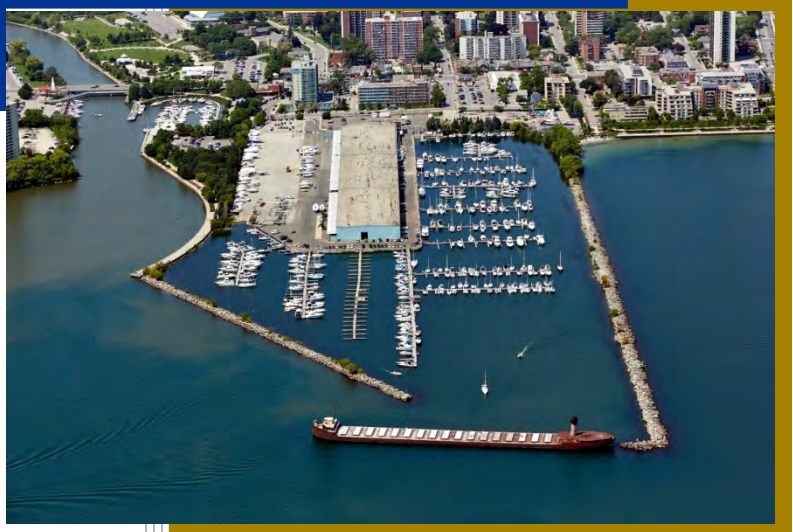
MISSISSAUGA

1 Port Street East Proposed Marina Environmental Assessment

Terms of Reference



SLR AG mbtw wai TOURISTICS SHOREPLAN

July 2020

FINAL TERMS OF REFERENCE
for
1 Port Street East Proposed Marina
Environmental Assessment

Prepared for:
City of Mississauga

Prepared by:
Shoreplan Engineering Limited

July 2020

EXECUTIVE SUMMARY

The City of Mississauga (City) is the proponent undertaking an Individual Environmental Assessment (EA) for the 1 Port Street East Proposed Marina Project (1PSEPM). The Port Credit Harbour Marina (PCHM) is currently located on the west portion of the site (the wharf). PCHM is privately operated by Centre City Capital Limited on the wharf leased from Canada Lands Company, the owners of a portion of 1 Port Street East. The PCHM lease is set to expire in 2023 and a future mixed-use neighbourhood is proposed to be developed on the wharf. This development process is expected to be initiated by Canada Lands Company (Canada Lands). The timing of the development of the wharf is dependent on the landowner and related required approvals. The future mixed-use wharf development of the site is not part of this EA.

The marina at 1 Port Street East plays an economic and cultural role within the Port Credit community. The issue of how to protect for a sustainable full-service marina as the site is redeveloped into a new mixed-use neighbourhood has become increasingly important. The City is undertaking the 1PSEPM Project 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, create new parkland, and enhance the site's ecological functions.

This part of the Mississauga waterfront has been the subject of many studies. The 1PSEPM Project was identified in the City Council approved Inspiration Port Credit 1 Port Street East Comprehensive Master Plan (2016)as a key opportunity to "Keep the Port in Port Credit". The 1PSEPM Project is intended to help fulfill the vision of the Master Plan:

> *"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"*

City Council subsequently approved an implementing Official Plan Amendment in 2017 that establishes the appropriate development policies for the site including a future marina use on the eastern portion of the site. 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 1PSEPM Project is building on this previous work.

The 1PSEPM Project is subject to the requirements of the Ontario *Environmental Assessment Act (EA Act)* as an Individual EA. The scope of works and activities anticipated for the 1PSEPM

Project cannot be covered under the Municipal Engineer's Association (MEA) Municipal Class Environmental Assessment because the proposed undertaking is to create a new land base around the eastern breakwater for a new marina and parkland rather than for purposes of flood or shoreline protection as contemplate by the Municipal Class EA. The new land base will provide flood and shoreline protection but this is not the reason for creating the new land base. This Terms of Reference (ToR) is the first step of an Individual EA. It sets out the work plan for preparing the EA and carrying out the required public consultation. This ToR:

- indicates that the environmental assessment will be prepared in accordance with the requirements set out in subsection 6.1 (2) of the Ontario *EA Act*;
- indicates that the environmental assessment will be prepared in accordance with such requirements as may be prescribed for the type of undertaking the proponent wishes to proceed with;
- sets out in detail the requirements for the preparation of the environmental assessment; and
- is accompanied by a description of the consultations by the proponent and the results of the consultations.

The public, government agencies, Indigenous communities, interest groups, and property owners were consulted throughout the development of the ToR and will continue to be consulted during the preparation of the EA. This ToR has been submitted to the Ministry of the Environment, Conservation and Parks (MECP) for review and approval. . The comments received on the Draft ToR and the City's responses have been summarized and included in the Record of Consultation submitted to the MECP for review and approval.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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). The Port Credit Harbour Marina (PCHM) is currently located on the west portion of the site (the wharf). PCHM is privately operated by Centre City Capital Limited on the wharf leased from Canada Lands Company, the owners of a portion of 1 Port Street East. The PCHM lease is set to expire in 2023 and a future mixed-use neighbourhood is proposed to be developed on the wharf. This development process is expected to be initiated by Canada Lands Company (Canada Lands). The timing of the development of the wharf is dependent on the landowner and related required approvals. The future mixed-use wharf development of the site is not part of this EA.

The City is undertaking the 1PSEPM Project 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. This part of the Mississauga waterfront has been the subject of many studies. The 1PSEPM Project was identified by the "Inspiration Port Credit" initiative as a key opportunity to "Keep the Port in Port Credit". Figure 1-1 provides a map showing the lands and water lots at 1 Port Street East and the 1PSEPM Project study area.

1.1 ENVIRONMENTAL ASSESSMENT FRAMEWORK

The 1PSEPM Project is subject to the requirements of the Ontario *Environmental Assessment Act (EA Act)* as an Individual EA. The 1PSEPM Project cannot be covered under the Municipal Engineer's Association (MEA) Municipal Class Environmental Assessment because the proposed undertaking is to create a new land base around the eastern breakwater that would allow for the establishment of a new marina and parkland rather than for purposes of flood or shoreline protection as contemplate by the Municipal Class EA. The new land base will provide flood and shoreline protection but this is not the reason for creating the new land base.

Source: Shoreplan; Photo by BP Imaging, August 2014

This Terms of Reference (ToR) document is the first step of an Individual EA. It sets out the work plan for preparing the EA and carrying out the required public consultation. However, should new issues arise during the EA, this ToR does not preclude their investigation at the discretion of the proponent, if the issues are within the purpose/goal of the 1PSEPM Project.

This ToR:

- indicates that the environmental assessment will be prepared in accordance with the requirements set out in subsection 6.1 (2) of the Ontario *EA Act*;
- indicates that the environmental assessment will be prepared in accordance with such requirements as may be prescribed for the type of undertaking the proponent wishes to proceed with;
- sets out in detail the requirements for the preparation of the environmental assessment; and
- is accompanied by a description of the consultations by the proponent and the results of the consultations.

The public, government agencies, Indigenous groups, interest groups, and property owners were consulted throughout the development of the ToR and will continue to be consulted during the preparation of the EA. All activities carried out during the EA will be documented in the EA Report.

SCALE: 1:4,000
WHEN PLOTTED CORRECTLY AT 11 x 17
NAD 1983 UTM Zone 17N

NOTES
This map is for conceptual purposes only and should not be used for navigational purposes.

Basedata:

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA PROJECT ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

WHARF, LAND AND WATER LOTS AT 1 PORT STREET EAST

December 3, 2019	Rev **0.0**	Figure No. **1-1**
Project No. 209.40718.00000		

SHOREPLAN MISSISSAUGA

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_Wharf_Land_Waterlots.mxd

1.2 PROPONENT

The City of Mississauga (City) is the proponent for this project. The City is interested in ensuring that any proposed plans along the Mississauga waterfront are in conformance with various planning and guiding documents, including Inspiration Port Credit. Pending Environmental Assessment approval from the Province of Ontario and Council approval and funding, the City will develop and implement the project.

1.3 ENVIRONMENTAL ASSESSMENT STUDY AREAS

The environmental assessment will be based on three general ***study areas***. These study areas will be confirmed and may need to be refined during the EA process, to allow for flexibility as the process proceeds.

Project Study Area (PSA) ..... The Project Study Area (PSA) is shown in Figure 1-2. It includes a portion of the 1 Port Street East property, inclusive of the water lot, located in Port Credit, Mississauga, 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. The lands and water lot collectively have an area of approximately 21.4 hectares, comprised of:

- The Breakwater & Ridgetown Water Lot (7.9 ha);
- Elizabeth and Helene Street Rights of Way (0.8 ha); and
- The Basin Water Lot (12.7 ha).

Local Study Area (LSA) ..... The Local Study Area (LSA) is shown in Figure 1-3. 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.

Regional Study Area (RSA) ..... The Regional Study Area (RSA) is shown in Figure 1-4. 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 area will be used to describe the broader setting for project and used to discuss cumulative effects of the project.

N

LEGEND

Project Study Area for 1 PSEPM Project EA

Arterial

Local Street

0 37.5 75 150 Meters

SCALE: 1:4,000
WHEN PLOTTED CORRECTLY AT 11 x 17
NAD 1983 UTM Zone 17N

NOTES

This map is for conceptual purposes only and should not be used for navigational purposes.

Basedata:

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA PROJECT ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

PROJECT STUDY AREA

December 3, 2019	Rev **0.0**	Figure No. **1-2**
Project No. 209.40718.00000		

SHOREPLAN MISSISSAUGA

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_ProjectStudyArea.mxd

NOTES

This map is for conceptual purposes only and should not be used for navigational purposes.

Basedata:

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA PROJECT ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

LOCAL STUDY AREA

December 3, 2019	Rev **0.0**	Figure No. **1-3**
Project No. 209.40718.00000		

SHOREPLAN MISSISSAUGA

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_LocalStudyArea.mxd

CITY OF MISSISSAUGA

CITY OF TORONTO

TOWN OF OAKVILLE

1 - Lakeview

2 - Lakefront Promenade

3 - Mineola

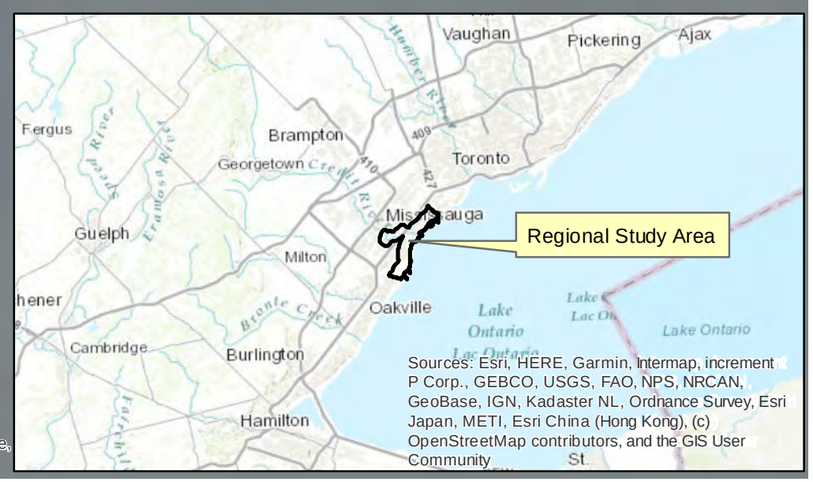
4 - Port Credit

5 - Lorne Park / Meadowwood

6 - Refinery

7 - Clearview

Source: Esri, DigitalGlobe, Community



N

LEGEND

LOISS Boundary

Municipal Boundary

0 0.5 1 2 Kilometers

1:50,000

WHEN PLOTTED CORRECTLY AT 11 x 17
NAD 1983 UTM Zone 17N

NOTES

This map is for conceptual purposes only and should not be used for navigational purposes.

Basedata:

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

REGIONAL STUDY AREA

December 3, 2019	Rev **0.0**	Figure No. **1-4**
Project No. 209.40718.00000		

SHOREPLAN MISSISSAUGA

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_RegionArea.mxd

1.4 ENVIRONMENTAL ASSESSMENT TEMPORAL BOUNDARIES

The temporal boundaries for the 1PSEPM Project EA are as follows:

Construction Phase: The time during which the land base is being constructed, including lakefilling, on-site infrastructure development, habitat creation and site restoration. Estimated start date is the beginning of 2023.

Establishment Phase: The time after the parkland and marina is constructed and officially open to the public for use and during which monitoring and adaptive management of the 1PSEPM Project would be undertaken. The duration of the establishment phase will be defined during the EA, and should the project proceed to implementation, the duration of the establishment phase will be confirmed during detailed design. In general, this may be anywhere from one to five years after the completion of construction.

1.5 DRAFT TOR REVIEW

The draft version of the ToR was circulated to the Ministry of the Environment, Conservation and Parks (MECP), other regulatory agencies, Indigenous communities, and the general public for review. The comments received and the proponent's responses are summarized in the Final ToR and included in a Record of Consultation (RoC).

2.0 PURPOSE OF THE PROPOSED UNDERTAKING

The following sections provide a description of the purpose of the 1PSEPM Project. The description is framed in terms of both the "problem" (expanding the land base on the east side of the breakwater to provide continued marina function on the site) and the "opportunity" (enhancing access to the waterfront and increased parkland) which the 1PSEPM Project presents.

2.1 PLANNING CONTEXT

There is a long history of planning, public engagement, scientific and economic studies with respect to the Port Credit waterfront, specifically the 1 Port Street East site. The following provides a brief summary. A more detailed review of the key background documents and how they support the problem and opportunity assessment will be included in the EA.

Inspiration Port Credit

"Inspiration Port Credit" was a city-building initiative that contributed to the planning framework for transforming Port Credit into an exceptional, high quality, waterfront village. Inspiration Port Credit focused on the 1 Port Street East site, partially owned by Canada Lands Company (Canada Lands), and 70 Mississauga Road South site, formerly owned by Imperial Oil Limited. These properties are two of the City's key waterfront sites in Port Credit. Their revitalization will assist in delivering on the City's Strategic Plan action of creating a model sustainable community on the waterfront. The key documents that have been generated by Inspiration Port Credit that define the planning context for the 1PSEPM Project are:

- Port Credit Local Area Plan of Mississauga Official Plan (2014);
- Mississauga Recreational Boating Demand and Capacity Study (2015);
- Mississauga Marina Business Case (2015);
- 1 Port Street East Comprehensive Master Plan (2016); and
- 1 Port Street East Official Plan Amendment 65 (2017).

Port Credit Local Area Plan of Mississauga Official Plan

The Port Credit Local Area Plan as adopted by Mississauga City Council on March 5, 2014 in the form of Official Plan Amendment No. 19 expresses a Vision for Port Credit, as an evolving urban waterfront village. Significant elements, which give Port Credit its sense of place, are intended to be preserved and enhanced, such as the main street village character along portions of Lakeshore Road (east and west), heritage buildings and landscapes, community facilities, stable residential neighbourhoods, open space, parks, and marina functions along the waterfront. The

Vision reinforces the importance of retaining and enhancing the built elements that provide residents with a sense of local community and social activity.

The Vision is intended to manage change to ensure an appropriate balance is maintained between growth and preservation of what makes Port Credit a place where people want to live, learn, work and play. The Vision is based on six principles:

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

Mississauga Recreational Boating Demand and Capacity Study (2015)

In 2015, the City completed a study on boating demand and capacity to determine anticipated demand for recreational boating facilities on Mississauga's waterfront. The study concluded that the demand for slips exceeds supply and additional slips are needed in Mississauga. The study determined that marinas and boating facilities increase public access to the waterfront; provide more amenities on the waterfront; act as tourism attractions; enhance the physical appearance of the waterfront; raise real estate property values on the waterfront; and, in nearby neighbourhoods, act as a catalyst for new commercial and residential development. In doing so marinas and boating facilities increase the tax base and create improved aquatic habitat.

Marina Business Case (2015)

In 2015, the City completed a Marina Business Case which was a critical study informing the 1 Port Street East Comprehensive Master Plan. The recommendations of the Business Case emphasized the importance of City involvement in protecting for a future marina use at 1 Port Street East. The Business Case concluded that a future marina at 1 Port Street East is an economic, recreational and cultural heritage imperative and of strategic importance to Port Credit and Mississauga. The Business Case looked at a number of marina models at this site and defined the most sustainable model as a full-service marina with the majority of uses on-site. It also determined that a marina can work within a mixed-use context.

1 Port Street East Comprehensive Master Plan (2016)

Building upon the principles from the Mississauga Official Plan, the Port Credit Local Area Plan, and community engagement activities undertaken during 2014 and 2015, the City of Mississauga prepared a Comprehensive Master Plan (Planning Partnership, 2016). The Master Plan describes the City's vision to ensure that an iconic and vibrant waterfront neighbourhood and destination with a full-service marina be developed at the 1 Port Street East site. The Master Plan reports on two concepts for a potential new marina, comprised of floating slips, a potentially expanded land base, and various marina services. One of the principles of the Master Plan speaks to a new development protecting and enhancing natural and cultural heritage resources, including important views, the marina function and marina heritage.

1 Port Street East Mississauga Official Plan Amendment (OPA 65)

Based on the Inspiration Port Credit Comprehensive Master Plan, Mississauga City Council adopted OPA 65 for 1 Port Street East in 2017 that establishes the appropriate development policies for the site including a future marina use on the eastern portion and mixed use development for the wharf portion of the site. OPA 65 clarified that the lands will be redeveloped in a manner that recognizes the site's rich marine history and waterfront location. The site will be a city-wide and regional destination that offers recreational and leisure activities with public access and views to the waterfront.

The site's key attractions will include a marina and marina-related facilities. The site will feature high quality design and prioritize pedestrians and cyclists. Innovative sustainable design and green building technologies will be show-cased, and the site's natural and cultural heritage resources will be protected and enhanced. The site should achieve the following:

1. is woven into the fabric of Port Credit and the city;

2. supports the overall vision of Port Credit as an evolving waterfront village;
3. celebrates the site's urban waterfront context;
4. provides for a mix of uses including, residential, office, retail, indoor and outdoor markets, and makerspaces;
5. links the marine and cultural history of the site together; and
6. draws people to the water's edge to live, work, make, learn, shop and play.

Council Direction

In October 2017, City Council authorized staff to execute an agreement of purchase and sale with Canada Lands for the eastern portion of the property at 1 Port Street East, including the basin water lot; the eastern breakwater water lot; and 2 acres of land between Elizabeth and Helene streets south of Port Street. As shown on Figure 1-1, the initial conveyance was completed on January 24, 2018 transferring the breakwater and a portion of the water lot into City ownership. The second conveyance will be triggered by the City gaining approvals (including the EA) and engaging a contractor to undertake the marina construction and issuing a "Ready to Commence Construction" notice to Canada Lands. City Council has also authorized staff to move forward with a Marina Action Plan by pursuing external funding opportunities and undertaking the required Environmental Assessment and pre-design studies.

2.2 ENVIRONMENTAL MANAGEMENT CONTEXT

A number of studies have also been undertaken that describe issues, opportunities, goals and objectives along the Lake Ontario shoreline and nearshore areas for Mississauga, Toronto and Lake Ontario, and are applicable to the 1PSEPM Project. A more detailed summary of the key background documents and how they support the problem and opportunity assessment will be included in the EA.

Credit River Estuary: Species at Risk Research Project

In 2014, the CVC completed a comprehensive Species at Risk (SAR) research project focussed on the Credit River estuary from the river mouth to the first riffle upstream at the Mississauga Golf and Country Club and its adjacent lands. The project aimed at:

1. identifying all existing SAR and Species of Conservation Concern (SCC);
2. developing a short-list of SAR and SCC species that represent a wide variety of guilds/functional groups;
3. identifying common habitat requirements and threats to the species;
4. identifying a range of restoration activities; and
5. identifying data gaps and potential future monitoring activities.

Although there were no SAR or SCC identified specifically on the eastern breakwater, a variety of species have been observed at nearby parks and at the mouth of Credit River itself. The report encourages plantings for migratory birds at all municipal parks and makes several recommendations for enhancing habitat in the vicinity of the 1PSEPM Project.

Fish Community Objectives for Lake Ontario

In 2017, the Lake Ontario Management Unit of the Ontario Ministry of Natural Resources and Forestry (MNRF) and the Great Lakes Fisheries Section of the New York State Department of Environmental Conservation jointly developed a common set of goals and objectives for fish communities in Lake Ontario (Stewart et. al., 2017). These goals and objectives aimed to sustain or increase the abundance of desirable fish in order to provide sustainable benefits to humans using fish for food, recreation, culture, ecological function, and aesthetics. The goals and objectives that were set by the MNRF and are most relevant to the 1PSEPM project are those for the nearshore zone of the lake, as follows:

Goal:

To protect, restore, and sustain the diversity of the nearshore fish community, with an emphasis on self-sustaining native fishes, such as Walleye, Yellow Perch, Lake Sturgeon, Smallmouth Bass, Largemouth Bass, Sunfish, Northern Pike, Muskellunge, and American Eel.

Objectives:

a. Maintain healthy, diverse fisheries—maintain, enhance, and restore self-sustaining local populations of Walleye, Yellow Perch, Smallmouth Bass, Largemouth Bass, sunfish, Muskellunge, and Northern Pike to provide high-quality, diverse, fisheries.
b. Restore Lake Sturgeon populations—increase abundance of naturally produced Lake Sturgeon to levels that would support sustainable fisheries.
c. Restore American Eel abundance—increase abundance (recruitment and escapement) of naturally produced American Eel to levels that support sustainable fisheries.
d. Maintain and restore native fish communities—maintain and restore native nearshore fish communities.

Integrated Watershed Monitoring Program (IWMP) Report

In their most recent annual report (2017), CVC presented results from its Integrated Watershed Monitoring Program (IWMP) (Credit Valley Conservation, 2019). The report provides a high-level summary of climate, groundwater, stream, forest and wetland conditions in the Credit River Watershed based on observed conditions. The report also identifies key issues of concern

throughout the watershed. Key issues of concern identified by CVC relevant to the 1PSEPM project were regarding:

1. Lake Ontario water levels - Water levels in Lake Ontario have reached an all-time high in the nearly 100-year record, causing flooding of shoreline trails and parks, and raising water levels in the lower Credit River. Flooding and high-water levels are causing damage to property and infrastructure in urban centres.
2. Climate change - A changing climate is expected to increase the magnitude and frequency of extreme events, including ice storms, flooding, high winds and drought (such as the drought in 2016). Intense storms are expected to become more common, resulting in more frequent flooding and more extensive damage to infrastructure. Older infrastructure (including roads, bridges, stormwater management and wastewater treatment facilities) in many parts of the watershed was not designed for changing climate.

<u>Living by the Lake: 2019-2039 - An Action Plan to Restore the Mississauga Shoreline</u>

The Credit Valley Conservation (CVC) began developing an action plan to restore the Mississauga shoreline by conducting the Lake Ontario Integrated Shoreline Strategy (LOISS) project. This project identified opportunities for the protection and restoration of natural ecosystems along the shoreline, inland, and into the lake in the nearshore environment.

LOISS identified the role of existing features in meeting the needs of wildlife, but also to identified priority areas for both restoration and creation of aquatic and terrestrial habitat to enhance existing features and functions. Implementation of the Project has contributed directly to significant improvements in aquatic habitat and functions within the LOISS study area that extends the length of the shoreline within CVC's jurisdiction, from the Harding Waterfront Estate on the west to Marie Curtis Park on the east, including five kilometres up the Credit River and six kilometres into Lake Ontario.

Based on the findings of the LOISS and the Credit River Estuary Species at Risk Research Project, the CVC developed and approved the Living by the Lake Action Plan in 2018 which envisions a "revitalized shoreline that maximizes access for people while maintaining and restoring health, aquatic and terrestrial habitat features and functions." Actions identified in the vicinity of the 1PSEM project include:

- Exploring the feasibility of re-creating wetland habitat at mouth of Credit River to support aquatic species;
- Investigate opportunities to enhance open coast habitat for cold water fish species;

- Study fish use of the nearshore at St. Lawrence Park to inform habitat enhancement and/or protection; and
- Explore opportunities to relocate and improve quality of common tern nesting habitat at Port Credit Harbour Marina.

The City will collaborate with CVC to conserve, enhance and restore the health of the Mississauga shoreline while providing public access to the water's edge and protecting viewing to the lake.

Climate Change Action Plan (2019)

The City of Mississauga developed a Climate Change Action Plan (2019), creating a 10-year road map for tackling climate change. It is the City's first comprehensive climate change action plan. It sets out actions to reduce greenhouse gas (GHG) emissions and help the city adapt to a changing climate over the next ten years. The plan has two goals:

1. Reduce greenhouse gas (GHG) emissions 80 per cent by 2050, with a long-term goal of becoming a net-zero community.
2. Increase resilience and the capacity of the city to withstand and respond to current and future severe weather event associated with climate change (e.g., extreme heat, flooding).

In recent years, there has been damage to parks and along the shoreline due to severe weather events and the introduction of invasive species. The City will emphasize resilient solutions for shoreline treatment to protect infrastructure, the natural environment and enhance water quality.

2.3 PROBLEM/OPPORTUNITY ASSESSMENT

The purpose of the 1PSEPM 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 1 Port Street East Comprehensive Master Plan (2016).

The 1PSEPM 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"*

The wharf at 1 Port Street East was constructed in mid 1950s to facilitate commercial shipping on the Great Lakes. The east breakwater (which is the focus of this EA) was added between

1958 and 1961 in two phases. The "Ridgetown" was added in 1974 and the site converted to a recreational marina in about 1974.

Currently, the Port Credit Harbour Marina is one of the largest privately-operated full-service marinas on the Greater Toronto Area's (GTA) Lake Ontario shoreline. It is also one of the deepest on the north shore of Lake Ontario. The marina caters to seasonal and transient boaters, charter fishing boats, and cruisers. The Port Credit Harbour Marina is considered by the City of Mississauga and its residents to be an important asset. Previous studies, as discussed in Section 2.1, have documented the community desire to continue the marina operations at this site.

As shown on Figure 1-1, Canada Lands Company currently owns a portion of the 1 Port Street East site and water lot where the existing Port Credit Harbour Marina is located. As documented in the studies discussed in Section 2.1, the wharf is anticipated to be sold and redeveloped into a mixed-use residential community. These studies have also identified that an expanded land base primarily along the eastern breakwater can help to accommodate the relocation of the marina.

The 1PSEPM Project will delineate the boundaries of the land base expansion along the eastern breakwater to permit the relocation of the marina.

Simultaneously, expansion of the land base will also:

- Create an opportunity for the provision of new waterfront parkland with safe public access
    - There is no public access associated with the existing privately-owned marina. The public increasingly seeks access to the water's edge through public parkland and along continuous trails and this project provides an opportunity to create access where none currently exists.

- Allow for improved aquatic and terrestrial habitat
    - The existing breakwater was constructed in the late 1950's when the provision of quality aquatic habitat was not part of project planning. The 1PSEPM Project provides an opportunity for the enhancement of aquatic and terrestrial habitats in the vicinity of the breakwater in a manner that achieves an overall ecological gain that is consistent with the stated objectives of CVC's LOISS.

2.4 DESCRIPTION AND RATIONALE FOR THE UNDERTAKING

The final description and rationale for the preferred undertaking will be further developed and provided in the EA as required under the Ontario *EA Act*. It will relate to the ability of the

1PSEPM Project to address the identified problem and opportunity, reflect the advantages and disadvantages of the preferred alternative, and include more detail on the purpose and rationale for the undertaking.

3.0 ENVIRONMENTAL ASSESSMENT AND APPROVAL REQUIREMENTS

3.1 THE ONTARIO *ENVIRONMENTAL ASSESSMENT ACT* (ONTARIO *EA ACT*)

To meet the requirements of the Ontario *EA Act*, the 1PSEPM Project Individual EA will be conducted in two stages. Stage one involved collecting public input and understanding concerns to develop this ToR. The submission and approval of this ToR completes stage one. Stage two involves the preparation and submission for approval of the Individual EA in accordance with the EA ToR.

This ToR was completed as set out in section 6(2)(c) and 6.1(3) of the Ontario *EA Act* and follows the "Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario" (Ministry of Environment, Conservation and Parks, 2014. Revision 2.). Thus, this is a 'focussed' ToR. It sets out the work plan for preparing the EA and carrying out the required public consultation.

The EA will be prepared in accordance with the requirements of this ToR and will generally follow the "Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario" (Ministry of Environment, Conservation and Parks, 2014. Revision 2.). Once the EA has been prepared, the City of Mississauga will submit the EA for review by the public and government agencies and decision by the Minister of the Environment, Conservation and Parks. The EA will contain the following:

- a description of the purpose of the undertaking;
- a description of and a statement of the rationale for,
  - the undertaking,
  - the alternative methods of carrying out the undertaking.
- regarding the undertaking, the alternative methods of carrying out the undertaking, a description of,
  - the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly,
  - the effects that will be caused or that might reasonably be expected to be caused to the environment, and
  - the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment,
- an evaluation of the advantages and disadvantages to the environment of the undertaking and the alternative methods of carrying out the undertaking; and

- a description of any consultation about the undertaking by the proponent and the results of the consultation.

This ToR describes how the City of Mississauga intends to undertake the EA and evaluates the alternatives to the undertaking. However, the ToR provides flexibility to address new circumstances that may be identified as the EA study progresses. This flexibility is not designed to permit the City to completely change the scope of the 1PSEPM Project, but rather to allow for the adjustment of the 1PSEPM Project without having to start the process over again.

3.2 THE IMPACT ASSESSMENT ACT (IAA)

On June 21, 2019, Bill C-69, which includes the *Impact Assessment Act* ("IAA"), new federal legislation governing environmental assessments at the federal level, received Royal Assent. The IAA also created the new Impact Assessment Agency of Canada (the Agency). The *Impact Assessment Act* (IAA) came into force on August 28, 2019 repealing its predecessor, the *Canadian Environmental Assessment Act, 2012* (CEAA 2012).

A marina project such as the 1PSEPM Project is not currently described on the Physical Activities Regulations (SOR/2019-285)[1] and does not require a federal EA under the new IAA. Moreover, the lands owned by Canada Lands (a non-agent commercial Crown corporation) are not federal lands and their conveyance to the City does not require Canada Lands to undertake a federal EA under the new IAA.

3.3 OTHER APPROVALS

Federal and provincial permits under the following legislation are anticipated to be required as part of the 1PSEPM Project. Additional federal and provincial requirements may be identified during the EA. Municipal approvals may also be required and will be identified as part of the EA.

3.3.1 Other Federal Approvals

- The Federal *Fisheries Act* applies to developments that are anticipated to impact fish habitat. The Act prohibits serious harm to fish, and by extension within the Act, fish habitat. In cases where unavoidable impacts are anticipated (after avoidance and mitigation measures are used), the Act's policies require that protection of fish habitat

[1] Source: http://www.gazette.gc.ca/rp-pr/p2/2019/2019-08-21/html/sor-dors285-eng.html

be achieved. Where serious harm of fish is unavoidable, protection is most often achieved by way of employing habitat off-setting measures.

- *Navigation Protection Act* is administered by Transport Canada. Navigable waters include all bodies of water that are capable of being navigated by any type of floating vessel for transportation, recreation or commerce. The creation of land under the *Navigation Protection Act* requires a formal approval under section 5(1)(2).
- *Migratory Birds Convention Act (MBCA).* This Act is administrated by Environment and Climate Change Canada and regulates potentially harmful human activities that may affect the conservation of migratory birds – both individuals and populations – and their nests. With some notable exceptions, a permit must be issued for any activities that may affect migratory birds identified under Article I of the *MBCA*, including waterfowl, cranes, rails, shorebirds, pigeons, migratory insectivorous birds, and other migratory nongame birds. Recently (2019) the Federal government has begun a review of the MBCA to provide better protection to migratory bird species and to modernize the Act with respect to enforcement issues and issues related to migratory bird hunting.
- *Species at Risk Act*. The *Species at Risk Act (SARA)* is also administered by Environment and Climate Change Canada. The *SARA* contains prohibitions against the killing, harming, harassing, capturing, taking, possessing, collecting, buying, selling or trading of individuals of endangered, threatened and extirpated species listed in Schedule 1. The *SARA* also contains a prohibition against the damage or destruction of their residences (e.g. nest or den). The *SARA* applies to all species on federal lands as well as aquatic species and migratory birds off federal lands. DFO administers the *SARA* for aquatic species, while Environment and Climate Change Canada administers the *SARA* for all other federally listed species at risk including migratory birds. Review under the *SARA* is typically undertaken in conjunction with requirements under the *Fisheries Act*. A permit is required for activities that may affect species listed on Schedule 1 and which contravene the *SARA*'s general or critical habitat prohibitions.

3.3.2 Other Provincial Approvals

- *Lakes and Rivers Improvement Act.* The *Lakes and Rivers Improvement Act* is administered by the Ministry of Natural Resources and Forestry (MNRF) and provides for the use of the water of lakes and rivers and regulates improvements in them. The *Act* requires MNRF approval for construction in lakes and rivers. The Minister of Natural Resources and Forestry is given discretionary powers relating to the repair, reconstruction and removal of dams, maintenance of water levels, and regulation of use of waters or works. A permit under the *Lakes and Rivers Improvement Act* may be required.

- *Conservation Authorities Act* and *Regulations 160/06.* Under Ontario Regulations 160/06, CVC has the ability to:
  - Prohibit, regulate or require the permission of the authority for straightening changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland; and
  - Prohibit, regulate or require the permission of the authority for development, if in the opinion of the authority, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land may be affected by the development.

  The proposal to infill portions of Lake Ontario along the shoreline is within the jurisdiction of CVC and is therefore subject to the Regulations above. Permits may be required for development along the shoreline within the 1PSEPM Project Study Area.
- *Clean Water Act*. The *Clean Water Act (CWA),* administered by the MECP, sets the legal framework to ensure that communities are able to protect their municipal drinking water supplies by developing collaborative, locally driven, science-based protection plans. Under Regulation 288/07 of the *Act*, local Source Protection Committees are to develop policies to address significant, moderate and low threats to source water within Intake Protection Zones. Communities will have to conform to policies addressing significant drinking water threats and have regard for policies addressing moderate and low drinking water threats. On this basis, relevant policies of the SPP should be considered.
- *Endangered Species Act.* The *Endangered Species Act (ESA)*, administered by the MECP, protects species identified as being Endangered, Threatened or Extirpated in Ontario. Species status is determined by the Committee on the Status of Species at Risk in Ontario (CASSARO). Under the *Act*, species are protected (Section 9) as well as their habitats (Section 10). Permits may be required from the MECP for any works within areas identified as habitat of a Species at Risk in Ontario (SARO) and for sampling SARO species. A Section 17 permit for the protection and recovery of a provincial species at risk may be required if SARO species are found in the project study area.

4.0 "ALTERNATIVES TO" THE UNDERTAKING

4.1 DESCRIPTION OF "ALTERNATIVES TO" THE UNDERTAKING

The Ontario *EA Act* requires the identification and evaluation of "Alternatives To" the undertaking, including the consideration of the "Do Nothing" alternative. "Alternatives To" the undertaking are defined as different ways to solve the identified problem or address the identified opportunity. The 1PSEPM Project is an opportunity to move forward with the implementation of the City approved 1 Port Street East Comprehensive Master Plan and ensure the continuation of the site's historic marina function, which is key to the cultural identity of the Port Credit community.

Various planning studies undertaken with significant public and stakeholder engagement looked at the long-term vision for this part of Port Credit. It was clear that the community wanted to keep the marina in Port Credit and the deep-water harbour at this location was considered an asset that gave this site a unique advantage against any other. Following extensive study, including a Marina Business Case (2015), 1 Port Street East Comprehensive Master Plan (2016) and Official Plan Amendment (2017), which were approved by City Council, the City identified that a marina was most appropriate on the lands between Elizabeth and Helene Street, an expanded eastern breakwater, and the entire waterlot. The existing harbour basin is a natural location for a marina and the costs associated with creating a harbour basin in other locations would be prohibitive. Based on the previous studies, Canada Lands Company, the owners of the 1 Port Street East site, 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. Therefore, alternative sites for a new marina outside of Port Credit have not been considered and the City's intention has consistently been to explore replacing the marina services and facilities within the existing basin.

A marina at this site supports Port Credit's cultural heritage and character, as this site has historically accommodated marine functions due to the protected harbour basin. For these reasons no additional sites along the Mississauga waterfront were assessed as alternatives and focus has been placed on the expansion of the land base along the breakwater at the 1 Port Street East site to permit relocation of the marina and associated operations.

For the purposes of this ToR, the "Alternatives To" that are subject to evaluation are defined as:

1. **Do nothing.** This alternative will not create additional parkland or preserve a future public marina function at the site. The second conveyance of land and water lot from

Canada Lands to the City would not take place, leaving the development of the entire property at the discretion of the Canada Lands.

2. **Create a new land base.** This alternative involves creating a new land base around the eastern breakwater that would allow for the establishment of a new marina and additional parkland in accordance with the City's approved 1 Port Street East Comprehensive Master Plan. The exact location and extent of filling will be determined in the next phase of this EA. To a large extent, the location and extent of filling will determine what can be created or constructed on this new land base.

4.2 EVALUATION OF 'ALTERNATIVES TO' THE UNDERTAKING

These "Alternatives To" are evaluated in a qualitative manner in Table 4-1 in terms of their environmental effects and their main advantages and disadvantages with respect to their ability to address the 1PSEPM Project "problem" and "opportunity". An overall rationale for the selection of the "Alternative To" that will be carried forward to the development of "Alternative Methods" during the EA is also provided based on net effects, advantages and disadvantages.

Table 4-1: Evaluation of Alternatives to the Undertaking

Environmental Component	Criteria	Do Nothing	Create a New Land Base
Physical Environment	Resiliency to changing lake levels and coastal processes	The long-term integrity of the existing pier and the eastern breakwater will continue to be at risk from changing lake levels and coastal processes	A new land base can be designed with sufficient flexibility with respect to changing coastal processes and lake levels to ensure its the long-term integrity and wharf protection.
	Effects on water quality in the Local Study Area	There is no potential for changes to water quality	Construction will result in temporary increased turbidity from lakefilling. Mitigation is available to minimize adverse effects.
	Potential for disturbance of contaminated soils	There is no potential for disturbance of contaminated soils	Construction has the potential to disturb contaminated soil. Mitigation is available to minimize adverse effects.
Atmospheric Environment	Change to air quality	There is no potential for changes to air quality	Dust from construction activities, trucks hauling fill and emissions from construction equipment may be sources of nuisance effects. Mitigation is available to minimize adverse effects.
	Changes to ambient noise conditions	There is no potential for change in noise levels	Noise from construction activities and trucks hauling fill may be sources of nuisance effects. Mitigation is available to minimize adverse effects.

Environmental Component	Criteria	Do Nothing	Create a New Land Base
Biological Environment	Area and quality of terrestrial habitat	There is no potential for loss or disturbance of terrestrial habitat	Some existing vegetation on the existing property and eastern breakwater would be lost and/or disturbed. Mitigation will is available to minimize adverse effects.
		No potential for improvement to terrestrial habitat.	Creating a new land base offers opportunities to improve terrestrial habitat and enhance migratory bird habitat and habitat connectivity through new plantings.
	Area and quality of aquatic habitat	There is no potential for effects on aquatic habitat	Although lakefilling activities may cover some existing low-quality aquatic habitat, this alternative provides the opportunity to create better habitat conditions. Removal of existing aquatic habitat will likely require an authorization under the *Fisheries Act*, and habitat compensation will be stipulated under this authorization in order to meet the Habitat Policy Guiding principle of "No Net Loss". A new land base can be designed so that it is self-compensating, so that the creation of new aquatic habitat as part of Project design will compensate for the removal of existing aquatic habitat.
	Potential to maintain or improve connections for aquatic species	Existing connections for aquatic species are maintained. No opportunities to improve connections for aquatic species.	A new land base with enhanced aquatic habitat may maintain or improve the ability of aquatic species to move within the nearshore areas and upstream in the Credit River.
Socio-economic Environment	Area of open space or park land created	Without the conveyance of additional land and water lot from Canada Lands to the City, no additional land base is created such that it can be made available for public amenities, parks and trails.	Creating a new land base offers opportunities to establish parkland that support passive recreational activities for visitors and residents of the City of Mississauga and beyond.
	Potential for changes to use of waterfront for recreation	Any development of the wharf and the water basin to the east of the wharf will be at the discretion of Canada Lands. This development may	Creating a new land base will increase opportunities for public use of and access to the site. Changes in activities should be compatible with activities associated with the marina and marina activities to avoid conflict.

Environmental Component	Criteria	Do Nothing	Create a New Land Base
		change/restrict the use of the waterfront for recreation.	
	Potential for change to navigation	Any development of the wharf and the water basin to the east of the wharf will be at the discretion of the Canada Lands Company. Changes to navigation are not likely.	The placement of lakefill may alter navigation patterns in the harbour basin and on the eastern side of the pier during construction. Safe navigation will be maintained during the establishment phase.
	Disruption to use and enjoyment of property during construction and establishment	There is no potential for disruption to use and enjoyment of residential properties, community facilities and institutions.	Construction activities may produce temporary nuisance effects that can disrupt people's use and enjoyment of their property, community facilities and institutions. Mitigation is available to minimize adverse effects.
	Changes in community character	The ultimate loss of marina functions along the waterfront will result in irreversible harm to the unique character of Port Credit Village.	Creating a new land base offers the opportunity to maintain marina functions along the waterfront and the unique character of Port Credit Village. The presence of new recreational and commercial land uses has the potential to enhance community character.
	Effects on business operations during construction and establishment	The ultimate loss of marina functions at the 1 Port Street East site will result in adverse effects on business operations. No potential for generating positive effects to business operations. Existing businesses might cease operations and jobs could be lost.	Creating a new land base offers the opportunity to maintain marina functions along the waterfront and maintain marina-related jobs and business operations. Construction and establishment activities will produce temporary nuisance effects that may result in short-term disruption to business operations. Mitigation is available to minimize adverse effects. Construction and establishment activities will generate business opportunities to improve business activity and enhance operations.
Cultural Environment	Potential for displacement of marine- and land-based archaeological resources, and built heritage resources due to construction	There is no potential for effects on cultural heritage value of built heritage resources and cultural heritage landscapes	Construction has the potential for the displacement of unknown archaeological resources onshore and in the lake. A new land base would create a new feature that is consistent with and can be integrated with the cultural landscape of Port Credit's shoreline.

Environmental Component	Criteria	Do Nothing	Create a New Land Base
	Potential for effect from construction and operations on traditional uses of lands by Indigenous communities	No potential effects on traditional uses of lands and waters	A new land base must allow for the use of lands and waters by Indigenous communities.
Cost	Capital and operating Costs	Avoids the capital costs of new construction. Ongoing maintenance and repairs of the existing breakwater will be incurred.	A new land base will require funding for construction. Costs for ongoing maintenance and repairs will also be incurred for the existing breakwater.

The "do nothing" alternative does not create a new land base that would allow for the development of a new marina, additional parkland and public access and enhancements to terrestrial and aquatic habitat. Therefore, this alternative does not meet the purpose of the 1PSEPM project. There are no clear advantages to this alternative other than the avoidance of new construction costs and negative environmental effects on various environmental components during construction. The main disadvantages of the 'do nothing' alternative are:

- Doing nothing would stall the implementation of the City-approved 1 Port Street East Comprehensive Master Plan with respect to the continuation of the site's historic marina function, which is key to the cultural identity of the Port Credit community. The "Do Nothing" alternative would forego the creation of new waterfront parkland and improved aquatic and terrestrial habitat.

- The long-term integrity of the existing wharf and the eastern breakwater will continue to be at risk from changing lake levels and coastal processes. City costs for ongoing maintenance and repairs remain and may rise over time.

New land can be created through lakefilling to allow for the establishment of a marina and supporting facilities and infrastructure, provide waterfront access and parkland at the 1 Port Street East site. The disadvantages of this alternative relate to its potential for adverse environmental effects on various environmental components during construction. Measures are available (e.g., traffic controls, dust management, noise abatement, spill management) to mitigate these adverse environmental. The main advantages of this alternative are:

- Promotes the implementation of the City-approved 1 Port Street East Comprehensive Master Plan with respect to the continuation of the site's historic marina function;

- Avoids the ultimate loss of marina functions along the waterfront in Port Credit and its adverse effects on recreational boating, business operations and community character of Port Credit Village.
- A new land base can be designed with sufficient flexibility with respect to changing coastal processes and lake levels to ensure its long-term integrity.
- Creating a new land base offers opportunities to enhance terrestrial and aquatic habitats and establish parkland that can support passive recreational activities for visitors and residents of Mississauga and beyond.

In conclusion, the "create a new land base" alternative will be carried forward to the development of "Alternative Methods" during the EA. The potential for negative and positive environmental effects described in Table 4-1 will be considered in more detail in the EA. The "Do Nothing" alternative will be re-assessed against the preferred alternative in the EA.

5.0 DESCRIPTION, EVALUATION AND RATIONALE FOR 'ALTERNATIVE METHODS' OF CARRYING OUT THE UNDERTAKING

The following sections describe the iterative steps that are proposed in developing *alternative 1PSEM project configurations* ('Alternative Methods') during the EA. The alternatives will be assessed as to their ability to achieve the purpose of the 1PSEM Project. Criteria and indicators will be used to assess the potential for negative and positive environmental effects and will address all components of the environment for each alternative.

Alternative 1PSEM Project configurations (i.e., different shapes for the land base) are proposed. These 1PSEPM Project configurations along with the process used to develop them will be the subject of public and agency consultation and as such they may be modified, refined or additional configurations may be developed as a result of comments received.

5.1 STEP 1 – DETERMINATION OF FOOTPRINT FOR ALTERNATIVES

The first step in defining the alternative 1PSEM Project configurations is to develop a range of *footprints*[2] up to a maximum spatial extent. This range of footprints will be determined through consideration of physical constraints such as the:

- size of the water lot,
- the potential impact to marine archaeological resources (if any),
- water depth,
- the technical viability of the footprint in relation to coastal processes and the effects of climate change;

The maximum size of the land base is limited by the size of the water lot and the newly created land base cannot extend beyond the water lot boundaries as it would not be under City ownership if it does.

Based on previous studies, it is understood that the smaller the land base, the fewer opportunities to provide a full range of marina services and public amenities. The larger the land base the greater the opportunity to provide a full range of marina services, increased public access, parkland and other amenities. Two distinct alternative footprints as defined below will be assessed in the EA:

- Alternative 1: Nominal Lakefill (Figure 5-1); and

[2] "Footprint" refers to the size and shape of the newly created land base.

- Alternative 2: Extended Lakefill (Figure 5-2).

These two footprint alternatives are considered the minimum and maximum limits of the lakefill, that is, the final land base and project configuration is likely to fall between these two distinct footprints. However, the City may consider alternative methods other than Alternatives 1 and 2 in the EA. Because the size of the footprint will largely determine the extent of opportunities available to provide marina facilities, public amenities and habitat improvements; different alternative 1PSEPM Project configurations of marina facilities, public amenities, and habitat improvements will be developed subsequently during ToR Section 5.2 – Step 2 "Identification of Desired Design Elements".

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_NominalLakeFillAlternative.mxd

LEGEND

- Project Study Area for 1 PSEPM Project EA
- 1 Port Street East Breakwater Lot in City Ownership
- 1 Port Street East Wharf Development Area in Canada Lands Company Ownership
- Breakwater Repair
- Lake Fill Above and Below Datum (74.2m)
- Arterial
- Local Street

0 37.5 75 150 Meters

SCALE: 1:4,000
WHEN PLOTTED CORRECTLY AT 11 x 17
NAD 1983 UTM Zone 17N

NOTES

This map is for conceptual purposes only and should not be used for navigational purposes.

Basedata:

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA PROJECT ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

ALTERNATIVE 1 - NOMINAL LAKEFILL

December 3, 2019	Rev **0.0**	Figure No. **5-1**
Project No. 209.40718.00000		

SHOREPLAN MISSISSAUGA

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_ExtentedLakeFillAlternative.mxd

LEGEND

- Project Study Area for 1 PSEPM Project EA
- 1 Port Street East Breakwater Lot in City Ownership
- 1 Port Street East Wharf Development Area in Canada Lands Company Ownership
- Breakwater Repair
- Lake Fill Above Datum (74.2m)
- Lake Fill Below Datum (74.2m)
- Arterial
- Local Street

0 37.5 75 150 Meters

SCALE: 1:4,000
WHEN PLOTTED CORRECTLY AT 11 x 17
NAD 1983 UTM Zone 17N

NOTES

This map is for conceptual purposes only and should not be used for navigational purposes.

Basedata:

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA PROJECT ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

ALTERNATIVE 2 - EXTENDED LAKEFILL

December 3, 2019	Rev **0.0**	Figure No. **5-2**
Project No. 209.40718.00000		

SHOREPLAN MISSISSAUGA

5.2 STEP 2 – IDENTIFICATION OF DESIRED DESIGN ELEMENTS

The range of footprints determined in the previous step will be further refined in this step through an iterative process to include the key design elements listed below:

- The approximate number, locations and sizes of boating slips;
- Marina services, including public parking, on-site winter boat storage, marina related businesses and services.
- Open space or parkland area, including trail connections and opportunities for recreation; opportunities to provide views of Lake Ontario and back to the City;
- Aquatic and terrestrial habitat features; and
- Other physical infrastructure (i.e., stormwater management, fencing).

These design elements will be conceptual, allowing them to be evaluated in the EA, but subsequently implemented by the City in a flexible and adaptive manner. Major changes to these design elements following EA approval would be subject to an amendment procedure, review and approval by the MECP and other regulators as required.

These layers of information will be developed by the 1PSEPM Project Team. A key aspect of this step will be to optimize the balance between maintaining an economically viable marina, terrestrial and aquatic habitat gains, and parkland and waterfront access.

The result of this step will be alternative 1PSEPM Project configurations which respect the range of 1PSEPM Project footprints. Coarse level habitat creation and recreational opportunities will be defined for each alternative such that differences between them can be assessed.

5.3 STEP 3 – COMPARATIVE EVALUATION OF SHORT LIST OF ALTERNATIVES

The alternative 1PSEPM Project configurations will be described in sufficient detail to adequately identify their potential impacts to the environment, evaluate and compare each alternative on the basis of net effects (i.e., after the consideration of mitigation) and their respective advantages and disadvantages. For example, the purpose of the comparative evaluation is to choose the alternative which has the greatest potential to minimize negative effects and maximize the positive effects or desired outcomes. The comparative evaluation will be undertaken using the preliminary evaluation criteria and indicators presented in Table 5-1, considering net effects (i.e., after mitigation is applied). The preliminary evaluation criteria and indicators will be refined and finalized as part of the EA based on public and agency comments. Criteria and indicators are organized by broad “Environmental Components”. Rationale for

including each criterion is provided in Table 5-1. For all 1PSEPM Project configurations, mitigation measures to minimize negative effects or enhance positive benefits will be identified. For each indicator, each alternative 1PSEPM Project configuration will be given a qualitative score of 'least preferred', 'moderately preferred,' or 'most preferred'. The evaluation will result in the identification of a preferred alternative based on the evaluation criteria using a reasoned trade-off analysis which explicitly considers trade-offs between the alternatives, thereby keeping more desirable alternatives over those less desirable. Public and agency input will also be sought on the alternative 1PSEPM Project configurations and the decision method. The analysis by indicator will be presented in an evaluation matrix. For this evaluation, the effects from construction and establishment activities will be considered separately for each alternative.

Table 5-1: Preliminary List of Comparative Evaluation Criteria and Indicators for Evaluation of 'Alternative Methods'

Environmental Component	Criteria	Indicator(s)	Rationale
Physical Environment	Resiliency of proposed lakefill to changing lake levels and coastal processes	Ability of proposed alternative to withstand changing lake levels (i.e., flooding hazards)and coastal processes (shoreline erosion) including future changes associated with climate change.	Design flexibility with respect to changing coastal processes and lake levels is important to ensure the long-term integrity of the 1PSEPM Project.
	Effects on surface water quality in the Local Study Area	Changes to surface water quality (turbidity, *E.coli,* algae, parameters of concern from stormwater discharges)	Surface water quality will affect the recreational opportunities along the waterfront. Mitigation will be necessary to minimize adverse effects.
	Potential for disturbance of contaminated soils	Area of contaminated soils to be managed/remediated for the 1PSEPM Project	Construction has the potential to disturb contaminated soil. Preference would be given to the alternative that provides for the least disturbance of contaminated soils and/or provides the most flexibility and efficiencies in managing contaminated soil issues. Mitigation will be necessary to minimize adverse effects.
	Ability to manage contaminated soils and groundwater	Ease of *remediation*/risk management	Preference should be given to the alternative that permits the implementation of appropriate remediation and/or risk management options easily and cost effectively.
	Risks to existing and future municipal	Changes in risks to municipal drinking water from project	Construction and establishment activities may pose a risk to drinking

Environmental Component	Criteria	Indicator(s)	Rationale
	drinking water	activities.	water (e.g., fuel spills) or be incompatible with source protection policies. Mitigation will be necessary to minimize adverse effects.
Atmospheric Environment	Change to air quality	Changes to air quality during construction and establishment	Dust from construction activities, trucks hauling fill and emissions from construction equipment may be sources of nuisance effects. Marina operations and vehicle traffic may be sources of nuisance effects. Mitigation will be necessary to minimize adverse effects.
	Changes to ambient noise conditions	Changes to day-time noise levels during construction and establishment and compliance with relevant MECP noise limits.	Noise from construction activities and trucks hauling fill maybe sources of nuisance effects. Marina operations and vehicle traffic will be sources of nuisance effects. Mitigation will be necessary to minimize adverse effects.
Biological Environment	Area and quality of terrestrial habitat	Total area of terrestrial habitat created, enhanced, disrupted or lost	Terrestrial habitat serves to increase the diversity, sustainability and linkages of the natural areas and also helps to increase the probability of occurrence of a wider range of wildlife species. Terrestrial habitat can support populations of terrestrial birds, mammals, insects, reptiles, and amphibians. Some structures may attract nuisance species.
		Potential effects on terrestrial Species at Risk (SAR) and Significant Wildlife Habitat (SWH)	
		Potential for the creation of habitat for nuisance species.	
		Qualitative assessment of improvement to terrestrial habitat for enhancement of migratory bird habitat and habitat connectivity	Indicator describes the types of terrestrial habitat that will be created. Greater diversity is an indicator of ecosystem function and has the potential to attract a wider variety of animal and plant species. Migratory birds require suitable habitat to rest. Enhancements in habitat and connectivity would provide greater quality resting options for these birds.
	Area and quality of aquatic habitat	Total area and types of aquatic habitat disrupted or removed	The amount of aquatic habitat removed and created will influence the aquatic species diversity. The greater the net area of habitat created (i.e., habitat created minus habitat
		Potential effects on aquatic Species at Risk (SAR) and Significant Wildlife Habitat	

Environmental Component	Criteria	Indicator(s)	Rationale
		(SWH)	removed), the more likely that the area is able to support a variety of habitat forms. Some structures may attract nuisance species.
		Potential for the creation of habitat for nuisance species	
		Amount to self-compensation with respect to fish habitat	Removal of aquatic habitat will likely require an authorization under the *Fisheries Act*, and habitat compensation will be stipulated under this authorization in order to meet the Habitat Policy Guiding principle of "No Net Loss". The 1PSEPM Project should be self-compensating, so that the creation of new aquatic habitat as part of Project design will compensate for the removal of aquatic habitat.
	Potential to maintain or improve connections for aquatic species	Qualitative assessment of connections for movement of aquatic species within lake and the Credit river	Lake Ontario and the Credit River provide important habitat for fish and provide natural linkages between the lake and areas inland. The 1PSEPM Project may maintain or improve the ability of aquatic species to move within the nearshore areas and upstream in the Credit River.
Socio-economic Environment	Area of open space or parkland created	Total area to be made available for recreation including trails	Parkland used for passive recreational activities serves the purpose of creating public linkages throughout and beyond the project site. Parkland used for passive recreational activities can enhance people's use and enjoyment of the waterfront
	Potential for changes to use of waterfront for recreation	Potential for use of area for new activities such as fishing, birding, etc. Compatibility of recreational activities with boating and marina business activities	The 1PSEPM Project will allow public use and access to the project site. New recreational opportunities can enhance people's use and enjoyment of the waterfront. Changes in activities should be compatible with activities associated with the marina and marina businesses to avoid conflict. Mitigation will be necessary to minimize adverse effects.
		Changes to navigable area as a result of project implementation	The placement of lakefill may alter navigation in the harbour basin and on the eastern side of the pier.

Environmental Component	Criteria	Indicator(s)	Rationale
	Disruption to use and enjoyment of property during construction and establishment	Effects of construction (noise, dust, traffic, site visibility) at residential properties, community facilities and institutions.	Construction activities may produce nuisance effects that can disrupt people's use and enjoyment of their property. Mitigation will be necessary to minimize adverse effects. Conversely, parkland used for passive recreational activities can enhance people's use and enjoyment of the waterfront.
		Effects of marina operations (air emissions, noise, dust, traffic and site visibility) at residential properties, community facilities and institutions.	Operation activities may produce nuisance effects that can disrupt people's use and enjoyment of their property, community facilities and institutions. Mitigation will be necessary to minimize adverse effects.
	Changes in community character	Effects of marina operations on the unique character of Port Credit Village and its marina functions along the waterfront.	The presence of new recreational and commercial land uses tied to the marina may diminish or enhance the unique character of Port Credit Village.
	Effects on business operations during construction and establishment	Adverse effects on business operations from increased noise, dust, traffic and site visibility) to business operations during construction and establishment	Construction and establishment activities may produce nuisance effects that may result in disruption to business operations. Mitigation will be necessary to minimize adverse effects.
		Positive effects to business operations in the Local Study Area.	Construction and establishment activities will generate business opportunities to improve business activity and enhance operations.
Cultural Environment	Potential for displacement of built heritage resources due to construction	Cultural heritage value of built heritage resources and *cultural heritage landscapes* within land creation area	It may be necessary to assess the areas to be affected to avoid or mitigate the effects to any identified resources of cultural heritage value or interest. Mitigation may be necessary to minimize adverse effects.
	Potential displacement of marine- and land-based archaeological resources	Archaeological resources within footprint of land creation and associated park area	The presence of archaeological resources will necessitate the application of measures to avoid or mitigate negative effects.
	Potential for effect from construction and operations on traditional uses of lands by Indigenous	On-going traditional uses of lands within 1PSEM Project Study Area	The ability for Indigenous communities to continue with their traditional uses of lands and water requires assessment..

Environmental Component	Criteria	Indicator(s)	Rationale
	communities.		
Cost	Potential to phase implementation of land creation, naturalization and park development	Ease of construction	It is desirable to choose an alternative that is relatively easy to construct to minimize cost and complexity.
	Capital cost	Estimated capital cost	Alternatives will be compared based on their estimated overall costs, with less expensive options that maximize the marina and public amenities being preferred.
	Annual marina operations and maintenance costs	Annual cost of operations and maintenance of marina and naturalized and park areas	It is desirable that the 1PSEM Project be as self-sustaining as possible to achieve low maintenance costs.
	Sustainability of active and informal park spaces	Qualitative assessment of maintenance requirements of 'park' space	Sustainability of the 1PSEM Project is important and it is desirable to minimize active maintenance requirements.
	Cost of management of groundwater and soil contamination	Total cost associated with remediation/risk management	The costs to remediate soils and the associated risk management are a significant component of the overall project costs.

5.4 STEP 4 – CONFIRM, REFINE AND UNDERTAKE DETAILED ASSESSMENT OF PREFERRED ALTERNATIVE

The preferred alternative will need to be confirmed and refined more thoroughly for the detailed assessment. The refinement will include the development of a phasing plan and construction plan including construction techniques and associated mitigation measures. The detailed assessment will result in a final discussion of how the preferred alternative meets the purpose of the Project, its net environmental effects, how it minimizes negative effects and/or maximizes positive effects, and its advantages and disadvantages, according to the following components of the environment and Project costs, namely:

- Physical Environment;
- Atmospheric Environment;
- Biological Environment;
- Socio-economic Environment;
- Cultural Environment (including Aboriginal Interests); and
- Costs.

The detailed assessment will also give consideration the potential for cumulative effects with existing, planned and reasonably foreseeable projects and activities in the study areas.

A summary of environmental effects and mitigation measures, and an assessment of 1PSEPM Project advantages and disadvantages will be provided in the EA. It is anticipated that the detailed assessment will include the development of preliminary environmental management plans for construction and establishment (as required).

6.0 DESCRIPTION OF THE ENVIRONMENT POTENTIALLY AFFECTED BY THE PROPOSED UNDERTAKING

The purpose of this chapter is to present a brief overview of the environment potentially affected by the proposed 1PSEPM Project so that the reader has familiarity with issues to be addressed and the complexity of the environment likely to be affected by the Project.

6.1 PHYSICAL ENVIRONMENT

6.1.1 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. Due to the depth of Lake Ontario, storm surge is not as severe as occurs elsewhere on the Great Lakes (such as in Lake Erie).

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 (Figure 6-1). 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. 100-year instantaneous water levels determined by MNRF still apply. Water levels in Lake Ontario have been regulated since the 1950s and have varied by approximately two metres over this period, although the regulations tended to reduce the extreme high and low levels. A new regulation plan by the International Joint Commission aims for a more natural management approach and therefore greater variability in water levels. Under the new plan, lake levels are expected to rise and fall in patterns more similar to the pre-regulation period.

6.1.2 Waves

The wave climate at Port Credit has a bi-nodal distribution of the total wave power with predominant easterly and southwesterly peaks. Figure 6-2 shows the directional distribution of the total offshore wave power, as well as the highest wave heights extracted from a hindcast database. Approximately 73% of the total power comes from the east, approximately 23% comes from the southwest and the remaining 4% is distributed over all other directions. Figure 6-3 presents "all-directions" wave height and period exceedance curves which show the percentage of time a given wave height or period is exceeded. Figure 6-4 and Figure 6-5 respectively, show the monthly and annual variation of the total offshore wave power from the 36-year hindcast.

As waves propagate from deep to shallow water, they undergo a transformation due to the changing water depths. Wave refraction, diffraction, and breaking cause changes to both the significant wave height and the mean wave direction. Due to the orientation of the nearshore contours, waves coming from the southwest undergo much more refraction than waves coming from the east. That produces a much narrower wave energy peak focused towards the east. For example, Figure 6-6 shows a comparison of the offshore wave energy distribution with the nearshore wave energy distribution for a point just offshore. Figure 6-7 and 6-8 are wave height contour and vector diagrams showing the transformation of the peak easterly and southwesterly waves respectively.

Figure 6-1: Lake Ontario Historic Water Level Data (1918-2018)

(Fisheries and Oceans Canada 2019)

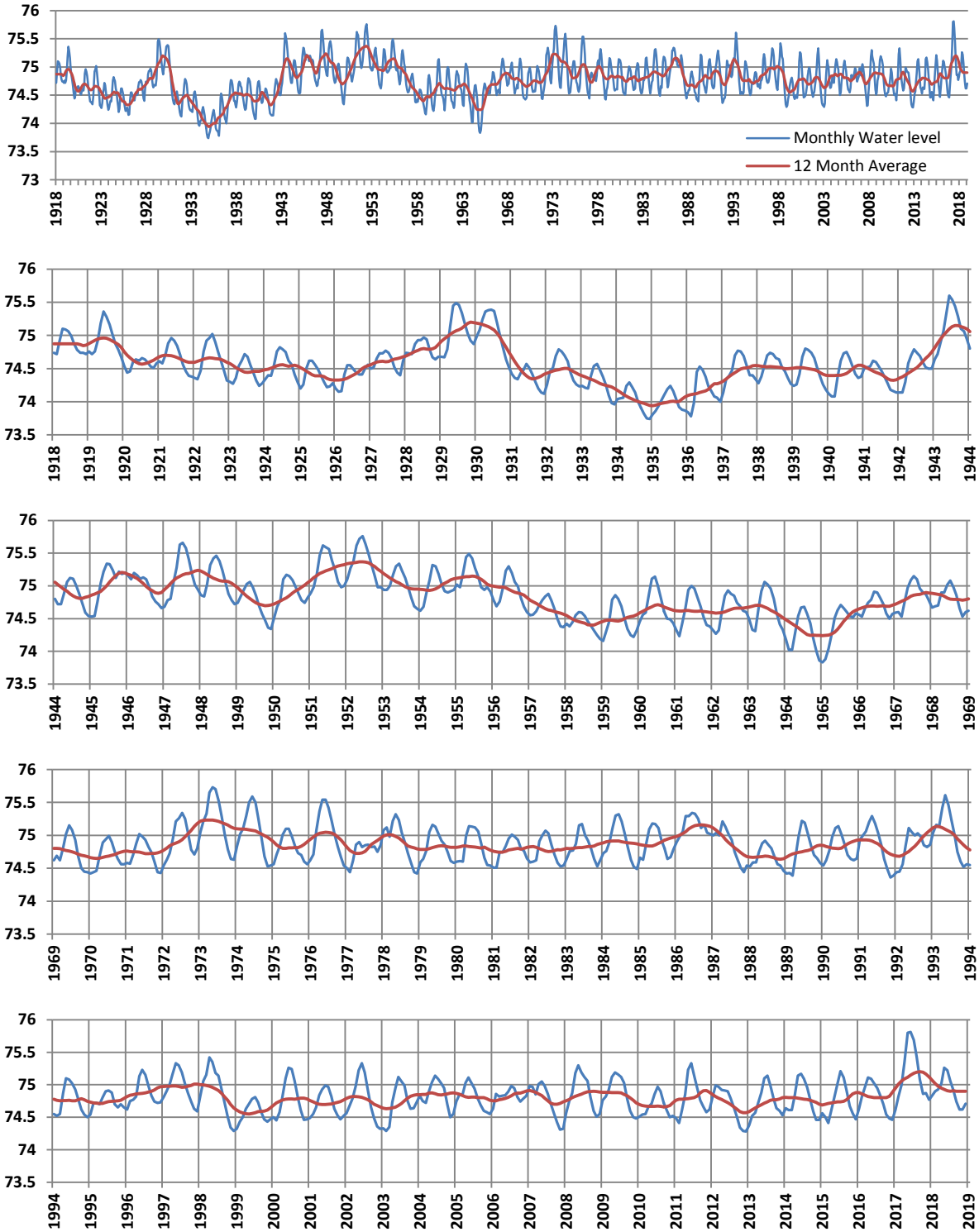


Figure 6-2: Distribution of Highest Wave Heights and Total Wave Power
(Shoreplan, 2019)

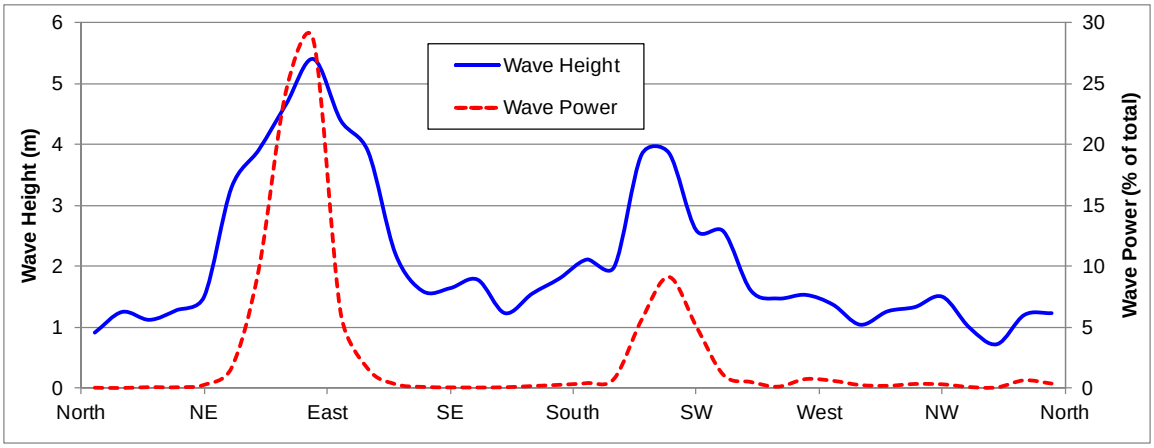


Figure 6-3: Wave Height and Period Exceedance Curves
(Shoreplan, 2019)

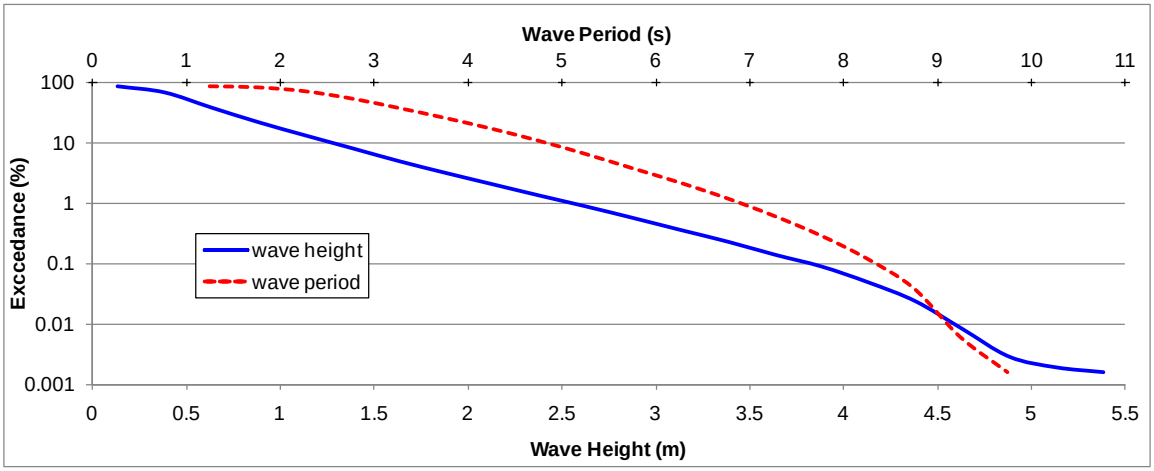


Figure 6-4: Monthly Distribution of Total Wave Power
(Shoreplan, 2019)

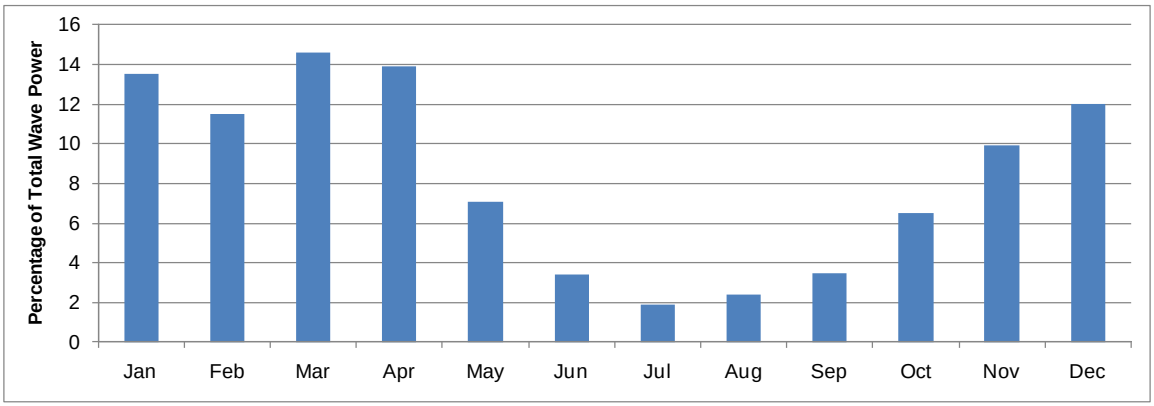


Figure 6-5: Annual Distribution of Total Wave Power
(Shoreplan, 2019)

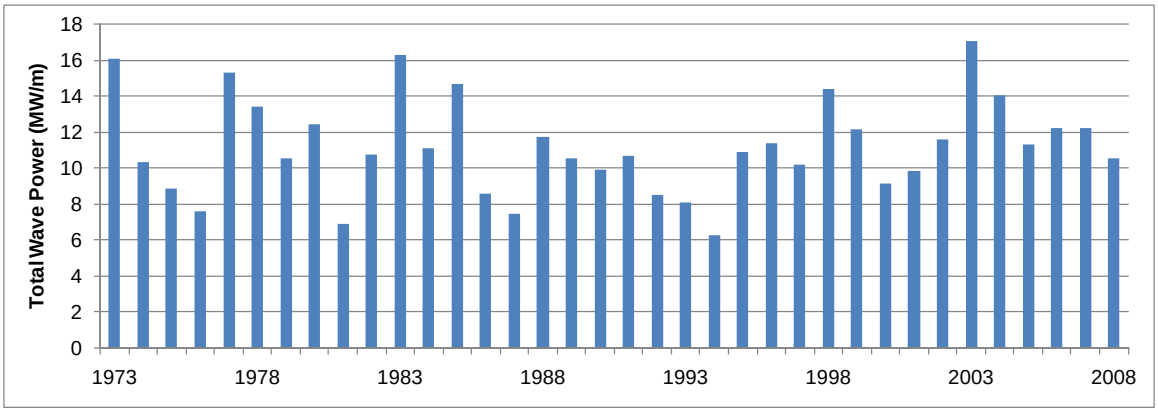


Figure 6-6: Offshore and Nearshore Wave Energy Distributions
(Shoreplan, 2019)

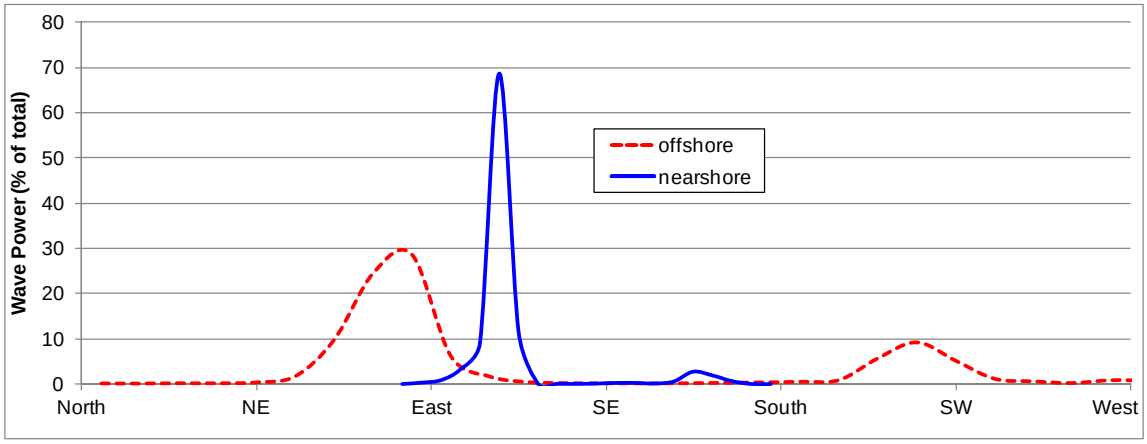


Figure 6-7: Transformation of Easterly Waves
(Shoreplan, 2019)

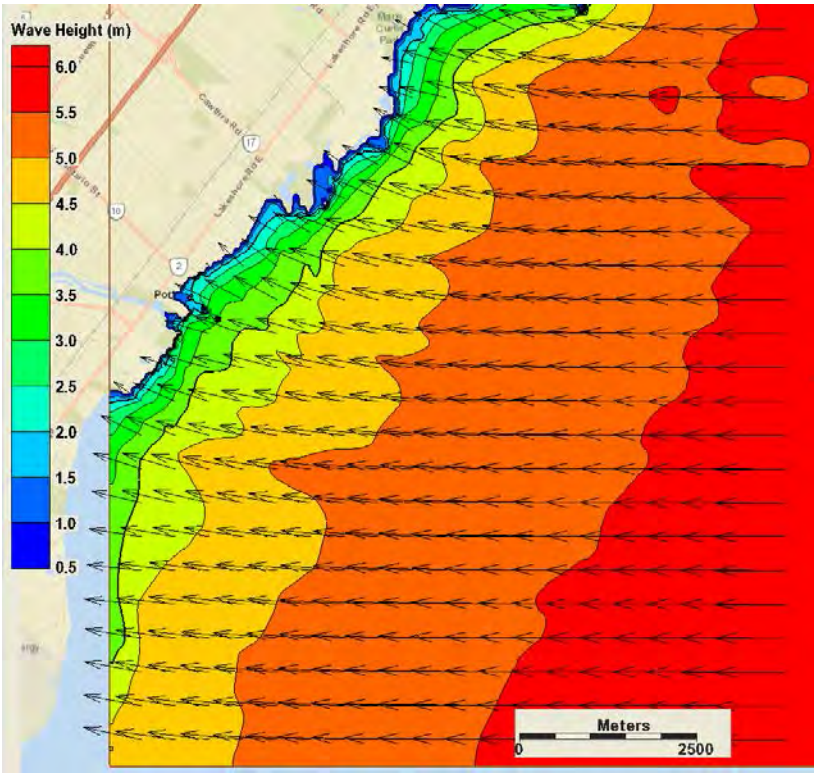
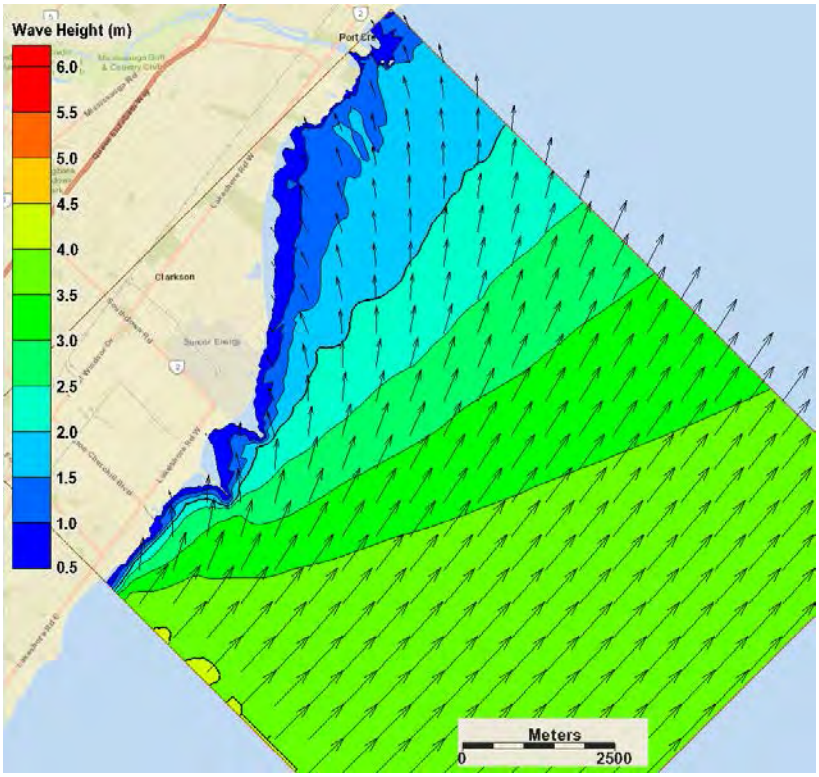


Figure 6-8: Transformation of Southwesterly Waves
(Shoreplan, 2019)



6.1.3 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 LOISS 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.

6.1.4 Lake and River Water Quality

Regional, Local and Project Study Areas

Rainfall and snowmelt run off surfaces rapidly and in unnaturally large amounts in areas of high urban density. This runoff gathers speed and erosional power and takes up contaminants as it travels into receiving waters. Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. Storm sewer overflows and rivers are major sources of bacterial, nutrient, and *total suspended solids* (TSS) loadings along the Regional and Project Study Areas. Additional pollutants from upstream agricultural areas also contribute. These pollutants can harm fish and wildlife populations, kill native vegetation and foul drinking water supplies (Aquafor Beech Limited, 2011).

A LOISS Background Review identified that the largest watercourse within the Regional Study Area, the Credit River has the greatest effect on most water quality parameters. It contributes 86% of the suspended solids, 66% of the nitrates, and 80% of the heavy metals entering Lake Ontario from within the study area.

6.1.5 Geomorphology

Regional and Local Study Areas

Within the Mississauga city limits approximately 90% of the shoreline is protected with man-made structures. The nearshore bottom within the 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 can be characterized as artificial shores.

Examples of beaches within the Regional Study Area include Rattray Marsh, Lakeside Park, Tall Oaks Park, Helen Molasy Memorial Park, Brueckner Rhododendron Gardens, Richard's Memorial Park, and Jack Darling Memorial Park. In the Project Study Area, a small sandy beach is located just east of the eastern breakwater.

A number of creeks flow to Lake Ontario along the Mississauga shoreline. These include (from west to east): Clearview, Avonhead, Lakeside, Sheridan, Turtle, Birchwood, Moore, Lornewood, Tecumseh, Cumberland, Cooksville, Serson, and Applewood.

The Credit River flows through the City of Mississauga. The Credit River is approximately 90 km long and is connected to over 1,500 km of smaller creeks and streams which drain into the river (Credit Valley Conservation, 2009). Downstream from the QEW to the river mouth, the Credit River becomes more turbid and underlain by finer silts and mud owing to its gentle gradient and backwater effects from Lake Ontario. The estimated 2-year flow of the river as it intersects with Lake Ontario is 126cms (Credit Valley Conservation, 2014).

Project Study Area

Within the Project Study Area, 100% of the shoreline is man-made and can be characterized as artificial. The east breakwater consists of large armour stones with a stone core. The west shoreline is formed by a steel sheet pile wharf. The north shore is formed by a conglomerate of structures and informal structures. The land within the Project Study Area is all infill. There are no creeks outlets or creeks running under the Project Study Area.

The mouth of the Credit River is just to the west of the Project Study Area.

6.1.6 Sedimentation

Regional, Local and Project Study Areas

The shoreline from Toronto to Burlington 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 study areas, much of the shoreline has been hardened, essentially eliminating bluff erosion, and the nearshore lakebed is erosion-resistant bedrock. Some sediment transport does take place but there is no significant source of new littoral material.

The Credit River yields the greatest amount of sediment supply to Lake Ontario near the Project Study Area, as the overall size of the Credit River basin is almost three times greater than the next largest basin. The Credit River Adaptive Management Study (Credit Valley Conservation, 2014) estimated that the total sediment yield from the Credit River to Lake Ontario is over 174,000 tonnes per year, and primarily composed of fine sands and silt particles.

Sedimentation and bathymetric studies were completed for Snug Harbour, the Credit River channel and river mouth (Geomorphic Solutions, 2011). A comparison with data sets from

1989, 1995, 1996, 2010 and 2011 identified areas of sediment loss and gain and revealed that Snug Harbour and the river mouth are experiencing sedimentation.

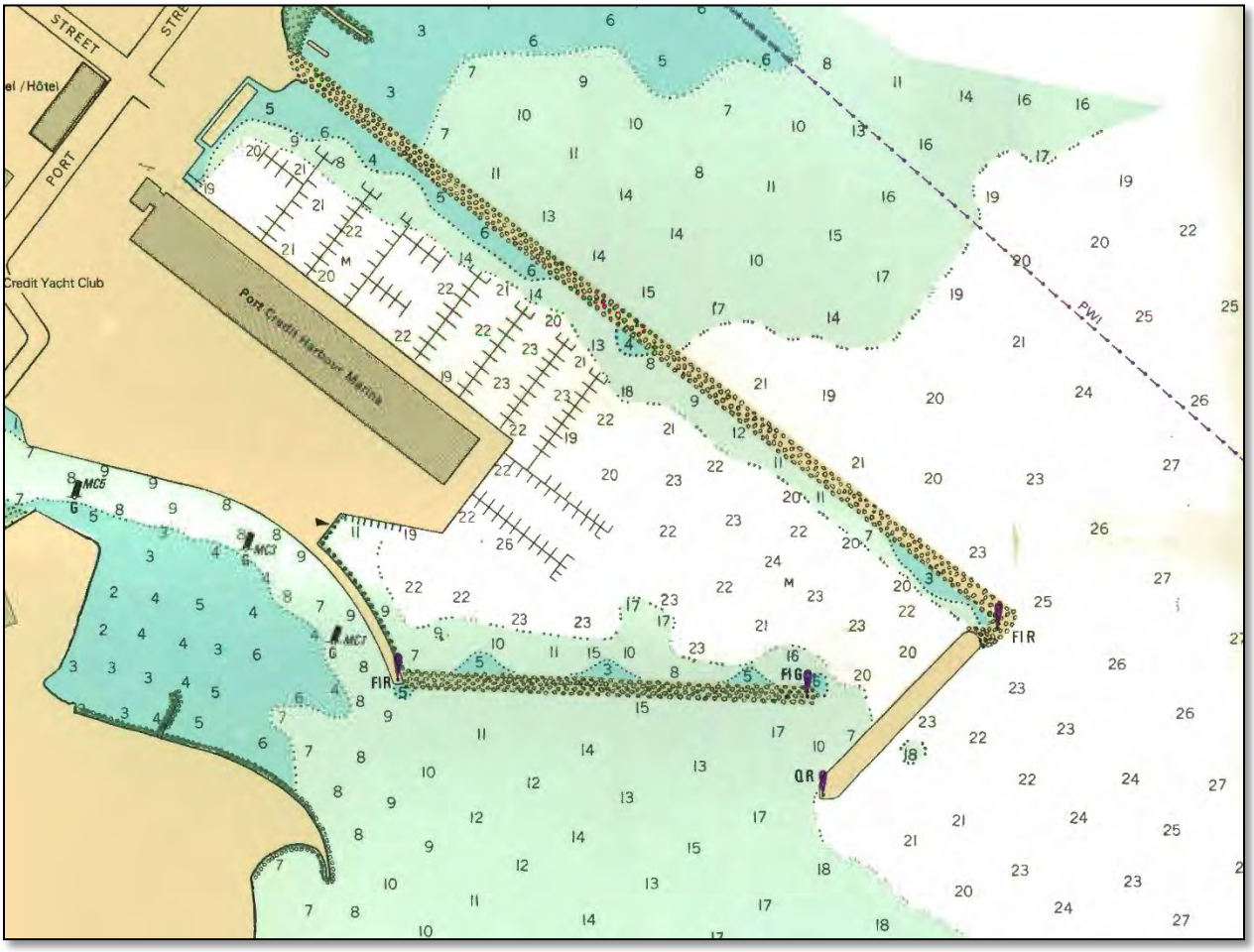
In 2014, the City of Mississauga completed a project to restore the navigability of the Credit River by removing excess sediment in the Snug Harbour and along portions of the Credit River channel near the mouth of the River. The deposition in the near the mouth of the Credit River is a natural function of decreasing flow velocity as the river mouth widens. Historically, these conditions supported a coastal wetland in this area. Wave action likely also influences deposition in this area.

6.1.7 Bathymetry

Figure 6-9 illustrates the bathymetry within the existing Port Credit Marina basin and for the area of the lakebed adjacent to the basin. 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.

Figure 6-9: Bathymetry in the Project Study Area

From: Ontario Hydrographic Chart No. 2070 – Harbours in Lake Ontario, 1971



6.1.8 Soils and Geology

Local and Project Study Areas

The Local and Project Study Areas are underlain by shale bedrock of the Georgian Bay Formation. The Georgian Bay Formation is grey shale that is up to 175 m thick, with fracturing limited to the upper few metres of the Formation. A variety of surficial deposits are associated with the Iroquois Plain in the Local Study Area. Coarse-textured glaciolacustrine deposits are primarily sand, gravel minor silt and clay that were foreshore and basinal deposits. Areas of bedrock are either exposed or thinly drift-covered Georgian Bay Formation shale. Modern alluvium (river deposits) was laid down by the Credit River within its floodplain, along with Stavebank Creek, Kenolli Creek, Mary Fix Creek and others.

The area of the pier is comprised of lakefill put in place in the 1950s. The nature of the lakefill is unknown at this time, as are details of any subsurface contamination.

6.1.9 Source Protection Areas

Local and Project Study Areas

The *Clean Water Act* (2006) aims to protect existing and future sources of drinking water. To achieve this, vulnerable areas are delineated around surface water intakes and wellheads for every municipal residential drinking water system that is in a source protection area. The Project and Local Study Areas are located within the Credit Valley Source Protection Area, a surface water Intake Protection Zone (IPZ) and a Highly Vulnerable Aquifer (HVA). Parts of these study areas may be located in an Event-based Modelling Area (EBA) (Ministry of Environment, Conservation and Parks, 2020).

6.1.10 Climate Change Considerations

Coastal processes and characteristics of the shoreline area in Port Credit are sensitive to climate conditions. Wind created waves can contribute to flooding, erosion and movement of sediments and debris along the shoreline. Stronger and more frequent winds can aggravate these conditions. Mild winters reduce lake ice cover that protects the shoreline from erosion, while cold winters can cause ice to build up along the shoreline.

For this Project, the potential impact of climate change on water levels is an important consideration. Generally, water levels on Lake Ontario are predicted to decline, but there is no absolute agreement on this. Strategies will need to consider many possible lake level scenarios,

and adaptive strategies will need to be able to respond to higher and lower lake levels than were seen in the past (Harris, 2016).

6.2 ATMOSPHERIC ENVIRONMENT

Air quality in the City of Mississauga is affected by both the emission sources that release pollutants into the air, and by the climate, or atmospheric conditions, such as wind speed, wind direction, and temperature. The climate in the Greater Toronto Area consists of fairly cold and windy winters and typically hot, humid summers.

Air quality in Region of Peel was subject to extensive study along the Hurontario Street corridor from Port Credit to Brampton as part of the Hurontario-Main Light Rail Transit Project (2014). These studies concluded that existing air contaminant levels for the majority of the contaminants are less than their relevant Ambient Air Quality Criteria (AAQC), even when considering the maximum concentrations over multiple stations and multiple years. However, Particulate matter (i.e., PM_{10}, $PM_{2.5}$), acrolein, benzene, and benzo(a)pyrene do exceed their criteria at least some of the time. PM_{10} and $PM_{2.5}$ have maximum concentrations that are above their 24-hour AAQC and CAAQS. These elevated maximums result from high particulate matter events that occur in the GTA from time-to-time. However, for both of these contaminants, the annual means are well below the thresholds, indicating that on an average day, the ambient concentrations of PM_{10} and $PM_{2.5}$ are below the criterion (City of Mississauga, 2014).

The City of Mississauga helps reduce local air pollution by promoting and providing residents with a number of alternative transportation options that help to get cars off the road; ensuring City buildings are energy efficient; and planting more trees. The City has an Idling Control By-law that encourages drivers to stop unnecessary vehicle idling. This reduces emissions from vehicles which reduces greenhouse gas emission and air contaminants.

The major sources of noise in the study area are both natural (i.e., Lake Ontario) and anthropogenic. Transportation is the major source of noise in Port Credit, including road traffic noise on Lakeshore Road West, Mississauga Road South, and internal roadways within Port Credit, as well as rail traffic on the CN Oakville Subdivision rail line. Existing residential, retail and commercial development within Port Credit are not considered significant noise sources and are generally not audible over the ambient road and rail traffic noise (Valcoustics Canada Ltd., 2017).

6.3 BIOLOGICAL ENVIRONMENT

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).

Historically, the Lake Ontario shoreline in Mississauga was composed of a mix of natural habitats: deciduous and mixed forests, open savannahs and coastal wetlands. Survey records from the early 1800s refer to a 'dense forest' from Burlington to Etobicoke Creek and for 'many miles northward' (Clarkson, 1977).

The area along the Lake Ontario shoreline is highly dynamic by the action of waves, and wind. Terrestrial linkages between the Lake Ontario shoreline and the Credit River are weak on both east and west sides of the river. Low density residential subdivisions and armoured banks of the Credit River provide little cover and access for wildlife between J.C. Saddington and J.J. Plaus Parks and upstream to the forested areas of Credit River valley.

Despite urbanization and changing shoreline conditions over time, there remains the potential for Species at Risk (SAR) habitat and Significant Wildlife Habitat (SWH) to occur in the study areas.

6.3.1 Aquatic Habitat

Regional and Local Study Areas

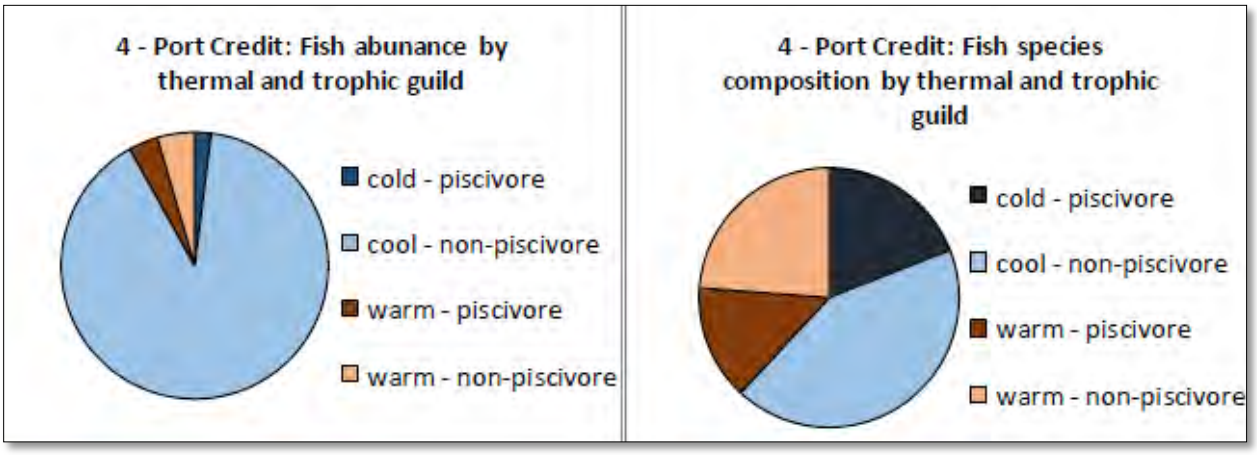
Aquatic habitats have undergone a substantial change from their historic conditions. Land use change, filling, dredging, and disturbance are the most notable historic and current threats to aquatic habitats along the shore of Lake Ontario. Stone hooking, the removal/mining of rock from the lake bottom, has left a legacy along the Mississauga shoreline that has resulted in wholesale changes in, and destruction of, nearshore aquatic habitat through the removal of structure and shelter for fish including the once extirpated Lake Ontario population of Atlantic Salmon (Martin, 2007). The loss of virtually all cobble substrates and the elimination of Lake Trout spawning reefs are also attributed to stone hooking (Whillans, 1979).

The shoreline in the Regional and Local Study Areas consists of erosion protection structures (armour stone, revetments, concrete, rubble, rip rap, etc.) most of the shoreline west of the Project Study Area being artificial.

Twenty-seven species of fish have been recorded in the Port Credit area since 2008. The nearshore community is comprised of species including Smallmouth Bass, Northern Pike, Pumpkinseed, Yellow Perch and Brown Bullhead. Records also include the following species of note: American Eel, Atlantic Salmon, Walleye, Longnose Gar, Bowfin, and White Bass.

Figure 6-10 illustrates fish abundance and fish species composition by thermal and trophic guild in the Port Credit area (Credit Valley Conservation, 2018).

Figure 6-10: Port Credit Fish Abundance
(Credit Valley Conservation, 2002)



Project Study Area

The Credit River at Lake Ontario can be described as estuary or river mouth habitat. This habitat is a mixing zone where a flowing river mixes with the static water of Lake Ontario. Substrates found here are generally finer sands and silts that have been carried as bedload by the river and deposited into the river mouth. Habitat alteration, periodic dredging and the presence of Carp have contributed to the absence of aquatic vegetation beyond very tolerant species that are typically found adjacent to the breakwater. Examples of species of fish found in the Project Study Area include Pike, Bass, Walleye, Bowfin and Dace (Credit Valley Conservation, 2002).

6.3.2 Vegetation

6.3.2.1 Forests

Regional and Local Study Areas

To the west of the Project Study area, along the Lake Ontario shoreline of Mississauga, deciduous forests, mixed deciduous-coniferous forests and *cultural woodlands* are some of the

most common (though underrepresented) communities. Most of these remnant natural areas are small in size, fragmented by roads, trails and development and are thus isolated from each other. Larger tracts are found at Rattray Marsh Conservation area (approximately 38 ha). Further inland, forested communities remain at Cawthra Woods (approximately 20 ha) and along the main Credit River valley at Dundas Street.

Trees in the study area are predominantly those in deciduous forest and cultural woodlands. Of note is the Stavebank Oak Forest and Tallgrass Prairie near the southern end of the Credit River Marshes which includes prairie indicator species such as Black Oak (*Quercus velutina*), Indian Grass (*Sorghastrum nutans*) and Big Bluestem (*Andropogon gerardii*) (CVC 2014).

Project Study Area

The Project Study Area is predominately urbanized with only a few trees growing on the breakwater near the shoreline.

6.3.2.2 Wetlands

Regional and Local Study Areas

Wetlands make up less than 1% of the Regional Study Area. Rattray Marsh located at the mouth of Sheridan Creek, west of the Project Study area, is the last remaining large baymouth bar coastal wetland between Oshawa and Burlington (Credit Valley Conservation, 2018).

Shallow depths 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. These wetlands comprise eight wetland units and are designated as provincially significant by MNRF and as a Centre for Biodiversity by CVC. The marshes themselves support a diverse complex of habitat types, their location, access and structure provide unique habitat for turtles, snakes, amphibians and birds (including waterfowl). The Credit River Marshes rival Rattray Marsh in quality and species richness, providing habitat for reptiles and amphibians including Eastern Milksnakes (*Lampropeltis triangulum*), Common Watersnakes (*Nerodia sipedon*), Snapping Turtles (*Chelydra serpentine*) and Map Turtles (*Graptemys geographica*).

Project Study Area

There are no wetlands located within the Project Study Area.

6.3.3 Birds

Most resident and migrant bird species require natural spaces to survive within an urban environment. Birds often face many stresses in urban ecosystems, particularly area-sensitive forest birds. Waterfront parks in particular offer some of the only remaining habitat within the larger landscape. In urban areas, high quality habitat supporting abundant food resources for migrant birds is limited.

In Mississauga, waterfront parks have been known to play an important role in sustaining migratory bird populations by providing habitat and resources for birds before and after their arduous flight around/over Lake Ontario. The Local and Project Study Areas are both located within an important migratory zone, which includes portions of both the Atlantic and Mississippi flyways.

Regional and Local Study Areas

All along the lakeshore in Mississauga are remnant natural features and manicured parks which offer potential stopover and breeding habitat for species of migrant and resident birds. Surveys since 2010 are beginning to document the diversity of birds that make use of the shoreline areas within the Regional Study Area. Some natural areas are known 'hotspots' for birds (for example Rattray Marsh Conservation Area); however, some migrant birds may make use of sub-optimal habitat when large natural tracts are limited and when inclement weather conditions impede further migration.

The vegetated ravines and river valley systems along the north shore of Lake Ontario within the Regional Study Area serve an important role in sustaining migratory bird populations by providing green north/south corridors through largely urban areas. The area west of Port Credit to Burlington has been identified as the *Western Lake Ontario Important Bird Area* and is most notable for its congregations of waterfowl, particularly overwintering waterfowl.

Sheltered embayments, creek mouths and some non-natural structures, such as the pier and breakwater at marina can also provide important habitat for water birds. Aggregations of waterfowl and cormorants are frequently noted in these areas.

Project Study Area

Its proximity to the shoreline and key migratory corridors allowed many species of birds to use this area as a stopover to rest and wait out inclement conditions. This includes the mouth of the Credit River, the wharf and water basin to the east. Some existing buildings and structures

at the existing Port Credit Harbour Marina and in Port Credit may provide roosting and nesting habitat for birds.

6.3.4 Amphibians

Amphibians are key ecological indicators as most spend a portion of their life in both aquatic and terrestrial habitats. Because of this dependency on multiple habitats amphibians are sensitive to ecological stressors and the quality of the ambient environment. Human disturbance, pollution, climate change, and alterations to the hydrologic cycle can have an impact on survival, health and population size.

Regional and Local Study Areas

Observations indicate that the natural areas along Lake Ontario shoreline in the Regional Study Area contain seven species of frogs and toads: Green Frog, American Toad, Bullfrog, Wood Frog, Western Chorus Frog, Northern Spring Peeper, and Northern Leopard Frog. Many of these records are historic (greater than 20 years old), and the species are sensitive to urban pressures.

Salamander diversity and abundance within the Regional Study Area is low. The most common salamander species is the Red-backed salamander although records of Yellow-spotted Salamander and Jefferson's Salamander exist for the area. The Red-backed salamander is a completely terrestrial species; all other salamanders in the Regional Study Area require wetland habitat to complete a portion of their lifecycle. The relative paucity of other salamander observations in the Regional Study Area may speak to the lack of suitable habitat (i.e., vernal pools, forested wetlands) across the landscape.

Project Study Area

There is no suitable breeding habitat for forest and wetland breeding in the Project Study Area.

6.3.5 Reptiles

Regional, Local and Project Study Areas

Reptile populations in the larger Lake Ontario shoreline area have not been studied in-depth. Within the larger coastal wetland communities of Rattray Marsh Conservation Area and the Credit River Marshes, turtle observations are common. Similarly, water snake observations are common at the Credit Village Marina. However, it is unknown the extent to which these populations move along the Lake Ontario shoreline. For example, turtles often fare poorly in

urban environments, where habitat is limited and fragmented, and encounters with humans are frequent.

6.3.6 Mammals

Regional and the Local Study Area

There has been no comprehensive study for mammals within the larger Regional Study Area. Many mammals are secretive and difficult to capture and are thus underreported. Common mammals occur within the broader Regional Study Area. Some less common species such as Red Squirrel and Eastern Chipmunk indicate that some larger habitat patches supporting area-sensitive species exist. Other mammals such as American Mink, Beaver and Muskrat indicate the importance of the shoreline area to species that make use of both terrestrial and wetland communities. Natural areas along the lakeshore and along the Credit River and Lake Ontario tributary creeks are important for the movement of these species and their ability to find adequate resources for food and shelter.

Project Study Area

Eleven mammal species are known to use the Project Study Area for all or some of their life cycle. These species are typical of urban areas and include the Eastern Gray Squirrel, Eastern Chipmunk, Raccoon, and Muskrat.

6.4 SOCIO-ECONOMIC ENVIRONMENT

6.4.1 Land Use

The land use descriptions in this section are based on the existing Mississauga Official Plan (City of Mississauga, 2015). Mississauga Official Plan consists of a principal document and a series of local area plans. Official Plan policies for lands within the Port Credit Community Node and Port Credit neighbourhoods are contained in the Port Credit Local Area Plan. In conjunction with the Mississauga Official Plan, the Port Credit Local Area Plan (Area Plan) provides policies for lands in south central Mississauga, which guide development and the preparation of zoning by-law amendments.

6.4.1.1 Existing Land Use

Local Study Area

Existing land uses within the Local Study Area are residential, commercial, industrial, institutional, open space/greenbelt, and vacant lands (City of Mississauga, 2012). Port Credit is generally a stable area with a distinct community identity, with a focus on the Lake Ontario

waterfront, the harbour and its heritage. The community is anchored by established residential areas at the eastern and western parts of the community and is served primarily by a commercial corridor along Lakeshore Road. Port Credit's heritage can be found in the unique buildings in and around the harbour area and the Lakeshore Road commercial areas. Port Credit's location makes the community a focal point of residential, commercial, open space and tourism and recreation activity on the Mississauga waterfront.

In 1988, the City of Mississauga defined by by-law Old Port Credit village south of Lakeshore Road West on the west side of the Credit River as an area to be examined for possible future designation as a heritage conservation district. In 2004, the City enacted the Old Port Credit Village Heritage Conservation District (HCD) Plan. This plan guides physical changes to the area over time to ensure that modifications contribute to the area's special character. The area to which the HCD Plan applies was one of the topics examined through a 2017 update process regarding the District. Among the updates made, the HCD Plan was refined such that the eastern boundary of the District encompasses the entire Credit River, as well as the City-owned property located on the northeast side of the harbour.

The 2016 population of Port Credit is estimated at approximately 12,500 people. Residential development consists of a combination of dwelling types and forms. High-density areas are centrally located near the Port Credit GO Transit Station, medium and high-density development along Lakeshore Road, as well as low density areas characterized by tree-lined streets in grid patterns. Lakeshore Road has a "main street" commercial character with on-street parking and sidewalks accommodating active pedestrian use. The street is framed by one- to two-storey buildings with small storefront shops. Small-scale industrial and commercial uses exist south of the Canadian National Railway tracks along Queen Street and Queen Street West. Most of the lands in the area are developed with the exception of the West Village Partners (formerly Imperial Oil) lands west of Mississauga Road South, which are slated for mixed-use development. Several commercial areas are located along Queen Street and Queen Street West, just south of the CN Railway. Other uses along the Port Credit waterfront include a working harbour, fishing, boating and marine services.

6.4.1.2 Future Land Use

Local and Project Study Areas

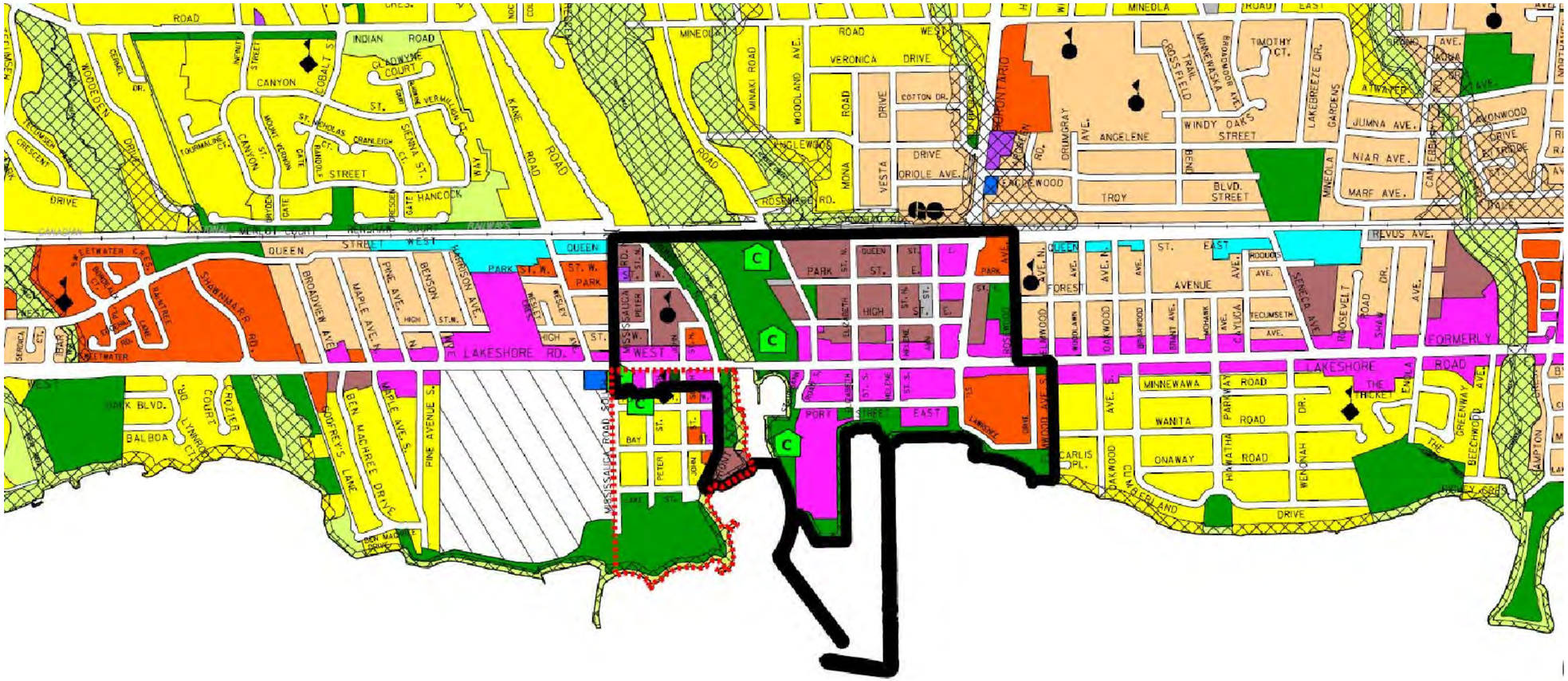
The land use designations in Port Credit are shown in Figure 6-11 as per the City of Mississauga's Official Plan. This plan describes the future development of Port Credit as an "urban waterfront village", based on the principles of a mixture of land uses, a variety of

densities, pedestrian and cycling friendly infrastructure, transit and supportive urban forms, a significant public realm, and public access to the waterfront.

As part of Inspiration Port Credit, the City worked with the community and stakeholders to create the 1 Port Street East Comprehensive Master Plan. The draft Port Credit Local Area Plan identified the site as having potential as a mixed use, water-related development that takes advantage of the site's location in downtown Port Credit and on the lake. The master plan set out a detailed vision for the 1 Port Street East site that ultimately set out permitted uses, densities, heights and building forms as detailed in the Official Plan Amendment (City of Mississauga, 2017).

Notes:

1. The limits of the Natural Hazards shown on this schedule are for illustrative purposes only. The appropriate Conservation Authority should be consulted to determine their actual location.
2. Base map information (e.g. roads, highways, railways, watercourses), including any lands or bodies of water outside the city boundaries, is shown for information purposes only.
3. Roads shown on this schedule are existing or under construction and are shown for information purposes only. For future roads refer to Schedule 5, Long Term Road Network.



LEGEND

LAND USE DESIGNATIONS

- Residential Low Density I
- Residential Low Density II
- Residential Medium Density
- Residential High Density
- Mixed Use
- Convenience Commercial
- Motor Vehicle Commercial
- Business Employment
- Public Open Space
- Private Open Space
- Greenbelt
- Utility
- To Be Determined

LAND USE LEGEND

- Community Node Boundary
- Heritage Conservation District
- Natural Hazards
- Public School
- Catholic School
- Community Facilities
- Local Area Plan Boundary

0 0.5 1 2 Kilometers

1:50,000

WHEN PLOTTED CORRECTLY AT 11 x 17
NAD 1983 UTM Zone 17N

CITY OF MISSISSAUGA

1 PORT STREET EAST PROPOSED MARINA PROJECT ENVIRONMENTAL ASSESSMENT - TERMS OF REFERENCE

PORT CREDIT LAND USE DESIGNATIONS

December 3, 2019 | Rev **0.0** | Figure No. **6-11**

Project No. 209.40718.00000

SHOREPLAN MISSISSAUGA

N:\Markham\GIS_Projects_GIS\209_40718_Shoreplan\1.MXDs\3.WRKG\209_40718_LocalAreaPlanLandUse.mxd

6.4.2 Recreation

Regional and Local Study Areas

The nearshore areas of Lake Ontario and the Credit River in the City of Mississauga are prime locations for recreational boating, canoeing and kayaking. Currently there are three marinas along the waterfront in Mississauga – Lakefront Promenade Marina, Credit Village Marina, and the Port Credit Harbour Marina currently operating at the 1 Port Street East Site. Marine uses within the Lakefront Promenade Marina area include motor boating, boat launching, shoreline and boat-based fishing, canoeing and kayaking. During the summer, the Lakefront Promenade Marina is a busy destination for local Mississauga residents, visitors from elsewhere in Mississauga, and tourists from outside the City.

Centre City Capital Limited (CCCL) operates the Port Credit Harbour Marina (PCHM) through a lease with Canada Land Company, the owner of a portion of the property. CCCL has operated the marina since 1978. CCCL sub-leases space to several businesses complementary to marine use.

PCHM is one of the largest privately-operated full-service marinas on the GTA Lake Ontario shoreline. The depth of water in the marina basin, one of the deepest on the north shore, allows the marina to accommodate boats up to 75 feet in length. The number of slips operated within the existing marina basin has fluctuated over time. The marina caters to seasonal and transient boaters, charter fishing boats, and liveaboards.

Port Credit is also the go-to spot for fishing enthusiasts throughout the Greater Toronto Area and is home to several fishing charter companies. Every summer on the shores of Lake Ontario, the annual Great Ontario Salmon Derby, North America's largest freshwater fishing derby, takes place for a six-week period in July and August. Over a 50-day period, the derby has had an estimated 21,000 people annually. The event attracts fishermen from all over the world and is an important tourist attraction to the City.

A number of waterfront parks are located within the Local Study Area, with the nearest parks to the 1PSEPM Project site being:

- **St. Lawrence Park** is located along St. Lawrence Drive immediately to the east of the 1PSEPM Project site. This is a small waterfront park with water's edge seating and lake activity viewing areas.
- **Port Credit Memorial Park East** is located along the Credit River north of Lakeshore Road. It is a place to enjoy river activities and explore the area's history related to the Credit River

and includes a water's edge walkway and seating; a Waterfront Trail below the Lakeshore bridge. Many of the City's festivals are hosted at Memorial Park. The municipal library is located within the park and the Port Credit Memorial Arena is located adjacent to the park.

- **Marina Park** is located along the Credit River's west edge and will serve as an important connection between Memorial Park West and J.C. Saddington Park.
- **J.C. Saddington Park** is located on the west shore of the Credit River. It is considered a destination park focusing on all-season family activities and events with a park pavilion, parking, water's edge seating and lake activity viewing areas.
- **J.J. Plaus Park** is located on Stavebank Road South, west of the 1 Port Street East site. This is a small riverfront park with water's edge seating, lake activity viewing areas, a restaurant and a surface parking area.

A Waterfront Trail runs throughout the Regional and Local Study Areas. The Mississauga section of Waterfront Trail stretches from Lakeside Park in the west to Marie Curtis Park in the east.. Through Port Credit, the trail is on paved asphalt, with some portions aligned along residential streets. Currently, the 1 Port Street East site is a missing link in the waterfront trail network.

Project Study Area

Currently, land-based "open lake views" (or vistas) from the Project Study Area to Lake Ontario are partially screening and limited as public access to the Project Study Area is restricted.

6.4.3 Traffic and Transportation

Local Study Area

Port Credit is served by four major corridors: Lakeshore Road which runs east-west through Port Credit, Mississauga Road which runs north from Lakeshore Road, the Queen Elizabeth Way (QEW) highway, and Hurontario Street, which runs north from central Port Credit. All roads in the Local Study Area are under the jurisdiction of the City of Mississauga, with the nearest regional arterial road being Cawthra Road to the east of Hurontario Street.

Lakeshore Road is an east-west major arterial roadway that extends through the entirety of the City of Mississauga, providing connections to the QEW at Mississauga Road and Hurontario Street. In Port Credit, Lakeshore Road West becomes Lakeshore Road East at the Credit River. Lakeshore Road operates with four travel lanes with a posted speed limit of 50 km/h, and with lay-by parking on both sides of the street. Lakeshore Road West has signalized intersections with Mississauga Road. Lakeshore Road East has signalized intersections at Stavebank Road, Elizabeth Street, Helene Street and Hurontario Street.

Traffic conditions along the Lakeshore Road corridor can become congested, particularly on left turn movements at signalized intersections, during the weekday peak hours due to the relatively high traffic volumes carried during these periods (BA Consulting Group Ltd., 2017).

Project Study Area

Current access to the 1PSEPM site is via Port Street. This is an east-west minor collector road under the jurisdiction of the City of Mississauga that runs between Stavebank Road and Hurontario Street. Port Street West has a two-lane cross-section and a posted speed limit of 40 km/h, with parking permitted on both sides of the street.

6.4.4 Business Activity

Local Study Area

Port Credit is a unique hub for shopping, events, music and activities on the waterfront, with a wide array of restaurants, retail stores, services and cafes, all within walking distance from each other, the Credit River and Lake Ontario. The majority of these businesses are located along Lakeshore Road. A hotel is located across from the PCHM on Stavebank Road. PCHM is one of the largest privately-operated full-service marinas on the Greater Toronto Area's lakefront and includes marina related businesses.

6.4.5 Commercial Fishing

Regional and Local Study Areas

Ontario's commercial fisheries contribute millions of dollars to the province's economy every year. The Ministry of Natural Resources and Forestry (MNRF) sets annual quotas and issues annual licences for the commercial harvest of fish, primarily in the Great Lakes. More than 500 active commercial fishing licences are held in Ontario. Lake Ontario has the smallest commercial fishery of all the Great Lakes. Harvested species include Yellow Perch, Lake Whitefish, Bullhead, and American Eel. Vessels used in Lake Ontario's commercial fishing industry are primarily steel built fish tugs built in the mid-1900s. The modern harvesting techniques used by the commercial fishing industry in Lake Ontario are primarily gill netting, trap netting and trawling. Fish monitoring trawl sites exist offshore from Port Credit (Canadian Seabed Research , 2017).

6.5 CULTURAL ENVIRONMENT

Regional and Local Study Areas

The Regional and Local Study Areas have a long history of human use and settlement, beginning with nomadic peoples approximately 12,000 years ago and continuing through to the present-day industrial uses and parkland. Portions of this area would originally have had a very high potential for Indigenous community sites of the pre-contact and post-contact periods. However, it is the consensus of both previous and current studies that there is little or no potential for such sites to survive owing to the extent of 19th Century and later landscaping and construction impacts along the shoreline. Extensive lakefilling and dredging activities were the primary disturbances within and adjacent to the Project Study Area.

There are no recognized Indigenous reserves or communities currently located within the Regional, Local or Project Study Areas. Although several Indigenous communities have an interest in the lands and waters in the Port Credit area, the Mississaugas of the Credit First Nation (MCFN) have the most direct interest in the lands and waters in the Local and Project Study Areas, the lakebed and the waters of Lake Ontario. They are a Mississauga Ojibwa First Nation located near Hagersville in south-central Ontario. The MCFN made claims to land on which the City of Mississauga is founded through the disputed Toronto Purchase of 1787. In 2010, the Government of Canada agreed to compensation for the lands, based on the ancient value of the land, extrapolated to current dollars.

Project Study Area

In the summer of 2019, a marine archaeological in-water assessment and background research were undertaken at the 1PSEPM Project site. Side scan sonar and magnetometer were used to investigate the area, and any targets found using these methodologies were further investigated using forward looking sonar (on a remote operated vehicle) and video. Background research indicated that the Project Study Area had been heavily modified via development, dredging, redevelopment and additional periodic dredging.

Only one target was found during the marine archaeological survey. This target consisted of at least two very large metal frames with uprights in some places and cut rectangular holes. This target lay immediately adjacent to the Ridgetown. Examination confirmed that the Ridgetown was not lying on any part of the target. Given that the area of the Ridgetown was dredged prior to its being positioned as a breakwater, it is unlikely that the target was in this location at that time. It is possible that the development of this breakwater (Ridgetown) may have had materials associated with the development that were discarded after its completion. This is not any type of structure that could have been transported by any natural means, and only by intentional disposition. No additional cultural targets were located, and the remaining area of the marine archaeological survey is considered clear of cultural/archaeological concerns.

In September of 2016 the MCFN filed an Aboriginal Title Claim to Waters within the Traditional Lands of the Mississaugas of the Credit. The First Nation continues to revere water as a spiritual being that must be accorded respect and dignity. Water is also vital to the survival of the Mississaugas of the Credit First Nation and all other forms of life. The Mississaugas of the Credit First Nation assert that they have unextinguished Aboriginal title to all water, beds of water, and floodplains contained in their treaty lands and territory.

Other Indigenous communities with known or suspected historical occupation of the Local and Project Study Areas are the Six Nations of the Grand River as represented by the Elected Chief and Council and the Haudenosaunee Confederacy Chiefs Council, and the Huron Wendat Nation. Other Indigenous communities and organizations (e.g., Métis Nation of Ontario, Peel Aboriginal Network) may also have an interest in the EA.

7.0 ENVIRONMENTAL ASSESSMENT STUDIES AND SCHEDULE

Table 7-1 presents the scope of the environmental assessments studies to be completed during the EA Stage, including baseline studies and effects assessment.

Table 7-1: Environmental Assessment Studies

Environmental Component	EA Component	Proposed Scope
Physical Environment	Baseline Studies	• Investigate and characterize physical conditions such as lake levels and flooding frequency, coastal processes and shoreline hazards that may affect (or be affected by) the alternatives considered and create effects to the land base or marina once implemented. Historical, prevailing and projected conditions (e.g., lake levels) will be described (if available). • Investigate and characterize the study area's source protection classification, particularly vulnerable areas.
	Effects Assessment	• Assess the resiliency of the proposed alternative to coastal conditions. • Conduct a special case specific engineering analysis referred to in Lake Ontario Shoreline Hazards Report (Shoreplan Engineering Limited, dated September 2005) for Reach 6a. • The EA will specifically address the shoreline hazards as defined in the Provincial Policy Statement and supporting Technical Guide and as it is considered in the CVC Ontario Regulation 160/06. • Assess the Project's potential risks to drinking water and its compatibility with relevant source protection policies. • Identify mitigation measures to be included as part of detailed design of individual marina elements.
Atmospheric Environment	Baseline Studies	• Investigate and characterize air emissions of existing municipally run marina facilities, including AERMOD screening level modelling. • Investigate and characterize noise emissions of existing municipally run marina facilities, using CADNA modelling.
	Effects Assessment	• Model and characterize the likely air and noise emissions during construction and establishment, including stationary and mobile equipment at municipally run facilities. • Assess potential effects of noise and air emissions on adjacent residents and park users and likely compliance with relevant air quality standards, MECP noise limits and City of Mississauga's noise by-law. • Identify mitigation measures to be included as part of detailed design.
Biological Environment	Baseline Studies	• Describe Lake Ontario water quality, inventory existing aquatic and terrestrial habitat and species, including species at risk (SAR) and significant wildlife habitat (SWH), on the project site and

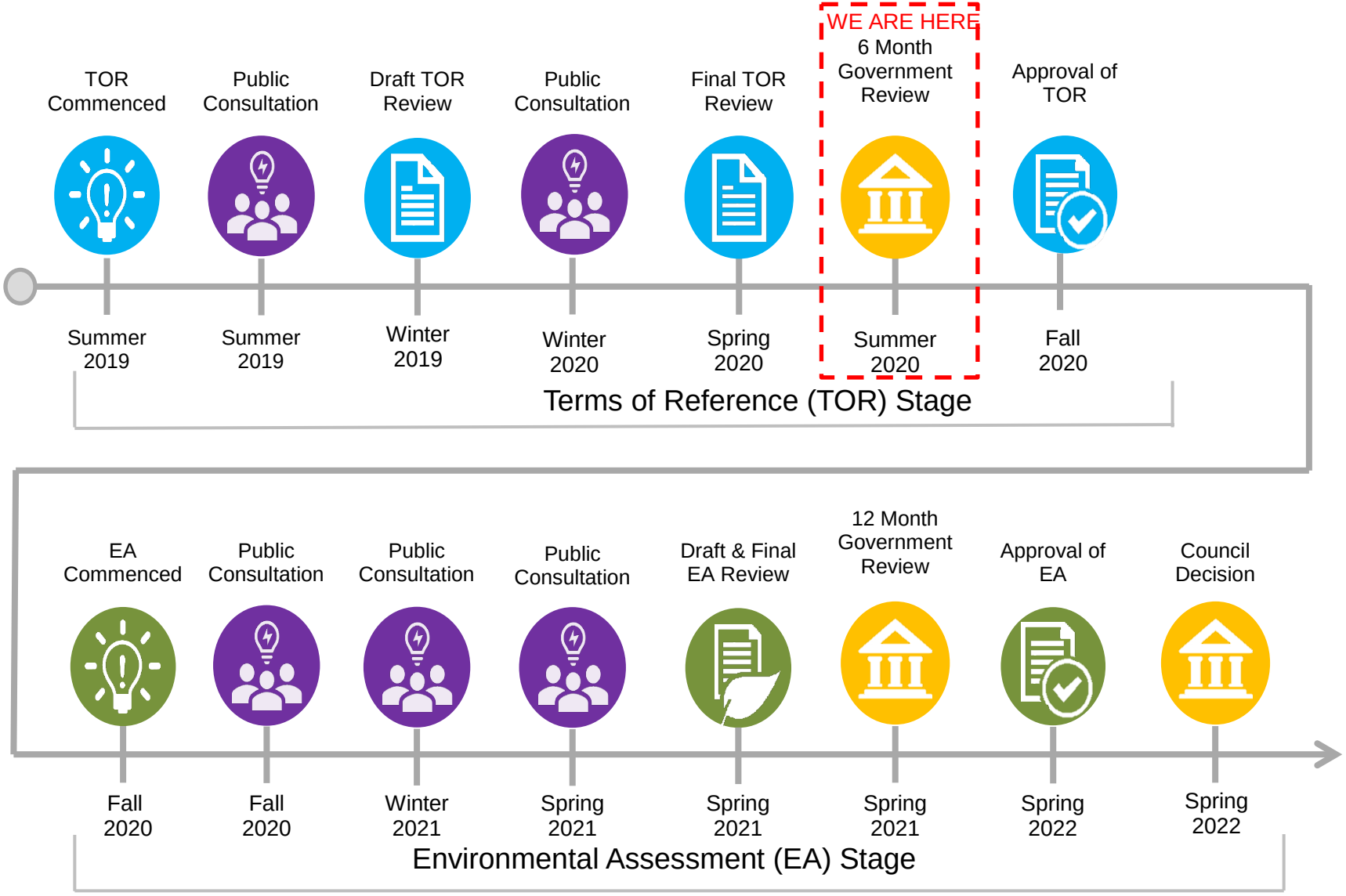
Environmental Component	EA Component	Proposed Scope
		adjacent to it.
	Effects Assessment	• Determine the potential for alternatives to result in adverse effects on surface water, soil and groundwater quality • Determine the potential for alternatives to result in serious harm to fish or fish habitat • Determine the potential for alternatives to result in adverse effects on the terrestrial ecology • Conduct a screening assessment regarding SAR and SWH • Identify mitigation measures, aquatic and terrestrial habitat restoration and enhancement opportunities • Examine the potential for bird-friendly design of the shoreline.
Socio-economic	Baseline Studies	• Investigate and characterize the existing and future residential, recreational, economic and institutional features that may be potentially affected by the Project • Characterize the existing and likely future transportation network and traffic conditions
	Effects Assessment	• Determine how materials and workers will arrive to the site during construction and how this will alter traffic volumes • Determine the potential for disruption to navigation, boating and marina use by boaters/sailors. • Determine the potential for alternatives to result in disruption to the use and enjoyment of property and recreational uses near the marina site taking into consideration likely nuisance effects (e.g., odours, noise and traffic etc.) • Determine the potential for alternatives to impact marine-related jobs and business operations Determine the potential for alternatives to result in a positive change in community character and/or beneficial social and recreational activities near the marina site • Identify mitigation measures, transition and enhancement opportunities.
Cultural Environment	Baseline Studies	• Investigate and characterize the potential for archaeological and cultural heritage resources to be affected by the project.
	Effects Assessment	• Determine the potential for alternatives to result in effects to cultural resources such as marine archaeology, cultural landscapes and built heritage resources. • Identify mitigation and enhancement measures.

Table 7-1 provides a graphic illustrating the environmental assessment process and proposed timelines. The ToR Stage commenced in July 2019 and the first consultation event, a Public Information Centre (PIC), was held in Port Credit on July 18, 2019. A second PIC was held in January 2020 during the review of the draft ToR.

The draft ToR was subject to initial government agency and public review in the winter of 2020, with a Final ToR issued for a formal 6 month government agency review in the spring of 2020. Approval of the ToR is anticipated in the fall of 2020.

The EA Stage is expected to commence in the winter of 2021, during which three formal consultation events will be held. A draft EA report will be subject to initial government agency and public review with a Final EA issued for a formal 12-month government agency review in late 2021. Approval of the EA is anticipated in 2022. A decision by Mississauga City Council on the 1PSEPM Project can be expected upon the approval of the EA.

Figure 7-1: The Environmental Assessment Process and Schedule



8.0 CONSULTATION

8.1 CONSULTATION ON TOR

The objective of the public, agency and Indigenous community consultation on the ToR was to consult with all potentially affected and interested stakeholders about the ToR and the proposed consultation plan for the EA such that there is stakeholder buy-in as to how the EA will be conducted. ToR consultation mechanisms have included a Notice of Commencement and Notice of Submission published in newspapers and online and emailed to the 1PSEPM Project contact list, PICs, website updates, mobile signs, and newsletters. Consultation with agencies and Indigenous communities has included email and telephone correspondence and face-to-face meetings where appropriate. For a full description of ToR consultation to date, please refer to the Record of Consultation submitted in conjunction with the ToR.

8.2 CONSULTATION PLAN FOR THE EA

8.2.1 Guiding Principles

1PSEPM Project EA consultation activities will meet the requirements and best practice for the provincial EA process. The 1PSEPM Project is part of the Inspiration Port Credit area, and a number of other projects being led by the City, Region of Peel, and CVC are taking place at the same time. Given the potential for consultation fatigue, public consultation events and activities will be coordinated between the various projects to allow for a streamlined conduit of information to and from the public for the various projects. The City acknowledges that as this and other project move forward, new issues and new stakeholders may emerge. It is the City's intent to address new issues and involve new stakeholders in the 1PSEPM Project EA.

8.2.2 Consultation Objectives

The following objectives will guide EA consultation activities:

1. To meet the consultation requirements for the provincial Individual EA.
2. To provide opportunities to participate in the consultation process to anyone interested.
3. To provide clear, concise information about the 1PSEPM Project that is easy for the public to understand.
4. To create opportunities for meaningful two-way exchange of information between the proponents, their consultants, and consultation participants.
5. To produce accurate and comprehensive reports that capture all feedback and advice received.

6. To thoroughly review and consider all feedback and advice received through the consultation and demonstrate how that feedback and advice has influenced the 1PSEPM Project.

8.2.3 Regulatory Consultation and Community Engagement Mechanisms

Consultation with the agencies, interested parties, stakeholders and public will be ongoing throughout the EA Stage of the Project. Consultation activities during the EA Stage will be a continuation of the activities that were successful during the ToR Stage. Consultation will begin with the publication and distribution of the Notice of Commencement for the EA. The City's project webpage will also be updated with information related to the EA Stage. Notifications of PICs will be mailed to study area residents and businesses. Letters will also be sent to regulatory agencies and Indigenous communities to provide notification and request meetings to continue to discuss the project and the EA Stage. Three Public Information Centres (PICs) are planned during the EA Stage.

The PICs will share information through a formal presentation and on display boards and provide an opportunity for interested people to ask questions of team members. Information presented at each PIC will be posted online following the event to further solicit comments. Throughout the EA Stage meetings with stakeholder groups and Indigenous communities will be held to discuss and resolve issues and concerns. New or emerging issues will be tracked and new stakeholders will be added to the City's database.

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

- Development and evaluation of 'Alternative Methods';
- Selection of preliminary Preferred Alternative; and
- Confirmation and refinement of Preferred Alternative including mitigation and effects management / adaptive management plans.

Once the Draft EA is prepared, all interested stakeholders, agencies and Indigenous communities will be notified of the opportunity for review and comment. All comments received will be included in the Final EA and notification will be published through letters, traditional media and social media of the availability of the Final EA for review and comment.

Targeted consultation on an as required basis with key stakeholders including representatives from:

- The local and surrounding neighbourhoods (including the general public, representatives of resident associations, and organizations with recreational, environmental, cultural, heritage, business, and other interests); and
- The municipal, provincial, and federal government (City of Mississauga, Region of Peel, Province of Ontario, Government of Canada).
- Agencies (Credit Valley Conservation)

8.2.4 Indigenous Communities

The 1PSEPM Project Team is engaged with Indigenous communities as per the Crown's Duty to Consult. Indigenous communities that have a documented history of occupying the 1PSEPM Project or Regional Study Areas and have potential or established treaty rights in the vicinity of the Project will continue to be consulted for the Project as it progresses. This information includes regular updates, notices of archeological findings in the Project Study Area and potential environmental impacts. As well, an open invitation will be extended to Indigenous communities to meet with the Project Team to discuss the proposal in greater detail and discuss issues of interest.

The following Indigenous communities were contacted during the ToR Stage and will continue to be contacted during the EA process:

- Mississaugas of the Credit First Nation;
- Six Nations of the Grand River as represented by the Elected Chief and Council
- Haudenosaunee Confederacy Chiefs Council; and
- Huron Wendat Nation.

9.0 MONITORING AND ADAPTIVE MANAGEMENT

The development of a monitoring plan will be an important part of the EA. Monitoring is used to verify expected environmental effects to determine if additional mitigation or impact management measures are required and to ensure the fulfilment of commitments made in the EA and conditions of approval. A monitoring plan will be developed during the 1PSEPM EA which is expected to, at a minimum, include the following information:

- The frequency of the proposed monitoring;
- Monitoring methods proposed;
- Submission procedures for the results of monitoring activities;
- List of the proposed commitments and how and when they will be addressed;
- The location of monitoring documents; and
- Any applicable emergency response plans.

A strategy and schedule for completing a monitoring plan will be developed and included in the EA. The monitoring plan will consider all relevant 1PSEPM Project phases: planning, detailed design, tendering, construction, establishment and post-establishment. It will also address the MECP's requirement for compliance and effects monitoring. Compliance monitoring is an assessment of whether an undertaking has been designed, constructed, implemented and/or operated in accordance with the commitments in the EA document and the conditions of approval. Effects monitoring consists of activities carried out by the proponent after the approval of the EA to determine the environmental effects of the undertaking.

9.1 EA COMMITMENTS

The EA will include a comprehensive list of commitments made by the City of Mississauga during the ToR process, including where or how they have been dealt with in the EA. The EA will also include a comprehensive list of commitments made by the City during the preparation of the EA. These will include all commitments relating to:

- Impact management measures (such as mitigation measures);
- Additional works and studies to be carried out;
- Monitoring;
- Public consultation and contingency planning; and
- Documentation and correspondence.

10.0 REFERENCES

Aquafor Beech Limited. (2011). *Lake Ontario Integrated Shoreline Strategy Background Review and Data Gap Analysis.* Mississauga: Credit Valley Conservation.

Aquafor Beech Ltd. (2013). *Credit River Adaptive Management Study.* Mississauga: City of Mississauga.

BA Consulting Group Ltd. (2017). *70 Mississagua Road South & 181 Lakeshore Road West: Urban Transportation Considerations for OPA, ZBA and Draft Plan of Subdivison.* Mississauga: City of Mississauga.

Canadian Seabed Research . (2017). *Crosslake Fibre Cable System Lake Ontario: 2017 Marine Route Survey Results.* Porters Lake, Nova Scotia: Canada Seabed Reserach Ltd.

City of Mississauga. (2014). *Hurontario-Main LRT Project: Preliminary Design: Environmental Project Report.* Mississauga: Metrolinx.

City of Mississauga. (2015). *City of Mississauga Official Plan.* Retrieved from http://www.mississauga.ca/portal/residents/mississaugaofficialplan

City of Mississauga. (2015, August). *Port Credit Local Area Plan.* Retrieved from http://www6.mississauga.ca/onlinemaps/planbldg/LakeviewPortCredit/2%20Schedule%20A%20-%20Port%20Credit%20LAP_%20Jan,%202014.pdf

Clarkson, B. (1977). *At the Mouth of the Credit.* Cheltenham, ON: Boston Mills Press.

Credit Valley Conservation. (2002). *Fishes of the Credit River Watershed.* Mississauga: Credit Valley Conservation.

Credit Valley Conservation. (2009). *Rising to the Challenge: A Handbook for Understanding and Protecting the Credit River Watershed.* Mississauga: Credit Valley Conservation.

Credit Valley Conservation. (2014). *Credit River Estuary: Species at Risk Reserach Project.* City of Mississauga: Credit Valley Conservation.

Credit Valley Conservation. (2018). *Lake Ontario Integrated Shoreline Strategy Charaterization Report.* Mississauga: Credit Valley Conservation.

Credit Valley Conservation. (2019). *Integrated Watershed Monitoring Program Biennial Report 2016 and 2017.* Mississauga: Credit Valley Conservation.

Fisheries and Oceans Canada (2019). http://www.tides.gc.ca/C&A/network_means-eng.html Accessed September 23, 2019

Geomorphic Solutions. (2011). *Lake Ontario Shoreline Recession Monitoring Program.* Mississauga.

Harris, S. H.-H. (2016). *Climate Change Vulnerabilities of Community Services and Assets in the Region of Peel. A Case Study in Port Credit.* Toronto: Toronto and Region Conservation Authority and Ontario Climate Consortium Secretariat.

Martin, K. (2007). Proceedings of the Central and Arctic Regional Science Advisory Process on the Recovery Potential Assessment of Atlantic Salmon (Lake Ontario Population. *Canada Centre for Inland Waters.* Burlington, ON: Fisheries and Oceans Canada.

Ministry of Natural Resources and Forestry. (2017, December 7). *Fishing*. Retrieved December 11, 2017, from Ontario Ministry of Natural Resources and Forestry: https://www.ontario.ca/page/fishing

Ministry of Environment, Conservation and Parks (2020). Source Protection Information Atlas. Available at https://www.gisapplication.lrc.gov.on.ca/SourceWaterProtection/Index.html?viewer=SourceWaterProtection.SWPViewer&locale=en-US. Accessed April 27, 2020.

Ministry of Environment, Conservation and Parks. (2014). *Code of Practice: Preparining and Reviewing Environmental Assessments in Ontario.* Revision 2. Toronto: Government of Ontario.

Ministry of the Environment . (2011). *Fill Quality Guide and Good Managment Practices for Shore Infilling in Ontario.* Toronto: Government of Ontario.

Planning Partnership. (2016). *Charting the Future Course: 1Port Street East Comprehensive Mater Plan Final.* Mississauga: City of Mississauga.

Scarlett Janusas Archaeology Inc., 2019. Marine Archaeological Assessment - One Port Street East Proposed Marina and Breakwater Expansion, City of Mississauga. Prepared under license # 2019-09 September 30, 2019.

Shoreplan, 2019. Internal work product for 1PSEPM Project Environmental Assessment Terms of Reference.

Stewart, T.J., Todd, A., and LaPan, S. 2017. Fish community objectives for Lake Ontario [online]. Available from: www.glfc.org/pubs/FisheryMgmtDocs/Fmd17-01.pdf

Touristics. (2015). *Mississauga Marina Business Case Study - Final Report.* Mississauga: City of Mississauga.

Valcoustics Canada Ltd. (2017). *70 Mississauga Road South & 181 Lakeshore Road West: Proposed Mixed-Use and Master-Planned Community.* Mississauga: Port Credit West Village Partners.

Whillans, T. (1979). Historic Transformations of Fish Communities in Three Great Lakes Bays. *J. Great Lakes Res*, 5:195-215.

GLOSSARY

Term	Definition
Adaptive management	A learning process where management of an ecological system is adjusted based on future changes to the system.
Alternative Methods	Different ways of implementing a project. For the 1PSEPM Project, these include the amount of habitat created, the extent of linkages created, and size of the land creation footprint, among others.
Alternative 1PSEPM Project configuration	See "Alternative Methods"
Alternatives To	Different ways of approaching and dealing with a problem or opportunity. For the 1PSEPM Project, these are: • 'Do Nothing' or 'Status Quo'; • Create a new land base.
Archaeological resources	An object, material or physical feature that may have cultural heritage value or interest.
Artificial shoreline	The edge of a body of water that has been significantly modified by humans.
Baseflow	The amount of moving of water entering stream channels from groundwater sources in the drainage of large lakes.
Bathymetry	The measurement of the depth of water in oceans, seas, or lakes.
Breakwater	A structure built on a coast for protecting a beach or harbour from the effects of weather and sediment.
Brownfield	Relating to a former industrial or commercial site where future use is affected by real or perceived environmental contamination
Built heritage resources	Significant buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic or military history and identified as being important to a community.
Coastal processes	Natural forces that affect the areas near and along a shoreline, which include erosion, waves, and changes in water levels.
Cultural heritage landscape	A defined geographic area of heritage significance which has been modified by human activities and is valued by a community.
Cultural woodland/thickets/communities	Ecological areas that are heavily influenced by historic or ongoing human disturbance.
Depositional zone	An area in a watercourse where sediment build-up occurs.
Dredging	The digging, gathering, or pulling out of sediment to deepen

Term	Definition
	harbours and waterways.
Duty to Consult	A legal requirement for the Crown to consult with Indigenous communities when a project may have an adverse effect on the rights of Indigenous communities in some way. The duty to consult may extend to municipalities by express statute.
Embayment	A recess in a coastline which forms a bay.
Extirpated	Describes the situation in which a species or population no longer exists within a certain geographical location
First Nations	Various Indigenous peoples in Canada who are neither Inuit nor Métis.
Flood conveyance channel	A structure constructed to safely transfer floodwaters within or away from developed or developing areas.
Fluvial	Of or found in a river.
Flyway	A seasonal route followed by birds migrating to and from their breeding areas.
Footprint	The size and shape of the land creation for the 1PSEPM Project.
Gabion	Caged riprap (rock or other material) used along shorelines to control erosion.
Geomorphology	The study of landforms, the processes that created them, and the history of their development.
Geotechnical	Related to soil and bedrock.
Glacial till	Rock and soil material that has been carried by a glacier as it moves and is left behind when the glacier melts or retreats.
Guild (related to birds)	Groups of species in a community that exploit the same set of resources in a similar manner, but are not necessarily closely related.
Important Bird Area	An area recognized as being globally important habitat for the conservation of bird species.
Indigenous communities	Communities or groups of First Nations, Métis or Inuit people.
Infilling	See “Lakefill”
Lakefill	An area of land bordering a lake that was originally underwater, but has been raised above the surface of the water by adding materials such as soil, stones, etc.
Littoral (drift, zone, processes)	Related to the part of a sea, lake or river that is close to the shore.
Marine archaeological resource	Site where evidence of past human activity is preserved that is fully or partially submerged or that lies below or partially below the high-water mark of any body of water.

Term	Definition
Métis	One of the Aboriginal peoples in Canada who trace their descent to mixed First Nations and European heritage.
Mitigation measures	Recommended actions to reduce, avoid or offset the potential negative effects of a project.
Multi-use trail	A trail that is shared by bicycles and pedestrians.
Navigable waterway	Any body of water which can be safely crossed by vessels.
Nearshore	See "Littoral".
Nuisance effects	Results of project activities that cause inconvenience or annoyance to people or businesses in the vicinity of the project.
Parameters of concern	Characteristics of water which are measured to determine its quality.
Proponent	The person, body, or government agency that proposes, owns, manages or controls a project.
Reasoned trade-off analysis	A process where the effects of decreasing one or more key factors and simultaneously increasing one or more other key factors in a decision, design, or project are determined.
Remediation	The removal of pollution or contaminants from soil, groundwater, sediment, or surface water.
Resident species	A type of animal that spends the majority of its life-cycle in one area and does not migrate.
Resilience	The capacity of an ecosystem to respond to disturbance by resisting damage and recovering quickly.
Riparian habitat	Habitat (the natural environment in which organisms live) that is located at the interface between land and a river or stream.
Riprap	Rock or other material used to protect shorelines from erosion.
Sedimentation	The process by which naturally-occurring particles suspended in water are transported and eventually settle at the bottom of a water body or watercourse.
Shoreline treatment	A measure which is applied to the edge of a water body in order to change its characteristics.
Slip (for a boat)	A slip is a location for a boat to moor which is outlined by a pier on each side of the boat, unlike the dock, which has a pier on one side only. A slip can also serve multiple vessels within a single area, the shore-sides of which are lined with piers. The essential characteristic of a slip is that it's open on one end only.
Stonehooking	The historic/past mining of sand, gravel, stone and blocks of shale from the shoreline of a lake.

Term	Definition
Substrate	A substance or layer that underlies something, or on which some process occurs, in particular the surface or material on or from which an organism lives, grows, or obtains its nourishment.
Terrestrial	Related to the earth's land area, including its man-made and natural surface and sub-surface features, and its interfaces and interactions with the atmosphere and surface waterbodies.
Undertaking	An enterprise or activity (i.e. a "project") by the government or a company.
Upland habitat	The dry habitat along the sides of a watercourse (i.e. river or creek).
Viewscape	Those features of an area which provide a range of sights and are considered a community asset. These may include pleasing vistas, scenes and views, among others, that provide a sense of place and character.
Vista	A broad sweeping view of a landscape or open water.
Water lot	One of a regular system of pieces of land which are partly or wholly covered by a water body.
100-year instantaneous water level	The peak water level that has a 1% chance of occurring during any given year.