act. As a result, technical review services (e.g., technical reviews related to natural heritage and select aspects of stormwater management) that CVC formerly provided as a watershed based resource management agency and public (commenting) body will no longer be provided for applications received after January 1, 2023.

CVC does not have any comments on the Aquatic Ecology Technical Memo related to our natural hazard management function as per the note above. CVC defers habitat compensation comments to Fisheries and Oceans Canada (DFO).

Thank you for the opportunity to review the above noted submission,
Jakub

I'm working remotely and in the office. The best way to reach me is by email, mobile phone or Microsoft Teams.

Jakub Kilis | RPP

Senior Manager, Infrastructure and Regulations | Credit Valley Conservation

905-670-1615 ext 287 | M: 647-212-6554

jakub.kilis@cvc.ca | cvc.ca



[View our privacy statement](#)

1 Port Street East Proposed Marina Environmental Assessment

Appendix 2 - Public Notifications

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA – NOTICE OF COMMENCEMENT: ENVIRONMENTAL ASSESSMENT AND PUBLIC INFORMATION CENTRE #1

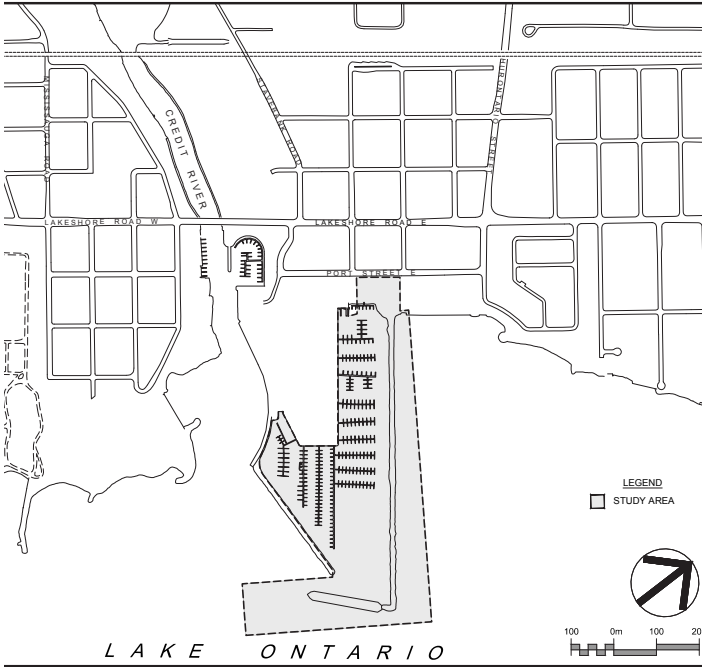
WHAT?

The City of Mississauga is commencing the environmental assessment under the *Environmental Assessment Act* for the 1 Port Street East Proposed Marina Project in accordance with the approved Terms of Reference. The environmental assessment will study proposed lakefill alternatives for additional waterfront parkland and marina services for this site.

WHY?

This Project is a key element of Inspiration Port Credit’s Charting the Future Course Master Plan. The 1 Port Street East Proposed Marina Project is intended to help fulfill the Master Plan vision “to ensure that an iconic and vibrant mixed-use waterfront neighbourhood and destination with a full service marina is developed at the 1 Port Street East Site”.

- The project provides an opportunity to:
- Enable the continuation of the site’s historic marina function, which is key to the cultural identity of the Port Credit community;
 - Support marina and other business activity, for the benefit of the City and its residents;
 - Create new waterfront parkland with safe public access;
 - Allow for enhancements to aquatic and terrestrial habitat.



HOW?

On September 16, 2021, the Minister of the Environment, Conservation and Parks approved the Terms of Reference for the 1 Port Street East Proposed Marina Project. The approved Terms of Reference is available at: mississauga.ca/1portstreeteast. A hard copy of the Terms of Reference is available upon request by emailing beata.palka@mississauga.ca.

This study will be carried out according to the approved terms of reference and the requirements of the Environmental Assessment Act. Results from this study will be documented in an environmental assessment, which will be submitted to the ministry for review. At that time, the public, Indigenous communities and other interested persons will be informed when and where the environmental assessment can be reviewed. Members of the public, agencies, Indigenous Communities and other interested persons are encouraged to actively participate in the environmental assessment process by attending consultation events or contacting staff directly with comments or questions. Consultation opportunities are planned throughout the environmental assessment process and will be advertised on the City of Mississauga’s project website, in local papers, and by direct email to those on the mailing list.

GET INVOLVED!

YOU ARE INVITED TO A VIRTUAL PUBLIC INFORMATION CENTRE

DATES: Thursday, February 17, 2022 – Thursday, March 17, 2022
WHERE: Online at: mississauga.ca/1portstreeteast

The City will present the lakefill alternatives assessed and the preliminary preferred lakefill alternative. We are seeking your feedback on the alternatives considered, the evaluation criteria and the results of the evaluation through a survey.

To view the presentation and complete a survey sharing your feedback, please visit the project website. Responses to questions and comments raised will be posted to the project website throughout the duration of the consultation period.

For more information, please visit the project website:
mississauga.ca/1portstreeteast

If you have any questions, would like to be added to the mailing list, or to request a hard copy of the Public Information Centre materials, please contact the project manager:

Beata Palka, M.PI, RPP
Planner, Park Planning
City of Mississauga
201 City Centre Drive, 9F
Mississauga, ON L5B 2T4
T 905-615-3200 ext. 4221
beata.palka@mississauga.ca

Notice of Collection of Personal Information:
All personal information included in a submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment, Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the *Environmental Assessment Act* or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the *Freedom of Information and Protection of Privacy Act*. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the Ministry of the Environment, Conservation and Parks Freedom of Information and Privacy Coordinator at 416-327-1434.

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA ENVIRONMENTAL ASSESSMENT

NOTICE OF PUBLIC INFORMATION CENTRE #2

WHAT?

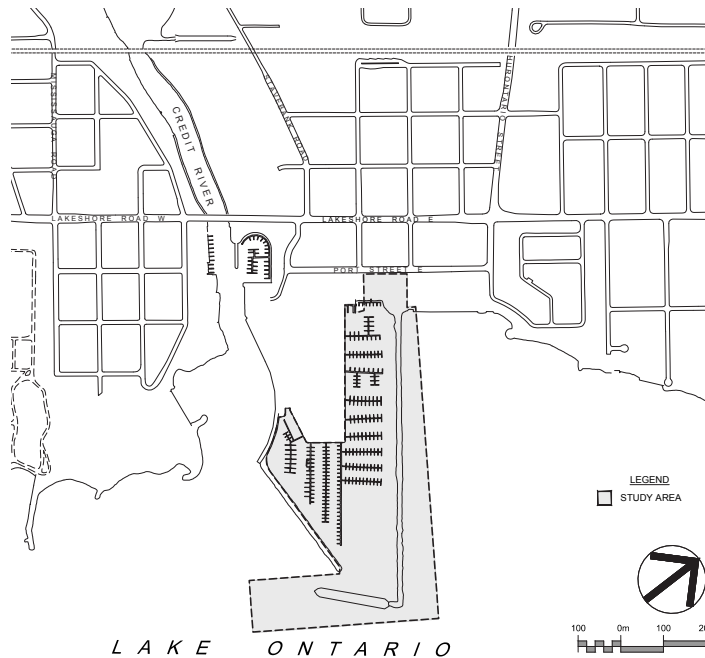
The City of Mississauga is undertaking the environmental assessment (EA) under the *Environmental Assessment Act* for the 1 Port Street East Proposed Marina Project in accordance with the approved Terms of Reference. The EA will study proposed lakefill alternatives for additional waterfront parkland and marina services for this site.

WHY?

This Project is a key element of Inspiration Port Credit's Charting the Future Course Master Plan. The 1 Port Street East Proposed Marina Project is intended to help fulfill the Master Plan vision "to ensure that an iconic and vibrant mixed-use waterfront neighbourhood and destination with a full service marina is developed at the 1 Port Street East Site".

The project provides an opportunity to:

- Enable the continuation of the site's historic marina function, which is key to the cultural identity of the Port Credit community;
- Support marina and other business activity, for the benefit of the City and its residents;
- Create new waterfront parkland with safe public access;
- Allow for enhancements to aquatic and terrestrial habitat.



HOW?

On September 16, 2021, the Minister of the Environment, Conservation and Parks approved the Terms of Reference for the 1 Port Street East Proposed Marina Project. EA Public Information Centre (PIC) #1 was held virtually from February 17 to March 17, 2022. The approved Terms of Reference, the EA PIC #1 materials and summary are available at: mississauga.ca/1portstreeteast. A hard copy of the Terms of Reference is available upon request by emailing beata.palka@mississauga.ca.

This study will be carried out according to the approved terms of reference and the requirements of the *Environmental Assessment Act*. Results from this study will be documented in an environmental assessment, which will be submitted to the ministry for review. At that time, the public, Indigenous communities and other interested persons will be informed when and where the environmental assessment can be reviewed. Members of the public, agencies, Indigenous Communities and other interested persons are encouraged to actively participate in the environmental assessment process by attending consultation events or contacting staff directly with comments or questions. Consultation opportunities are planned throughout the environmental assessment process and will be advertised on the City of Mississauga's project website, in local papers, and by direct email to those on the mailing list.

GET INVOLVED!

YOU ARE INVITED TO VIRTUAL PUBLIC INFORMATION CENTRE #2

WHEN: Thursday, August 25, 2022 – Thursday, September 22, 2022
WHERE: Online at: mississauga.ca/1portstreeteast

The City will present the preferred lakefill alternative, the preliminary design of the park space and marina layout along with the effects assessment. We are seeking your feedback on the preliminary design and the effects assessment through an online survey.

To view the presentation, complete the survey and share your feedback, please visit the project website anytime between August 25, 2022 and September 22, 2022. Responses to questions and comments raised will be posted to the project website following the consultation period.

The City will be holding a pop-up event with staff available to answer questions and discuss the project. Pop-up event details will be made available on the project website during the EA PIC #2.

For more information, please visit the project website:
mississauga.ca/1portstreeteast

If you have any questions, would like to be added to the mailing list, or to request a hard copy of the Public Information Centre materials, please contact the project manager:

Beata Palka, M.PI, RPP
 Planner, Park Planning
 City of Mississauga
 201 City Centre Drive, 9F
 Mississauga, ON L5B 2T4
 T 905-615-3200 ext. 4221
beata.palka@mississauga.ca

Notice of Collection of Personal Information:

All personal information on this survey is collected under the authority of the *Environmental Assessment Act*. Any personal information will be used for the purpose of creating a record that is available to the general public as well as assisting staff in understanding the public's preferences related to the noted project. Your personal information will not be published as part of the public record. Questions regarding this collection, retention, and use of Personal Information should be addressed to: Beata Palka, Planner, Park Planning at: beata.palka@mississauga.ca or 905-615-3200 ext. 4221.

1 Port Street East Proposed Marina Environmental Assessment

Appendix 3 - Indigenous Community Letters

Letter Delivered via Email

**Tracey General
Leroy Hill**

Haudenosaunee Confederacy Chiefs Council
c/o Haudenosaunee Development Institute
16 Sunrise Court, Suite 600
P.O. Box 714
OHSWEKEN, ON, N0A 1M0

City of Mississauga
Community Services
201 City Centre Drive, 9F
MISSISSAUGA, ON, L5B 3C1
mississauga.ca

February 1, 2022

**Re: Individual Environmental Assessment for the 1 Port Street East Proposed Marina Project:
Notice of Environmental Assessment Commencement and Public Information Centre**

Dear Tracey General and Leroy Hill,

We are writing to notify you of the Individual Environmental Assessment (EA) commencement and upcoming Public Information Centre (PIC) for the 1 Port Street East Proposed Marina (1PSEPM) Project, located in Port Credit Village in the City of Mississauga, Ontario. The City of Mississauga (the City) has previously been in contact with you regarding this project.

The 1PSEPM Project is subject to the requirements of the Ontario Environmental Assessment Act (EA Act). As the first step in the EA process, a Terms of Reference (ToR) was prepared and submitted to the Ontario Ministry of Environment, Conservation and Parks (MECP) in July 2020. MECP approved the final ToR on September 16, 2021. The ToR and Record of Consultation are available on the project website: mississauga.ca/1portstreeteast.

The next PIC is scheduled from February 17 to March 17, 2022, with a pre-recorded presentation and survey. Consultation opportunities are planned throughout the EA process and will be advertised on the City's project website, in local papers, and by direct email to those on the mailing list.

We encourage your community's active participation in the EA process by participating in attending future PICs or contacting the City of Mississauga's staff directly with comments or to discuss other ways we can engage your community in this process. We want to chart out a mutually agreeable EA engagement process as the EA advances towards a final submission to the MECP. We would be happy to meet with you in person or virtually during the coming months to develop this plan forward.

As Project Lead, I will continue to be your contact at the City. Please call me at 905-615-3200 (ext. 4221) or contact me via email at beata.palka@mississauga.ca to arrange a meeting, or with any questions or comments.

Respectfully,



Beata Palka, M.Pl, RPP
Planner, Park Planning

Letter Delivered via Email

Mr. Aaron Detlor

Haudenosaunee Confederacy Chiefs Council
c/o Haudenosaunee Development Institute
16 Sunrise Court, Suite 600, P.O. Box 714
OHSWEKEN, ON, N0A 1M0

City of Mississauga

Community Services
201 City Centre Drive, 9F
MISSISSAUGA, ON, L5B 3C1
mississauga.ca

August 11, 2022

**Re: Individual Environmental Assessment for the 1 Port Street East Proposed Marina Project:
Notice of Public Information Centre**

Dear Mr. Detlor,

We are writing to notify you of the Individual Environmental Assessment (EA) upcoming Public Information Centre (PIC) for the 1 Port Street East Proposed Marina (1PSEPM) Project, located in Port Credit Village in the City of Mississauga, Ontario. The City of Mississauga (the City) has previously been in contact with you regarding this project and held a discussion regarding your engagement requests during our June 8, 2022 video conference call. The City is working on a response to your June 8, 2022 email and letter. We will be in touch shortly.

As discussed, the 1PSEPM Project is subject to the requirements of the Ontario Environmental Assessment Act (EA Act). As the first step in the EA process, a Terms of Reference (ToR) was prepared and submitted to the Ontario Ministry of Environment, Conservation and Parks (MECP) in July 2020. MECP approved the final ToR on September 16, 2021. EA PIC #1 was held from February 17 to March 17, 2022, with a pre-recorded presentation and survey. The ToR, Record of Consultation, and EA PIC #1 materials are available on the project website: mississauga.ca/1portstreeteast.

EA PIC #2 will be held virtually from August 25 to September 22, 2022, with a pre-recorded presentation and survey. Consultation opportunities are planned throughout the EA process and will be advertised on the City's project website, in local papers, and by direct email to those on the mailing list.

We continue to encourage HDI's active participation in the EA process by attending future PICs, contacting the City of Mississauga's staff directly with comments or to discuss other ways we can engage HDI in this process. We would be happy to meet with you in person or virtually during the coming months to discuss our project and future opportunities for engagement.

As Project Lead, I will continue to be your contact at the City. Please call me at 905-615-3200 (ext. 4221) or contact me via email at beata.palka@mississauga.ca to arrange a meeting, or with any questions or comments.

Respectfully,



Beata Palka, M.Pl, RPP
Planner, Park Planning

Letter Delivered via Email

Grand Chief Konrad H. Sioui
Huron Wendat Nation
255, place Chef Michel Laveau
WENDAKE QC G0A 4V0

City of Mississauga
Community Services
201 City Centre Drive, 9F
MISSISSAUGA, ON, L5B 3C1
mississauga.ca

February 1, 2022

**Re: Individual Environmental Assessment for the 1 Port Street East Proposed Marina Project:
Notice of Environmental Assessment Commencement and Public Information Centre**

Dear Grand Chief Konrad H. Sioui,

We are writing to notify you of the Individual Environmental Assessment (EA) commencement and upcoming Public Information Centre (PIC) for the 1 Port Street East Proposed Marina (1PSEPM) Project, located in Port Credit Village in the City of Mississauga, Ontario. The City of Mississauga (the City) has previously been in contact with you regarding this project.

The 1PSEPM Project is subject to the requirements of the Ontario Environmental Assessment Act (EA Act). As the first step in the EA process, a Terms of Reference (ToR) was prepared and submitted to the Ontario Ministry of Environment, Conservation and Parks (MECP) in July 2020. MECP approved the final ToR on September 16, 2021. The ToR and Record of Consultation are available on the project website: mississauga.ca/1portstreeteast.

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As Project Lead, I will continue to be your contact at the City. Please call me at 905-615-3200 (ext. 4221) or contact me via email at beata.palka@mississauga.ca to arrange a meeting, or with any questions or comments.

Respectfully,



Beata Palka, M.Pl, RPP
Planner, Park Planning

Letter Delivered via Email

Grand Chief Rémy Vincent
Huron Wendat Nation
255 Place Chef Michel Laveau
Wendake QC G0A 4V0

City of Mississauga
Community Services
201 City Centre Drive, 9F
MISSISSAUGA, ON, L5B 3C1
mississauga.ca

August 11, 2022

**Re: Individual Environmental Assessment for the 1 Port Street East Proposed Marina Project:
Notice of Public Information Centre**

Dear Grand Chief Rémy Vincent,

We are writing to notify you of the Individual Environmental Assessment (EA) upcoming Public Information Centre (PIC) for the 1 Port Street East Proposed Marina (1PSEPM) Project, located in Port Credit Village in the City of Mississauga, Ontario. The City of Mississauga (the City) has previously been in contact with you regarding this project.

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Beata Palka, M.Pl, RPP
Planner, Park Planning

Letter Delivered via Email

Chief R. Stacey Laforme
Mississaugas of the Credit First Nation
4065 HWY 6 NORTH
HAGERSVILLE ON NOA 1H0

City of Mississauga
Community Services
201 City Centre Drive, 9F
MISSISSAUGA, ON, L5B 3C1
mississauga.ca

February 1, 2022

**Re: Individual Environmental Assessment for the 1 Port Street East Proposed Marina Project:
Notice of Environmental Assessment Commencement and Public Information Centre**

Dear Chief R. Stacey Laforme,

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Letter Delivered via Email

Chief Mark Hill

Six Nations of the Grand River
1695 Chiefswood Rd., P.O. Box #5000
OHSWEKEN ON N0A 1M0

City of Mississauga

Community Services
201 City Centre Drive, 9F
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Respectfully,

Beata Palka, M.Pl, RPP
Planner, Park Planning

1 Port Street East Proposed Marina Environmental Assessment

Appendix 4 - EA Public Information Centre #1

1 Port Street East Proposed Marina Environmental Assessment:







Environmental Assessment
Public Information Centre #1

February 2022

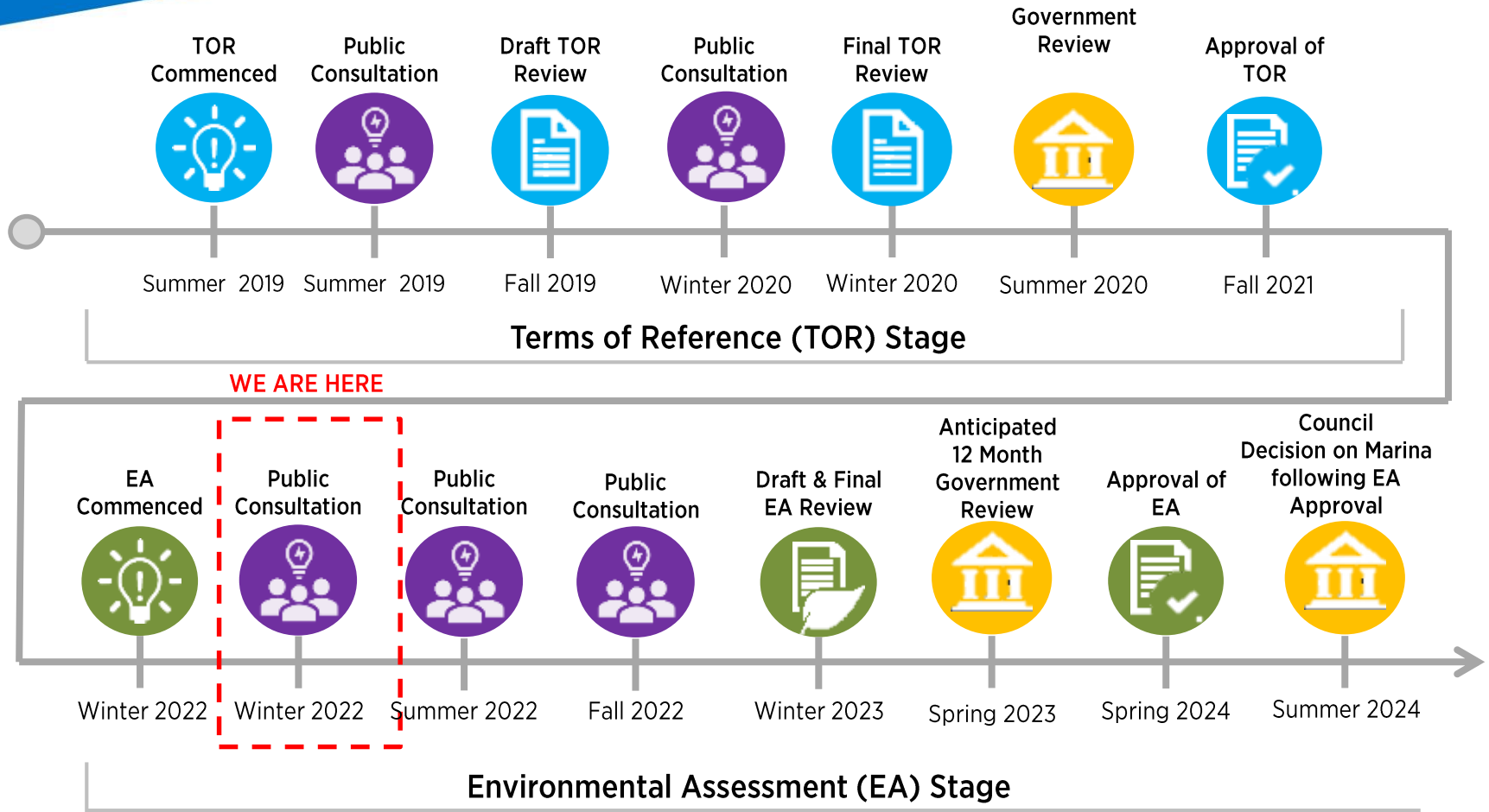


Objectives of Public Information Centre (PIC)

1 Port Street East Proposed Marina Environmental Assessment





-  To introduce the EA and update the project schedule
-  To present background project information to be included in the EA
-  To present the preliminary lakefill alternatives and the comparative evaluation
-  To seek comments and feedback on the alternatives and comparative evaluation
-  To identify issues and concerns to be assessed
-  To discuss next steps





Environmental Assessment Process

1 Port Street East Proposed Marina Environmental Assessment

-  An EA is a planning and decision-making process supported by good science documented for review by stakeholders and approval agencies - you need to get the decision-making process right to get approval from MECP to proceed with a project
-  Project requires approval as an Individual EA under the Ontario Environmental Assessment Act, the process has 2 phases:
-  **Phase 1 Develop Terms of Reference:** documents how the EA will be done and how consultation during the EA will be carried out
 - Terms of Reference will make use of past studies to focus what will be looked at in the EA
 - ***The 1 Port Street East Proposed Marina Terms of Reference was approved September 2021.***
-  **Phase 2 Prepare EA:** EA will document the evaluation of lakefill alternatives and assessment of effects in accordance with the Approved Terms of Reference



Project Study Area




1 Port Street East Proposed Marina Environmental Assessment

- Area where project activities will occur should the EA be approved
- 1 Port Street East is located in Port Credit, at the mouth of the Credit River. It is bound by Port Street East to the north, Stavebank Road to the west, Helene Street South to the east and Lake Ontario to the south
- This project is limited to the eastern portion of the site in the waterlot owned by the City (green area). The waterlot beyond this area is not owned by the City and is not available for this project.
- The wharf on the western portion of the site will be developed into a mixed-use community and is not part of this City-led project



Purpose of Proposed Undertaking

1 Port Street East Proposed Marina Environmental Assessment

-  The purpose of this project is to provide an expanded land base for additional waterfront parkland and marina alternatives at the 1 Port Street East site. This Project is a key element of Inspiration Port Credit's Charting the Future Course Master Plan.
-  The 1 Port Street Proposed Marina Project is intended to help fulfill the following vision:
“to ensure that an iconic and vibrant mixed-use waterfront neighbourhood and destination with a full service marina is developed at the 1 Port Street East Site”
-  Past Studies informed the development of the Terms of Reference and the identification of lakefill alternatives.



Planning Context

1 Port Street East Proposed Marina Environmental Assessment



Inspiration Port Credit 1 Port Street East Comprehensive Master Plan, approved by City Council in 2016, identified a desire for a marina at the site



Past studies have looked at potential uses for the site, described existing conditions and investigated some alternatives



Past studies have determined that eastern breakwater is best location for marina



Official Plan Amendment, approved by City Council in 2017, establishes the appropriate development policies for the site to allow a future marina use, public parks and waterfront lands implementing the Master Plan.



Past studies have included considerable public consultation and will be used to focus the issues and alternatives studied as part of the EA



Problem/Opportunity Assessment

1 Port Street East Proposed Marina Environmental Assessment



Stakeholders have communicated a desire for continued marina operations in Port Credit ***“keep the Port in Port Credit”***



Marina site is one of the few deep water harbours on the north shore of Lake Ontario. The City is exploring intent expressed during Inspiration Port Credit for continued marina operations in this location



Support marina and other business activity, for the benefit of the City and its residents



Provision of park space and enhanced public access along waterfront where none currently exists








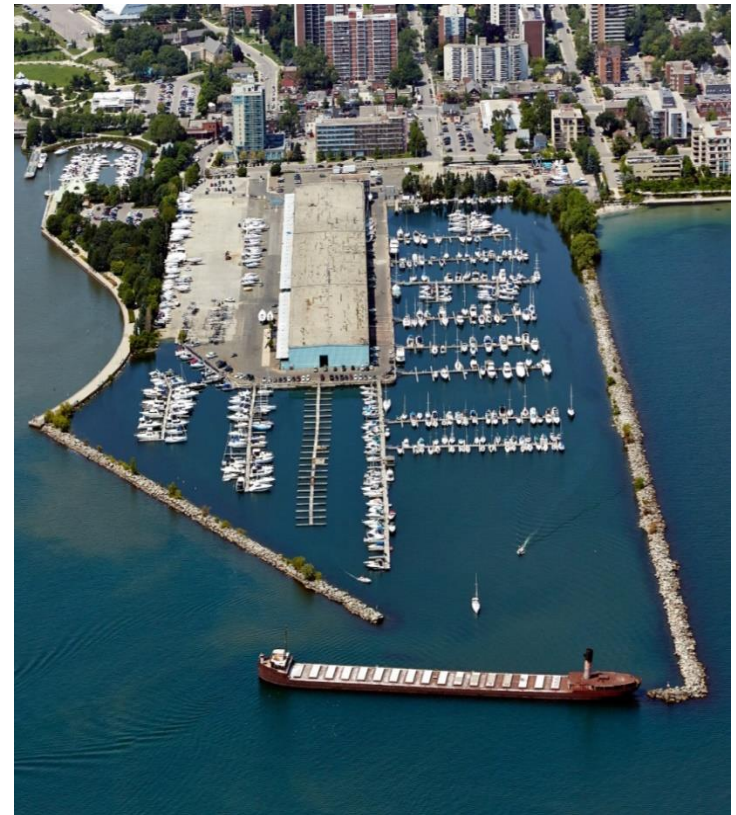
Project provides an opportunity to enhance terrestrial and aquatic habitat in the vicinity of the eastern breakwater



Description of the Environment Potentially Affected by the Proposed Undertaking

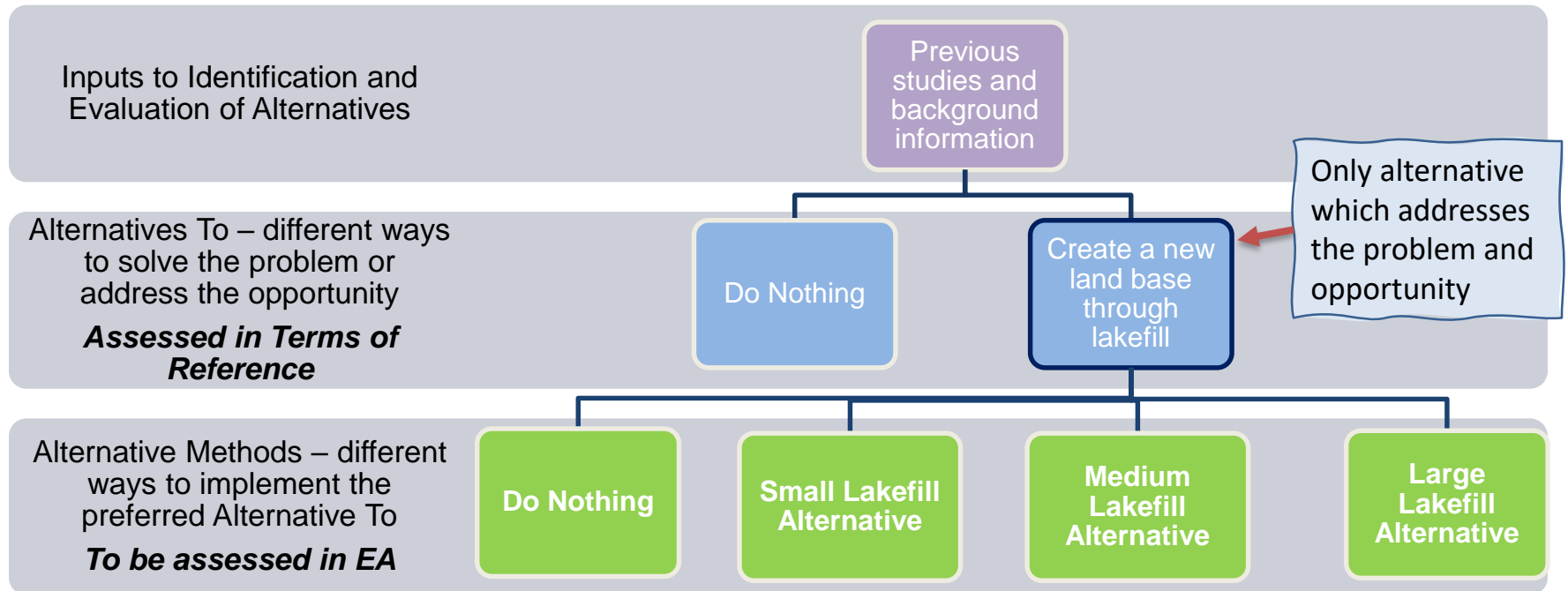
1 Port Street East Proposed Marina Environmental Assessment

-  The 1 Port Street East site has natural attributes such as the deep basin and existing breakwater which make it ideal for a marina.
-  Alternatives have been developed to withstand coastal conditions including wave height and water levels
-  The aquatic habitat in the area is of very poor quality
-  Minimal terrestrial habitat available
-  No marine archaeological or heritage resources present in the areas of proposed lakefill






Identification of Alternatives

1 Port Street East Proposed Marina Environmental Assessment



ToR Section 5.0 – ‘Alternative Methods’

1 Port Street East Proposed Marina Environmental Assessment

-  ‘Alternative methods’ are different ways of implementing the preferred ‘Alternative to’
-  For this project ‘alternative methods’ are different configurations of lakefill around the eastern breakwater to enable marina alternatives
-  Four Step Process for Identifying and Evaluating ‘Alternative Methods’
 - Step 1 - Determination of Footprint for Alternatives
 - Step 2 – Identification of Desired Design Elements; parkland, trail, marina elements
All alternatives include parkland, trail, marina service building, parking/boat storage and a number of slips based on size of lakefill
 - Step 3 – Comparative Evaluation of Alternatives
 - Step 4 – Confirm, Refine and Undertake Detailed Assessment of Preferred Alternative



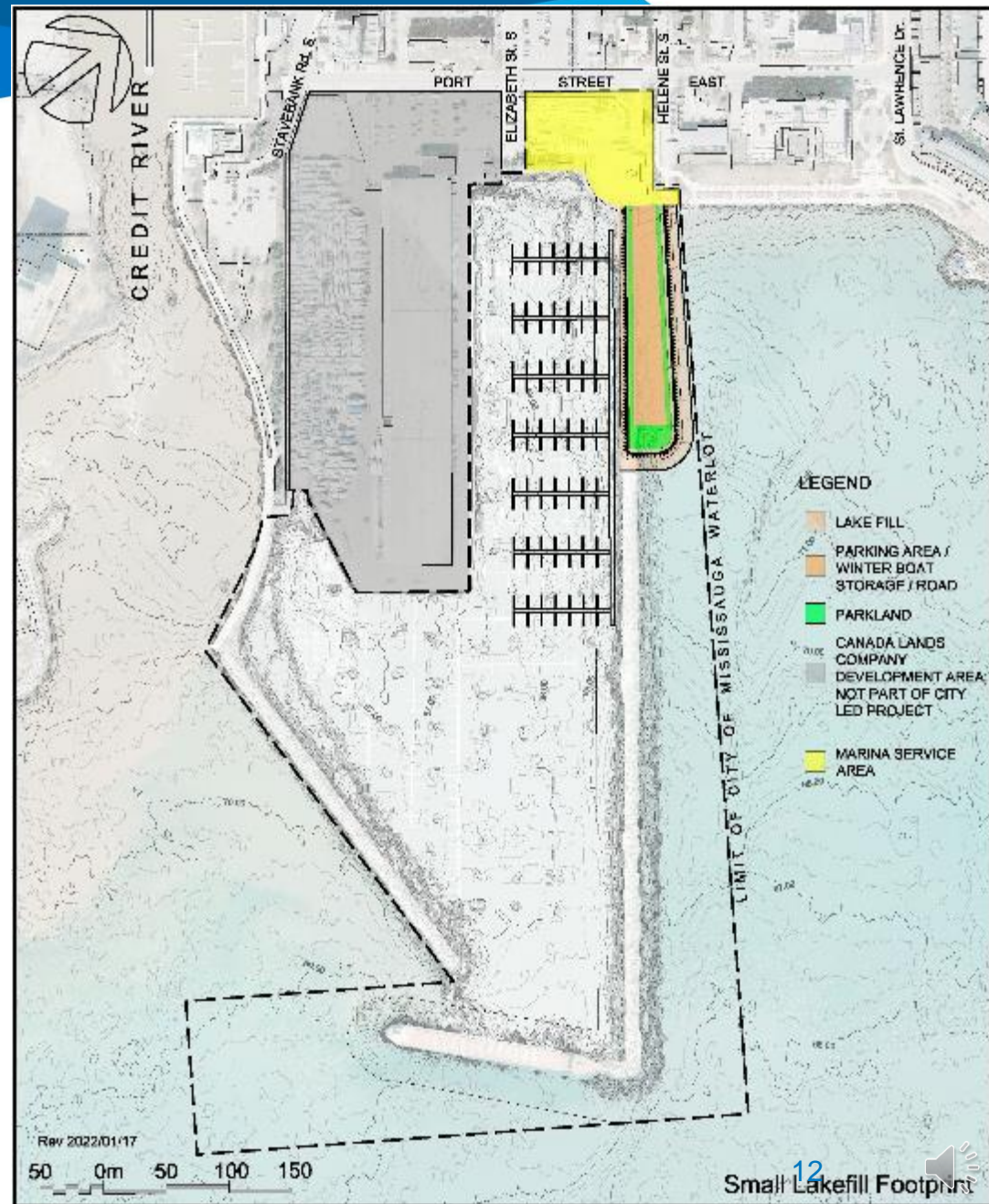
Small Lakefill Footprint

Number of Slips: ~200

Total Lakefill Area: 5700 m² or
1.4 acres or 1 football field

Parkland Area: 9% or ~500 m²
or 0.1 acres

**Estimated Lakefill Construction
Timing:** 6 months



Medium Lakefill Footprint

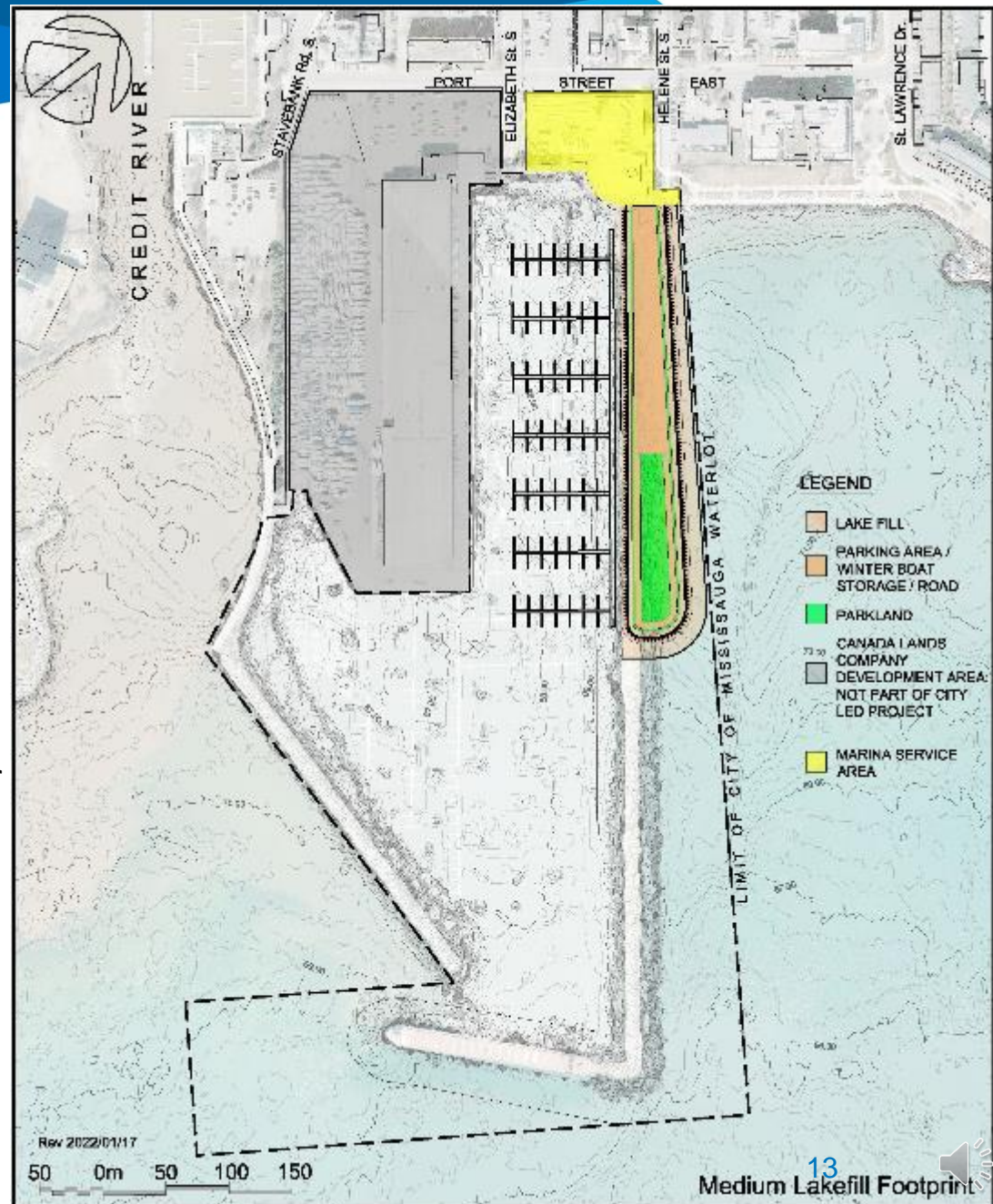
Number of Slips: ~200

Total Lakefill Area: ~11300 m² or 2.8 acres or 1.9 football fields

Parkland Area: 40% or ~4600 m² or 1.1 acres

Estimated Lakefill Construction

Timing: 7 months



Large Lakefill Footprint

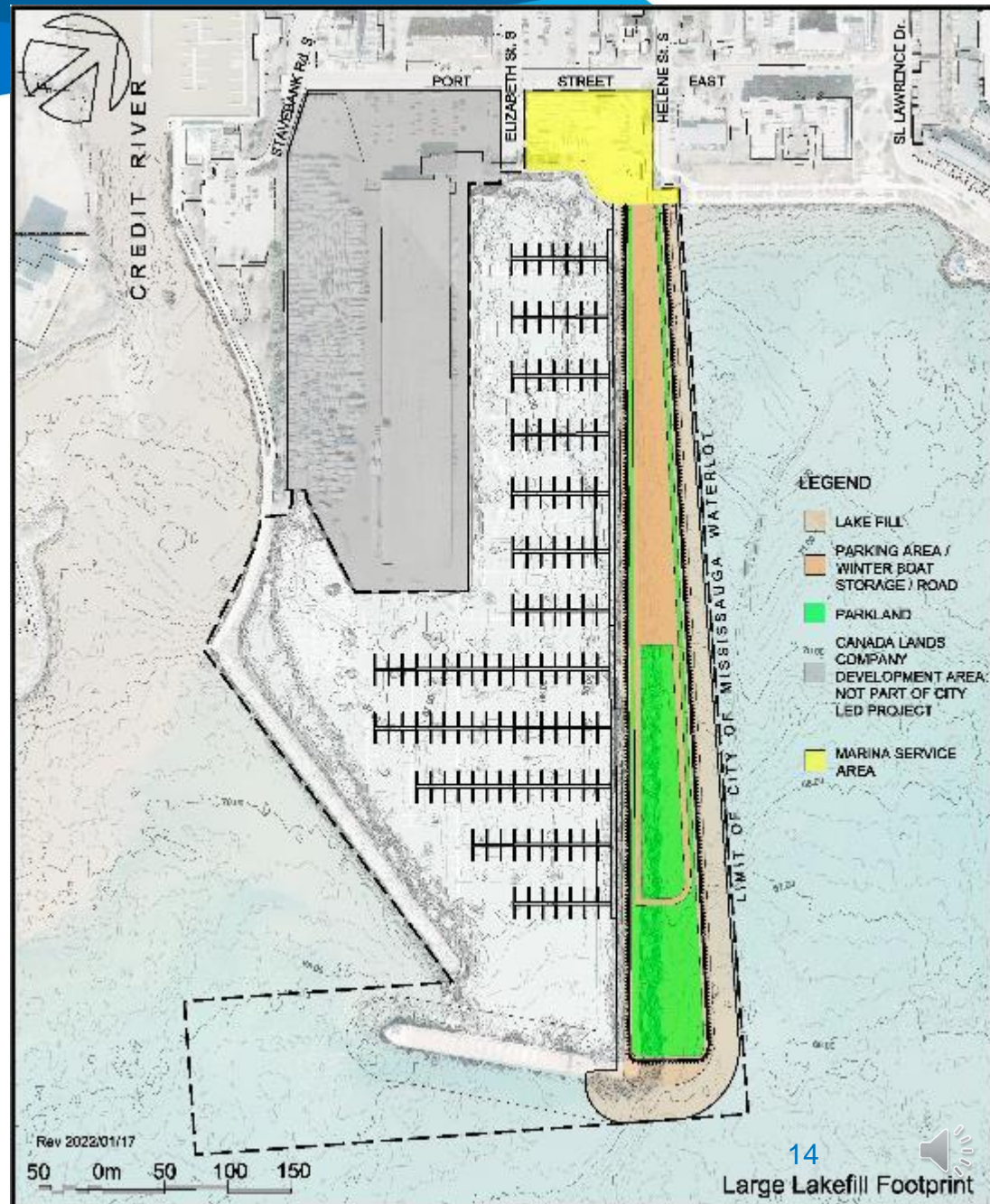
Number of Slips: ~450

Total Lakefill Area: ~28800 m² or 7.1 acres or 4.8 football fields

Parkland Area: 52% or ~ 15000 m² or 3.7 acres

Estimated Lakefill Construction

Timing: 14 months



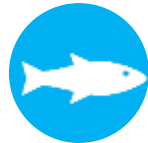
Step 3 Comparative Evaluation of Alternatives; Evaluation Criteria

1 Port Street East Proposed Marina Environmental Assessment



Physical Environment

- Effects on water quality in the Local Study Area
- Potential for disturbance of contaminated soils



Biological Environment

- Area and quality of terrestrial habitat created, enhanced, disrupted or lost
- Area and quality of aquatic habitat disrupted or removed
- Amount of fish habitat compensation



Socio-economic Environment

- Area of parkland created
- Ability to accommodate marina facilities and services
- Disruption to use and enjoyment of property during construction and establishment
- Changes in community character
- Effects on non marina related business operations during construction and establishment



Cost

- Capital cost of lakefill and land creation
- Cost of management of soil contamination



Comparative Evaluation of Lakefill Footprint Alternatives

Environmental Component	Do Nothing Alternative	Small Lakefill Footprint	Medium Lakefill Footprint	Large Lakefill Footprint
Physical Environment Summary	First Rank	Second Rank Similar effects for all lakefill alternatives	Second Rank Similar effects for all lakefill alternatives	Second Rank Similar effects for all lakefill alternatives
Biological Environment Summary	Fourth Rank <ul style="list-style-type: none"> no potential to enhance aquatic and terrestrial habitat 	Third Rank <ul style="list-style-type: none"> Highest potential to enhance aquatic habitat on site Limited potential to enhance terrestrial habitat 	Second Rank <ul style="list-style-type: none"> potential to enhance aquatic habitat on site moderate potential to enhance terrestrial habitat 	First Rank <ul style="list-style-type: none"> Potential to enhance aquatic habitat however, largest area of aquatic habitat removed and off-site compensation may be required Greatest potential to enhance terrestrial habitat



Comparative Evaluation of Lakefill Footprint Alternatives

Environmental Component	Do Nothing Alternative	Small Lakefill Footprint	Medium Lakefill Footprint	Large Lakefill Footprint
Socio-economic Summary	Fourth Rank <ul style="list-style-type: none"> No potential to provide marina or parkland 	Third Rank <ul style="list-style-type: none"> Provides for ~ 200 slips Least potential to provide parkland (~9 % of lakefill area) Nuisance effects are mitigable and will occur for shortest duration 	Second Rank <ul style="list-style-type: none"> Provides for ~200 slips Moderate potential to provide parkland (~40 % of lakefill area) Nuisance effects are mitigable and will occur for moderate duration 	First Rank <ul style="list-style-type: none"> Provides for ~450 slips Greatest potential to provide parkland (~52% of lakefill area) Nuisance effects are mitigable and will occur for longest duration
Cost Summary	First Rank <p>No capital cost but no marina or park created</p>	Second Rank <p>Low capital costs for land creation with space for a marina and very small parkland created</p>	Third Rank <p>Moderate capital costs for land creation but similar size marina to the smallest footprint and moderate parkland created</p>	Fourth Rank <p>Highest capital costs for land creation, largest marina and largest area of parkland created</p>




Summary – Evaluation of Lakefill Footprint Alternatives

Environmental Component	Do Nothing Alternative	Small Lakefill Footprint	Medium Lakefill Footprint	Large Lakefill Footprint
Physical Environment Summary	First Rank	Second Rank	Second Rank	Second Rank
Biological Environment Summary	Fourth Rank	Third Rank	Second Rank	First Rank
Socio-economic Summary	Fourth Rank	Third Rank	Second Rank	First Rank
Cost Summary	First Rank	Second Rank	Third Rank	Fourth Rank
OVERALL	FOURTH RANKED ALTERNATIVE The Do Nothing alternative is most preferred for cost, and effects to the physical environment while least preferred for the biological and socio-economic environment as there is no potential to enhance aquatic and terrestrial ecology and no new marina nor parkland.	THIRD RANKED ALTERNATIVE The smallest lakefill provides the lowest number of slips and smallest parkland created and has low opportunity to create habitat enhancements. However, construction and the nuisance effects from construction activities will be for the shortest duration and are mitigable.	SECOND RANKED ALTERNATIVE The medium lakefill provides the lowest number of slips and moderate parkland created and has moderate opportunities to create habitat enhancements. Nuisance effects from construction activities will be for a moderate duration and are mitigable.	FIRST RANKED ALTERNATIVE The largest lakefill alternative creates the largest parkland relative to the marina space and provides for a similar sized marina to what exists today (greatest number of slips). As the largest alternative, it also has the highest cost and will take the longest to construct resulting in construction nuisance effects for the longest period of time. However, the effects from construction are short-term and mitigable while the lakefill area and its benefits will exist for the long-term.



Step 4 – Confirm, Refine and Undertake the Detailed Assessment of the Preferred Alternative

1 Port Street East Proposed Marina Environmental Assessment

-  Once the preferred alternative is selected, it will be refined and the parkland and marina elements will be designed in more detail. This will include:
- Refinement of marina elements including area available for marina facilities and services, number of slips, parking and storage
 - Refinement of parkland elements including trail
 - Development of a phasing plan and construction plan including construction techniques and associated mitigation measures
 - A detailed assessment of how the preferred alternative meets the purpose of the Project, minimizes adverse effects and/or maximizes positive effects
 - A summary of environmental effects and mitigation measures



Consultation for the ToR

1 Port Street East Proposed Marina Environmental Assessment

What we have done.....

- Two Public Information Centres at key decision points
- Meeting notifications published online, in newspapers, maildrop in Project area and sent to mailing list, mobile signage, Social Media posts, eBlasts
- Ongoing consultation and engagement with Indigenous communities
- Ongoing consultation with regulatory agencies
- Participation in the Port Credit Heritage Days TOPCA Bike Tour
- Responded to questions sent to the project team
- Project website
mississauga.ca/1portstreeteast

What we have heard.....

- Marina is important to the community
- Concerns were raised about transitioning from the existing marina to the new marina and whether this could be done before the lease for the existing marina expires
- Additional parkland and trail connections are welcome benefits for the community
- Stakeholders are looking forward to seeing the marina alternatives
- Some stakeholders expressed concern over the marina lease expiring and want to see the project progress quickly
- Questions about timing of the wharf development, not part of this project



Consultation Plan for the EA

1 Port Street East Proposed Marina Environmental Assessment

- This is the first of 3 public information centres at key decision points
- Ongoing consultation and engagement with Indigenous communities
- Ongoing consultation with regulatory agencies such as Ministry of Environment Conservation and Parks, Ministry of Natural Resources and Forestry, Transport Canada, Credit Valley Conservation and other City departments
- Consultation and engagement with community groups and interest groups
- Project website **mississauga.ca/1portstreeteast**



Next Steps

1 Port Street East Proposed Marina Environmental Assessment



Please complete the survey available on the project website.

If you require a paper copy of the survey, please email:

1portstreeteast@mississauga.ca

or contact:

Beata Palka, M.Pl, RPP

Planner, Park Planning

T 905-615-3200 ext. 4221

Please continue to engage with us through the project webpage.

Please sign up for the City's mailing list through the project website:

mississauga.ca/1portstreeteast





MISSISSAUGA

1 Port Street East Proposed Marina

Environmental Assessment
Public Information Centre #1 Summary

June 2022

**PARKS, FORESTRY
& ENVIRONMENT**

Project Overview

The City of Mississauga is completing an environmental assessment under the Environmental Assessment Act for the 1 Port Street East Proposed Marina Project. The environmental assessment is studying the proposed expanded land base for additional waterfront parkland and examining marina alternatives for this site.

Following the Terms of Reference approval, the City is proceeding with the Environmental Assessment. The City held a virtual Public Information Centre (PIC) from February 17 to March 17, 2022. Creating a 24/7 Community Meeting, the public had access to the PIC materials online and hard copies were mailed upon request. This allowed residents to participate when it was convenient for them. The City notified residents of the PIC through a mailing to area residents and businesses, a notice in Mississauga News, eBlasts to the project email list, social media advertising and posts, roadway signage, and posters at Port Credit Harbour Marina.

The City provided a [recorded presentation](#) explaining the lakefill alternatives assessed and the preliminary preferred lakefill alternative. Three lakefill alternatives were presented:

- **Small Lakefill Alternative:** The estimated parkland is approximately 0.1 acre (0.05 hectare) or the equivalent of 1/14th of a football field. This alternative can accommodate approximately 200 slips.
- **Medium Lakefill Alternative:** The estimated parkland is approximately 1.1 acres (0.5 hectare) or just under a football field. This alternative can accommodate approximately 200 slips.
- **Large Lakefill Alternative:** The estimated parkland is approximately 3.7 acres (1.5 hectares) or the equivalent to two and a half football fields. This alternative can accommodate approximately 450 slips.

The public provided feedback through the survey on the three lakefill alternatives considered, the evaluation criteria, and the results of the evaluation. The City received 130 completed surveys and over 550 views to the online presentation. The feedback gathered will inform the evaluation of alternatives and the preferred lakefill alternative. This document includes responses to questions submitted through the survey. Should the public have any additional questions, please email 1portstreeteast@mississauga.ca.

To be notified of future engagement opportunities, including the next PIC taking place this summer, please subscribe to [news alerts](#) to be kept up to date on the project by email.

Responses to Survey Questions

Marina Continuity:

- **Question:** If Canada Lands is proposing the lease end as 2023 and this project finishes in 2027 (5 years time), what will happen to existing boaters at Port Credit Harbour Marina?

Answer: Canada Lands is working on an interim operations plan to assist with the continuity of marina operations beyond April 2023 given the lease expiry and the EA timeline. Canada Lands is expected to provide an update to boaters and the community as soon as possible.

Environmental Components:

- **Question:** How will the City manage potential Canada geese population issues on the new lakefill parkland?

Answer: City staff monitor geese populations annually across waterfront areas, including parks and marina facilities. Each year City staff work with various partners including the Canadian Wildlife Services, and an approved wildlife sanctuary to implement a comprehensive Goose Management program that has proven to control the population of resident geese within waterfront areas of the City. The Goose Management program will continue annually and will include any new waterfront parks or marinas.

- **Question:** Is there a way to protect the small beach area east of the breakwater, which may be impacted by the lakefill construction?

Answer: This small beach largely falls within the project footprint. The remaining portion of this beach will remain after the marina has been established. The function of this remaining portion of the beach as a place for birds to come ashore will not change. The beach will continue to build up very slowly in the future.

- **Question:** Will there be any impact to the nearby water treatment plant and the water flow in the lake?

Answer: Water flow in the lake will not change, as the new lakefill will not alter the water circulation patterns created by the existing breakwater. No impact on the water treatment plant is anticipated.

- **Question:** How confident is the project team that the large lakefill alternative will not have long-term negative effects on the marine life and ecology?

Answer: A goal of the project is to enhance lake and fish habitat, and improve it over existing conditions. Lakefill projects along the north

shore of Lake Ontario are being designed to create fish habitat and monitoring data has demonstrated the success of these efforts. Fisheries and Oceans Canada and Credit Valley Conservation will be consulted during permitting.

- **Question: What kind of stormwater controls are being considered for the parking area and for the park?**

Answer: A storm water management plan that outlines the design features and best management practices will be incorporated into the final design. The City will consult with Ontario's Ministry of Environment, Conservation and Parks (MECP) in developing its detailed design.

- **Question: What kind of environmental controls and spill response is there for the marina?**

Answer: The City's two marinas are currently part of, and in good standing, with the Clean Marine Eco-Rating Program. This environmental program allows marina operators and businesses to follow best environmental practices to reduce and prevent water, air and land pollution associated with recreational boating activities in Ontario. The City also has protocols in place in the event of an environmental incident such as a spill. The City's existing protocols and the participation in the Clean Marine Eco-Rating Program would be extended to the proposed marina at 1 Port Street East.

- **Question: What will the green space be planted with? The marina parking area should be environmentally friendly and consider permeable parking.**

Answer: Fill materials will be tested for their suitability for use as lakefill in accordance with Provincial guidelines. Consideration to the use of permeable paving, and the type of plantings in the green space will be determined during detailed design, with emphasis on naturalized landscaping with native, non-invasive plants species. Only the required minimum parking to support marina and park use is provided for each alternative and the remainder of the area will be park space.

- **Question: What will the water quality be like with 450 slips and boats?**

Answer: The project is creating the land base to move the existing marina operation. There is no anticipated change in marina use such that water quality would change and with the implementation of the Clean Marine Eco-Rating Program there is potential for improvements in water quality.

- **Question: Are there provisions that can mitigate against algae?**

Answer: Measures for minimizing the growth of algae in the marina will be considered in the environmental assessment in conjunction with the development of design features to enhance fish habitat.

- **Question: What consideration is being given to strong east wind, wave action and hazardous winter weather conditions?**

Answer: The design of the lakefill will take into consideration the ability of proposed alternatives to withstand changing lake levels (flooding hazards) and coastal processes (wave action, shoreline erosion) including future changes associated with climate change. The design of shore protection will consider wave spray and propose design to reduce risks associated with severe waterfront conditions. Access may be limited during severe weather conditions.

- **Question: How is this proposal being considered in the context of other improvements to the waterfront and the Credit River by the City?**

Answer: The EA will consider the impacts of the 1 Port Street East Proposed Marina in the context of existing and future baseline conditions, including other City improvements in proximity to the site.

Fishing Boats:

- **Question: What is happening with regards to the fishing boats?**

Answer: As described in the EA Terms of Reference, *"The charter businesses related to the existing marina will be described and the effects of the project on charter businesses will be evaluated in the EA."* The new marina will offer a variety of slip sizes to accommodate a wide range of boats, including commercial operations. Programming of the marina is an operational matter that will need to be undertaken following the EA in consultation with stakeholders.

Costs:

- **Question: What are the general order of magnitude costs of the three alternatives?**

Answer: At this stage of the EA, the alternatives and their associated costs are developed at a very coarse level of detail. In the EA PIC #1 presentation, the City provided relative costs of the small lakefill footprint having a low capital cost, medium lakefill footprint has a moderate capital cost, and the large lakefill footprint has the highest capital cost. At the next stage of the EA both the design and the cost estimate will be developed in more detail.

Marina Services:

- **Question: Can boaters coming from other places arrive at the Marina for a day?**

Answer: Yes, the proposed marina will accommodate slips for transient boaters. A public boat launch is available at Lakefront Promenade Park, and visit the future marina as a transient boater.

- **Question: Will winter boat storage be provided?**

Answer: Both the creation of new parkland and the provision of parking/storage for boats are being investigated as part of this project. The considerations around the location and amount of boat storage will be addressed in the next step of the EA and the detailed design process.

- **Question: Will there be marina businesses and facilities as part of the proposed marina?**

Answer: The size of the marina facilities and infrastructure will be determined in the next phase of the EA process. The City will be looking for creative and space efficient solutions to accommodate marina facilities and services. The City recognizes the importance of the existing businesses at the 1 Port Street East site.

- **Question: Is consideration being given to expand transient and storm anchorage areas?**

Answer: The EA will determine the space available for different marina services. This would be addressed during the detailed design of the marina and development of detailed operation plan. Emergency mooring will be always accommodated.

- **Question: What is being proposed for boat security?**

Answer: Security for boats will be addressed as part of the detailed design and development of detailed operation plan.

- **Question: What are the details of parking and land access to boat slips, as well as winter boat storage?**

Answer: The parking areas provided on each of the three alternatives accommodate parking for the number of slips associated with the marina and the public park suggested by previous studies. The minimum parking provided also accommodates the number of winter boat storage previously identified as required to accommodate repair shop operations through the winter months. The area allocations will be

re-examined and updated throughout the development of the marina design and the marina site operational plan.

- **Question: What is the existing slip count in relation to the proposed alternatives?**

Answer: The current number of boats using the existing marina facility is approximately 250. Here is the approximate slip count for each lakefill alternative:

- Small Lakefill Alternative: 200 slips
- Medium Lakefill Alternative: 200
- Large Lakefill Alternative: 450

The approximate mix of the slip sizes will be updated in the next phase of the study. At this conceptual state the slips are represented by a typical 10 metre size dock. The final mix of sizes will accommodate full range of sizes of the Lake Ontario recreational fleet. Final selection will be made in the detailed design phase of the project.

- **Question: How can the public be assured that variances will not be approved to remove the marina aspect of this project?**

Answer: The approved Master Plan and Official Plan Amendment for this site identifies a marina to be provided on the lands between Elizabeth and Helene streets. The City has been working with Canada Lands based on this work. Canada Lands and the City executed an agreement for a phased transfer of the breakwater, 2 acres of land, and the deep water harbour to the City for the purposes of developing a marina on the eastern portion of this site. The starting point for the City's Environmental Assessment currently underway is building on previous work and studying alternatives to expand the land base for additional waterfront parkland and marina related functions.

Wharf Development:

- **Question: What is the future of the wharf development owned by Canada Lands?**

Answer: A future mixed-use neighbourhood is permitted as per an approved Master Plan and Official Plan Amendment to be developed on the wharf portion of lands where the existing Port Credit Harbour Marina and service building is currently located. The timing of the development of the wharf is dependent on the landowner and related required approvals, and will involve comprehensive community consultation. A future mixed-use development of the Canada Lands Company property is not subject to the EA Act and thus, not within the scope of the 1 Port Street East Proposed Marina EA.

Parkland:

- **Question: Will the park be available year-round?**

Answer: Yes, the park will be accessible to the public year-round, subject to weather conditions.

- **Question: Is there a plan to have public washrooms on this site**

Answer: The City intends on providing a public washroom on site as part of the marina service building.

- **Question: What public attractions are planned for the future parkland, if any?**

Answer: The programming and design details for the parkland will be determined following the EA. The size of area available and the boundaries to the City's waterlot will impact what can be established in the open space areas of the lakefill. The public will have an opportunity to provide feedback throughout that process.

- **Question: How does the City know more parkland is needed?**

Answer: The City's waterfront parks are highly used and are currently at capacity. This project presents a unique opportunity to provide new waterfront parkland and trail access along the water's edge where none currently exists. This site provides a unique opportunity to provide views of Port Credit, Lake Ontario, and beyond. The City's Waterfront Parks Strategy Refresh (2019) supports additional waterfront parkland, expanding continuous public shoreline access, and improving views and visibility to Lake Ontario. Specifically for the 1 Port Street East site, the Waterfront Parks Strategy Refresh recommends continuing to explore the opportunity for a full service marina and expansion of the eastern breakwater for public access.

- **Question: How will the park area be maintained?**

Answer: The park area will be maintained in accordance with the City's current park maintenance standards and best practices.

Ridgetown:

- **Question: Will there be access to the Ridgetown as part of this project?**

Answer: Lakefilling around the Ridgetown is not proposed as part of the 1 Port Street East Proposed Marina EA. Public access to the Ridgetown is not permitted or planned for safety reasons.

Traffic and Parking:

- **Question: How is traffic being address in Port Credit and as part of this project?**

Answer: Traffic impacts of construction and future operation of the proposed marina will be addressed in the EA and, if necessary, specific recommendations will be made to mitigate adverse impacts along haul routes and within the Village of Port Credit. Consideration will be given to using barges to bring some of the fill material to the site during construction. No significant change to current or past traffic patterns associated with the marina operation is anticipated. In addition:

- With respect to development applications and future developments that are not part of this project, individual traffic impact studies are required to be completed and City staff will review them as they are submitted.
 - The City has commenced Lakeshore Transportation Studies, which includes three infrastructure projects in the Lakeview, Port Credit and Clarkson communities that build from the 2019 Lakeshore Connecting Communities Transportation Master Plan. The three projects include:
 - **Lakeshore Bus Rapid Transit (BRT) Study** - The City of Mississauga is developing the preliminary design and completing the Transit Project Assessment Process (TPAP) for the Lakeshore Bus Rapid Transit Project (BRT). The Lakeshore BRT is planned to run for two kilometres along Lakeshore Road from the Etobicoke Creek to East Avenue.
 - **Lakeshore Complete Street Study** - The City is developing the preliminary design and completing the Schedule C Class Environmental Assessment (EA) for Lakeshore Road and Royal Windsor Drive. This study will consider a 'Complete Street' approach to improve the experience for people travelling along the Lakeshore corridor from East Avenue to the Oakville border.
 - **New Credit River Active Transportation Bridge Study** - The City is developing the preliminary design and completing the Schedule B Class EA for a new Active Transportation bridge over the Credit River north of Lakeshore Road. This bridge will enhance mobility across the river for people walking, rolling and cycling.
- **Question: Can you provide more details on the parking lot?**

Answer: Detailed design of the parking lot will follow the EA. The EA will make recommendations on key design features to control

stormwater runoff and discharges into the lake. It is anticipated that the parking lot will serve the marina and park users.

- **Question: How will the increased traffic due to boaters and park visitors be addressed?**

Answer: This project creates land to move the existing marina from the wharf to the new land created around the eastern breakwater. As such, no significant change to current traffic patterns associated with the marina operation is anticipated. There will be parking for the marina created as part of the site development.

1 Port Street East Proposed Marina Environmental Assessment

Appendix 5 - EA Public Information Centre #2

1 Port Street East Proposed Marina Environmental Assessment:






Environmental Assessment
Public Information Centre #2

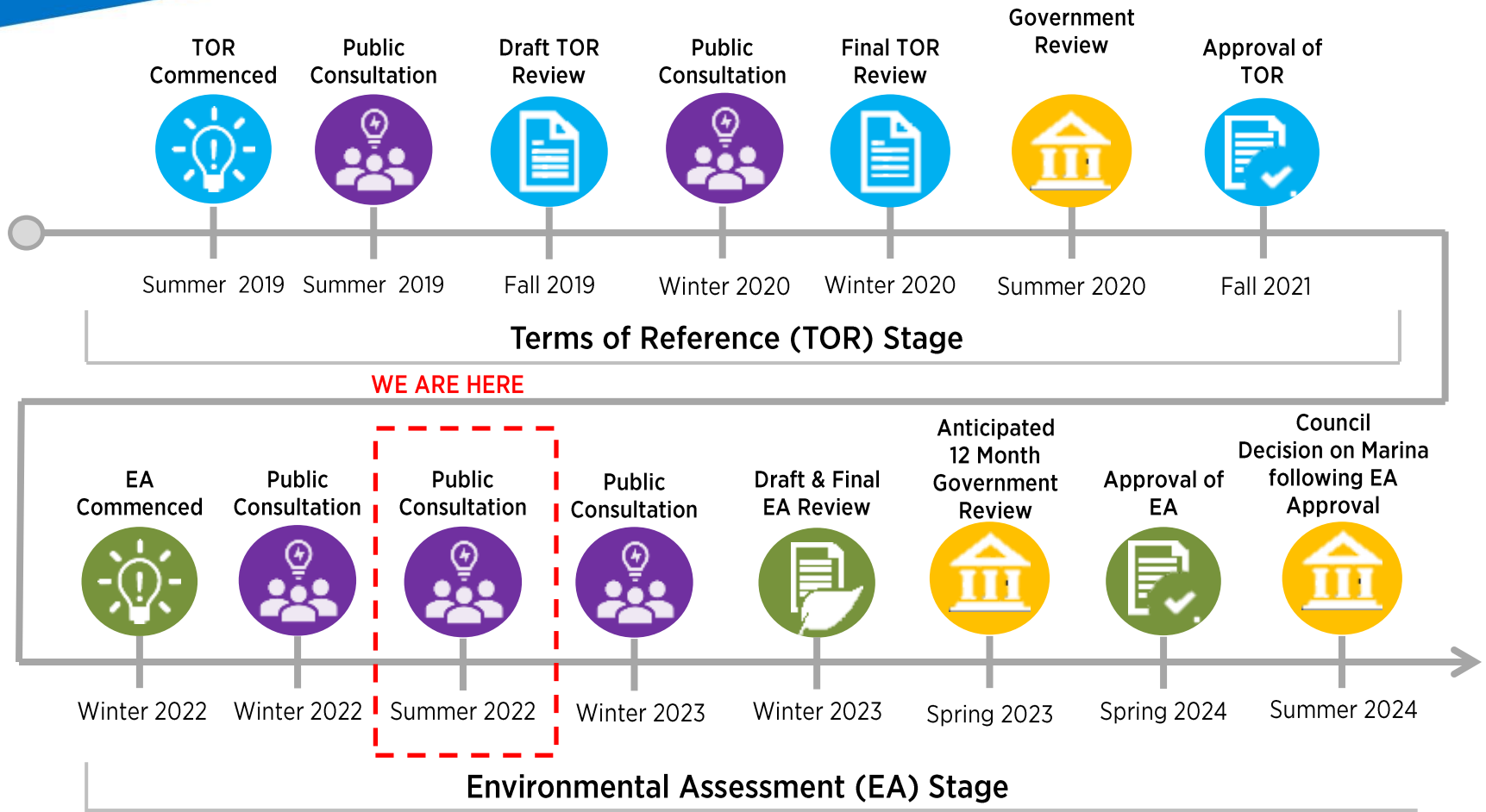
August 2022



Objectives of Public Information Centre (PIC)

1 Port Street East Proposed Marina Environmental Assessment

-  To present the preferred lakefill alternative and the preliminary design of the park space and marina facilities
-  To seek comments and feedback on the preliminary design of the park space and marina facilities
-  To present the environmental effects of the preliminary design including the effects of construction
-  To seek comments and feedback on the effects assessment
-  To update the project schedule and discuss next steps



What we heard at EA PIC #1

1 Port Street East Proposed Marina Environmental Assessment

- EA PIC #1 was held from February 17 to March 17, 2022
- EA PIC #1 materials and a pre-recorded presentation were available on the project website.
- Feedback was provided through a survey.
- The City received 130 completed surveys and over 550 views to the online presentation.
- Questions raised about:
 - Effects to fish habitat
 - Visual effect of boat storage
 - Potential for small boat launch
 - Desirability of park area given strong wind and wave conditions
 - Pedestrian access and park use of parking lot
- Some discussion about how much of the lakefill should be parkland and how much should serve the marina with respect to parking and boat storage.






What we heard at EA PIC #1

1 Port Street East Proposed Marina Environmental Assessment

	Advantages	Disadvantages
Small Lakefill Alternative	lowest cost, shortest construction period, less environmental impact and disruption to local residents, some respondents noted there are no advantages to this option	too small; not enough parkland, boat storage, slips, and parking; does not add value to community
Medium Lakefill Alternative	more parkland, some respondents noted there are no advantages to this option, cost, better than small lakefill alternative	same slip number as small lakefill alternative, not enough parkland, cost
Large Lakefill Alternative	creates the most parkland; has largest number of slips, parking and storage; economic opportunities; best option; environmental benefits; majority support for this alternative	construction time, cost, environmental impact

Environmental Assessment Process

1 Port Street East Proposed Marina Environmental Assessment

-  An EA is a planning and decision-making process supported by good science documented for review by stakeholders and approval agencies - you need to get the decision-making process right to get approval from MECP to proceed with a project
-  Project requires approval as an Individual EA under the Ontario Environmental Assessment Act, the process has 2 phases:
-  **Phase 1 Develop Terms of Reference:** documents how the EA will be done and how consultation during the EA will be carried out
 - ***The 1 Port Street East Proposed Marina Terms of Reference was approved September 2021.***
-  **Phase 2 Prepare EA:** EA will document the evaluation of lakefill alternatives and assessment of effects in accordance with the Approved Terms of Reference
-  The purpose of this project is to provide an expanded land base for additional waterfront parkland and marina alternatives at the 1 Port Street East site. This Project is a key element of Inspiration Port Credit's Charting the Future Course Master Plan.

Project Study Area

1 Port Street East Proposed Marina Environmental Assessment

- Area where project activities will occur should the EA be approved
- 1 Port Street East is located in Port Credit, at the mouth of the Credit River. It is bound by Port Street East to the north, Stavebank Road to the west, Helene Street South to the east and Lake Ontario to the south
- This project is limited to the eastern portion of the site in the waterlot owned by the City. The waterlot beyond this area is not owned by the City and is not available for this project.
- The wharf on the western portion of the site will be developed into a mixed-use community and is not part of this City-led project



100 0m 100 200

Problem/Opportunity Assessment

1 Port Street East Proposed Marina Environmental Assessment



Stakeholders have communicated a desire for continued marina operations in Port Credit ***“keep the Port in Port Credit”***



Marina site is one of the few deep water harbours on the north shore of Lake Ontario. The City is exploring intent expressed during Inspiration Port Credit for continued marina operations in this location



Support marina and other business activity, for the benefit of the City and its residents








Provision of park space and enhanced public access along waterfront where none currently exists

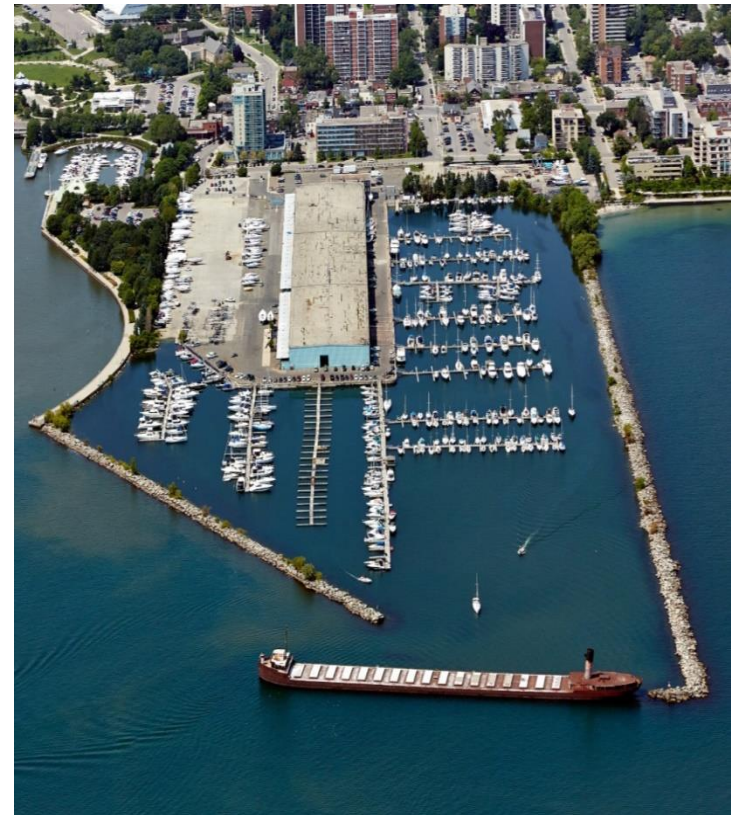


Project provides an opportunity to enhance terrestrial and aquatic habitat in the vicinity of the eastern breakwater

Description of the Environment Potentially Affected by the Proposed Undertaking

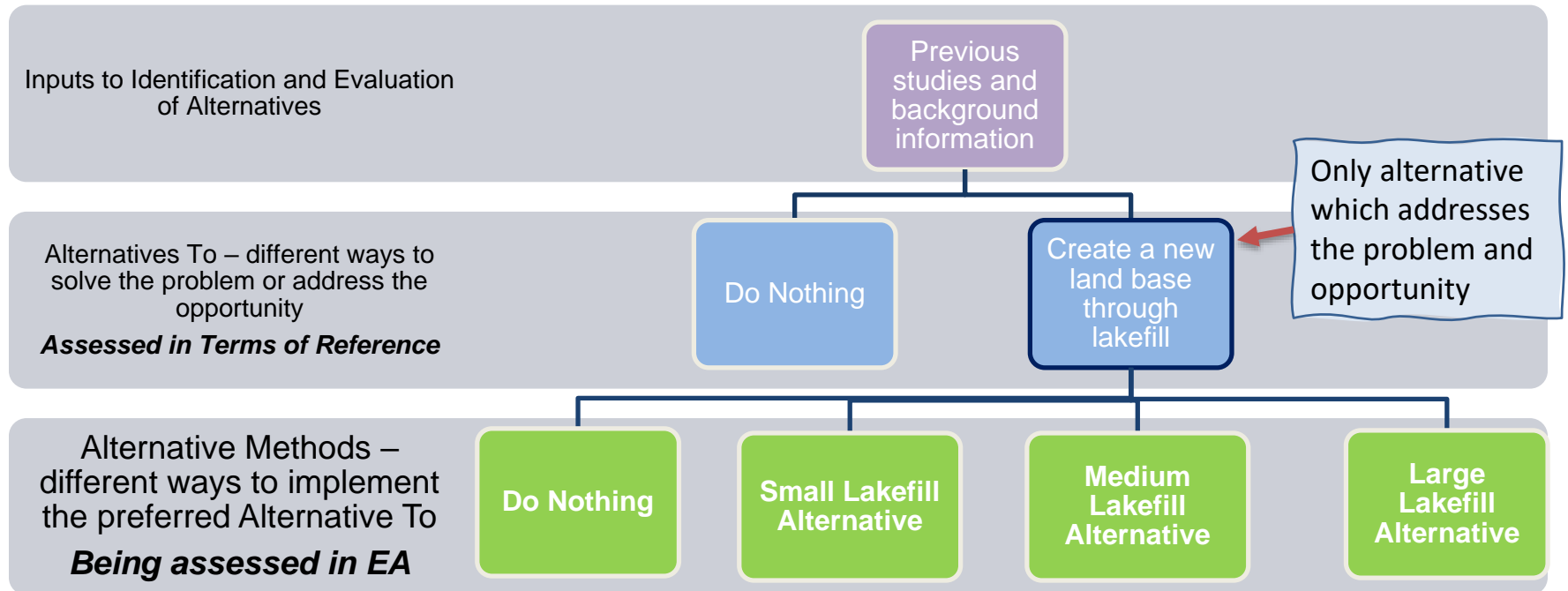
1 Port Street East Proposed Marina Environmental Assessment

-  The 1 Port Street East site has attributes such as the deep basin and existing breakwater which make it ideal for a marina.
-  Alternatives have been developed to withstand coastal conditions including wave height and water levels
-  Aquatic environment within the project footprint provides a wide variety of aquatic habitats for fish species. However, the available habitat within the footprint does not appear limiting within Lake Ontario
-  Minimal terrestrial habitat available
-  No marine archaeological or heritage resources present in the areas of proposed lakefill






Identification of Alternatives

1 Port Street East Proposed Marina Environmental Assessment

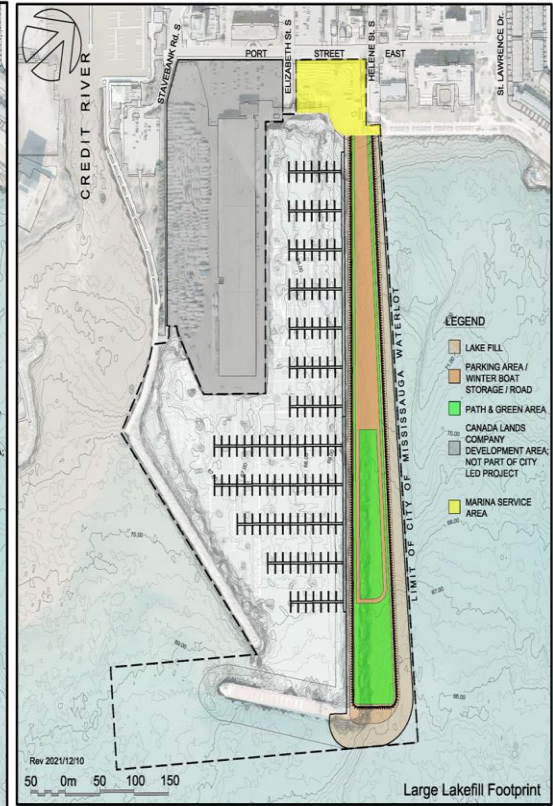
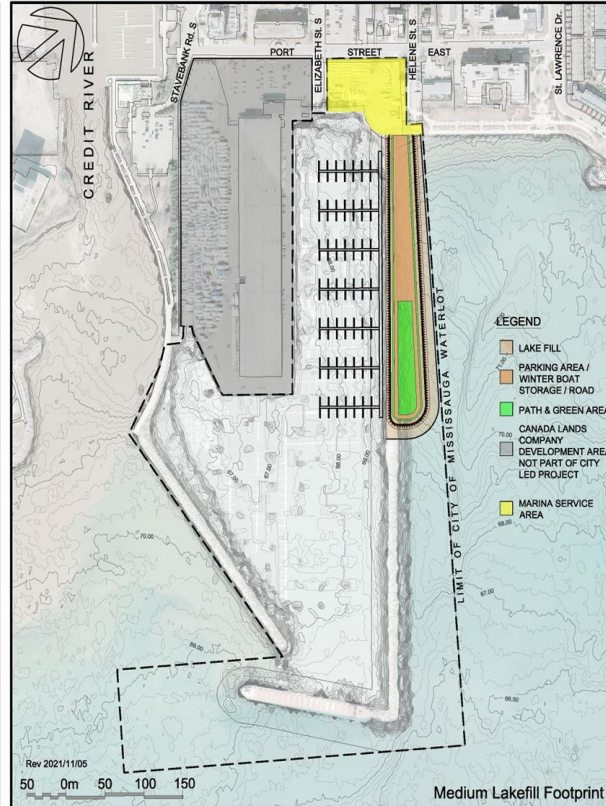
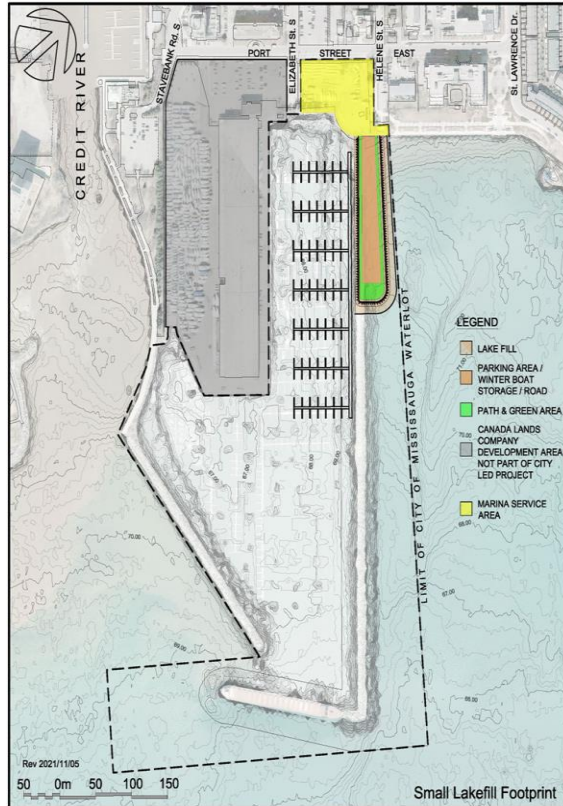


'Alternative Methods'

1 Port Street East Proposed Marina Environmental Assessment

-  'Alternative methods' are different ways of implementing the preferred 'Alternative to'
-  For this project 'alternative methods' are different configurations of lakefill around the eastern breakwater to enable marina alternatives
-  Four Step Process for Identifying and Evaluating 'Alternative Methods'
 - Step 1 - Determination of Footprint for Alternatives
 - Step 2 – Identification of Desired Design Elements; parkland, trail, marina elements
All alternatives include parkland, trail, marina service building, parking/boat storage and a number of slips based on size of lakefill
 - Step 3 – Comparative Evaluation of Alternatives
 - Step 4 – Confirm, Refine and Undertake Detailed Assessment of Preferred Alternative**

Step 3: Comparative Evaluation of Lakefill Footprint Alternatives



Step 3 Comparative Evaluation of Alternatives: Evaluation Criteria

1 Port Street East Proposed Marina Environmental Assessment



Physical Environment

- Effects on water quality in the Local Study Area
- Potential for disturbance of contaminated soils



Biological Environment

- Area and quality of terrestrial habitat created, enhanced, disrupted or lost
- Area and quality of aquatic habitat disrupted or removed
- Amount of fish habitat compensation



Socio-economic Environment

- Area of parkland created
- Ability to accommodate marina facilities and services
- Disruption to use and enjoyment of property during construction and establishment
- Changes in community character
- Effects on non marina related business operations during construction and establishment



Cost

- Capital cost of lakefill and land creation
- Cost of management of soil contamination

Step 3 Comparative Evaluation of Alternatives: Summary of Evaluation Criteria

1 Port Street East Proposed Marina Environmental Assessment

Environmental Component	Do Nothing Alternative	Small Lakefill Footprint	Medium Lakefill Footprint	Large Lakefill Footprint
Physical Environment Summary	First Rank	Second Rank	Second Rank	Second Rank
Biological Environment Summary	Fourth Rank	Third Rank	Second Rank	First Rank
Socio-economic Summary	Fourth Rank	Third Rank	Second Rank	First Rank
Cost Summary	First Rank	Second Rank	Third Rank	Fourth Rank
OVERALL	FOURTH RANKED ALTERNATIVE The Do Nothing alternative is most preferred for cost, and effects to the physical environment while least preferred for the biological and socio-economic environment as there is no potential to enhance aquatic and terrestrial ecology and no new marina nor parkland.	THIRD RANKED ALTERNATIVE The smallest lakefill provides the lowest number of slips and smallest parkland created and has low opportunity to create habitat enhancements. However, construction and the nuisance effects from construction activities will be for the shortest duration and are mitigable.	SECOND RANKED ALTERNATIVE The medium lakefill provides the lowest number of slips and moderate parkland created and has moderate opportunities to create habitat enhancements. Nuisance effects from construction activities will be for a moderate duration and are mitigable.	FIRST RANKED ALTERNATIVE The largest lakefill alternative creates the largest parkland relative to the marina space and provides for a similar sized marina to what exists today (greatest number of slips). As the largest alternative, it also has the highest cost and will take the longest to construct resulting in construction nuisance effects for the longest period of time. However, the effects from construction are short-term and mitigable while the lakefill area and its benefits will exist for the long-term.

Step 4 – Confirm, Refine and Undertake the Detailed Assessment of the Preferred Alternative

1 Port Street East Proposed Marina Environmental Assessment

- The large lakefill alternative is being design conceptually for the purpose of the EA approval and includes:
 - General location of marina elements including area for marina facilities and services, approximate number of slips, parking and storage.
 - Parkland elements including trail and landscaping
 - Aquatic habitat features
- Additionally the team has:
 - Developed a construction plan including construction techniques and associated mitigation measures
 - Commenced a detailed assessment of how the preferred alternative meets the purpose of the Project, minimizes adverse effects and/or maximizes positive effects
- ***The detailed design of the marina and park space will be subject to consultation after the EA is approved. Questions regarding marina security, marina facilities, operations, storage, etc. will be addressed during detailed design.***

Why isn't everything part of the EA?

1 Port Street East Proposed Marina Environmental Assessment

The EA creates the skeleton for the lakefill and new land base while the detail design will determine the details.

- **Issues addressed in EA**
 - Extent and size of lakefill
 - Aquatic habitat features
 - Mitigation for environmental effects
 - Conceptual allocation of space for park, marina, trail and parking
 - Stormwater management
 - Approach to construction and effects from construction
- **Issues addressed during detailed design**
 - Type of marina facilities and services
 - Marina access and security
 - Location of park features
 - Landscape features
 - Detailed design will include public consultation

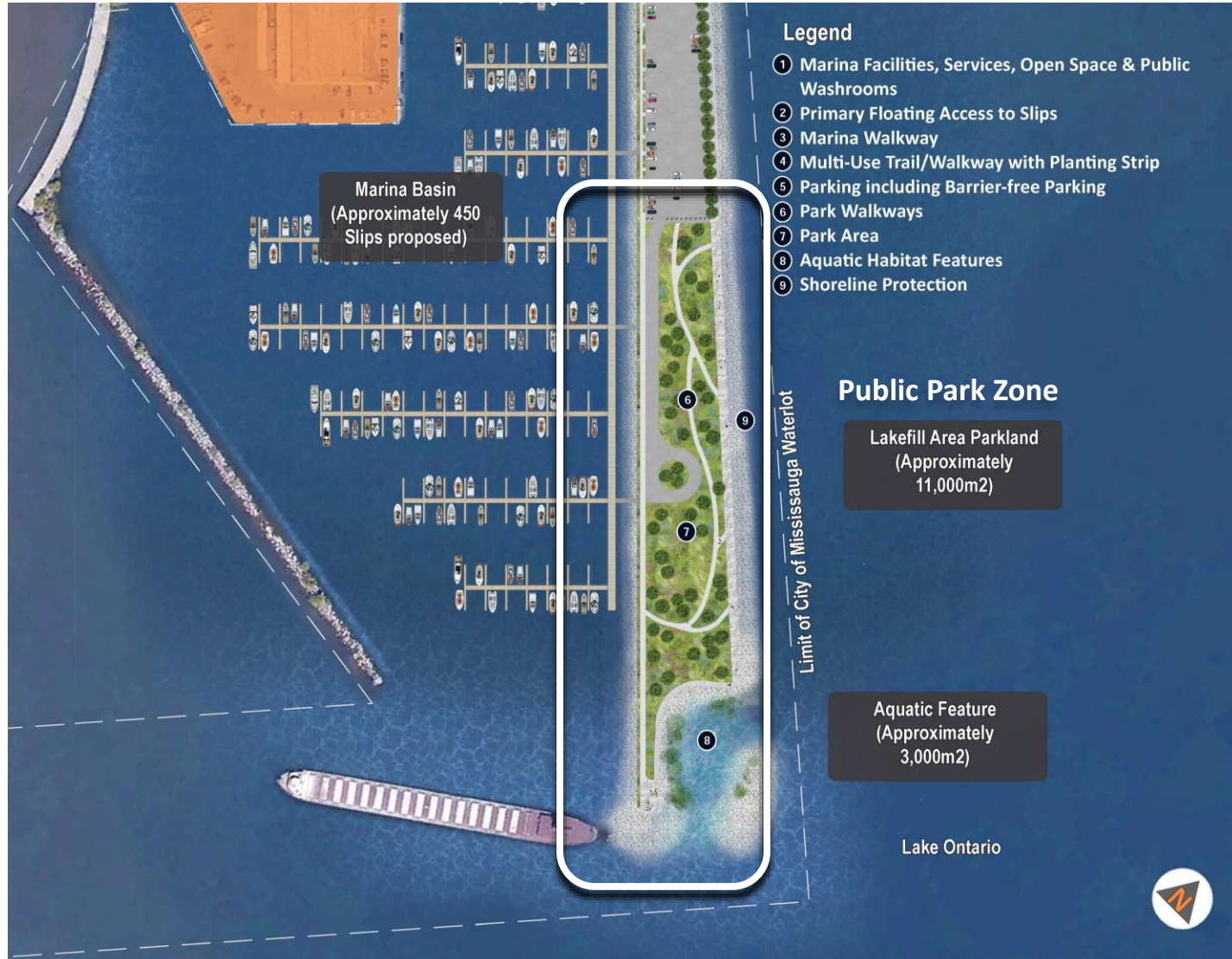


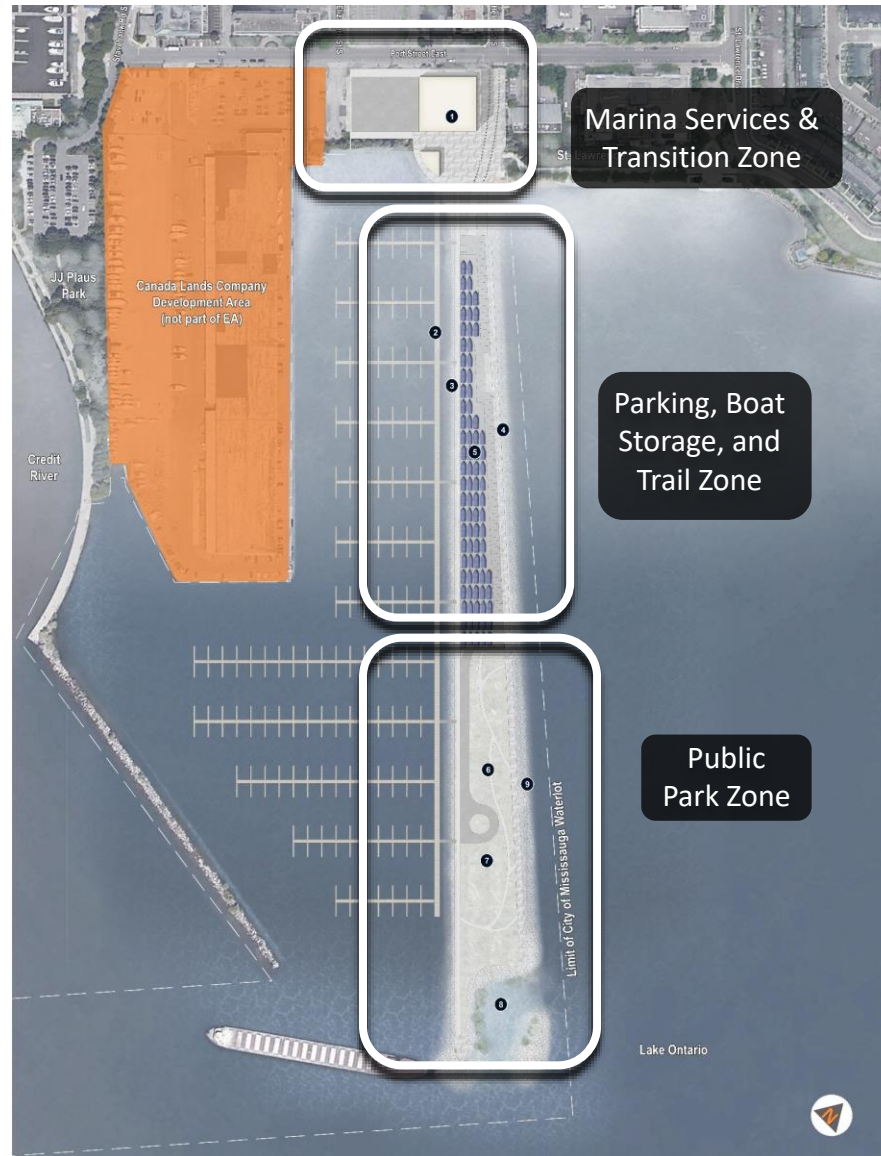


Legend

- ① Marina Facilities, Services, Open Space & Public Washrooms
- ② Primary Floating Access to Slips
- ③ Marina Walkway
- ④ Multi-Use Trail/Walkway with Planting Strip
- ⑤ Parking including Barrier-free Parking
- ⑥ Park Walkways
- ⑦ Park Area
- ⑧ Aquatic Habitat Features
- ⑨ Shoreline Protection







How will the lakefill be designed and constructed?

1 Port Street East Proposed Marina Environmental Assessment

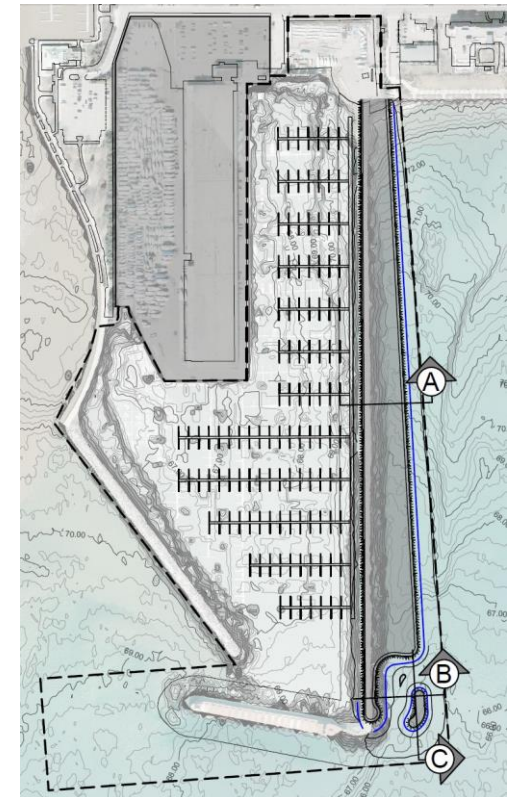
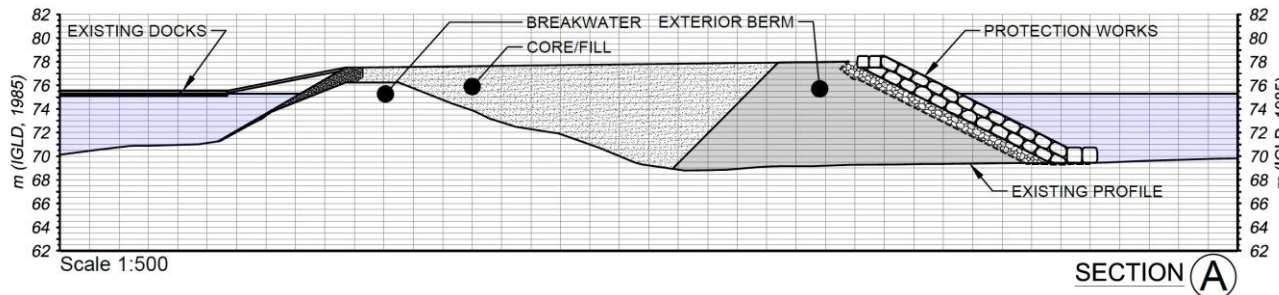
- Detailed design will be completed using state-of-the-art design methods; use of numerical and physical modelling is anticipated.
- Design will consider anticipated climate change impacts.
- Materials will be brought to site by truck and barge (~ 50/50 split assumed)
- Exterior berm of coarse stone will be created, and protection constructed using typical construction equipment. Both land based and marine based equipment is expected to be used.
- Core fill will be placed in created enclosed cells.
- Construction may proceed from the shore out and from the outer end in or both depending on the truck and barge stone supply availability at the time of construction.
- Construction of lakefill and protections is anticipated to take approximately 14 months.
- Once rough grading is complete the planting, trails, parking, etc. will be added. This will require additional time.

How will the lakefill be constructed?

1 Port Street East Proposed Marina Environmental Assessment

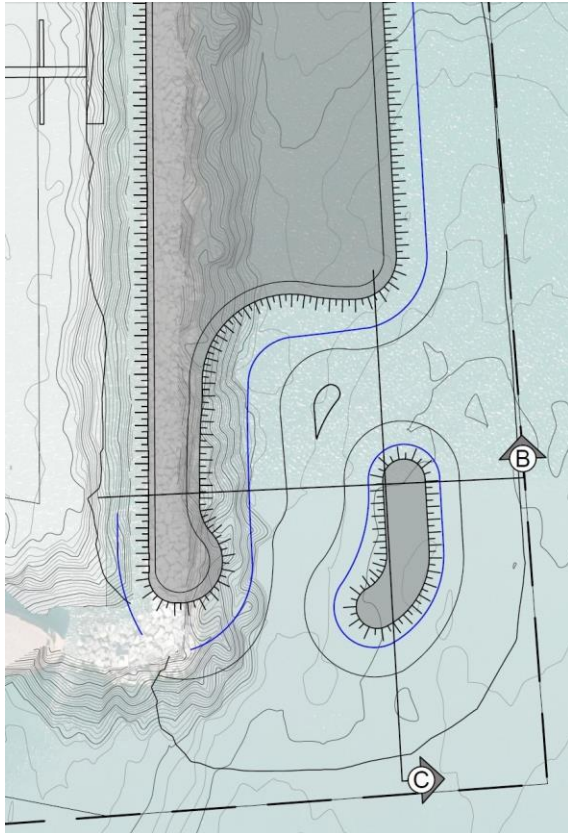
The cross sections illustrate the construction method of the lakefill structure.

1. First, the outer core berm will be constructed, by truck end dumping from the shore or by material being placed from barges.
2. Second, the protection works will be constructed to ensure stability of the berm.
3. Third, which may be concurrent with the second activity, the core fill material will be placed, and
4. Finally, the shore of the existing breakwater will be cleaned up and upgraded



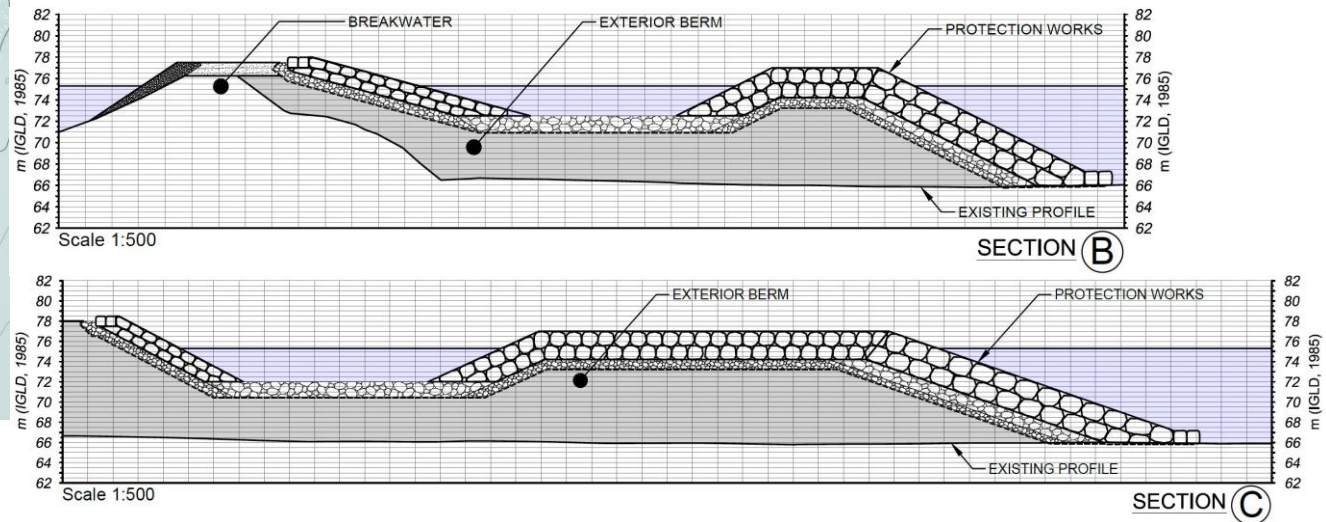
How will the lakefill be constructed?

1 Port Street East Proposed Marina Environmental Assessment



These cross sections illustrate the aquatic habitat area and its construction

- The aquatic habitat area will be constructed using mostly the exterior berm material in its core. The material is expected to be placed from barges and from the created lakefill.
- The exterior of the structures will be protected to provide stability. Depth of the semi sheltered areas and substrate material will be selected to maximize aquatic habitat benefit.
- Structural habitat, such as boulders, will be included.



Summary of the Effects of Construction

1 Port Street East Proposed Marina Environmental Assessment

- Increased turbidity (i.e. sediment in water) near areas where fill is being placed. Use of clean materials and proper placement methods will minimize effects.
- Removal of ~ 28,000 m² of existing aquatic habitat to be compensated by new habitat along the lakefill edge and new habitat feature at park's end. Additional compensation will likely be required off-site.
- Noise and dust from construction activities will occur over 14 months and may be experienced by residents living closest to the site when construction is occurring close to shore
- Minimal effects to traffic volumes (50 trucks per day)

Summary of the Effects of Establishment

1 Port Street East Proposed Marina Environmental Assessment

- Planting of native non-invasive trees and vegetation in park area will provide some terrestrial habitat and enhanced connectivity for migratory birds
- ~ 11,000 m² of park space created
- ~ 1,000 m of trail created with access to the end of the lakefill
- Area available to replace marina services and facilities and provide ~ 450 slips
- Effects of marina operations on neighbours not likely to change.
- Future parkland and associated marina activities will be visible to residents living to the north and northeast of the lakefill area

Consultation Plan for the EA

1 Port Street East Proposed Marina Environmental Assessment

- This is the second of 3 public information centres at key decision points
- On-going consultation and engagement with Indigenous communities
- On-going consultation with regulatory agencies such as Ministry of Environment Conservation and Parks, Ministry of Natural Resources and Forestry, Transport Canada, Credit Valley Conservation and other City departments
- Consultation and engagement with community groups and interest groups
- Project website **mississauga.ca/1portstreeteast**



Next Steps

1 Port Street East Proposed Marina Environmental Assessment



Please complete the survey available on the project website.

If you require a paper copy of the survey, please email:

1portstreeteast@mississauga.ca

or contact:

Beata Palka, M.Pl, RPP

Planner, Park Planning

T 905-615-3200 ext. 4221

Please continue to engage with us through the project webpage.

Please sign up for the City's mailing list through the project website:

mississauga.ca/1portstreeteast



MISSISSAUGA

1 Port Street East Proposed Marina

Environmental Assessment
Public Information Centre #2 Summary

December 2022

**PARKS, FORESTRY
& ENVIRONMENT**

Project Overview

The City of Mississauga is completing an individual environmental assessment under the Environmental Assessment (EA) Act for the 1 Port Street East Proposed Marina Project. The EA is studying the proposed expanded land base for additional waterfront parkland and examining marina alternatives for this site.

Following [EA Public Information Centre \(PIC\) #1](#), the City held EA PIC #2 virtually from August 25 to September 22, 2022. Creating a 24/7 community meeting, the public had access to the PIC materials online and hard copies were mailed upon request. This allowed residents to participate when it was convenient for them. The City notified the public of the PIC through a mailing to area residents and businesses, a notice in Mississauga News, eBlasts to the project email list, social media advertising and posts, roadway signage, and posters at Port Credit Harbour Marina.

The City provided a [recorded presentation](#) to present the preferred large lakefill alternative, the preliminary design of the park space and marina along with the effects assessment. The preliminary construction timing for the lakefill is 14 months, depending on many factors including weather conditions, lakefill availability, and not including landscaping and the construction of the marina. The lakefill parkland created is estimated at approximately 11,000 m², with an additional estimated 3,000 m² of aquatic habitat. This alternative could accommodate approximately 450 marina slips, and approximately 90 winter storage spaces on the lakefill, with additional potential storage spaces in the marina building.

This EA pertains to the lakefill and the general distribution of uses on the lakefill. The ultimate configuration of the marina and programming of park space will be determined during detailed design.

The public provided feedback through a survey. The City received 127 completed surveys and over 330 views to the online presentation. The feedback gathered will inform the refinement of the preferred large lakefill alternative. This document includes responses to feedback submitted through the survey. Should the public have any additional questions, please email 1portstreeteast@mississauga.ca.

In addition to the virtual engagement, the City also held a pop-up event on Saturday, August 27, 2022 at Credit Village Marina, attended by 170 people. Staff were onsite to answer questions and discuss the EA PIC #2 materials.

To be notified of future engagement opportunities, including the next PIC taking place in the spring of 2023, please subscribe to [news alerts](#) to be kept up to date on the project by email.

Responses to EA PIC #2 Feedback

Marina Continuity

- **Is there an update on the Port Credit Harbour Marina lease?**

Response: City is pleased to advise that Canada Lands and Centre City Capital Ltd. have reached an agreement to extend the marina lease for the management of the Port Credit Harbour Marina. This lease extension allows for the continued operations of the existing marina and boating seasons while the City works on its marina plans.

Parkland

- **Concerns raised with respect to configuration of parkland and parking. Comment received that it is undesirable to have to walk through or past a parking lot to access the park area.**

Response: The trail on the eastern side of the lakefill will have vegetation screening from the parking area providing a park-like quality to the walk to the park. This is challenging to show on the drawings due to scale. Details of the park and parking design will be refined in the future design phases.

- **How will the park be maintained?**

Response: The park area will be maintained in accordance with the City's current park maintenance standards and best practices.

Parking

- **A number of comments were received about the amount of parking proposed for the lakefill area. Some respondents thought there was too much parking while others thought there should be more parking.**

Response: The amount of parking provided is consistent with the requirements set out in previous planning documents. Many people commented that there should be no parking or winter storage at the site however, one of the purposes of the project is to create land to permit the relocation of the marina from the west side of the basin to the east side of the basin. There is limited land available for the proposed marina at the 1 Port Street East site, therefore parking and winter storage will be located on the lakefill to make the marina economically viable. The parking provided will be available to both marina users and park users.

- **Will there be adequate parking for vehicles with trailers designated?**

Response: No, there will not be designated parking for vehicles with trailers.

- **Will the parking be paid and overnight?**

Response: There have been no decisions around paid parking or parking hours. Parking operation details will be addressed in detailed design.

Environmental Components

- **Respondents provided comments about impacts of the project on aquatic life and algae issues.**

Response: Whenever projects are proposed that alter or potentially harm aquatic habitat there must be compensation to replace any habitat lost in accordance with the requirements of the Federal Fisheries Act. The proposed lakefill will remove and alter fish habitat, which will be compensated on site with the fish habitat feature at the end of the lakefill, and additional compensation will likely be required off site. There are on-going algae issues all along the north shore of Lake Ontario. Considerable scientific research is underway to understand the algae issue and recommend ways it may be managed. It is not anticipated that the proposed lakefill project will alter the algae issues at this site.

- **Suggestion to provide a beach area for swimming access.**

Response: Coastal conditions in this area are not conducive to the creation of a beach as part of the 1 Port Street East Proposed Marina project.

- **Concerns were raised about the effect on birds and waterfowl currently using the area.**

Response: Construction activities will likely disturb the birds and waterfowl currently using the area. However, the species using the area are very tolerant of urban activities and will relocate to another part of the waterfront while construction is occurring. Studies will be done prior to the start of construction to ensure nesting is not occurring.

- **Is there a way to expand the small beach area east of the breakwater?**

Response: This small beach largely falls within the project footprint. A portion of this beach will remain after the marina has been established. The beach will continue to expand, over future decades, through the deposition of sand sediment in the lake.

- **What kind of environmental controls and spill response is there for the marina?**

Response: The City's two marinas are currently part of, and in good standing, with the Clean Marine Eco-Rating Program. This environmental program allows marina operators and businesses to follow best environmental practices to reduce and prevent water, air and land pollution associated with recreational boating activities in Ontario. The City also has protocols in place in the event of an environmental incident such as a spill. The City's existing protocols and the participation in the Clean Marine Eco-Rating Program would be extended to the proposed marina at 1 Port Street East.

- **Will this project be net zero carbon?**

Response: We are pleased to say that at the same time as the City approved the Climate Change Action Plan, Council also approved the Corporate Green Building Standard (December 2019) and the proposed marina building would be subject to these standards. Please see the link [here](#) to the Standard.

- **What consideration is being given to strong east wind, wave action and hazardous winter weather conditions?**

Response: The design of the lakefill will take into consideration the ability of the preferred alternative to withstand changing lake levels (flooding hazards) and coastal processes (wave action, shoreline erosion) including future changes associated with climate change. The design of shore protection will consider wave spray and propose design to reduce risks associated with severe waterfront conditions. Access may be limited during severe weather conditions.

- **How confident is the project team that the large lakefill alternative will not have long-term negative effects on the marine life and ecology?**

Response: A goal of the project is to enhance lake and fish habitat, and improve it over existing conditions. Lakefill projects along the north shore of Lake Ontario are being designed to create fish habitat and monitoring data has demonstrated the success of these efforts. Fisheries and Oceans Canada and Credit Valley Conservation are being consulted and permits will need to be obtained.

Marina

- **Comments with respect to provision of a location to launch kayaks, canoes and paddle boards at the 1 Port Street East site.**

Response: There are no formal launching facilities for non-motorized boats planned for this site. Non-motorized launching facilities will be provided nearby at Marina Park.

- **Where will boats be launched from?**

Response: There will not be a public boat launch at this location. Boat launching facilities are provided by the City at other waterfront locations, including Lakefront Promenade Marina and the future launch planned for Marina Park.

- **Comments about not enough boat storage being provided on the lakefill.**

Response: The City is limited to boat storage on the lakefill and exploring off site storage locations for boats. The considerations around the location and amount of boat storage will be addressed during detailed design.

- **Question: What is the existing slip count in relation to the preferred large lakefill alternative?**

Response: The estimated number of slips at existing marina is 470, and the number of boats using the existing marina facility is approximately 250. The large lakefill alternative includes approximately 450 slips. The approximate mix of the slip sizes will be updated in the next phase of the study during detailed design. At this conceptual stage, the slips are represented by a typical 11-metre size dock. The final mix of sizes will accommodate full range of sizes of the Lake Ontario recreational fleet.

Construction Impacts

- **Concerns about noise from construction and noise from operation of the marina (noisy boaters blasting music for example).**

Response: Construction and operation activities will abide by the City's Noise Control By-law, which limits the noise impacts and hours of construction. The operation of the marina and the behaviour of individual boaters is an existing condition and is not anticipated to change because of the lakefill.

Lakefill

- **Concerns about resilience of lakefill, overtopping of lakefill by waves, erosion of lakefill into the lake, etc.**

Response: The lakefill will be designed to withstand coastal processes associated with Lake Ontario including changes to these processes anticipated because of climate change. This means that the lakefill will be high enough that it will not flood, constructed of large enough rock material that it will not erode or wash away and thus able to withstand the conditions for a very long time.

- **Will the trees and landscaping on the east side of the lakefill ensure that the parking lot is not visible from St Lawrence Park and Tall Oaks Park?**

Response: There will be trees and landscaping along the east side of the lakefill to provide some visual screening. The type of vegetation to be planted will be determined during detailed design. Visual screening will be an important parameter in selection of plant material.

- **What will be the increase in height of the lakefill compared to the existing breakwater?**

Response: The height of the lakefill will be higher than the existing rubble breakwater. The south tip of the landfill will be the highest and will gradually reduce in height as it approaches the existing shore. The south tip of the landform is anticipated to be in the order of 4 metres above average summer water level and the lakefill will match existing land elevation at the shore.

Construction

- **Will construction be done over 14 consecutive months or is it intended to be spread over several years?**

Response: It is anticipated that the construction of the lakefill will take approximately 14 months and it is not intended to spread construction over several years however there may be pauses in construction due to lakefill availability, weather conditions, or times when construction may not be permitted because of fisheries issues.

- **Assuming the existing marina will be retained in some form during construction of the new landfill, what would be the effect on boaters continuing to use that marina, e.g. dust, noise, interference with access?**

Response: Prior to the start of construction, a plan will be developed to address the transition of activities from the existing marina to the new facility, with consideration to boaters currently using the marina.

Traffic

- **How will traffic be impacted on Lakeshore?**

Response: During construction there is anticipated to be approximately 50 truck loads or 100 truck movements per day or approximately 12 per hour. Adding 12 vehicle movements per hour to the existing traffic volumes creates an imperceptible change. Opportunities to further minimize traffic by bringing more materials to site by barge will also be considered. There will be no change to traffic once the site is operational as there is no change to the capacity of the marina.

- **How is traffic being addressed in Port Credit and as part of this project?**

Response: Traffic impacts of construction and future operation of the proposed marina will be addressed in the EA and, if necessary, specific recommendations will be made to mitigate adverse impacts along haul routes and within the Village of Port Credit. Consideration will be given to using barges to bring some of the fill material to the site during construction. No significant change to current or past traffic patterns associated with the marina operation is anticipated. In addition:

- With respect to development applications and future developments that are not part of this project, individual traffic impact studies are required to be completed and City staff will review them as they are submitted.
- The City has commenced Lakeshore Transportation Studies, which includes three infrastructure projects in the Lakeview, Port Credit and Clarkson communities that build from the 2019 Lakeshore Connecting Communities Transportation Master Plan. The three projects include:

- Lakeshore Bus Rapid Transit (BRT) Study - The City of Mississauga is developing the preliminary design and completing the Transit Project Assessment Process (TPAP) for the Lakeshore Bus Rapid Transit Project (BRT). The Lakeshore BRT is planned to run for two kilometres along Lakeshore Road from the Etobicoke Creek to East Avenue.
- Lakeshore Complete Street Study - The City is developing the preliminary design and completing the Schedule C Class Environmental Assessment (EA) for Lakeshore Road and Royal Windsor Drive. This study will consider a 'Complete Street' approach to improve the experience for people travelling along the Lakeshore corridor from East Avenue to the Oakville border.
- New Credit River Active Transportation Bridge Study - The City is developing the preliminary design and completing the Schedule B Class EA for a new Active Transportation bridge over the Credit River north of Lakeshore Road. This bridge will enhance mobility across the river for people walking, rolling and cycling.
- **How will the increased traffic due to boaters and park visitors be addressed?**

Response: This project creates land to move the existing marina from the wharf to the new land created around the eastern breakwater. As such, no significant change to current traffic patterns associated with the marina operation is anticipated. There will be parking for the marina created as part of the site development.

Ridgetown

- **Can anything be done to remove or beautify the boat (the Ridgetown) at the south end of the breakwater?**

Response: The Ridgetown is part of the breakwater creating the harbour basin. It cannot be removed without creating significant impacts. Beyond serving its function as part of the breakwater, the Ridgetown is outside the scope of this project.

Marina Operations

- **Questions with respect to how sewage from boats will be managed, provision of fuel, marina operations, safety and security, and management of litter in the park.**

Response: The City appreciates and notes all feedback received regarding the features and the operation of the marina. These issues will be addressed during detailed design and the development of a detailed operation plan. The public will have future consultation opportunities during the detail design phase of the project.

Wharf Development

- What is the future of the wharf development owned by Canada Lands?

Response: A future mixed-use neighbourhood is permitted, as per an approved Master Plan and Official Plan Amendment, and is proposed to be developed on the wharf portion of lands where the existing Port Credit Harbour Marina and service building are currently located. The development of the wharf is not a City project and the timing of development is dependent on the landowner and related required approvals, and will involve comprehensive community consultation. A future mixed-use development on the Canada Lands Company property is not subject to the EA Act and thus, not within the scope of the 1 Port Street East Proposed Marina EA.

