



BLUFFER'S PARK SOUTHWEST HEADLAND AND BEACH MAJOR MAINTENANCE PROJECT CITY OF TORONTO

CLASS ENVIRONMENTAL ASSESSMENT

MAY 3, 2018

101 Exchange Avenue, Vaughan, ON L4K 5R6



Member of Conservation Ontario

**BLUFFER'S PARK SOUTHWEST HEADLAND AND BEACH MAJOR MAINTENANCE
PROJECT**

CITY OF TORONTO

CLASS ENVIRONMENTAL ASSESSMENT FOR REMEDIAL FLOOD AND EROSION
CONTROL PROJECTS

PROJECT PLAN

May 3, 2018

Please find enclosed the Class Environmental Assessment Project Plan for the proposed
erosion control works at Bluffer's Park in the City of Toronto.

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EXECUTIVE SUMMARY

Toronto and Region Conservation Authority (TRCA) continues to work towards promoting healthy rivers and shorelines, protecting greenspaces and biodiversity and creating sustainable and safe communities. One key component in this process is the design and implementation of remedial erosion control and slope stabilization works to protect human life and property, including the proposed works outlined in this Project Plan.

TRCA is interested in undertaking major maintenance on existing erosion control structures along the City of Toronto waterfront in Bluffer's Park. The construction of Bluffer's Park began in the 1970s, and the two failing structures in the Project Area were built between 1980 and 1983. TRCA's Erosion Risk Management Program (ERMP) monitors the condition of all TRCA-owned waterfront structures on an annual basis, including the southwest headland (TRCA ID WF22-11) and beach (TRCA ID WF22-12) within Bluffer's Park. The ERMP assessed these structures as failing and in need of maintenance for several years, and identified the fact that continued erosion at these sites would present risk to human life and property. The failing structures protect an area of the Toronto waterfront approximately 250 m long.

TRCA's project objective is to restore and enhance the original erosion protection capability of these structures, thereby protecting Bluffer's Park from wave energy and continued erosion. As a result, risk to public safety will be reduced and park services such as Bluffer's Park Marina will be protected. The project will also provide opportunities for aquatic habitat enhancement.

As part of the Class Environmental Assessment (Class EA) process, TRCA retained Shoreplan Engineering Limited (Shoreplan) to review existing conditions, complete a wave hindcasting analysis, and develop alternative concepts for the repair of the structures within the Project Area. Shoreplan and TRCA examined the following alternative design concepts for the headland and the beach:

- Headland Option 1A – 'Do Nothing'*
- Headland Option 1B – Reconstruct Headland*
- Headland Option 1C – Repair Headland*
- Beach Option 2A – 'Do Nothing'*
- Beach Option 2B – Armourstone Revetment*
- Beach Option 2C – Cobble Beach with Optional Shoal*

A Notice of Intent initiating the project was published in the Scarborough Mirror on October 27, 2017, and in the November 2017 issue of the Bluffs Monitor. Notices were also sent to Aboriginal communities, local community groups, home and business owners in the vicinity of the Project limits, and regulatory agencies including Conservation Ontario (CO) and the Ministry of the Environment and Climate Change (MOECC). To assist with the evaluation of the alternative options and provide input into the planning and design process, a Community Liaison Committee (CLC) was formed. This committee was composed primarily of staff from Bluffer's Park Marina and members of the Toronto Float Home Association. The CLC was an integral part of the Class EA process as it allowed community members the opportunity to participate in the evaluation of alternative options.

The preferred solutions determined through the Class EA process are Option 1C – Repair Headland, and Option 2C – Cobble Beach with Optional Shoal. The Headland will be repaired by filling existing voids with appropriate material and then capping the existing structure with a second layer of armourstone. The beach will be recharged with cobble material to create a stable beach profile. A shoal extending outward from the headland is recommended to help contain the beach. Construction is to be carried out in two phases, with Phase I being the implementation of the beach in the summer of 2018 and Phase II being the repair of the headland and installation of the optional shoal in the summer of 2019.

Upon identifying the preferred solution, TRCA completed an environmental analysis and has worked with partner organizations to inform the design process. TRCA has prepared a Class EA Project Plan with input from regulatory agencies such as Fisheries and Oceans Canada, City of Toronto, and Transport Canada. Following the thirty (30) day review period of this Class EA Project Plan by interested stakeholders, and the successful resolution of any concerns received during the review period, TRCA intends to finalize the detailed design of the preferred solution and obtain the necessary approvals to proceed with the implementation of the selected alternative.

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1 INTRODUCTION

Toronto and Region Conservation Authority (TRCA) has proposed to undertake the repair and remediation of two erosion control structures located in Bluffer's Park, along the shoreline of Lake Ontario in the City of Toronto (**Figure 1**). The project limits include the southwest headland and beach located near Bluffer's Park Marina, stretching approximately 250 m along the shoreline. The headland and beach landform contains and protects Bluffer's Park Marina. The headland consists of large armourstone and smaller rocks used as filter material. The beach is made of sand, cobble and rubble, backed by a sandy backshore. The area above the structures is mostly lawn or parking lots. This area of Bluffer's Park is gated and generally only accessible by marina users and staff.

This Project Plan has been prepared as documentation of the decision-making process exercised when selecting the preferred measure(s) for carrying out the proposed remedial work. This Project Plan includes:

- i) the situation or problem to be addressed, including the causes and history of the problem;
- ii) the preparation of a baseline inventory to provide the information needed to evaluate the alternative measures;
- iii) an examination of a full range of alternative remedial measures and the selection a preferred alternative. Advantages and disadvantages of each alternative are considered in the analysis, including a "Do Nothing" option;
- iv) the rationale underlying the selection of the preferred alternative method of carrying out the remedial work;
- v) an environmental analysis of the preferred alternative, including a detailed study of the temporary and permanent net impacts of the proposed project;
- vi) identification of methods for avoiding or mitigating negative impacts;
- vii) a record of consultation with interested persons, Indigenous communities, government agencies, and community groups;
- viii) an outline of the monitoring program which will be commenced upon completion of the work.



Figure 1. Location of Bluffer's Park and the Project Area. *Source: TRCA, 2016.*

1.1 Relationship of the Undertaking to the Environmental Assessment Act

TRCA is defined as a public body in Section 3 of Regulation 334/90 in the *Environmental Assessment Act* (R.S.O. 1990) and must conduct its remedial flood and erosion control projects in accordance with said Act.

Recognizing that common elements exist in addressing flood and erosion problems, a coordinated approach to environmental assessments was developed by Conservation Ontario (CO) in 1993 for use by all of the Conservation Authorities (CAs) referred to as the Class Environmental Assessment for Remedial Flood and Erosion Control Projects (Class EA). This project aligns with the following excerpt from the CO Class EA document (amended 2013):

“Remedial Flood and Erosion Control Projects refer to those projects undertaken by Conservation Authorities, which are required to protect human life and property, in previously developed areas, from an impending flood or erosion problem. Such projects do not include works which facilitate or anticipate development. Major flood and erosion control undertakings which do not suit this definition, such as multipurpose projects, lie outside the limits of this Class and require an Individual Environmental Assessment” (CO, 2013).

Over twenty years of experience have demonstrated that using the Class EA approach is an effective way of complying with the EA Act's requirements. Approval of the Class EA allows CAs

to carry out these types of projects without applying for formal approval under the *Environmental Assessment Act* on the condition that all other necessary federal and provincial approvals are obtained (CO, 2013). A chart illustrating the key steps of the Class EA planning and design process is shown below in **Figure 2**.

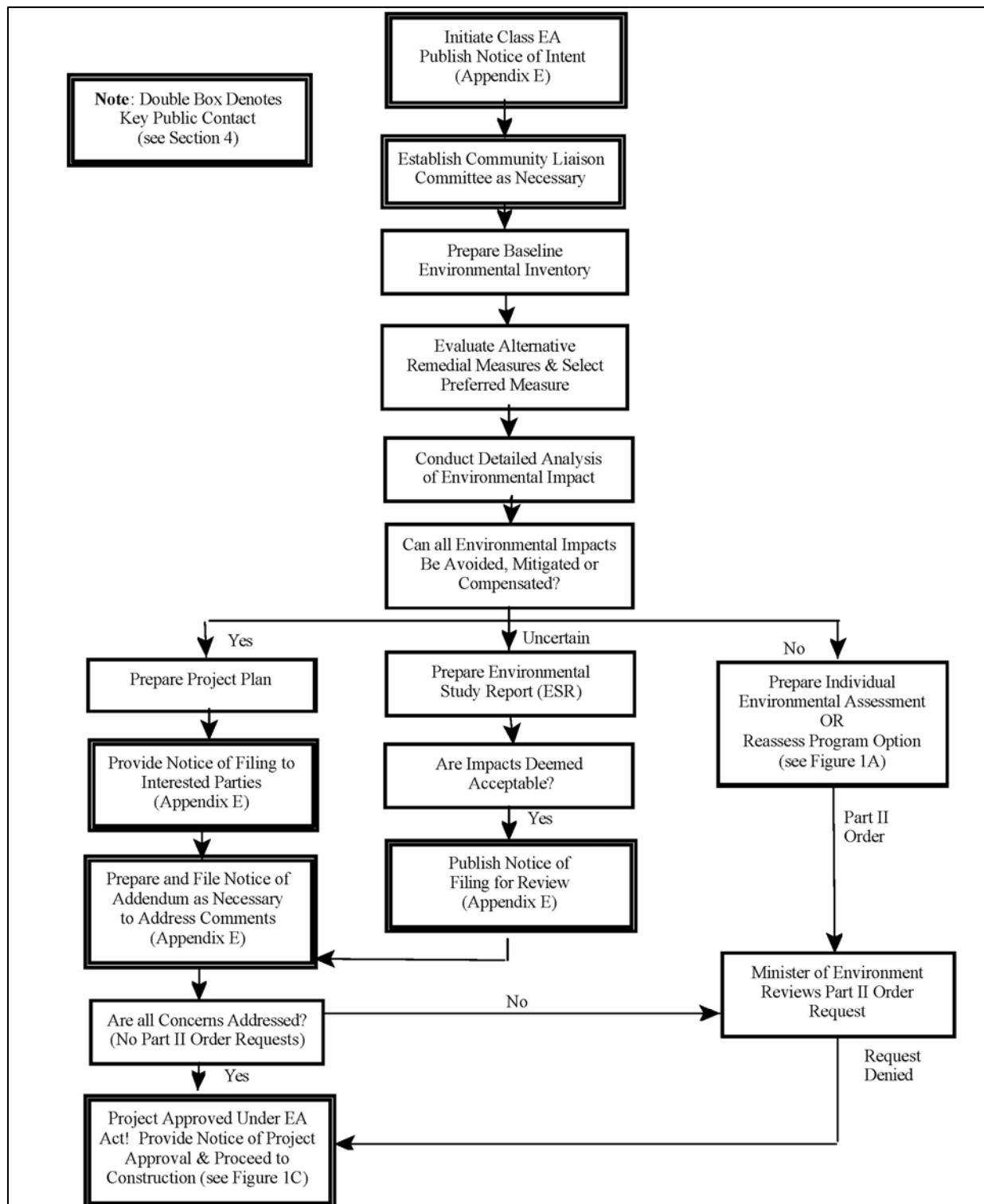


Figure 2. Class EA Planning and Design Process. Source: CO, 2013

1.2 Purpose of the Undertaking

Risk Mitigation

One of TRCA's primary objectives is to prevent or reduce risk to human lives and property. The Bluffer's Park Southwest Headland and Beach Major Maintenance Project (hereafter referred to as "the Project") has been undertaken to protect members of the public from the hazards associated with the failing headland and eroding beach by re-establishing effective long-term, low maintenance erosion protection within the Project Area.

1.3 Description of the Project Area

The Project Area is located within Bluffer's Park at the base of Brimley Road South on the north shore of Lake Ontario in the City of Toronto. Bluffer's Park was built in the 1970's and opened to the public as a waterfront park in 1981. Erosion control structures along the shoreline of the park include a series of headlands, beaches and revetments. These structures have been monitored annually as a part of TRCA's Erosion Risk Management Program (ERMP) since 2006. The structures within the Project Area are a headland, known by TRCA ID as WF22.11 and a beach with the ID WF22.12.

The headland, shown in **Figure 3**, consists primarily of large armourstone and is 31 m wide with a linear length of 165 m. The headland shows many signs of instability, including toe instability, lack of consistent double layer placement of armourstone in various areas, lack of sufficient filter layering below the primary armourstone, an oversteepened structure slope, and wave overtopping. These deficiencies were noted during a Shoreline Conditions Review by Shoreplan Engineering in 2010 (**Appendix A**). Since this review, TRCA's ERMP has further identified outflanking of the headland on the northeast limit of the structure and scouring at the southwest limit, as well as slumping and voids behind the top of the structure (**Figure 4**). In 2016, TRCA undertook interim maintenance works to improve headland stability until the final solution can be implemented (**Figure 5**).



Figure 3. Conditions of headland in October 2017. *Source: TRCA, 2017.*



Figure 4. Scouring at the southwest limit (left) and outflanking and scouring at the northeast limit (right).
Source: TRCA, 2017.



Figure 5. Headland before and after interim maintenance. Source: TRCA, 2017.

The beach, shown in **Figure 6**, measured 194 m long and 6 m wide at the time of its initial construction, and included sand, rip rap and armourstone material. The beach has experienced significant erosion along its sandy backshore; the Shoreline Conditions Review (Shoreplan Engineering Limited, 2010) attributed this erosion to a lack of coarse material to provide stability as well as a limited beach width to dissipate waves before reaching the back portion of the bank. In May of 2017, TRCA measured the scoured backshore as being 4 m from the informal path. At the time, Lake Ontario was experiencing record high lake levels which impacted the Bluffer's Park shoreline and the erosion control structures within the Project Area. Between November of 2016 and August of 2017, the backshore eroded substantially enough that one park bench and at least five mature trees were lost (**Figure 7**).

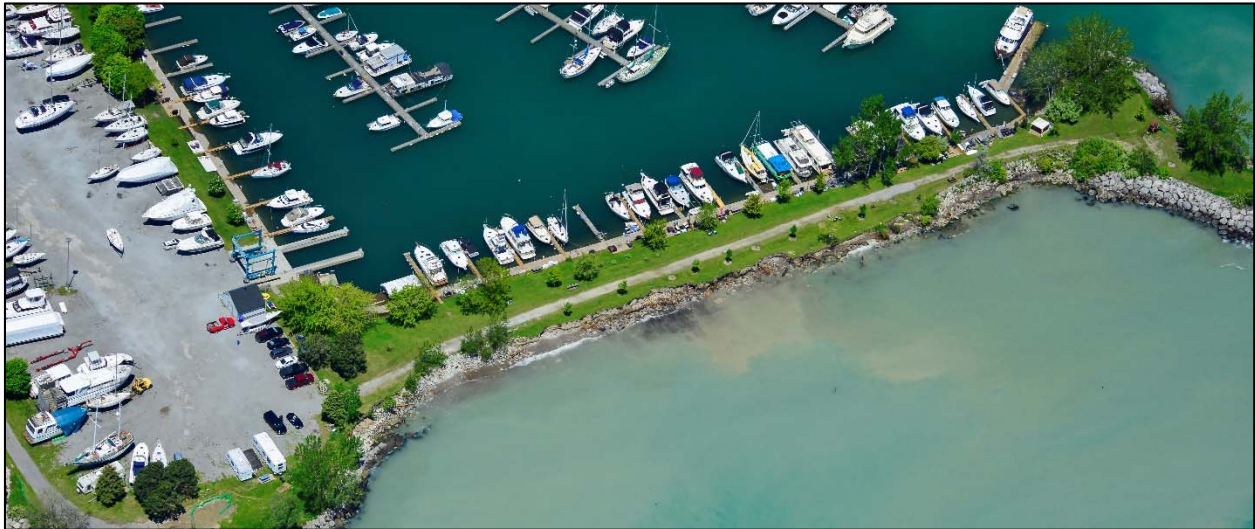


Figure 6. Aerial view of beach area and marina. *Source: TRCA, 2017.*



Figure 7. Erosion of the backshore occurring between November 2016 (top) and August 2017 (bottom). The arrows indicate trees that have been lost since November 2016, and the circle shows the position of the bench. *Source: TRCA, 2017.*

1.4 General Description of the Undertaking

There are four situations in which remedial flood and erosion control projects may be undertaken within the Class EA framework:

- i) Riverine flooding
- ii) Riverine and valley slope erosion
- iii) Shoreline flooding
- iv) Shoreline erosion

The primary objective of the Project is to provide long-term protection against shoreline erosion. Alternative remedial measures that will be considered to achieve this include:

- the reduction and dissipation of wave energy before reaching the shore, and
- the absorption of wave energy once waves reach the shore.

In accordance with the Class EA planning process, a full range of alternatives must be developed, including both traditional and innovative approaches. The type and range of alternatives developed will vary by project as they are based on the nature, cause and extent of the problem. The options developed must be tailored to the individual characteristics of each site.

The Project examined a number of remedial alternative options to achieve the objectives for each structure in the Project Area. Three options were considered for the headland:

- **Headland Option 1A – ‘Do Nothing’**
The headland would not be altered, allowing it to continue to deteriorate, eventually damaging the backshore.
- **Headland Option 1B – Reconstruction of the Headland**
A complete reconstruction of the headland involving the disassembly of the existing structure and reconstruction with a double-layer of armourstone to increase the crest height and strength of the structure. Existing materials would be reused wherever possible.
- **Headland Option 1C – Repair of the Headland**
A repair of the headland by placing a second layer of armourstone over the existing structure. The crest height would not be increased, but the armourstone would extend further into the land.

Three options were considered for the beach:

- **Beach Option 2A – ‘Do Nothing’**
The beach would not be altered, allowing the backshore to continue to erode, eventually causing a breach of Bluffer’s Park Marina.
- **Beach Option 2B – Armourstone Revetment**
An armourstone revetment would be constructed along the backshore of the beach with a crest higher than the existing bank. An optional cobble berm can be placed at the toe of the revetment.

- **Beach Option 2C – Cobble Beach with Optional Shoal**
The beach would be rebuilt with a large berm of cobble that reaches to the backshore.
The beach would be dynamic and be allowed to reshape by wave action.

While evaluating the preliminary alternatives, preference was given to alternatives which would have minimal construction footprint and machine access requirements in an effort to reduce impacts to the natural and built environment. In determining the preferred method of remediation for the erosion problem, four major factors were considered: i) the natural environment, ii) the socio-cultural environment, iii) the economic environment, and iv) technical and engineering aspects.

In all cases, the design of Major Maintenance works must provide protection compatible with TRCA's Design Criteria, which includes improvements to or enhancements of the existing terrestrial and aquatic habitat conditions through natural designs. Upon review, the proposed undertaking meets all TRCA planning and policy objectives, and satisfies the needs and concerns of the affected property owners and general public based on the input received during CLC outreach activities.

The decision-making process used in the selection of the preferred remedial solution is documented in detail in **Section 4**.

A record of consultation activities, including copies of all CLC materials, can be found in **Appendix D**.

1.5 Rationale for the Undertaking

As part of its mandate to prevent, eliminate, or reduce the risk to life and property from flooding and erosion, TRCA monitors the condition of shoreline erosion control structures in its jurisdiction through the ERMP. Accelerated or continuing erosion is monitored and public health and safety hazards are identified and recorded. If identified erosion or hazards are deemed to be severe enough, TRCA may decide to undertake repairs of the structure or rehabilitation of the area. Based on regular monitoring through the ERMP, TRCA plans and implements major maintenance and remedial flood and erosion control work on a priority basis to the limit of available funding each year.

According to TRCA's regular monitoring, the condition of the headland and beach have deteriorated since their initial inspection in 2006, and are at risk of failure. These structures were identified as among the highest priorities for maintenance following inspection of all waterfront structures. Interim maintenance was implemented in 2016 to temporarily stabilize the headland, but a permanent solution is needed to reduce or eliminate future maintenance cost and frequency.

According to the 2010 Shoreline Conditions Review, this headland receives some of the strongest waves along the Toronto shoreline. Based on TRCA monitoring records, the backshore of the beach has been receding regularly. In 2014, the backshore was 7.4 m away from an informal park path, while in spring of 2017, that distance had reduced to 4.0 m. The record high water levels on Lake Ontario in 2017 have further eroded the backshore since the last formal inspection. Continued erosion of the backshore could eventually cause a breach into the Bluffer's Park marina, rendering it unusable.

Prior to making a decision to proceed with remedial action at the site, TRCA evaluated the 'Do Nothing' alternative, which assesses what would happen to the area if no remedial works were implemented. As marina users regularly use the areas above the headland and beach, any failure of either structure would present a health and safety risk to members of the public, and therefore it is recommended that maintenance works be undertaken. Considering the potential risk if a 'Do Nothing' approach was taken, TRCA made the decision to proceed with a Class EA. Upon approval of the Class EA Project Plan, it is intended that work will commence immediately to implement the preferred alternative solution for major maintenance works to repair shoreline erosion control structures within Bluffer's Park.

2 BACKGROUND

This section provides factual information as to the causes, effects, extent and associated hazards relating to erosion and instability within the Project limits. The findings and recommendations of previous studies are presented herein as justification for TRCA's involvement.

2.1 History of the Problem

Bluffer's Park was built in the 1970's and opened to the public as a waterfront park in 1981. Erosion control structures along the shoreline of the park include a series of headlands, beaches and revetments. These structures have been monitored annually by TRCA's ERMP since 2006. Based on TRCA monitoring records, the southwest headland and adjacent beach within Bluffer's Park have been listed as in fair/poor condition and recommended for major maintenance since 2009.

A Shoreline Conditions Review undertaken by Shoreplan Engineering in 2010 stated that the instability of the headland was likely caused by a combination of toe instability, lack of consistent double layer placement of armourstone in various areas, lack of sufficient filter layering below the primary armourstone, an oversteepened structure slope, and wave overtopping. Preliminary identified solutions included modification of the existing structure or a complete reconstruction utilizing existing material when possible and supplementing with new material as required. In 2016, TRCA undertook interim maintenance works to improve headland stability until the final solution can be implemented.

During the same Shoreline Conditions Review, the underwater portion of the beach was examined and was found to be approaching a stable alignment and a stable slope underwater. Of primary concern is the erosion of sand material along the over-steepened portion of the bank, resulting from a lack of coarse material to provide stability and lack of an appropriate beach width to dissipate waves before reaching the back portion of the bank.

In 2017, it was decided that this project should be subject to the Class EA process. Shoreplan Engineering was asked to provide alternative concepts to be evaluated by TRCA and project stakeholders. Headland concepts include a complete rebuild and a repair while beach concepts include an armourstone revetment and a cobble beach with an optional shoal. Further analysis and consultation is being undertaken to determine which alternatives are preferred.

2.2 Identification of Previous Studies

2.2.1 Erosion Assessments

Shoreline Conditions Review – Shoreplan Engineering, 2010

Shoreplan Engineering conducted a review of the conditions of the headland and beach structures within the Project Area and issued a memorandum describing their condition, causes of deficiency and possible solutions. The information documented in this review was used to inform the development of alternative conceptual concepts.

2.2.2 Environmental Assessments in Project Vicinity

Meadowcliffe Drive Erosion Control Project Environmental Study Report – TRCA, 2010

The Meadowcliffe Drive Erosion Control Project involved the construction of a headland-beach system at the base of Meadowcliffe Drive, immediately east of Bluffer's Park beach. TRCA initiated a Class EA and submitted an Environmental Study Report (ESR) to the Ministry of Natural Resources and Forestry. The ESR contains detailed studies and background information relevant to the Project Area.

Scarborough Waterfront Project Individual Environmental Assessment (Draft) – TRCA, 2017

The Scarborough Waterfront Project (SWP) is a TRCA-led initiative to create continuous and improved waterfront access from Bluffer's Park to East Point Park in Scarborough. This project would include improvements to erosion control as well as aquatic and terrestrial habitat. An Individual EA was undertaken and is currently in draft form. The Study Area for the EA encompasses all of Bluffer's Park, including the Bluffer's Park Southwest Headland and Beach Major Maintenance Project Area. Much of the background information gathered as part of the SWP EA is therefore relevant to the Project, and includes components such as geological studies, wave analyses, bathymetry, and an archaeological study, among others. As part of the Stage 1 archaeological assessment completed for the SWP, the Project Area was determined to have no archaeological potential.

2.2.3 Planning Documents

In developing the range of alternatives for evaluation under the Class EA guidelines, TRCA incorporated the applicable guidelines from several municipal, provincial, and federal guidance and policy documents, as follows:

The Metropolitan Waterfront Plan – Municipal Council of Metropolitan Toronto, 1994

In 1994, the Metropolitan Waterfront Plan was adopted by the Municipal Council of Metropolitan Toronto, replacing the Waterfront Plan for the Metropolitan Toronto Planning Area (1967). This Plan is the guiding document directing the operation and projects undertaken by TRCA along Toronto's waterfront. The Plan identifies steps needed to achieve a waterfront that is healthy, vibrant and publicly accessible and included the policies representing steps to get there. The guiding principles of the Plan include: accessibility, sharing the benefits, balance and diversity, and responsible stewardship.

Clean Waters, Clear Choices: Toronto and Region Remedial Action Plan – TRCA, 1994

The Toronto and Region Remedial Action Plan (RAP) was developed by all levels of government and other stakeholders. The RAP encompasses a 2,000 km² area within TRCA's jurisdiction in the City of Toronto. This area includes the Lake Ontario Waterfront and all the watersheds between Etobicoke Creek in the west and Rouge River in the east. The RAP Team consists of Environment Canada, Ontario Ministry of Natural Resources and TRCA. RAP worked towards the following goals:

- Clean waters
- Healthy Habitats
- Science and Monitoring
- Sustainability
- Education and Involvement

Lake Ontario Greenway Strategy – Waterfront Regeneration Trust, 1995

The goal of the Strategy is to foster commitment to actions that will regenerate a healthy and sustainable waterfront that is clean, green, accessible, connected, open, usable, diverse, affordable and attractive. This goal is supported by five objectives, and a series of actions necessary to achieve each objective.

Integrated Shoreline Management Plan – TRCA, 1996

The need and rationale for the Project is supported by planning initiatives previously undertaken by TRCA as part of the Integrated Shoreline Management Plan (ISMP), which was developed through extensive consultation with the public, agencies and other stakeholders. The ISMP provides strategic direction on the section of the waterfront extending from Tommy Thompson Park to Frenchman's Bay. The Project aligns with the overarching goal of the ISMP with focus on established objectives including the need to "identify the features, functions and processes which compromise the shoreline ecosystem" and to "minimize danger to life and damage to property from flooding, erosion and associated hazards".

Toronto Waterfront Aquatic Habitat Restoration Strategy (TWAHRS) – TRCA, 2003

The Toronto Waterfront Aquatic Habitat Restoration Strategy was developed to provide a guideline for future work along the Toronto waterfront that maximizes its potential ecological integrity. TWAHRS contains historical and geological information relevant to the entire Toronto waterfront including the Project Area and will be useful for the assessment of the possible impacts of the Project.

Planning and Development Procedural Manual – TRCA, 2007

TRCA's Planning and Development Procedural Manual provides a comprehensive summary of the legislative and policy framework that guides TRCA's decisions and actions with respect to planning and regulatory responsibilities, as outlined in Ontario Regulation 166/06.

The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority – TRCA, 2014

The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (LCP) is a Conservation Authority policy document that guides the implementation of TRCA's legislated and delegated roles and responsibilities in the planning and development approvals process. Comparable to a combined municipal official plan and zoning by-law, the LCP represents a compilation of existing plan and permit review policies and practices that have evolved over time. It also contains new policies related to TRCA programs, scientific research, and external planning and development initiatives.

2.3 Justification of Authority Involvement

TRCA has a mandate to carry out remedial erosion control works as set out in Section 20 of the Conservation Authorities Act (R.S.O. 1990):

"The objects of an authority are to establish and undertake, in the area which it has jurisdiction, a program designed to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals (R.S.O. 1990, C.27, s.20)."

As part of this broad mandate, Conservation Authorities are considered to have prime responsibility over water management in terms of water quantity and related hazards through

administrative and regulatory powers. In the 1980 Watershed Plan, TRCA developed and implemented its Erosion and Sediment Control Program (ESCP) with two major directions:

“To minimize the aggravation or creation of erosion or sediment problems as a result of new development, and to rectify existing problems through protective works” (TRCA, 1980).

These directions are categorized as either preventative, or protective, respectively. The Project falls under the protection component of the ESCP, which is designed to protect lives and minimize loss of property through the construction of suitable remedial works. Through annual capital funding from its' member municipalities, TRCA is able to implement a program of major remedial works for shoreline stabilization across the waterfront of the Greater Toronto Area.

3 BASELINE ENVIRONMENTAL INVENTORY

Once the determination has been made that remedial works are warranted at a given site, a baseline inventory is prepared. The baseline inventory provides the information needed to evaluate the alternative options developed through the Class EA process, and to evaluate the types and levels of environmental impacts that may result from implementing the preferred alternative.

The inventory involves the examination and documentation of:

- the erosion problem;
- existing site conditions, including physical, biological, cultural and socioeconomic characteristics;
- engineering/technical aspects to be considered;
- previous protective measures that have been implemented within the Project limits.
- whether the site falls within a vulnerable area as identified in the local assessment report prepared under the *Clean Water Act*, 2006

This baseline environmental inventory takes into consideration the directly and indirectly affected environment. The area indirectly affected by the Project includes the remaining portions of Bluffer's Park, including the marina. Brimley Road South will also be affected as a result of truck traffic.

Baseline environmental data was collected from the following organizations due to their specific expertise relevant to the regional and local project area:

- City of Toronto
- Environment and Climate Change Canada
- Ontario Ministry of Natural Resources and Forestry (MNRF)
- Ontario Ministry of the Environment and Climate Change (MOECC)
- Toronto and Region Conservation Authority

3.1 Existing Site Conditions

In accordance with the Class EA process, the broad definition of 'environment' as provided in the *Environmental Assessment Act* is applied to this section. The prepared environmental description is "*an inventory of elements for which a given project is likely to have an impact*" (CO 2013). The inventory includes an evaluation of the presence and extent of physical, biological, cultural, social, economic, and technical engineering elements applicable to the Project limits.

An existing conditions drawing of the Project limits is provided in **Appendix B**.

3.1.1 Physical Environment

Unique Landforms

The nearby Scarborough Bluffs are the most significant natural feature in the area. The Scarborough Bluffs extend from Victoria Park avenue in the west to Highland Creek in the east, a distance of approximately 20 kilometers. Bluffer's Park is situated at the base of the Scarborough Bluffs, beginning at the base of Scarborough Crescent Park and ending near the

base of Cudia Park and Meadowcliffe Drive. Bluffer's Park provides erosion protection to the bluffs, which have become well-vegetated since the installation of the park.

The Project Area is located within Bluffer's Park but is not immediately adjacent to the Bluffs. Therefore, any work being carried out within that area will not affect the Bluffs.

Existing Mineral/Aggregate Resource Extraction Industries

Lake Ontario was the site of the "stone hooking" industry from the 1850s to the 1910s (Toronto and Region Conservation Authority (TRCA), 2003). This activity involved the extraction of shale material from the lakebed using a shallow draft schooner and several workers carrying bent poles. The material was used for ballast and later sold for construction purposes. It is unknown how much material was removed from the lake bed, but it is estimated that 1,000,000 m³ of stones were removed from Toronto Harbour. It is likely that the stone materials provided erosion protection to the lake bed and the shoreline by helping to absorb or dissipate wave energy and that their removal has accelerated erosion along the shore.

There are no records of other types of mineral or aggregate resource extraction industries in the area.

Earth Science – Areas of Natural and Scientific Interest (ANSI)

The Government of Ontario defines ANSIs as "areas of land and water containing unique natural landscapes or features. These features have been scientifically identified as having life or earth science values related to protection, scientific study or education." Earth Science ANSIs have important geological significance and may contain fossils, bedrock, landforms or other geological processes (Toronto and Region Conservation Authority (TRCA), 2018).

The Scarborough Bluffs Earth Science ANSI (**Figure 8**) is approximately 93 hectares and contains geological layers and formations from the Pleistocene epoch. The ANSI includes the "needles" formation near Scarborough Crescent Park and stretches eastward to the end of Bluffer's Park Beach. The Project is located within Bluffer's Park, which is adjacent to the ANSI; however, the Project Area is on the shoreward side of the park and is not near the bluffs. Therefore, any work being carried out within that area will not affect the ANSI.

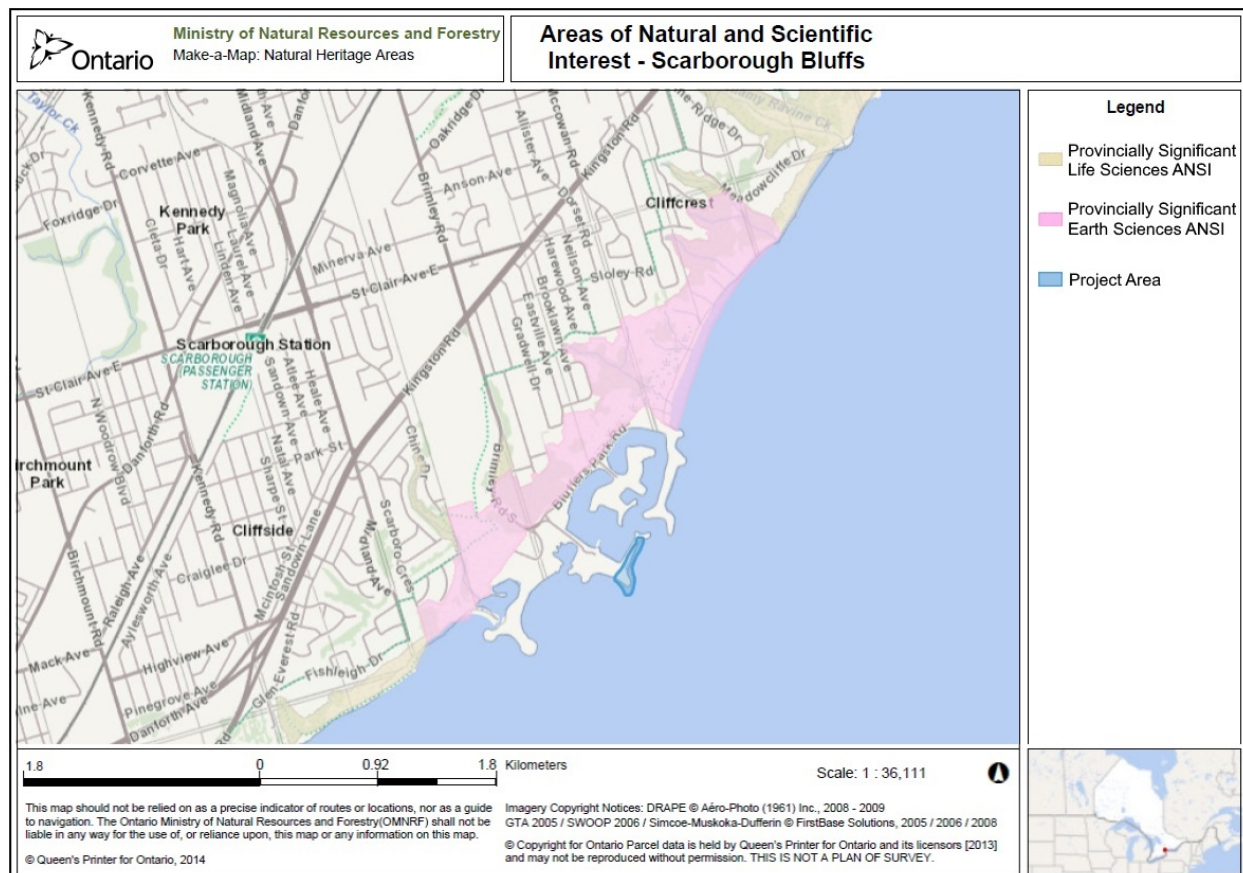


Figure 8. Location of the Scarborough Bluffs Earth Science ANSI. *Source: (Ministry of Natural Resources and Forestry, 2018).*

Specialty Crop Area/Agricultural Lands or Production

The Project Area is located within Bluffer's Park, which is an artificial landform used as a public park. The surrounding areas are all either public parks or residential areas. No agricultural lands are present in the vicinity, therefore there will be no impact as a result of these works.

Niagara Escarpment/Oak Ridges Moraine

This section of the shoreline is not located in the Niagara Escarpment or the Oak Ridges Moraine, therefore there will be no impact as a result of these works.

Environmentally Significant Areas (ESA) – Physical

ESAs are defined as areas of land that meet one or more certain physical or biological criteria. The physical criterion is that the area must contain rare or high quality landforms. The only ESA that meets this physical criterion located near the project site is the Scarborough Bluffs Sequence (**Figure 9**) (Toronto and Region Conservation Authority (TRCA), 2018).

The Project Area is located within Bluffer's Park, which is adjacent to the ESA; however, the Project Area is on the shoreward side of the park and is not near the bluffs. Therefore, any work being carried out within this area should not affect the ESA.



Figure 9. ESAs near the project site. *Source: TRCA, 2018.*

Air Quality

Air quality is measured hourly by the MOECC at many stations across Ontario (Ontario Ministry of the Environment and Climate Change (MOECC), 2018). The station closest to the Project Area is known as the “Toronto East” station and is located near the intersection of Kennedy Road and Lawrence Avenue East, approximately 6.2 km from the Project Area. Air quality results are used to calculate the “Air Quality Health Index” (AQHI), which describes the general air quality as a risk to human life on a scale from 1 to 10. The risk levels are shown in Table 1.

Table 1. Air Quality Health Index risk levels. *Source: MOECC, 2018.*

Air Quality Health Index Range	Risk Level
1 to 3	Low
4 to 6	Medium
7 to 8	High
10+	Very High

The AQHI for Toronto tends to score in the low risk range of 1-3 from winter to spring, and in the low to medium risk ranges in the summer and fall. The monthly averages, maximums and minimums for 2016 and 2017 are shown in **Figure 10** and **Figure 11**.

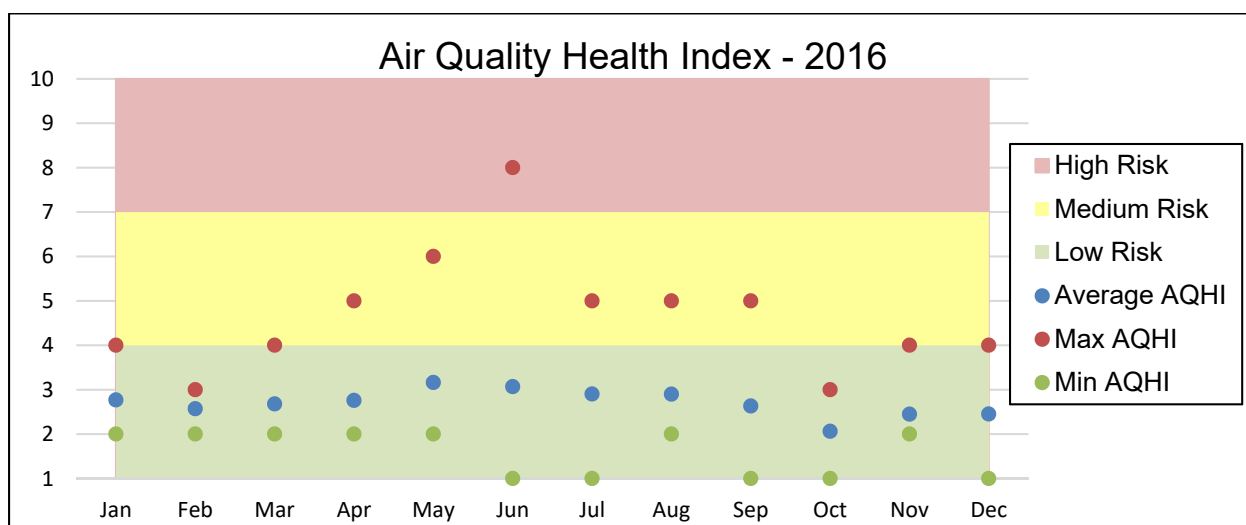


Figure 10. Air Quality Health Index scores for 2016. *Source: MOECC, 2018.*

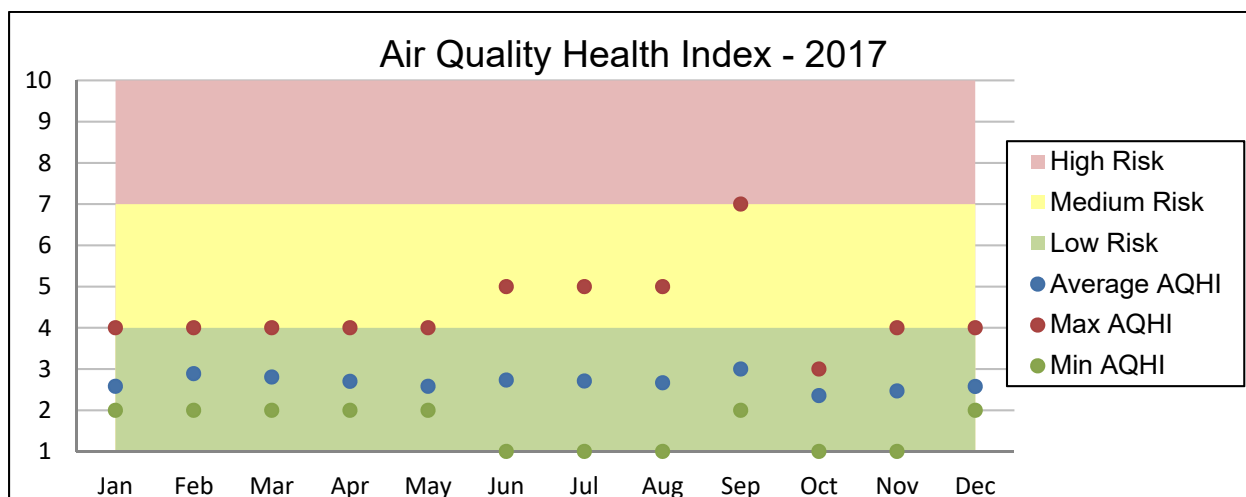


Figure 11. Air Quality Health Index scores for 2017. *Source: MOECC, 2018.*

No component of this Project is anticipated to significantly degrade air quality or be influenced by local or regional sources of air pollution. Any impacts from machinery and/or vehicles used as part of the construction phase will be temporary and minimal and are therefore deemed to be insignificant.

Agricultural Tile or Surface Drains

There are no drainage features associated with agricultural lands near the study, therefore there will be no impact as a result of the works.

Noise Levels and Vibration

There are no notable sources of noise or vibration along this section of the shoreline. As the Project Area is located within a public park, no industrial activities are expected. Minor sources of possible noise include recreational watercraft or maintenance work being carried out on nearby shoreline areas. The channel entrance to Bluffer's Park Marina undergoes dredging activities on an annual basis, which may be a minor source of noise. The project will temporarily increase noise levels during construction, which will occur in two phases during the summer months. All hours of construction will conform to local bylaws.

Water Flow Regime

Lake Ontario water levels are measured on an hourly basis in the Toronto Harbour and are presented in meters, measured using the 1985 International Great Lake Water Datum (IGLD85) (Fisheries and Oceans Canada, 2018). Water levels have been regulated in Lake Ontario since the 1960s, but the lake level will still fluctuate based on inputs and outflows. The water level data for 2015 to 2017 is shown in **Figure 12**.

In 2017, Lake Ontario experienced record high lake levels, which can be seen in the graph below. The maximum water level was recorded as 75.93 m, which is more than 0.6 m higher than the maximum water levels for the preceding two years. The high volumes of water caused flooding of several areas within the City of Toronto and exacerbated erosion in many locations. The beach (WF22.12) within the Project Area experienced accelerated erosion throughout the spring and summer of 2017.

This project is not expected to have a significant impact on the water level or flow regime.

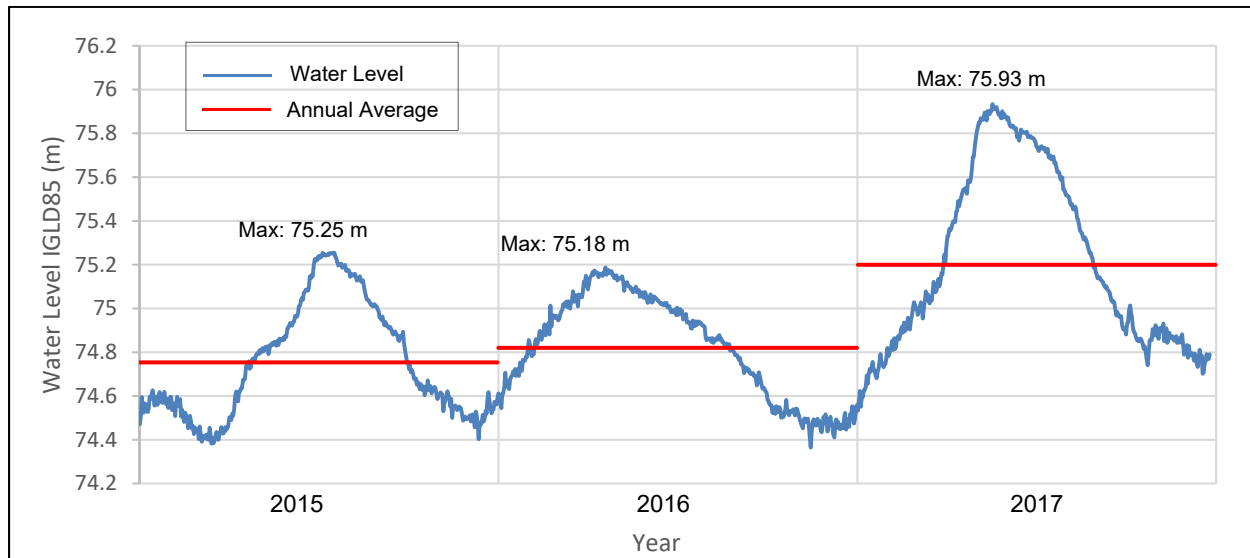


Figure 12. Lake Ontario water levels for 2015-2017, including annual averages. Water levels were measured hourly and are presented here as daily averages. *Source: DFO, 2018*

Existing Surface Drainage/Groundwater Seepage/Groundwater Recharge and Discharge Zones
A high-volume groundwater recharge area is located along the bluffs near Bluffer's Park (**Figure 13**) (Toronto and Region Conservation Authority (TRCA), 2018). The areas are located along the edge of the bluffs between Brimley Road South and Midland Avenue. The Project Area is located in Bluffer's Park on an artificial landform, and any work happening in the area will not affect the groundwater recharge areas.

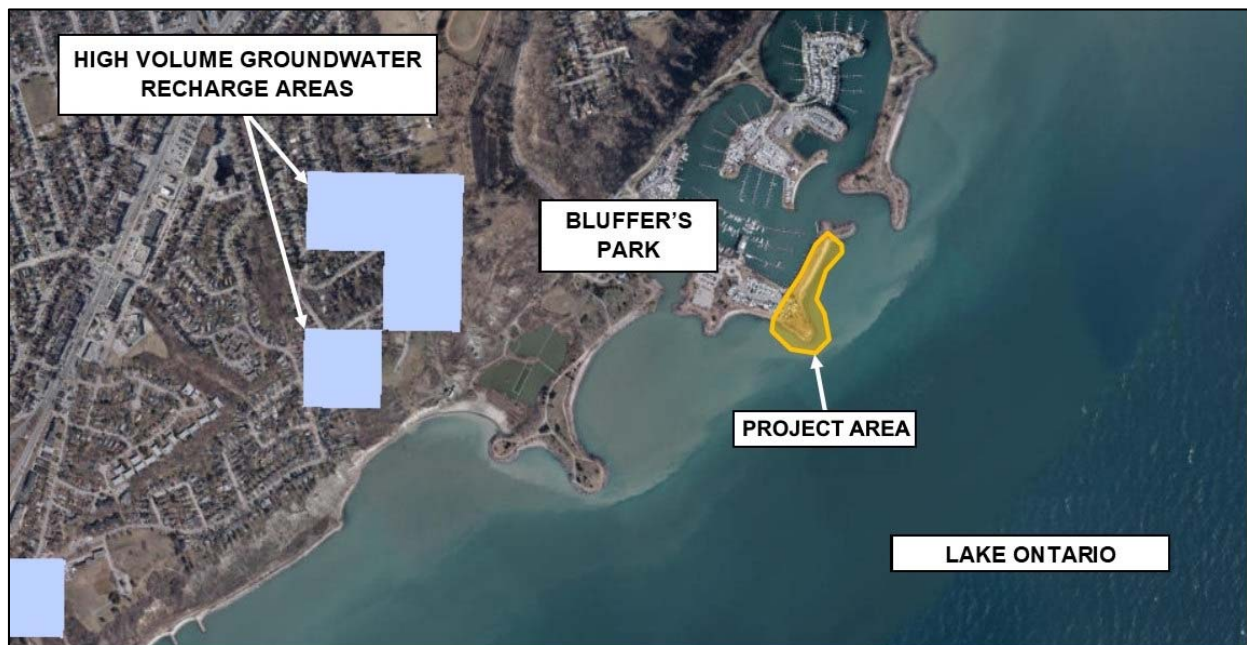


Figure 13. Groundwater recharge areas near the project site. *Source: TRCA, 2018.*

Status under Clean Water Act

A Sourcewater Protection Zone, designated IPZ-2 under the Clean Water Act (2006), is located near the project site (**Figure 14**) (Toronto and Region Conservation Authority (TRCA), 2018). The zone is approximately 200 m away from the Project Area at its closest point. Work at the site is not anticipated to affect the sourcewater intake zone, as it will be carried out with as little disturbance as possible to the lakebed, stirring up a minimal amount of sediment.

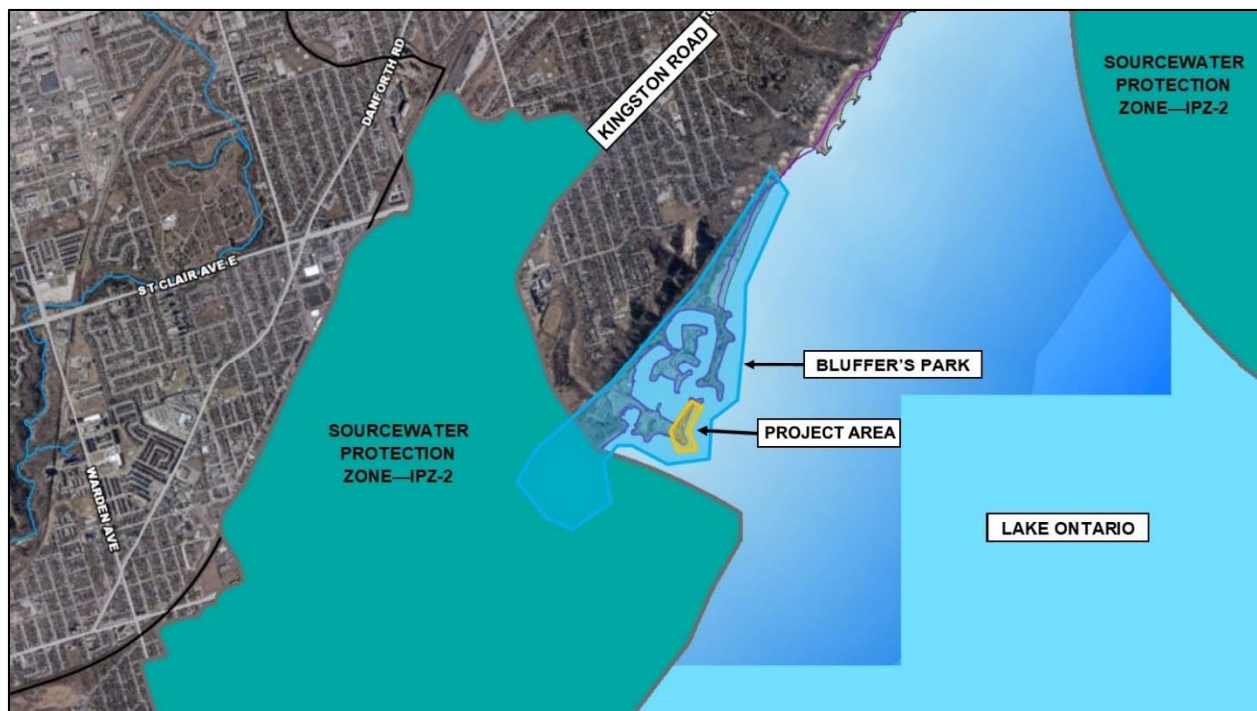


Figure 14. Sourcewater Protection Zones near the Project Area. *Source: TRCA, 2018.*

Littoral Drift/Other Coastal Processes

Bluffer's Park and the project site are situated at the boundary between two littoral cells (**Figure 15**) (Toronto and Region Conservation Authority (TRCA), 2003). Approximately 15,000 m³ of sand is transported annually along the eastern littoral cell toward Bluffer's Park, with much of it building up in the entrance channel of the Bluffer's Park Marina, near the Project site. This area is dredged on an annual basis to maintain an adequate depth for boat traffic. Work at the site is not anticipated to affect coastal processes.

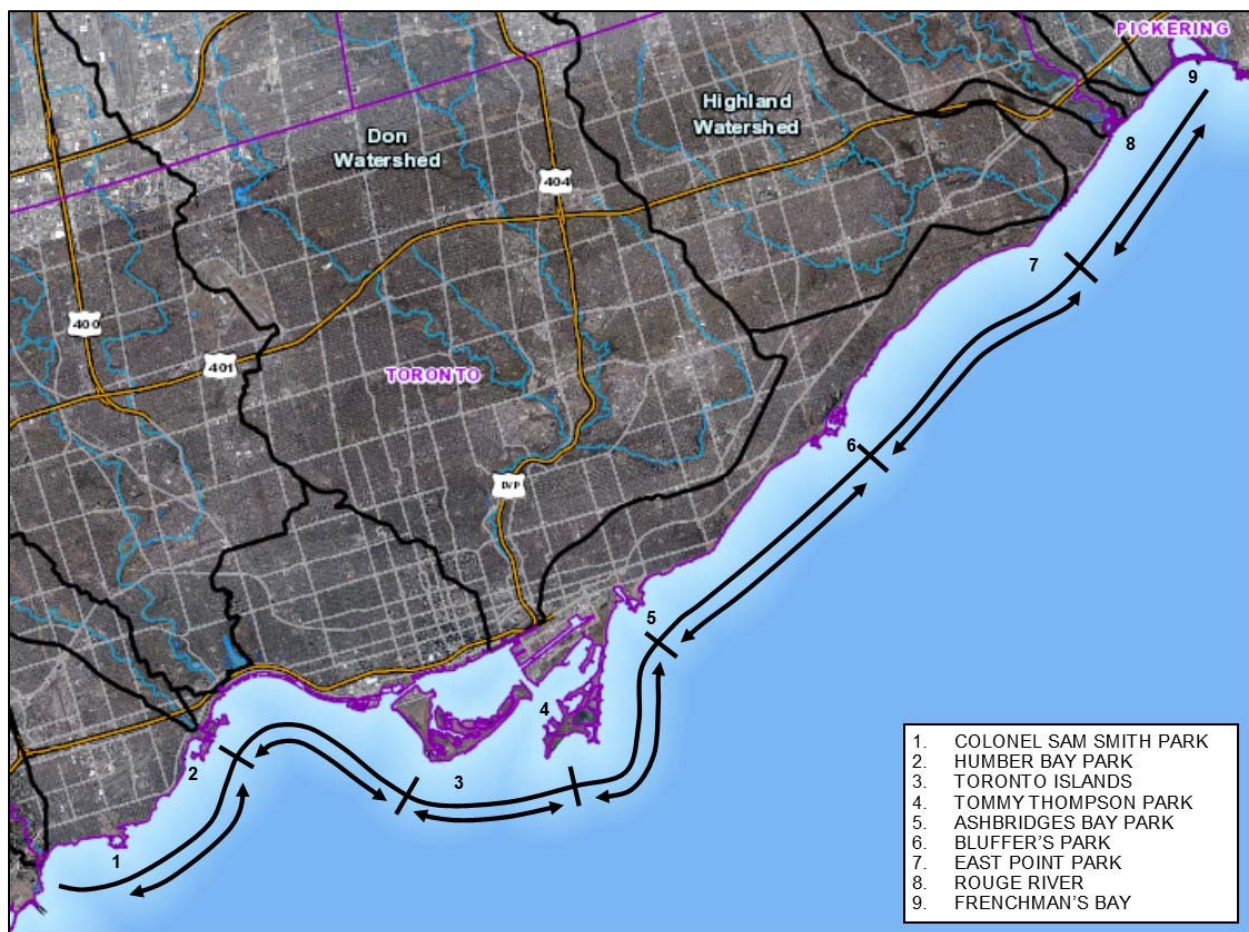


Figure 15. Littoral cells along the Toronto Waterfront. Source: TRCA, 2018.

Water Quality

The nearby Bluffer's Park Beach is monitored daily in the summer as a Blue Flag beach. Water samples are taken to measure levels of *Escherichia coli* (*E. coli*) as a general indicator of water quality (Lake Ontario Waterkeeper, 2018). If *E. coli* levels exceed 100 colony forming units (cfu) per every 100 mL, then the water is considered at risk for recreational use. During the summers of 2015 through 2017, 281 total samples were taken. Of those samples, 9 returned as exceeding 100 cfu/100mL, or approximately 3% of the samples. A beach is considered to be Blue Flag if 95% of the samples in the summer are below this threshold. It is not expected that the work in the Project Area will have an effect on the water quality at Bluffer's Park beach, as the site is not adjacent to the beach, and the nature of the work does not involve *E. coli* inputs.

Soil/Fill Quality

Bluffer's Park consists primarily of an artificial landform created using rocky fill and topsoil. When work is undertaken at the Project site, only clean fill will be used, preventing any reduction in quality of existing soils and fill.

Contaminated Soils/Sediment/Seeps

Bluffer's Park consists primarily of an artificial landform created using rocky fill and topsoil. When work is undertaken at the project site, all measures will be taken to prevent any chemical spills that would contaminate soil. Sampling will be performed as required during detailed design development and any impacted soils will be dealt with appropriately.

Existing Transportation Routes

The only road access to Bluffer's Park and the Site is from Brimley Road South, which intersects Kingston Road at the top of the bluffs. Currently, there is no public transit service that runs to Bluffer's Park using this route. Public transit buses run through the communities near Kingston Road. A trial summer bus route may be established for Bluffer's Park in the future.

Constructed Crossings

There are no constructed crossings within the Project Area, therefore there will be no impact as a result of these works.

Geomorphology

The Project Area is part of the Bluffer's Park artificial landform, which protects the nearby Scarborough Bluffs from wave impacts. Sediment from exposed areas of the bluffs regularly builds up in the channel immediately east of the Project Area, requiring it to be dredged annually. As the Project is not designed to alter the function of the structures within the Project Area, it should have no impact on these aspects of local geomorphology.

Lake Simcoe Protection Act

The Project Area is not located within the Lake Simcoe watershed, therefore there will be no impact as a result of these works.

3.1.2 Biological Environment

Wildlife Habitat

The Project Area does not contain many habitat features as it consists mostly of rocky fill and manicured lawn. There are some trees that may provide nesting habitat for birds, while crevices in rocky areas may provide shelter for terrestrial and aquatic animals. A temporary disruption to the wildlife habitat is likely during construction due to the required removal of trees and movement of rocky material. In order to mitigate any potential impacts to wildlife habitat, a breeding bird survey will be completed prior to the removal of any trees and any alteration of rocky material will be carried out in a gradual manner to allow for wildlife in the vicinity to passively relocate.

Habitat Linkages or Corridors

The Project Area is not connected to any forested corridors and does not provide habitat linkage, therefore there will be no impact as a result of these works.

Significant Vegetation Communities

As the landform in the Project Area is artificial and the vegetation consists primarily of lawn

grasses and planted trees, there are no significant vegetation communities in the area and there will be no impact as a result of these works.

Environmentally Sensitive/Significant Areas (biological)

ESAs are defined as areas of land that meet one or more of certain physical or biological criteria (Toronto and Region Conservation Authority (TRCA), 2018). The biological criteria for an ESA include the following properties:

- The area has endangered or rare species habitat;
- The area is large, diverse and relatively undisturbed;
- The area contributes to healthy ecosystems.

The only ESA located near the Project site is the Scarborough Bluffs Sequence (**Figure 9** in section 3.1.1), which meets all of the above biological criteria.

The Project Area is located within Bluffer's Park, which is adjacent to the ESA; however, the Project Area is on the shoreward side of the park and is not near the bluffs. Therefore, any work being carried out within this area should not affect the ESA.

Fish Habitat

All areas of Lake Ontario are considered potential fish habitat and any works occurring in or around the lake must be assessed for the potential to cause harm to fish or fish habitat. DFO has issued a Letter of Advice for the preferred alternatives of the Project, indicating that no serious harm to fish or fish habitat is expected.

Fish monitoring occurs annually at a station known as 'Bluffer's Park Outer Breakwall, WFF_BFPK_171', located at the opening of the marina channel near the study site (Toronto and Region Conservation Authority (TRCA), 2018). Twelve sampling events occurred at this location from 2014 to 2016. Fish were found during 9 of these sampling events, and the total counts and average lengths and weights are shown below (**Table 2**).

Table 2. Results of fish monitoring at headland near the Project Area from 2014-2016. *Source: TRCA, 2018.*

Species	Total Count	Average length (mm)	Average weight (g)	Native/non-native/invasive
White Sucker	18	189.9	128.4	Native
Alewife	65	134.2	18.3	Non-native
Round Goby	13	73.5	8.3	Invasive
Largemouth Bass	2	86.5	11.5	Native
Yellow Perch	1	100.0	11.0	Native
Emerald Shiner	19	81.2	4.3	Native
Coho Salmon	1	346.0	333.0	Non-native
Rainbow Smelt	25	85.3	3.6	Invasive
Gizzard Shad	4	107.3	14.0	Native
Chinook Salmon	5	108.4	11.2	Non-native
Threespine Stickleback	1	61.0	2.0	Native
Northern Pike	1	682.0	2400.0	Native

Species of Concern - Flora

A Species at Risk (SAR) screening request was submitted to MNRF and a response was received on October 31, 2016. The only flora SAR that was identified as being in the vicinity of the Project area is Butternut, a provincially and federally endangered tree species. A tree inventory was completed for the Project Area, and no Butternut species were identified within the Project limits, therefore the work should not have any impact on floral species of concern.

Species of Concern - Fauna

A SAR screening request was submitted to MNRF and a response was received on October 31, 2016. MNRF identified the following fauna species as being in the vicinity of the Project limits:

- Bank Swallow
- Barn Swallow
- Chimney Swift
- Eastern Musk Turtle
- Eastern Wood Peewee

MNRF also indicated that there was the potential for the following species of endangered bats to be present in the area:

- Little Brown Myotis
- Northern Myotis
- Tri-colored Bat

TRCA Biologist, Paul Prior, was asked to comment on the possibility of impacts that the Project may have on these species. He indicated that due to the distance of the Project from suitable nesting habitat, as well as the planned timing of the project, that there should be no impacts on the listed bird species. He also indicated that the Eastern Musk Turtle is very unlikely to be present in the Project Area, as it does not contain any of the species' preferred habitat features.

The trees at the site were assessed for potential bat habitat and it was found that none were suitable for roosts. Therefore, implementation of the Project should not have an impact on endangered bat species.

Wildlife/Bird Migration Patterns

This area of shoreline along the Lake Ontario waterfront serves as a major migratory corridor for wildlife and birds (Toronto and Region Conservation Authority (TRCA), 2010). The Project site is located within an important migratory zone which encompasses both the Atlantic and Mississippi flyways. A temporary disruption to wildlife habitat is likely during construction due to presence of construction equipment and the possible removal of trees. Temporary losses of habitat will be offset through the implementation of compensatory plantings and habitat creation at replacement ratios that will improve overall habitat quality and area.

Exotic/Alien and Invasive Species

Several invasive species have been identified near the Project Area in the past. Aquatic habitat monitoring from 2015 to 2016 identified the presence of the invasive fish species Round Goby and Rainbow Smelt. During the tree inventory, conducted in November 2016 prior to interim works, several invasive tree species were found within the Project Area (**Table 3**).

Table 3. Invasive tree species identified in the Project Area. *Source: TRCA, 2016.*

Species	Scientific Name	Inventory count (2016)
Manitoba Maple	<i>Acer negundo</i>	2
Norway Maple	<i>Acer platanoides</i>	3
Black Locust	<i>Robinia pseudoacacia</i>	1
Common Buckthorn	<i>Rhamnus cathartica</i>	1
Autumn Olive	<i>Elaeagnus umbellata</i>	2
Russian Olive	<i>Elaeagnus angustifolia</i>	1

Measures will be taken during Project implementation to ensure that invasive species are not transported off-site and that new invasive species will not be introduced. Any trees planted during compensation will be native species.

Wetlands

The nearest wetlands to the project site are the Bluffer's Park constructed wetlands to the west (**Figure 16**). This is a series of five wetland cells, known as the Dunker's Facility, designed to naturally treat stormwater before it drains into Lake Ontario as well as provide coastal wetland habitat for local wildlife (Ontario Streams, n.d.). The wetlands are approximately 550 m away from the Project site and will not be affected by any project activities.



Figure 16. Constructed coastal wetlands in Bluffer's Park and location of Project area. *Source: TRCA, 2017.*

Microclimate

The microclimate of the shoreline of Lake Ontario is heavily influenced by winds, nearshore waves, solar heating and thermal characteristics. These factors have an effect on the shoreline conditions and aquatic habitat and if any of these components were to be altered, it could have lasting effects on the shoreline profile, built environment, or local habitat. Lake currents and

nearshore waves are largely a product of wind conditions. The project site is generally influenced by winds and waves from two directions: the southwest and the east. Although the southwesterly waves are more common, the easterly waves tend to carry far more energy.

Daily and seasonal weather conditions, especially solar heating, play a critical role in the ecology of Lake Ontario. The lake waters stratify according to temperature in the summer and winter. The amount and intensity of solar heating defines the scope and extent of this thermal stratification and the subsequent aquatic habitat conditions.

These factors of the shoreline microclimate can be influenced by blocking winds (windscreening), which would in turn affect wave conditions; altering snow accumulation which can affect thermal conditions; or creating unnatural shading, which can affect temperature conditions and aquatic habitat suitability. The Project involves repairing the headland and rehabilitating the beach and is not expected to include any components that will block wind, change snow accumulation amounts, or shade any part of the Project Area.

Unique Habitats

The Scarborough Bluffs is part of the songbird migratory corridors within the Atlantic and Mississippi flyways and the bluff face provides habitat for nesting Bank Swallows. Aquatic habitat consists of both a coldwater fishery in open areas with extensive wave action, as well as a warmwater fishery in the sheltered embayments of the park. The work being undertaken in the Project Area should not affect any of these unique habitats.

Areas of Natural Scientific Interest - Life Science (ANSI-LS)

The Government of Ontario defines ANSIs as “areas of land and water containing unique natural landscapes or features. These features have been scientifically identified as having life or earth science values related to protection, scientific study or education.” Life Science ANSIs contain vegetation and landforms as well as their associated species and communities that are relatively undisturbed (Toronto and Region Conservation Authority (TRCA), 2018).

The Scarborough Bluffs Life Science ANSI (**Figure 17**) is approximately 155 hectares and contains steep bluff habitat with vegetated deep stream gullies and tableland rim forested areas. The ANSI begins at Scarborough Heights Park and stretches eastward to the South Marine Drive Park.

The Project Area is located within Bluffer’s Park, which is adjacent to the ANSI; however, the Project Area is on the shoreward side of the park and is not near the bluffs. Therefore, any work being carried out within this area should not affect the ANSI. Access for this project will be from Brimley Road South, which travels down the bluffs through a valley. The work vehicles should not have an impact on the ANSI.

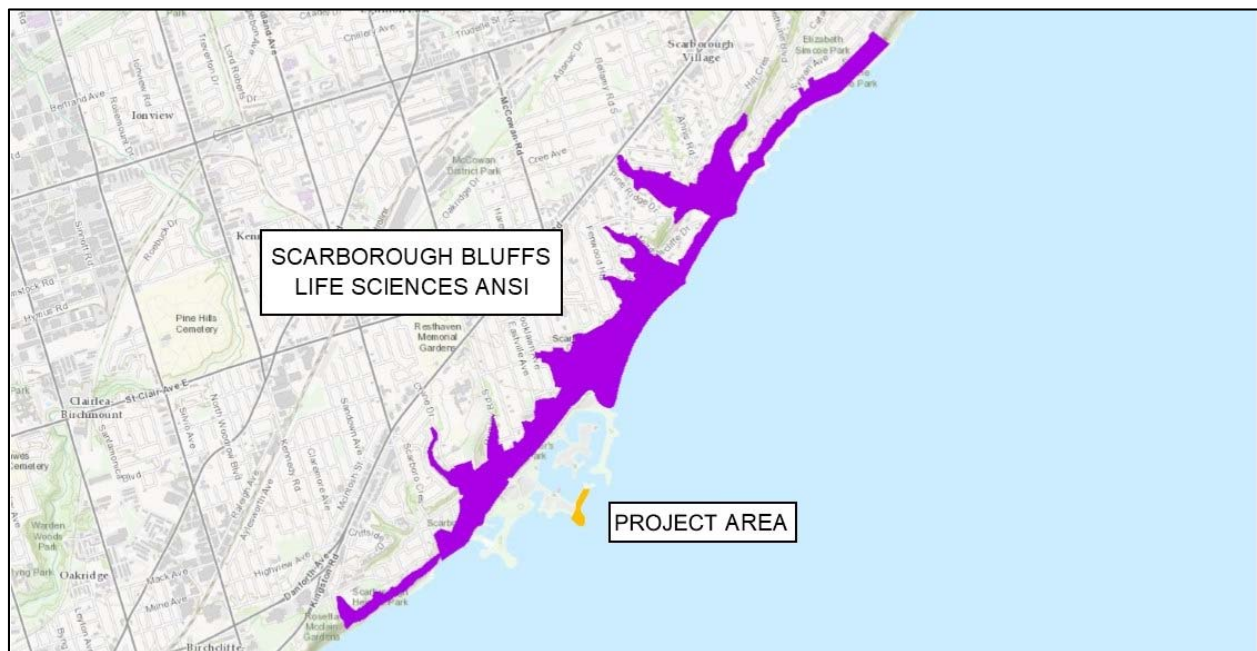


Figure 17. Map showing the Scarborough Bluffs Life Sciences ANSI and the nearby Project Area.
 Source: TRCA, 2018.

3.1.3 Cultural Environment

Traditional Land Uses

The Project Area is located within Bluffer's Park, which is a landform that was constructed in the 1970s, as such there are no traditional uses of the land within the Project Area.

Aboriginal Reserve or Community

There are no known reserves or communities within the Project Area, therefore there will be no impact as a result of these works.

Transboundary Water Management Issues

The Project Area is not located near the American border and there are no known transboundary water management issues within the Project limits, therefore there will be no impact as a result of these works.

Riparian Uses

A boat launch for the Bluffer's Park Marina is present in the Project Area. Access to this launch might be affected or restricted temporarily during construction, but the project will have no permanent impact on any current riparian uses.

Recreational or Tourist Uses of a Waterbody and/or Adjacent Lands

The area behind the erosion control structures is part of Bluffer's Park marina and is frequently used as a launch point for recreational boating. Boat launches are present in other parts of the park near the Project Area. During favourable wave conditions, surfers may use the areas offshore of the headland. Work in the Project Area may temporarily disrupt local recreational activities, but should not have a permanent impact on them.

Aesthetic or Scenic Landscapes or Views

The Project Area is located in a waterfront park with views of Lake Ontario and the Scarborough Bluffs. The area is closed off to members of the general public, but users and residents of the marina facilities have the opportunity to enjoy the scenery. The project is not anticipated to alter the landscape or obstruct the view of the surrounding area, as the work is to repair or restore existing erosion control structures. The crest heights of the structures are not expected to change significantly, and therefore there should be no impact on landscape aesthetics or views.

Archaeological Resources, Built Heritage Resources and Cultural Heritage Landscapes

A stage 1 archaeological assessment was conducted for much of the waterfront in Scarborough as part of the Scarborough Waterfront Project (Toronto and Region Conservation Authority (TRCA), 2017). This area encompasses Bluffer's Park and the Project Area. Through this assessment, the Project Area and remainder of Bluffer's Park were determined to have no archaeological potential. Areas along the tableland required further assessment (**Figure 18**); however, works at the Project Area will not extend into this tableland and therefore should not impact any archaeological resources.

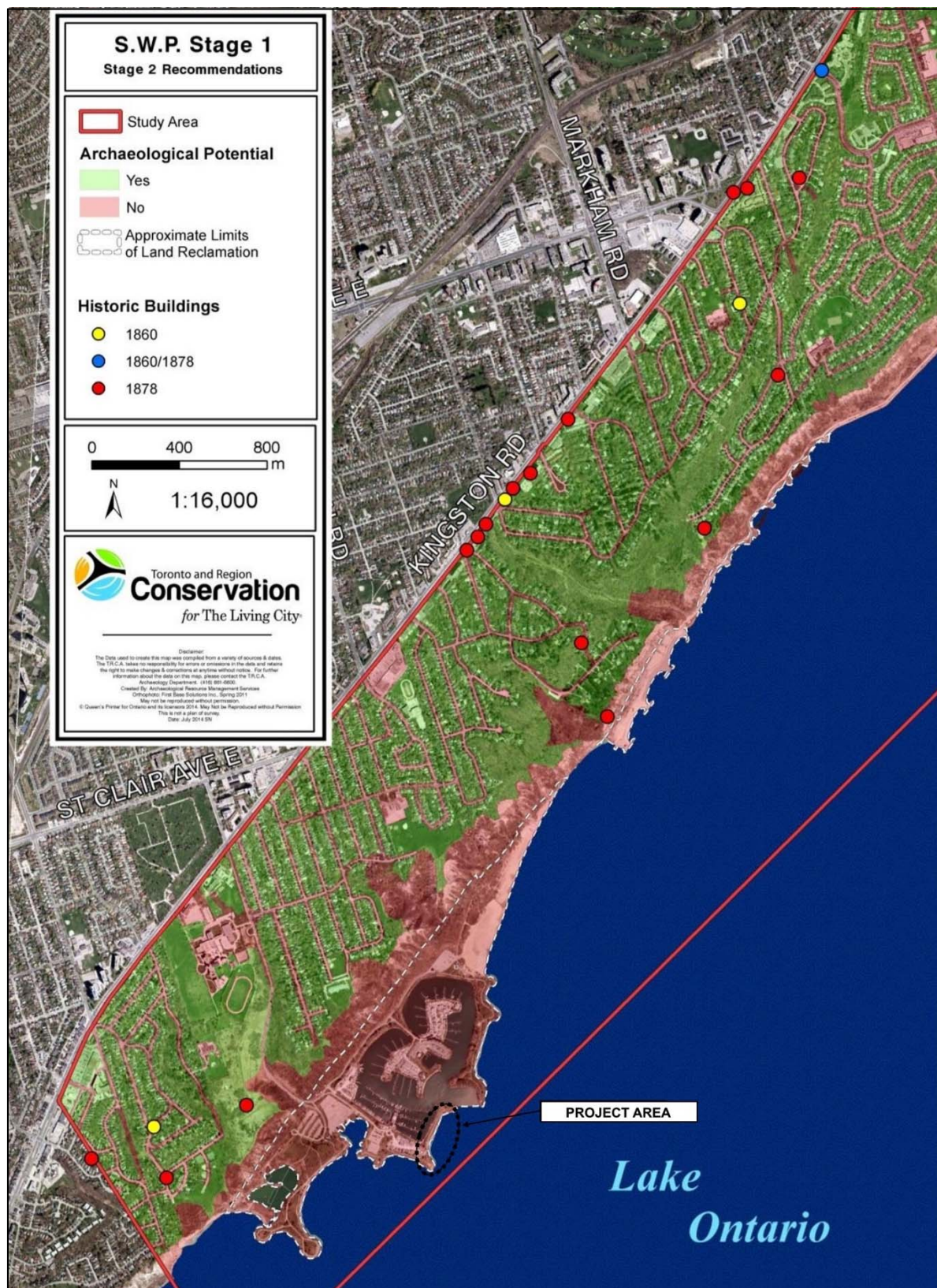


Figure 18. Archaeological potential for Bluffer's Park and the surrounding area. *Source: TRCA, 2017.*

Historical Canals

There are no historic canals within the Project limits, therefore there will be no impact as a result of these works.

Federal Property

The land portion of the park is mostly owned by TRCA while the marina waters and headlands are owned by DFO (**Figure 19**) (Toronto and Region Conservation Authority (TRCA), 2018). In particular, the headland within the Project Area is owned by DFO, while the beach is mostly TRCA-owned with a small area at the east limit being DFO property. The work being done on both the beach and the headland will have a direct impact on DFO property, however, DFO is aware of the Project is involved in the review process.



Figure 19. Property ownership of Bluffer's Park and the Project Area. *Source: TRCA, 2018.*

Heritage River System

No heritage river systems are present near the project site.

3.1.4 Socioeconomic Environment

Surrounding Neighbourhood or Community

There are no neighbourhoods or communities immediately adjacent to the Project Area. The community of Cliffcrest is present at the tableland of the bluffs; this community will not be affected by construction activities. The Bluffer's Park marina, immediately adjacent to the Project Area, is the location of several watercrafts where residents live full-time. The Project is not expected to have a negative impact on the marina; if the Project is not implemented, the beach may breach the marina, which would place these watercrafts at risk.

Surrounding Land Uses and Growth Pressure

The land surrounding the Project Area is parkland, located on an artificial landform. There is no potential for urban development near the Project Area. The community of Cliffcrest, located on the tableland of the nearby bluffs, consists primarily of single-family dwellings or small apartment buildings. The City of Toronto 2016 census showed a modest 1.5% population growth from 2011 to 2016, indicating minor growth pressure for this area (City of Toronto, 2017). There should be only minor disturbances to the surrounding communities during implementation of the works.

Existing Infrastructure, Support Services, Facilities

Several City of Toronto stormwater sewers drain through the western side of Bluffer's Park, near the base of Brimley Road South (**Figure 20**). These drains service Brimley Road South, the Bluffer's Park western parking lots and several residential areas at the top of the bluffs. This drainage system has an outfall in Bluffer's Park, south of the western parking lots. The Project Area is located east of the outfall and any work undertaken will not affect the sewer system.

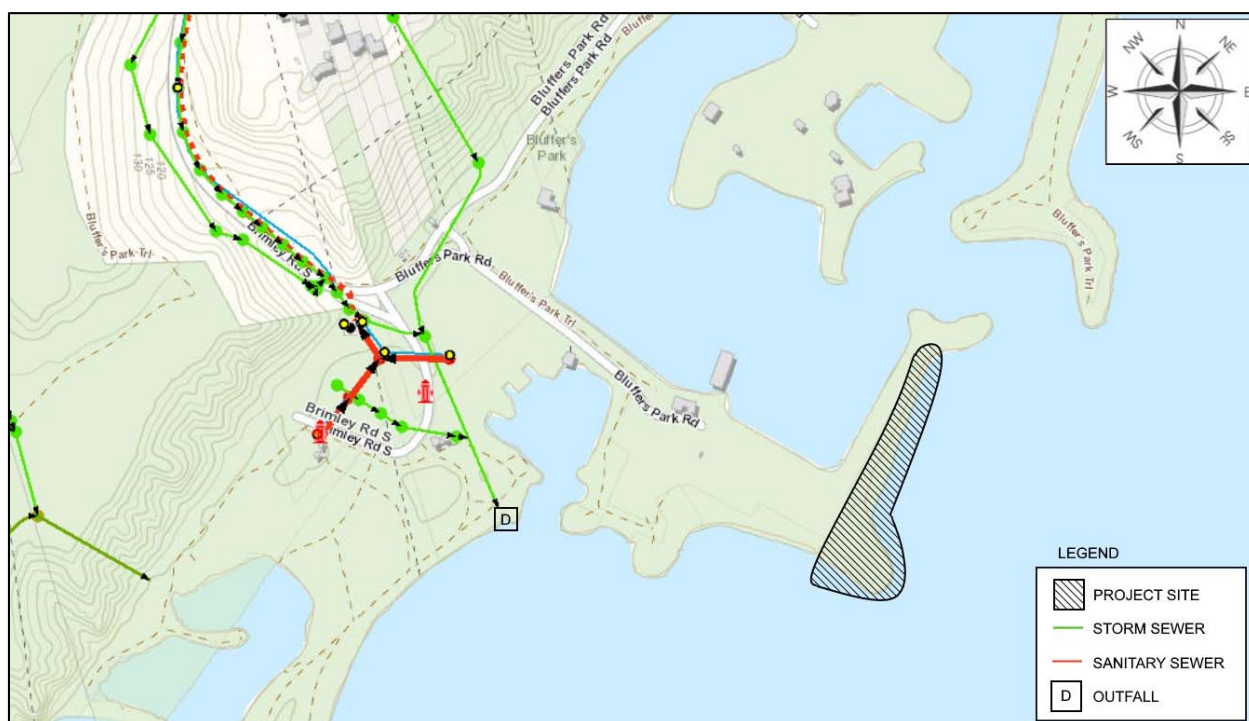


Figure 20. City of Toronto sewer infrastructure near the Project Area. *Source: City of Toronto, 2018.*

Pedestrian Traffic Routes

Informal trails leading to and from the Bluffer's Park Marina are present within the Project Area. These trails are currently at risk from erosion and since the goal of the Project is to reduce erosion, a positive impact on these trails is anticipated.

Property Values or Ownership

The Project Area and surrounding parkland are owned by TRCA, with the exception of any headlands, which are owned by DFO. The land is not designated for private commercial or residential use and the work at the site should not affect any property values.

Existing Tourism Operation

Several fishing charter businesses operate from Bluffer's Park Marina. The Project will temporarily restrict access to the headland and beach, but it is unlikely to affect the operation of the Marina or these businesses.

Property Accessibility

The property is gated to members of the public and is generally only used by patrons and residents of Bluffer's Park Marina. Work in the Project Area will temporarily restrict access to the headland and beach, but patrons and residents will still be able to access the marina facilities. Once the project has been completed, full access will be restored.

3.1.5 Engineering/Technical Environment

Rate of Erosion in Ecosystem

Erosion rates are irregular within the Project Area; the backshore of the beach shows signs of erosion every year, but not always in the same locations (Toronto and Region Conservation Authority (TRCA), 2018). Since 2012, the crest of the scour at the western limit of the headland has encroached on the formal path by 3.2 m and was 4.0 m away at last inspection. Since 2012, the large scour along the backshore of the beach has increased in length from 80 m to 91.2 m. The crest of the bank was 1.0 m away from a park bench in 2012 and by August 2017, that bench had become undermined and had fallen over the edge of the crest. As the purpose of the proposed work is erosion control, it is expected that the erosion mentioned above will cease.

Sediment Deposition Zones in Ecosystem

Bluffer's Park and the project site are situated at the boundary between two littoral cells (Toronto and Region Conservation Authority (TRCA), 2003). Approximately 15,000 m³ of sand is transported annually along the eastern littoral cell toward Bluffer's Park, with much of it building up in the entrance channel of the Bluffer's Park Marina, near the Project site. This area is dredged on an annual basis to maintain an adequate depth for boat traffic. Work at the site is not anticipated to affect this sediment deposition zone.

Flood Risk in Ecosystem

The Bluffer's Park artificial landform and the associated erosion control structures have been built to a crest height that would be above the water level of most flooding events. During the record high lake levels in the spring of 2017, there was no flooding within the park, with the exception of the sandy beach areas. However, during windy conditions, wave uprush will frequently cause overtopping of the structures, resulting in erosion and damage to structures. Work at the Project site is not anticipated to increase flood risk, and it is possible that the final structure can have some flood risk mitigation components.

Slope Stability

The closest slopes to the Project Area are the Scarborough Bluffs. Work on the Project will not have any impact on the stability of the bluffs.

Existing Structures

The repair of the existing erosion control structures in the Project Area is the purpose of this Project. Work at this site will improve the condition of the existing structures and ensure they are functioning as intended.

Hazardous Lands/Sites

Hazardous lands and sites refer to areas that are hazardous for development due to unstable naturally occurring processes. Since Bluffer's Park is designated as parkland, no development can occur in the area and therefore the hazardous lands and sites designation does not apply.

4 EVALUATION OF PRELIMINARY ALTERNATIVE OPTIONS

The information obtained in the baseline inventory is used in the evaluation of the preliminary alternative options, giving specific consideration of the advantages and disadvantages of each method.

4.1 Description of Preliminary Alternative Options

In 2016, TRCA retained the services of Shoreplan Engineering to develop site appropriate remedial alternatives in order to address ongoing erosion concerns within the Project limits. In addition to the 'Do Nothing' alternative, two conceptual designs were presented for each structure, as shown below:

Headland Options

Option 1A – 'Do Nothing'

Option 1B – Reconstruction of the Headland

Option 1C – Repair of the Headland

Beach Options

Option 2A – 'Do Nothing'

Option 2B – Armourstone Revetment

Option 2C – Cobble Beach with Optional Shoal

The evaluation of each preliminary alternative option includes an examination of the types and extents of impacts, both positive and negative.

Headland Options

4.1.1 Option 1A - 'Do Nothing'

The 'Do Nothing' option is a mandatory alternative that must be considered during the Class EA process in order to justify the need to undertake remedial works within the Project limits. Should the 'Do Nothing' option or other Conservation Authority programs such as land acquisition be deemed a more acceptable solution, then there shall be no further consideration for remedial action and the Class EA process terminates.

Prior to making the decision to proceed with remedial action at the site, TRCA evaluated the 'Do Nothing' option, which assesses the impacts and risks over time to the proposed site if no remedial works were undertaken. In this instance, the 'Do Nothing' approach allows the headland to continue in its current state without the undertaking of major maintenance works. If no remedial action is taken, the backshore will continue to flood during normal storm events and access to the headland will need to be restricted on a regular basis. Although no capital investment will be required for this option, minor maintenance of the backshore will need to be carried out frequently, ensuring high long-term maintenance costs.

4.1.2 Option 1B – Reconstruction of the Headland

Option 1B involves the removal of existing material from the headland followed by complete reconstruction of the structure (**Figure 21** and **Figure 22**). This process would allow for the reuse of existing material while also requiring the addition of new material. The crest height of the structure would be elevated to prevent waves from overtopping and damaging the backshore. This option would also present opportunities to enhance terrestrial and aquatic habitat.

Although Option 1B will result in a reduced footprint, implementation will require major disturbance to the lakebed, and would likely result in serious harm to fish. The structure is expected to have similar habitat features to existing conditions. Marine-based equipment would be required to excavate and place the toe stones in the water and a crane would be needed to place larger armourstone. The capital cost of this option would be high and the construction process would be long, however long-term maintenance costs would be low.

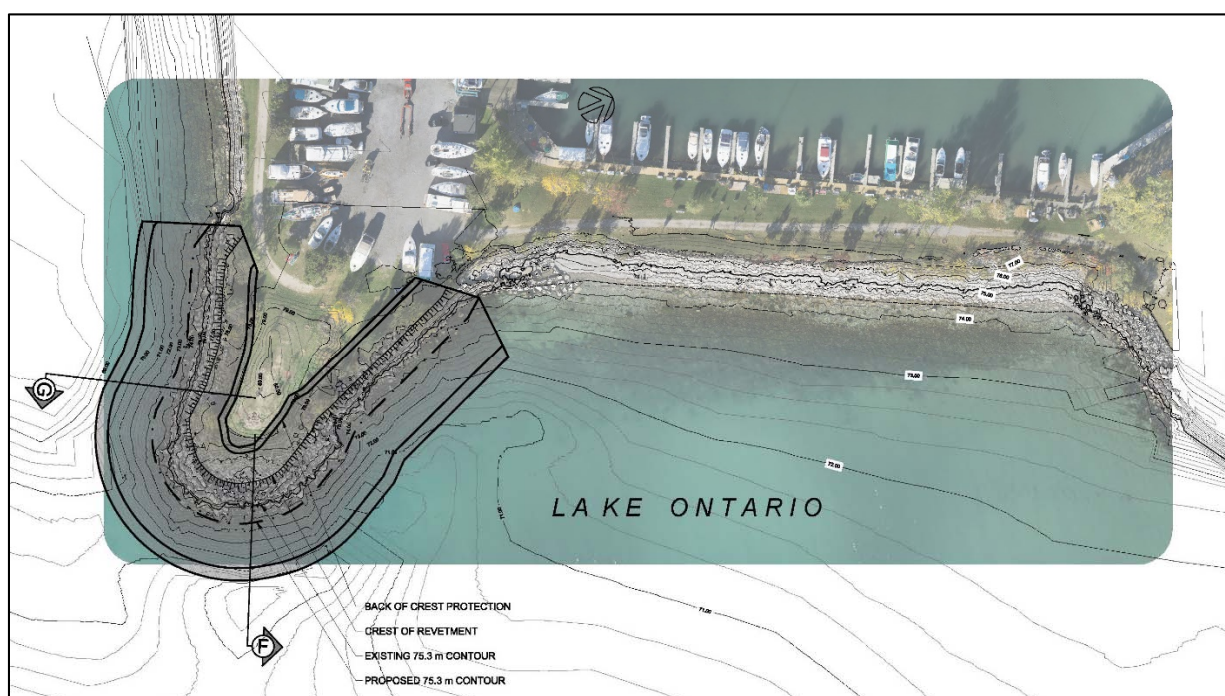


Figure 21. Concept design plan view for Option 1B, headland reconstruction. *Source: Shoreplan Engineering, 2017.*

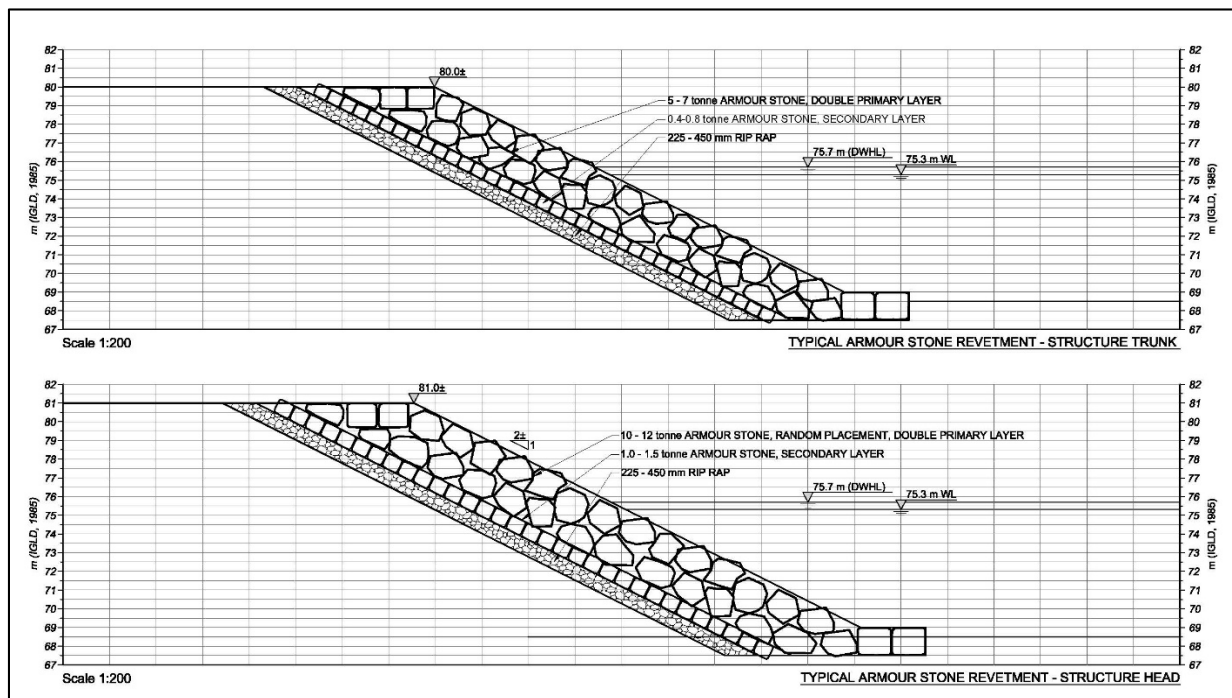


Figure 22. Concept design cross-sections for Option 1B, headland reconstruction. *Source: Shoreplan Engineering, 2017.*

4.1.3 Option 1C – Repair of the Headland

Option 1C involves leaving the existing headland revetment in place and adding a second layer of armourstone overtop (**Figure 23** and **Figure 24**). The crest of the structure will not increase in height but it will be extended inland to reduce damage from wave overtopping. The backshore would remain at risk of minor damage during extreme storm events.

This option is not likely to result in serious harm to fish because in-water works will be limited to the addition of a second armourstone layer. The structure is expected to have similar habitat features to existing conditions. Marine-based equipment might be required to place the toe stones in the water and a long-reach excavator would be required to place armourstone. The capital cost and the ongoing maintenance costs of this option would be moderate.

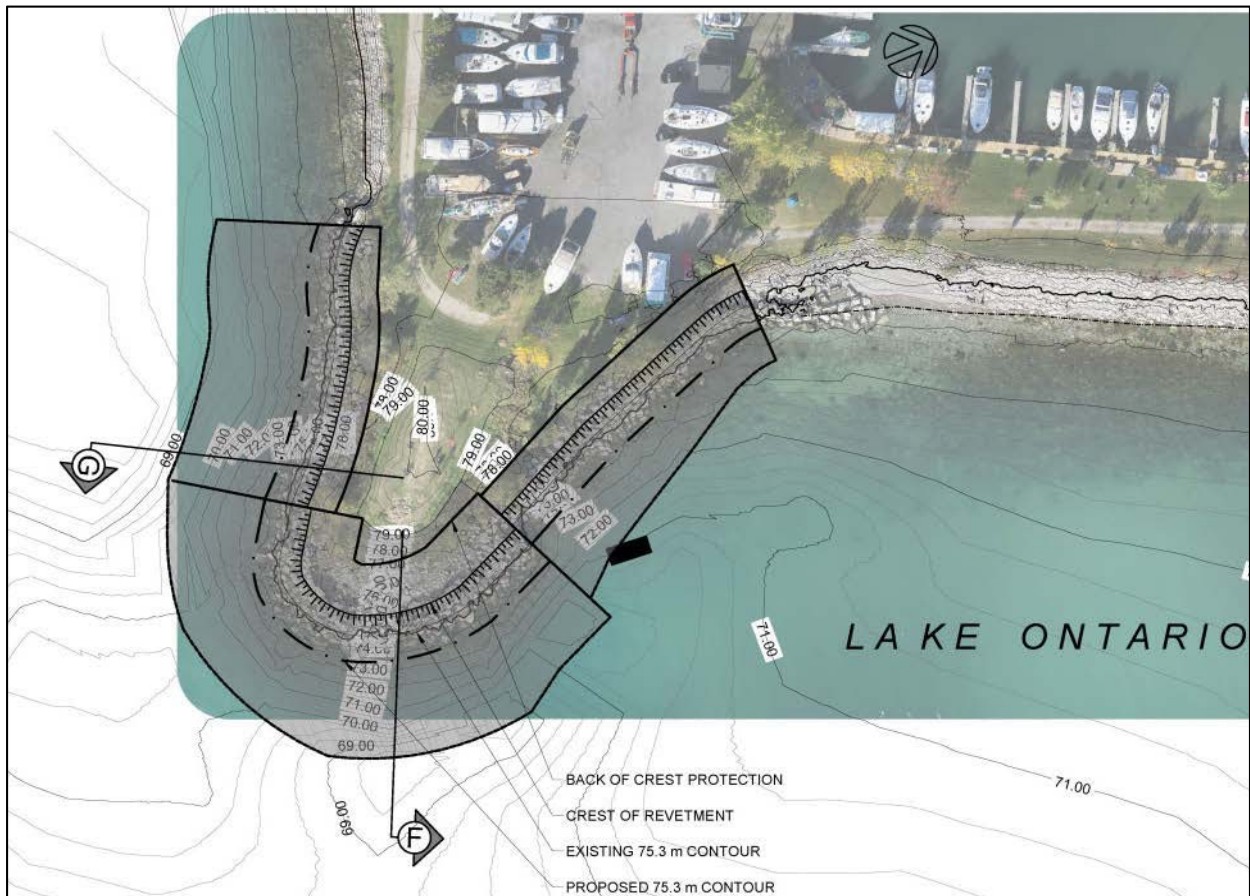


Figure 23. Concept design plan view for Option 1C - repair headland. *Source: Shoreplan Engineering, 2017.*

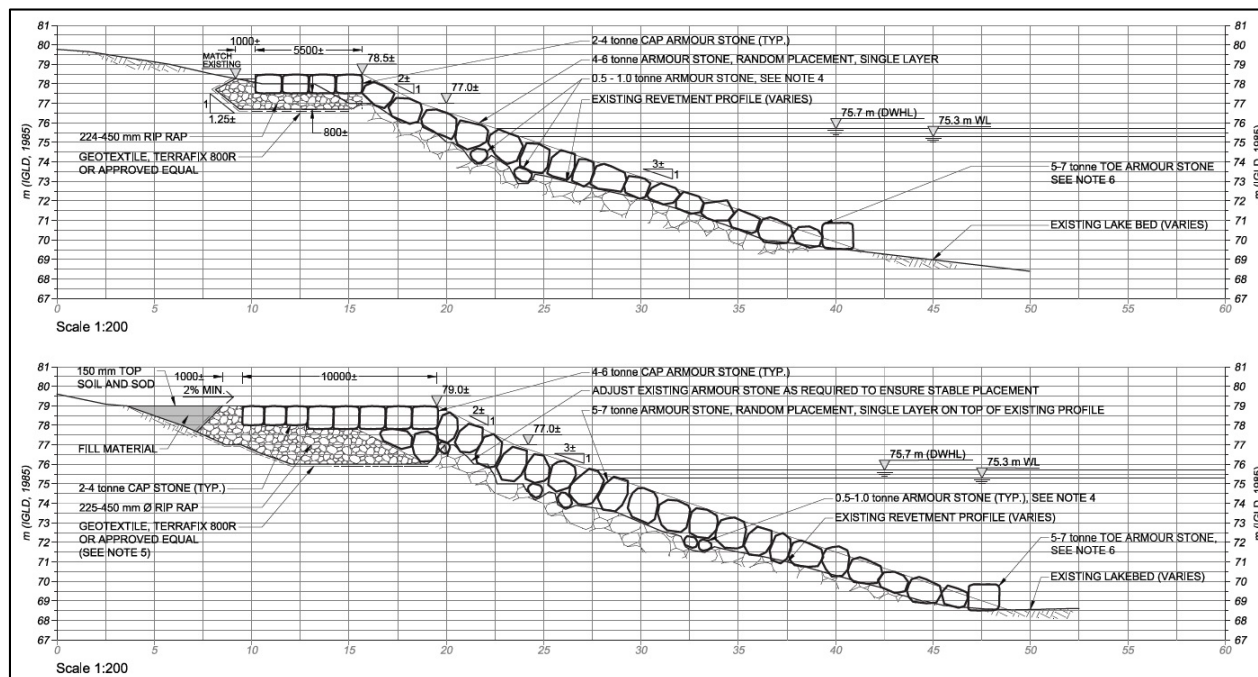


Figure 24. Concept design cross-sections for Option 1C - repair headland. *Source: Shoreplan Engineering, 2017.*

Beach Options

4.1.4 Option 2A – ‘Do Nothing’

The ‘Do Nothing’ option is a mandatory alternative that must be considered during the Class EA process in order to justify the need to undertake remedial works within the Project limits. Should the ‘Do Nothing’ option or other Conservation Authority programs such as land acquisition be deemed a more acceptable solution, then there shall be no further consideration for remedial action and the Class EA process terminates.

The ‘Do Nothing’ option consists of allowing the beach to continue in its current state, carrying out no major maintenance on it. This ensures that there will be continued erosion along the backshore of the beach, which presents the possibility of an eventual breach into the marina. Continued erosion would also mean the loss of additional trees and the necessity of relocating the park path. Access to the beach area would need to be restricted at all times. No capital investment for this option would be required, but the ongoing maintenance costs would be high.

4.1.5 Option 2B – Armourstone Revetment

Option 2B involves the construction of a new revetment along the backshore of the beach to absorb the impact of waves, protecting the existing bank, trail, and marina (**Figure 25** and **Figure 26**). The revetment would be made of armourstone and have a crest slightly higher than the existing bank. This design would allow for the placement of an optional cobble berm at the base of toe of the revetment. The revetment option would not provide access to the water.

This option is not expected to result in serious harm to fish, as the footprint would be primarily in the backshore portion of the existing beach. Limited opportunities for aquatic habitat improvement would be provided using this option. The revetment would be constructed using land-based equipment. The capital cost of this option would be moderate to high and the maintenance cost would be low.

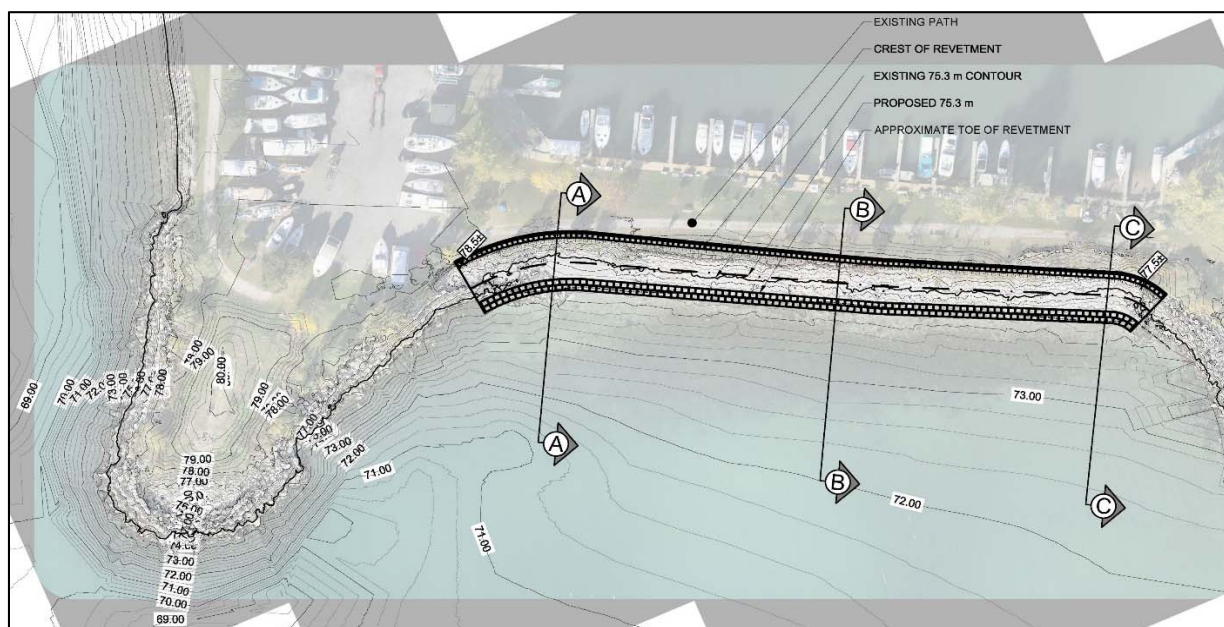


Figure 25. Concept design plan view for Option 2B - Armourstone Revetment. Source: Shoreplan Engineering, 2017.

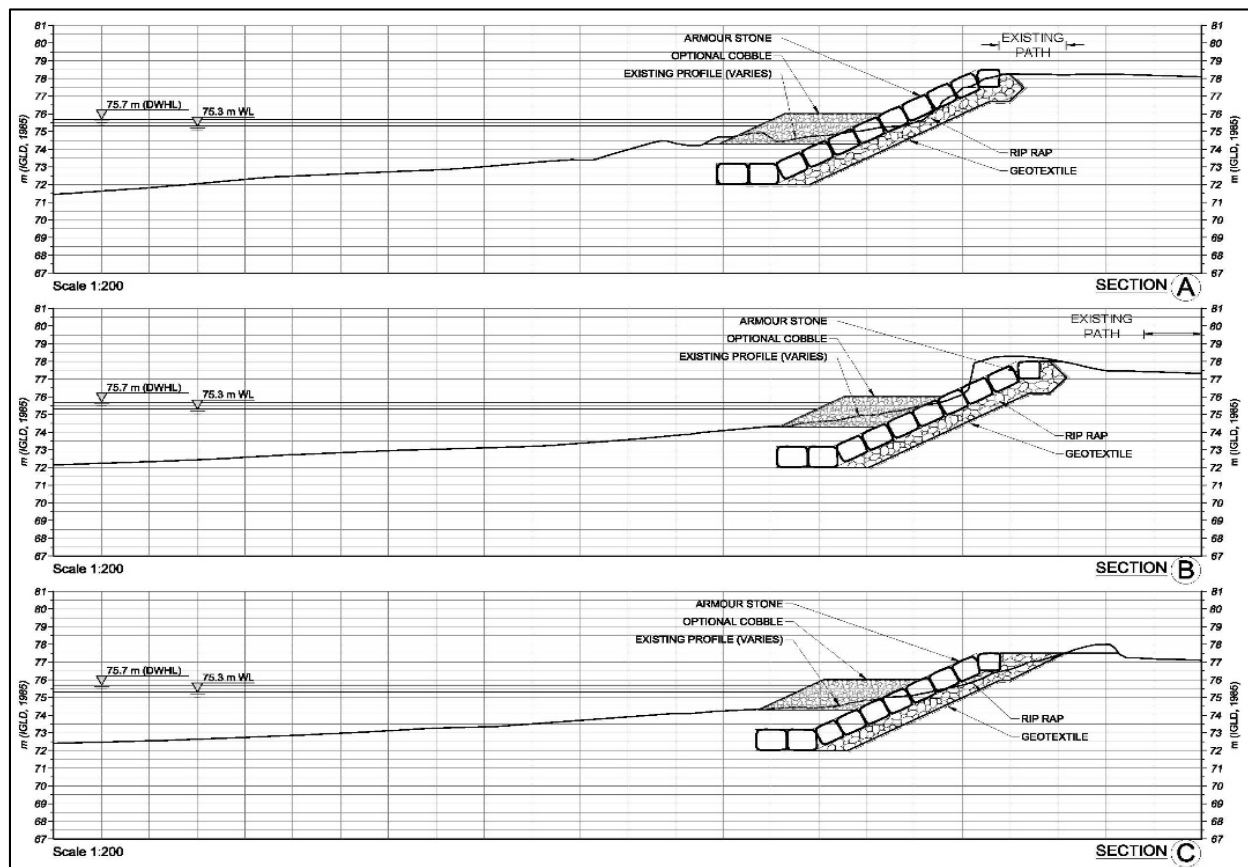


Figure 26. Concept design cross-sections for Option 2B - Armourstone Revetment. *Source: Shoreplan Engineering, 2017.*

4.1.6 Option 2C – Cobble Beach with Optional Shoal

Option 2C would involve the placement of cobble material along the shore to create a berm that protects the existing bank (**Figure 27** and **Figure 28**). The beach would provide dynamic protection that is capable of dissipating the energy of waves before they reach the shore. The waves would reshape the beach as needed, and the beach can be contained by an optional, but recommended, underwater shoal installed extending outward from the headland. Wave uprush during extreme storm events would be expected to occasionally deposit cobble from the beach on the backshore area, necessitating minor cleanup operations.

This option provides several opportunities for fish habitat enhancement to be incorporated into the design. Construction of the cobble beach could be undertaken using land or marine-based machinery. The optional shoal would be phased for construction in conjunction with implementation of headland works. This option would have a moderate capital cost and moderate maintenance cost.

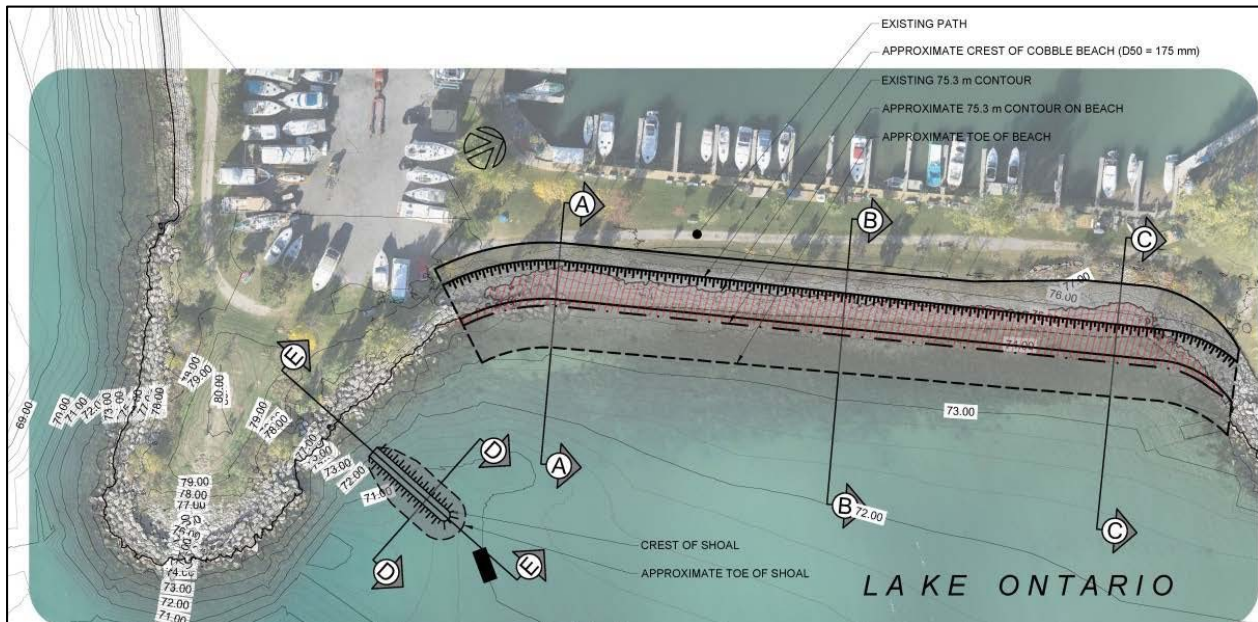


Figure 27. Concept design plan view for Option 2C - Cobble Beach with Optional Shoal. Source: Shoreplan Engineering, 2017.

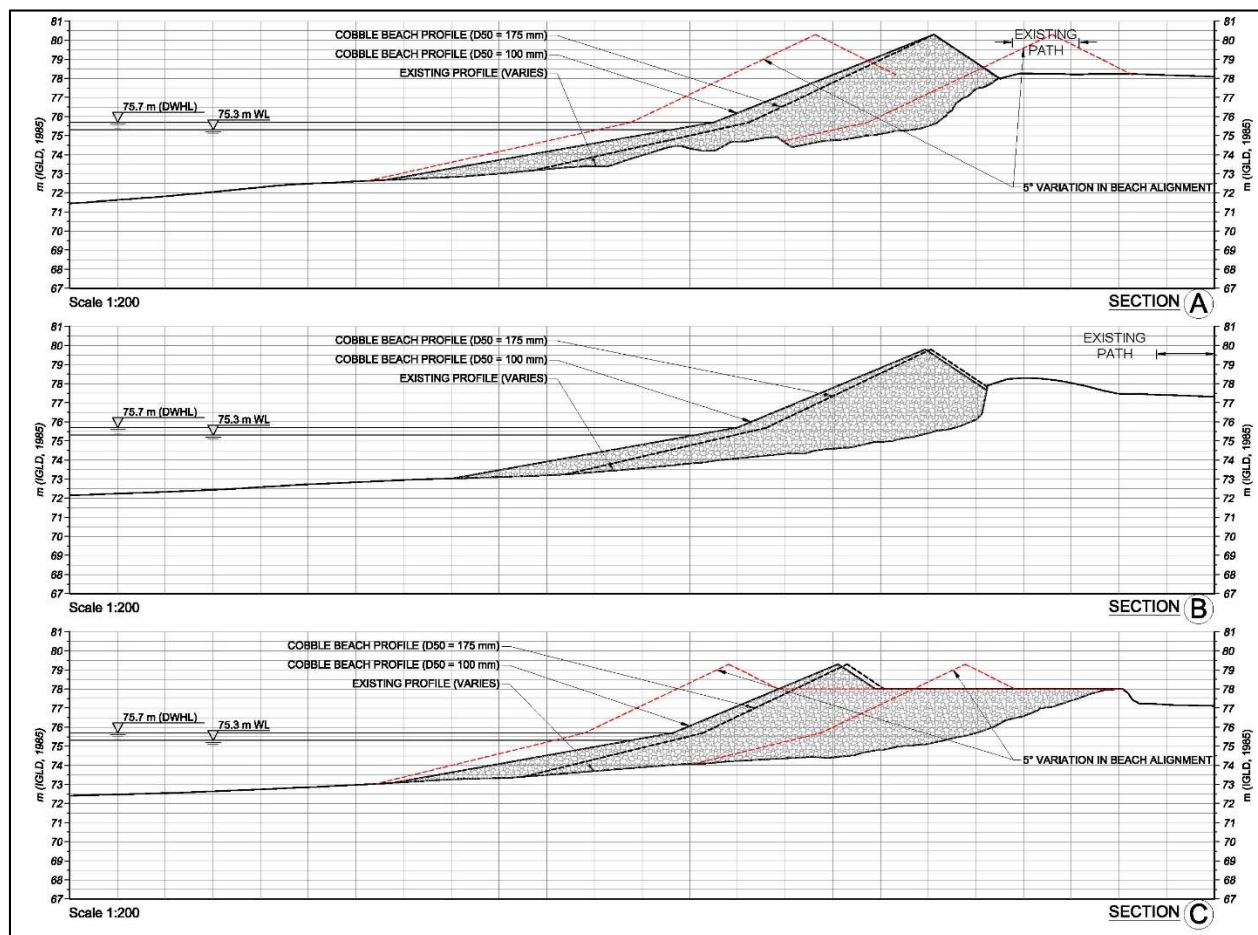


Figure 28. Concept design cross-sections for Option 2C - Cobble Beach with Optional Shoal. Source: Shoreplan Engineering 2017.

4.2 Evaluation of Preliminary Alternative Options

The following four general constraints were recommended during the evaluation process of the alternatives:

- a) the work will require permits and approvals from applicable regulatory bodies, including DFO;
- b) traffic and pedestrian volume on Brimley Road South must be considered, especially during the summer months. Trucks travelling down Brimley Road South must do so with extreme caution due to the steep grade, blind crests and corners, and lack of formal pedestrian areas;
- c) the work may require monitoring to ensure in-water works will be completed to avoid interference with spawning fish; and
- d) budgeting for the project necessitates that it must be phased so that the implementation of the beach portion of the project will occur in 2018 and the implementation of the headland portion of the project will occur in 2019.

To ensure that the proposed solution best meets the project objectives, fourteen evaluation criteria were considered in relation to physical, biological, cultural, social, economic and technical engineering elements. Each of the six preliminary concepts were evaluated with the criteria and the comparison is summarized in **Table 4**.

Table 4. Criteria for evaluation of preliminary concepts. *Source: TRCA, 2017.*

Criteria	Rationale
<i>Natural Environment</i>	
Aquatic Habitat	Alternatives that improve the quantity and quality of aquatic habitat are preferred.
Terrestrial Habitat	Alternatives that improve the quantity and quality of terrestrial habitat are preferred.
Vegetation	Alternatives that minimize tree and vegetation removal or preserve vegetation are preferred.
<i>Socio-cultural Environment</i>	
Pedestrian Access to the Waterfront	Alternatives that provide opportunities for pedestrian access to the waterfront and improve accessibility are preferred.
Aesthetics	Alternatives that provide a positive change to appearance are preferred.
Disturbance to Public During Construction	Alternatives that limit disturbance of public park usage are preferred.
<i>Economic Environment</i>	
Capital and Maintenance Costs	Alternatives with the least relative capital and maintenance costs are preferred.
Life Cycle	Alternatives with long life cycles are preferred.
<i>Technical and Engineering</i>	
Erosion Protection	Alternatives that provide stable slopes and reduce erosion are preferred.
Flood Protection	Alternatives that reduce flooding are preferred.

Land and Lake Bottom Requirements	Alternatives that can meet project objectives with minimal land and lake bottom occupation are preferred.
Agency Acceptance	Alternatives that have the potential to be approved under regulating Acts and permits from local, regional, and/or federal government are required.
Design	Alternatives that are standard designs are preferred.
Constructability	Alternatives that meet the objectives of the project with the least difficulty are preferred.

The options for the headland were evaluated using the chosen criteria. The results are presented in **Table 5**.

Table 5. Evaluation of alternatives for the headland options. *Source: TRCA, 2018.*

Criteria	Option 1A - Do Nothing	Option 1B - Reconstruct Headland	Option 1C - Repair Headland
<i>Natural Environment</i>			
Aquatic Habitat	No change	Loss of habitat between existing and proposed 75.3 m contour. Provides similar habitat as existing structure	Loss of habitat between existing and proposed 75.3 m contour. Provides similar habitat as existing structure
Terrestrial Habitat	No change	Similar to existing structure	Similar to existing structure
Vegetation	No change	Vegetation is expected to grow further out onto headland	Similar to existing structure, south end of headland protected on crest
<i>Socio-cultural Environment</i>			
Pedestrian Access to the Waterfront	No access to shore provided. Restricted access to headland due to unsafe conditions	No access to shore provided. Pedestrians will have access to the headland	No access to shore provided. Pedestrian will have access to headland, but this may be restricted during storm events
Appearance	No change to appearance, which is poor	Improved appearance. Higher crest elevation	Improved appearance. Same crest elevation
Disturbance to Public During Construction	No change	Significant disturbance to park users	Moderate disturbance to park users
<i>Economic Environment</i>			
Capital and Maintenance Costs	No capital expense, High maintenance cost due to storm damage	High capital expense, low maintenance costs	Moderate capital expense, Moderate maintenance cost; design anticipates some damage
Life Cycle	No remaining life	>30 year design life with maintenance	20 to 30 year design life with potential maintenance after extreme storm events
<i>Technical and Engineering</i>			
Erosion Protection	Some erosion protection	Provides erosion protection	Provides erosion protection

Criteria	Option 1A - Do Nothing	Option 1B - Reconstruct Headland	Option 1C - Repair Headland
Flood Protection	Structure is overtopped by wave action.	Overtopping by waves will occur, but higher crest elevation reduces amount	Overtopping by waves will occur. Protected backshore reduces damage
Land and Lake Bottom Requirements	No change	Reduces footprint on lake bottom	Same footprint on land, increased footprint on lake bottom
Agency Acceptance	No approval or permits required	Will require DFO Authorization	Unlikely to require DFO Authorization
Design	No design	Standard, well understood design	Standard, well understood design
Constructability	No construction activities	Marine based equipment required to excavate and place stones. Large armourstones placed by crane. Most challenging construction	Marine based equipment may be required to place stones at toe of slope. Long reach excavator can place stones. Least challenging construction

The options for the beach were evaluated using the chosen criteria. The results are presented in **Table 6**.

Table 6. Evaluation of alternatives for the beach options. *Source: TRCA, 2018.*

Criteria	Option 2A – Do Nothing	Option 2B – Armourstone Revetment	Option 2C – Cobble Beach with Optional Shoal
<i>Natural Environment</i>			
Aquatic Habitat	No change	Some loss of habitat between existing and proposed 75.3 m contour. Alters lake bottom below 75.3 m contour	Loss of habitat between existing and proposed 75.3 m contour. Alters lake bottom below 75.3 m contour. Structures provides similar habitat as existing beach
Terrestrial Habitat	No change	Some loss of terrestrial habitat because it is a steep sloped revetment	Similar to existing structure
Vegetation	No change	No change	Vegetation expected to grow on beach similar to east end of beach
<i>Socio-cultural Environment</i>			
Pedestrian Access to the Waterfront	Limited access to shore because of eroding bank. Existing pathway is vulnerable to erosion	No access to shore provided. Existing pathway is protected	Access to shore provided over cobble beach material. Existing pathway is protected but may be covered by cobble material after severe storm event
Appearance	No change to appearance	Improved appearance	Improved appearance

Criteria	Option 2A – Do Nothing	Option 2B – Armourstone Revetment	Option 2C – Cobble Beach with Optional Shoal
Disturbance to Public	No change	Moderate disturbance to park users	Minor disturbance to park users
<i>Economic Environment</i>			
Capital and Maintenance Costs	No capital expense, high maintenance cost due to storm damage	Moderate to high capital expense, low maintenance costs	Moderate capital expense, moderate maintenance cost
Life Cycle	No remaining life	>30 year design life with maintenance	>30 year design life with maintenance
<i>Technical and Engineering</i>			
Erosion Protection	No erosion protection	Provides erosion protection	Provides erosion protection. Waves will reshape structure
Flood Protection	No change	Wave spray anticipated	Wave spray anticipated
Land and Lake Bottom Requirements	No change	Same land and lake bottom as existing	Occupies larger lake bottom footprint
Agency Acceptance	No approval or permits required	Unlikely to require DFO Authorization	Unlikely to require DFO Authorization. Optional shoal will likely require approval under the Navigation Protection Act.
Design	No design	Standard, well understood design	Standard, well understood design
Constructability	No construction activities	Land based construction with typical equipment	Land-based or Marine-based delivery of material, land-based spreading of material using small machinery

Headland Options Summary

i. Option 1A: 'Do Nothing' Approach

This option will not improve erosion protection at the site and will require the headland to be closed off to the public. It will require costly ongoing maintenance and would likely require repair after any major storm.

ii. Option 1B: Reconstruct Headland

This option provides the greatest erosion protection for the headland and will require only minor ongoing maintenance, but will be extremely costly to implement, to the point of being prohibitive. The construction process will be the most challenging and time-consuming of the options, and have the greatest disturbance to park users.

iii. Option 1C: Repair Headland

This option provides adequate erosion protection and will only require moderate ongoing maintenance. The construction would be affordable, involve standard procedures and equipment, and could be completed within one year.

Beach Options Summary

i. Option 2A: 'Do Nothing' Approach

This option provides no erosion protection and would require large parts of the area above the backshore to be closed off to the public. Erosion would continue which would eventually result in a breach into the marina.

ii. Option 2B: Armourstone Revetment

This option provides adequate erosion control protection by absorbing the impact of incoming waves. The resulting structure would have a similar lake bottom footprint to the existing structure and would provide limited opportunities for the improvement of fish habitat. Implementation of this structure would not require DFO authorization under the Fisheries Act. The construction would be affordable, involve standard procedures and equipment, and could be completed within one year. Ongoing maintenance costs would be low.

iii. Option 2C: Cobble Beach with Optional Shoal

This option provides dynamic erosion control protection by dissipating the impact of incoming waves and allowing them to reshape the beach. The resulting structure would have a larger lake bottom footprint to the existing structure but would provide many opportunities for the improvement of fish habitat. Implementation will not require DFO authorization under the Fisheries Act, but the optional shoal will require authorization under the Navigation Protection Act. The construction would be affordable, involve standard procedures and equipment, and could be completed within one year. Much of the material could be quickly installed using marine equipment. This option would allow for greater access to the water and provides greater potential for establishment of vegetation when compared to the revetment option.

4.3 Selection of the Preferred Alternative Option

Headland Option 1C: Repair Headland

The results of the evaluation of alternatives for the headland led to the identification of Option 1C: Repair Headland as the preferred alternative for the Bluffer's Park Southwest Headland and Beach Major Maintenance Project. Option 1C was selected due to the relative ease of construction, lower cost, and reduced disturbance to park users. Option 1C will provide adequate erosion protection, though occasional maintenance may be required. Members of the Community Liaison Committee preferred this option due to the ability complete the construction phase in one season. Although Option 1B: Reconstruct Headland, would provide greater shoreline protection and have a higher crest elevation to prevent overtopping, it would have a significantly higher cost and construction would likely span multiple years. Further, Option 1A: 'Do Nothing' is not recommended as it will require closure of the headland and maintenance costs will be very high.

Beach Option 2C: Cobble Beach with Optional Shoal

The results of the evaluation of alternatives for the beach led to the identification of Option 2C: Cobble Beach with Optional Shoal as the preferred alternative for the Bluffer's Park Southwest Headland and Beach Major Maintenance Project. Option 2C was selected due to the ease of construction, the potential for the addition of fish habitat, and a more naturalized approach to erosion protection that allows wave energy to dissipate rather than be absorbed. The cost of 2C would be less than that of Option 2B: Armourstone Revetment. Option 2A: 'Do Nothing' is not recommended as it places the marina and its users at risk.

The selected alternatives meet the project objective of *Risk Mitigation* as identified in **Section 1.2**:

- 1) *Headland Option 1C: Repair Headland*: Current risk to public life and property arises primarily from continued erosion and instability of the headland. Option 1C: Repair Headland will address this risk by improving the stability of the structure, thereby mitigating continued erosion at the site.
- 2) *Beach Option 2C: Cobble Beach with Optional Shoal*: Current risk to public life and property arises primarily from continued erosion and undercutting of the backshore, as well as the possibility of a breach into the marina. The cobble beach will provide erosion protection, thereby removing instability of the site and greatly reducing risk to the public.

5 ENVIRONMENTAL SCREENING

5.1 Detailed Environmental Analysis of the Preferred Alternative Options

To complete the detailed environmental analysis of the preferred alternatives, the information collected for the baseline inventory is examined in greater detail to confirm potential impacts, refine methods of mitigation, and to identify any unforeseen impacts. The evaluation of impacts includes both temporary impacts during construction of the undertaking, and permanent impacts due to function and maintenance of the works after construction. **Table 7** evaluates the potential negative and positive effects of the proposed undertaking on the environment during construction and maintenance phases. It includes the consideration of the magnitude, geographic extent, duration, frequency, permanence or reversibility and ecological context of the effects, as well as proposed mitigation measures and any residual effects.

Environmental components that have been identified as potentially having an effect on the environment, both positive and negative, are discussed herein. Those that have been determined as not applicable (NA) as identified in **Section 3.0**, have been omitted from further discussion.

Screening of potential effects are considered to be negative (-), neutral (NIL) or positive (+) and are rated as relatively high (H), medium (M), low (L) or not applicable (NA). *Source: CO, 2013.*

Table 7. Detailed Environmental Analysis of the Preferred Alternatives: Option 1C – Repair Headland and Option 2C – Cobble Beach with Optional Shoal. *Source: TRCA, 2018.*

Rating of Potential Effects									
Screening Criteria	-H	-M	-L	NIL	+L	+M	+H	NA	Comments
Physical									
Unique Landforms				•					
Existing Mineral/Aggregate Resources Extraction Industries				•					
Earth Science - Areas of Natural and Scientific Interest				•					
Specialty Crop Areas								•	
Agricultural Lands or Production								•	
Niagara Escarpment								•	
Oak Ridges Moraine								•	
Environmentally Sensitive/Significant Areas (physical)				•					
Air Quality			•						There may be a temporary minor impact on local air quality due to the use of construction equipment.
Agricultural Tile or Surface Drains								•	
Noise Levels and Vibration			•						There will be a temporary increase in noise levels and vibration during construction, but no permanent effects.
High/Storm Water Flow Regime				•					
Low/Base Water Flow Regime				•					

Rating of Potential Effects									
Screening Criteria	-H	-M	-L	NIL	+L	+M	+H	NA	Comments
Existing Surface Drainage and Groundwater Seepage				•					
Groundwater Recharge/Discharge Zones				•					
Littoral Drift				•					
Other Coastal Processes (Wave Climate)				•					
Water Quality				•					All measures will be taken to mitigate construction related impacts to water quality.
Soil/Fill Quality				•					Only clean rock or aggregate material will be used in construction.
Contaminated Soils/Sediment/Seeps (Sediment Quality)				•					
Existing Transportation Routes			•						The optional shoal for the beach may have a minor impact on lake traffic and will require authorization under the Navigation Protection Act.
Constructed Crossings (e.g. bridges, culverts)								•	
Geomorphology				•					
Biological									
Wildlife Habitat			•						The construction process will have a minor temporary impact on wildlife habitat, as wildlife will not be able to use the nearshore area during construction.
Habitat Linkages or Corridors								•	
Significant Vegetation Communities								•	
Environmentally Sensitive/ Significant Areas (biological)				•					
Fish Habitat							•		The cobble beach option provides many opportunities for fish habitat enhancement and the existing habitat quality is low.
Species of Concern				•					
Exotic/Alien and Invasive Species				•					
Wildlife/Bird Migration Patterns				•					Short-term disruption only during construction.
Wildlife Population				•					Short-term disruption only during construction.
Wetlands				•					
Microclimate				•					
Unique Habitats				•					Short-term disruption only during construction.
Life Science - Areas of Natural and Scientific Interest				•					

Rating of Potential Effects									
Screening Criteria	-H	-M	-L	NIL	+L	+M	+H	NA	Comments
Cultural									
Traditional Land Uses								•	
Aboriginal Reserve or Community								•	
Outstanding Native Land Claim								•	
Transboundary Water Management Issues								•	
Riparian Uses			•						The construction process may have a temporary impact on marina boat launches.
Recreational/Tourist Uses of Water Body and/or Adjacent Land				•					
Recreational/Tourist Uses of Existing Shoreline Access							•		Cobble beach will provide access to shoreline
Aesthetic or Scenic Landscapes or Views				•					
Culturally Significant Resources								•	
Historic Canals								•	
Federal Property						•			The project will increase the stability of the DFO-owned headland.
Heritage River System								•	
Socioeconomic									
Surrounding Neighbourhood or Community				•					
Surrounding Land Uses or Growth Pressure				•					
Existing Infrastructure, Support Services, Facilities						•			The repair of the beach will reduce the risk of Bluffer's Park Marina needing to shut down due to a breach.
Pedestrian Traffic Routes							•		Maintenance works will reduce erosion risk to park trail and pedestrians
Property Values or Ownership				•					
Existing Tourism Operations								•	
Property/Farm Accessibility								•	
Engineering/Technical									
Rate of Erosion in Ecosystem							•		The project will greatly reduce erosion rates within the Project Area.
Sediment Deposition Zones in Ecosystem				•					
Flood Risk in Ecosystem					•				The increase in stability of the structures will help mitigate flood risk.
Slope Stability								•	
Existing Structures							•		The project will increase the longevity and reduce

Rating of Potential Effects									
Screening Criteria	-H	-M	-L	NIL	+L	+M	+H	NA	Comments
									maintenance costs of existing erosion control structures.
Hazardous Lands/Hazardous Sites								•	
Other Engineering Projects at this Location								•	No other Engineering Projects have been concurrently undertaken at this location.

6 SUMMARY

This section of the Project Plan provides a summary of comments received during the planning and design phases of the Project, a discussion of how these concerns have been addressed, and an outline of the monitoring program once the Project is complete.

Documents related to public outreach component of this project including all published notices, meeting materials and minutes, and comment forms are included in **Appendix D**.

6.1 Public Notifications and Consultation

In accordance with the Class EA process, the first point of public contact occurred with the publication of the Notice of Intent (NOI), which was published in the October 26, 2017 edition of the Scarborough Mirror and the November issue of the Bluffs Monitor. The NOI was also published on the TRCA website.

Notices were sent to the following individuals, agencies or organizations:

City Councillor Gary Crawford, Ward 36
Michelle Reid, Parks General Supervisor, City of Toronto
Andrew Gothard, Parks Supervisor, City of Toronto
James Dann, Parks Manager, City of Toronto
Member of Parliament Bill Blair, Scarborough Southwest
Member of Provincial Parliament Lorenzo Berardinetti, Scarborough Southwest
Conservation Ontario
Ontario Ministry of the Environment and Climate Change
Toronto Float Home Association
Bluffer's Park Marina

The NOI requested that individuals contact the Project Manager, Jet Taylor, if they wished to participate further in the EA process or be kept informed about the Project's status.

A summary of the individuals and community groups that expressed interest in the Project after distribution of the NOI is summarized in **Appendix D**.

6.1.1 Role of the Community Liaison Committee (CLC)

This project aligns with the following excerpt from CO's Class EA document:

"In an effort to facilitate more on-going public involvement at the project level, the Conservation Authority shall, based on its contact group mailing lists and expressions of interest from the local landowners, members of the general public, interest groups, or agencies, establish a Community Liaison Committee (CLC) to assist the Authority by obtaining additional public input concerning the planning and design process of an individual flood and/or erosion control project, and to review information and provide input to the Conservation Authority throughout the process. The Conservation Authority shall strive to ensure that the membership of the CLC is

representative of all views respecting a proposed remedial and erosion control project.

As the name implies, the function of the CLC, in the Class EA process, will be to assist the Conservation Authority to reach out and maintain contact with community residents, groups, associations and organizations. The CLC will provide direct input into the process. At the end of the process, the entire committee will have been exposed to the entire process, will have understood how decisions have been reached and will have had their questions answered during the process.

To fulfill its function, the CLC will:

- Identify items of public concern with regard to the impact and design of proposed erosion control alternatives;*
- Provide direct input on these concerns to the Conservation Authority to be utilized throughout the planning and design process;*
- Co-host, with Authority Staff, meetings organized by the Authority to facilitate the resolution of concerns relating to a proposed remedial work;*
- Review any Part II Order Requests made by members of the public and attempt to resolve the issues of concern between the Part II Order requesters and the Conservation Authority before the request gets referred to the Minister of the Environment for a decision; and*
- Where appropriate, submit an assessment to the Conservation Authority, upon project completion, commenting on the effectiveness of the Class EA process for meeting public concerns for the specific project, and where relevant, identify possible improvements (CO, 2013)."*

6.1.2 CLC Meeting #1

A CLC meeting was held on December 7, 2017. The meeting was attended by staff of Bluffer's Park Marina, members of the Toronto Float Home Association, TRCA staff, and staff from Shoreplan Engineering. TRCA staff presented the background of the project and Shoreplan staff outlined the alternative designs for repairs. The evaluation criteria for the alternative design selection process were laid out and CLC members were asked to provide input on what the preferred alternative would be. Attendees were provided with comments sheets to be submitted by December 21, 2017.

During the meeting and on the comment sheets, CLC members expressed preferences for options that could be implemented in a cost-effective and timely manner. Option 1C, the "Repair" option for the headland, was preferred because the cost was reasonable and the

construction could likely be completed within one year. Option 2B, the “Revetment” option for the beach, was preferred because it was unlikely to require DFO authorization, thereby allowing the construction of the beach to be completed in 2018. It was noted however, that Option 2C, the “Cobble Beach with Optional Shoal”, was also viable if it could proceed without the need for DFO authorization. All members of the CLC expressed a desire for some land reclamation to regain area that was lost as the backshore of the beach eroded. Land reclamation is not part of any of the alternative designs.

Documentation related to the CLC meeting is contained in **Appendix D**.

6.1.3 CLC Comments on Cobble Beach Option

TRCA consulted with DFO regarding the requirement of authorization for Option 2C, the “Cobble Beach with Optional Shoal.” In April 2018, DFO issued a Letter of Advice for the Project using this option. During CLC Meeting #1, committee members selected Option 2B, the “Revetment” as the preferred option due to the possible requirement for authorization of the cobble beach option, which would greatly extend the timeline of the project. Once it became clear the Cobble Beach would not require authorization, members of the CLC were informed of this and that TRCA considers the Cobble Beach to be the preferred option. Each member of the CLC indicated that they had no issue with TRCA proceeding with this option.

6.1.4 Notice of Filing and Notice of Project Approval

As per the requirements of the Class EA document, the Project Plan shall be filed and made available at TRCA’s Head Office and a local public library for the duration of the thirty (30) day review period. The Project Plan shall be circulated digitally to the formal CLC list and hard copies will be provided upon request.

Following the 30 day review period of this Class EA report and the successful resolution of any concerns received during the review period, TRCA intends to finalize the detailed design of the preferred solution and obtain the necessary approvals to proceed with the implementation phase of the preferred alternative.

A Notice of Project Approval and a Notice of Project Completion shall be sent to all parties who expressed an interest in the Project, in addition to Conservation Ontario and the MOECC.

6.1.5 First Nation and Indigenous Community Consultation

Prior to the delivery of any notifications, Indigenous and Northern Affairs Canada (INAC) and the Ministry of Indigenous Relations and Reconciliation (MIRR) were consulted for advice and information on the Indigenous communities that should be contacted during the Indigenous Consultation process. Additional Indigenous community contact lists were also considered, including the lists held by the City of Toronto and TRCA. The following Communities that have established or asserted rights and interests in the Project limits were contacted:

- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama-Mnjikaning First Nation
- Conseil de la Nation Huronne-Wendat
- Coordinator of Williams Treaty Nations

- Curve Lake First Nations
- Hiawatha First Nation
- Mississaugas of Alderville First Nation
- Mississaugas of Scugog Island First Nation
- Mississaugas of the New Credit First Nation

A notification package was sent on October 27, 2017 to the identified First Nations and Metis communities to inform them of the initiation of the Project. Any interested communities were invited to contact Kathryn Brown, Archaeologist and Indigenous Engagement Coordinator at TRCA. Follow-up emails and calls were conducted on November 17, 2017 to confirm reception of the notification package.

Two First Nation groups inquired about the archaeological potential of the site and were informed that there is no potential. They were provided with a copy of the Scarborough Waterfront Project Archaeology Report. No other First Nations groups expressed interest in the site.

A full record of Indigenous community consultation including copies of all correspondence can be found in the Record of Indigenous Engagement for Bluffer's Park Southwest Headland and Beach Major Maintenance Project (April 17, 2018) in **Appendix D**.

6.2 Monitoring Program

As the work is proposed to be constructed utilizing TRCA staff, regular monitoring by trained TRCA professionals will be conducted from the Project Management group, as well as Construction Services to ensure that all best management practices (BMPs) are being used to avoid or minimize disturbance to the environment.

Once the construction of the works is deemed complete, regular inspections will be completed by staff through TRCA's long-standing ERMP to ensure the works are performing as expected. These inspections will flag any maintenance that may be required so it can be scheduled and carried out in a timely manner. The erosion control structure shall be included in TRCA's Stream, Erosion and Infrastructure Database (SEID) where construction specifications, photos, and structure condition will be documented. Visual inspections will be completed following major storm events for a period of 1 year. Site inspections will be conducted annually until a period of 5 years has passed, after which time inspections will be adjusted to an appropriate frequency depending on structure condition. Copies of these inspection reports can be provided to parties of interest upon formal request to TRCA's Engineering Projects group.

If a significant deviation from expected performance is noted during a visual inspection, additional surveys will be undertaken immediately. If a survey detects a significant deviation from expected performance, then maintenance will be planned and implemented on a priority basis to the limit of available funding each year.

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Member of Conservation Ontario

**BLUFFER'S PARK SOUTHWEST HEADLAND AND BEACH MAJOR MAINTENANCE
PROJECT**

CITY OF TORONTO

CLASS ENVIRONMENTAL ASSESSMENT FOR REMEDIAL FLOOD AND EROSION
CONTROL PROJECTS (AMENDED 2013)

PROJECT PLAN

MAY 3, 2018

For digital copies of Appendices A, B, C, & D, please contact:

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