

1 Port Street East Proposed Marina Environmental Assessment

Final DraftTerms of Reference





January 2020

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

> Prepared for: City of Mississauga

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EXECUTIVE SUMMARY

The City of Mississauga (City) is undertaking an Individual Environmental Assessment (EA) for the 1 Port Street East Proposed Marina Project (Marina 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 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 by the "Inspiration Port Credit" initiative as a key opportunity to "Keep the Port in Port Credit".

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 Class EA. 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 *EAAct*;
- 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 proponents and the results

of the consultations.

The public, government agencies, Indigenous communities, interest groups, and landowner are being consulted throughout the development of the ToR and will continue to be consulted during the preparation of the EA. This draft version of the ToR is being circulated to the Ministry of the Environment, Conservation and Parks (MOECP), other regulatory agencies, Indigenous communities and the general public for review. The comments received and the City's responses will be summarized in the Final ToR and will also be included in a Record of Consultation that will be submitted to the MOECP for review and approval.

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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 led 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 scope of works and activities anticipated for the 1PSEPM Project cannot be covered under the Municipal Class EA. This document is the Terms of Reference (ToR) which 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.



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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 proponents and the results of the consultations.

The public, government agencies, Indigenous groups, interest groups, and landowners are being 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.





1.2 PROPONENT

The City of Mississauga 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

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.

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 5	
	years after the completion of construction.	

1.5 DRAFT TOR REVIEW

This draft version of the ToR is being circulated to the Ministry of the Environment (MOECP), other regulatory agencies, Indigenous communities, and the general public for review. The comments received and the proponent's responses will be summarized in the Final ToR and will also be included in a Record of Consultation.

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.
- 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 dayto-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 onsite. 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.

<u>1 Port Street East Mississauga Official Plan Amendment (OPA 65)</u>

Based on the Inspiration Port Credit Comprehensive Master Plan, Mississauga City Council adopted OPA 65 for 1 Port Street East in 2017. 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.

Key attractions will be a marina, marina-related facilities and waterfront parks. 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 the parcel 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 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:

- 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 highlevel 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:

- 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.

Living by the Lake: 2019-2039 - An Action Plan to Restore the Mississauga Shoreline

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 GHG emissions 80 per cent by 2050, with a long-term goal of becoming a netzero community.
- 2. 2. Increase resilience and the capacity of the city to withstand and respond to current and future climate events (e.g., extreme heat, flooding).

In recent years, there has been damage to the public realm in parks and along the shoreline due to severe wearer events and the introduction of invasive pests and species. The City will emphasize resilient solutions for shoreline treatment to protect infrastructure and the natural environment and to 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 Master Plan.

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.

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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. However as documented in the studies discussed in Section 2.1 the wharf will 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 also creates an opportunity to:

- 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 to further enhance aquatic habitat in the vicinity of the breakwater in a manner 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 the Environment, 2009a). 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 the Environment , 2009b). 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,
 - o the undertaking,
 - o the alternative methods of carrying out the undertaking, and
 - o the alternatives to the undertaking;
- regarding the undertaking, the alternative methods of carrying out the undertaking and the alternatives to 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, the alternative methods of carrying out the undertaking and the alternatives to 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; however, it 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 the 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: <u>http://www.gazette.gc.ca/rp-pr/p2/2019/2019-08-21/html/sor-dors285-eng.html</u>

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 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 MNRF, 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 MNRF 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. Many of the previous studies undertaken for this site have considered alternative uses. These studies determined, with significant stakeholder consultation, that the expansion of the land base along the breakwater at the 1 Port Street East site should be considered to permit relocation of the marina and associated operations.

For the purposes of this EA, the 'Alternatives To' 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.

4.2 EVALUATION OF 'ALTERNATIVES TO' THE UNDERTAKING

These "Alternatives To" are evaluated in in Table 4-1 in terms of their environmental effects. Their main advantages and disadvantages with respect to their ability to address the 1PSEPM Project "problem" and "opportunity" are also summarized below.

Environmental Component	Criteria	Do Nothing	Create a New Land Base
Physical	Resiliency to	The long-term integrity of	A new land base can be designed with
Environment	changing lake levels and coastal processes	the existing pier and the eastern breakwater will continue to be at risk from changing lake levels and coastal processes	sufficient flexibility with respect to changing coastal processes and lake levels to ensure its the long-term integrity and wharf protection.

Table 4-1: Evaluation of Alternatives to the Undertaking

Environmental Component	Criteria	Do Nothing	Create a New Land Base
	Effects on water quality in the Local Study Area	Until the commencement of construction on the wharf, there is no potential for changes to water quality	Construction will result in temporary increased turbidity from lakefilling. Mitigation will be necessary to minimize adverse effects.
	Potential for disturbance of contaminated soils	Until the commencement of construction on the wharf, there is no potential for disturbance of contaminated soils	Construction has the potential to disturb contaminated soil. Mitigation will be necessary to minimize adverse effects.
Atmospheric Environment	Change to air quality	Until the commencement of construction on the wharf, 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 will be necessary to minimize adverse effects.
	Changes to ambient noise conditions	Until the commencement of construction on the wharf, there is no potential for change in noise levels	Noise from construction activities and trucks hauling fill may be sources of nuisance effects
Biological Environment	Area and quality of terrestrial habitat	Until the commencement of construction on the wharf, 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 be necessary to minimize adverse effects.
		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. No potential for improvement to terrestrial habitat on property owned by the City.	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	Until commencement of construction on the wharf, 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.
		Until the commencement of construction on the wharf, there is no compensation required with respect to fish habitat.	Removal of aquatic habitat will likely require an authorization under the <i>Fisheries Act</i> , 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

Environmental Component	Criteria	Do Nothing	Create a New Land Base
			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. Any parkland would be limited to the wharf development and not guaranteed.	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 change the use of the waterfront for recreation.	Creating a new land base will change how the public use and access the site. Changes in activities should be compatible with activities associated with the marina and marina activities to avoid conflict.
	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 in the harbour basin and on the eastern side of the pier.
	Disruption to use and enjoyment of property during construction and establishment	Until the commencement of construction at the wharf, 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 will be necessary to minimize adverse effects.
	Changes in community character	The ultimate loss of marina functions along the waterfront will result in irreversible harm to the	Creating a new land base offers the opportunity to maintain marina functions along the waterfront and the unique character of Port Credit Village. The

Environmental Component	Criteria	Do Nothing	Create a New Land Base
		unique character of Port Credit Village.	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.	Creating a new land base offers the opportunity to maintain marina functions along the waterfront and maintain marine-related jobs and business operations.
		No potential for generating positive effects to business operations. Existing businesses would likely cease operations and jobs would be lost.	Construction and establishment activities will produce temporary nuisance effects that may result in short-term disruption to business operations. Mitigation will be necessary 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	Until the commencement of construction of the wharf, 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 can be integrated with the cultural landscape of Port Credit's shoreline.
	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 respect and wherever possible enhance the potential for traditional uses 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 protection and development of a new marina. 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 adverse effects on various environmental components during construction. The main disadvantages of the 'do nothing' alternative are:

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- 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 establish a marina and supporting facilities and infrastructure, waterfront access and parkland at the 1 Port Street East site. The disadvantages of this alternative relate to its potential for adverse effects on various environmental components during construction. 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.

It is noteworthy that any development of the wharf will be at the discretion of the Canada Lands. The ultimate sale and development of the existing wharf is likely to create nuisance effects similar to those associated with creating a new land base.

In summary, the "create a new land base" alternative will be carried forward to the development of 'Alternative Methods' during the EA. The 'Do Nothing' alternative will be assessed against the preferred alternative as part of the detailed assessment.

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 work done for 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).

For each footprint, different alternative 1PSEPM Project configurations of marina facilities and public amenities can be developed at a conceptual level.

The ultimate size of the new land base and the presence of marina facilities and public amenities will be determined during the detailed design phase. These two alternatives are considered bounding, that is, the final land base and project configuration is likely to fall between these two distinct footprints.








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 each of the 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; and
- Aquatic and terrestrial habitat features.

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 distinguish between them for the establishment phase. For example, the purpose of the comparative evaluation is to choose the alternative which has the greatest potential to minimize adverse 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. 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 tradeoff 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 will be considered to be the same for each alternative.

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

The alternative 1PSEPM Project configurations will only be described in enough detail to distinguish between them. Thus, it is anticipated that 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, minimizes adverse effects and/or maximizes positive effects 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.

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).

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

Environmental Component	Criteria	Indicator(s)	Rationale
Physical	Resiliency of	Ability of proposed	Design flexibility with respect to
Environment	proposed lakefill to changing lake levels and coastal processes	alternative to withstand changing lake levels and coastal processes including changes associated with climate change.	changing coastal processes and lake levels is important to ensure the long- term integrity of the 1PSEPM Project.
	Effects on water quality in the Local Study Area	Changes to water quality (turbidity, <i>E.coli, parameters</i> of concern)	Water quality will affect the recreational opportunities along the waterfront. Mitigation will be necessary to minimize adverse effects.

Environmental Component	Criteria	Indicator(s)	Rationale
	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 <i>remediation</i> /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.
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	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.
		improvement to terrestrial habitat for enhancement of migratory bird habitat and habitat connectivity	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

Environmental	Criteria	Indicator(s)	Rationale
Component			
	Area and quality of	Total area and types of	quality resting options for these birds.
	aquatic habitat	aquatic habitat disrupted or removed	removed and created will influence the aquatic species diversity. The greater
		aquatic habitat created/enhanced	habitat created minus habitat created (i.e., habitat created minus habitat removed), the more likely that the area is able to support a variety of habitat forms.
		Amount to self-compensation with respect to fish habitat	Removal of aquatic habitat will likely require an authorization under the <i>Fisheries Act</i> , 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	The placement of lakefill may alter

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

Environmental Component	Criteria	Indicator(s)	Rationale
	and operations on traditional uses of lands by Indigenous communities.	Study Area	
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 maintenance of 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.

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 (June; 75.1 m) with the lowest water levels generally occurring in the winter (December; 74.5 m). The average annual water level fluctuation is approximately 0.6 metres. Although water levels below chart datum are rare, the lowest monthly mean on record is 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)

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(Fisheries and Oceans Canada 2019)



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



(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)



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Figure 6-8: Transformation of Southwesterly Waves

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 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 manmade 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, Helen Molasy Memorial Park, Richard's Memorial Park, and Jack Darling Park.

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.

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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.

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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 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., PM₁₀, PM_{2.5}), acrolein, benzene, and benzo(a)pyrene do exceed their criteria at least some of the time. PM₁₀ 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 PM₁₀ 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 Bylaw 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.

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).

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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

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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 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.

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 areasensitive 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 designates 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.





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 head 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 complimentary 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 edge and serves 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; 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 passes 22 parks, the Bradley Museum and Rattray Marsh 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 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 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, 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 presentday 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 and all other forms of life. The Mississaugas of the Credit First Nation and all other and the 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.

Environmental	EA	Proposed Scope	
Component	Component		
Physical	Baseline	• Investigate and characterize physical conditions such as coastal	
Environment	Studies	processes that may affect the alternatives considered and	
		create effects to the land base or marina once implemented.	
	Effects	Assess the resiliency of the proposed alternative to coastal	
	Assessment	conditions.	
Atmospheric	Baseline	Investigate and characterize air and noise emissions of existing	
Environment	Studies	marina facilities.	
	Effects	Investigate and characterize the likely air and noise emissions	
	Assessment	during construction and establishment, including stationary and	
		mobile equipment.	
		Assess potential effects of noise and air emissions on adjacent	
		residents and park users.	
Biological	Baseline	Inventory existing aquatic and terrestrial habitat and species,	
Environment	Studies	including species at risk, on the project site and adjacent to it.	
	Effects	Identify habitat restoration and enhancement opportunities	
	Assessment	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, including species at risk	
		Determine potential for bird-friendly design and shoreline	
		terrestrial enhancements for each alternative	
Socio-economic	Baseline	• Investigate and characterize the existing and future residential,	
	Studies	recreational and institutional features that may be potentially	
		affected by the Project	
	Effects	• Determine the potential for alternatives to result in disruption	
	Assessment	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 result in a positive	
		change in community character and/or beneficial social and	
		recreational activities near the marina site	
Cultural	Baseline	Investigate and characterize the potential for archaeological and	
Environment	Studies	cultural heritage resources to be affected by the project.	
	Effects	• Determine the potential for alternatives to result in effects to	
	Assessment	cultural resources such as marine archaeology, cultural	
		landscapes and built heritage resources.	

Table 7-1: Environmental Assessment Studies

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.

This draft ToR will be 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 summer of 2020.

The EA Stage is expected to commence in the summer of 2020, 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 the fall of 2021. Approval of the EA is anticipated in the spring of 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.

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.

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 sent the information 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 and the 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.

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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	See "Alternative Methods"
configuration	
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.
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	Ecological areas that are heavily influenced by historic or
woodland/thickets/communities	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
	harbours and waterways.
Duty to Consult	A legal requirement for the Crown to consult with
	Indigenous communities when a project may have an

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Term	Definition
	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.
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.
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.

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Term	Definition
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.
Stonehooking	The historic/past mining of sand, gravel, stone and blocks of shale from the shoreline of a lake.
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.
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

Term	Definition
	provide a sense of place and character.
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	The peak water level that has a 1% chance of occurring
level	during any given year.