# Don Mouth Naturalization and Port Lands Flood Protection Project

Amendedment To The March 2014 Environmental Assessment Report (EA 03 03 02)

April 2021









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## **Executive Summary**

The Port Lands Flood Protection (PLFP) Project is currently being pursued with a phased design and construction implementation process to meet requirements defined in a Delivery Agreement (DA) between Waterfront Toronto and the three levels of government. The Project includes the delivery of components defined in:

- The Don Mouth Naturalization Project (DMNP) Environmental Assessment (EA),
- The Lower Don Lands (LDL) Master Plan EA, and
- The Gardiner Expressway and Lake Shore Boulevard East Reconfiguration (Gardiner East) EA (to be added through a separate DA with the City per Council direction provided in December 2020).

As detailed design has progressed in alignment with the governing Environmental Assessments, the Co-proponent Team, which includes Toronto and Region Conservation Authority (TRCA), City of Toronto, and Waterfront Toronto, identified some minor changes from the preferred alternative presented in the DMNP and Gardiner East EAs and the design to be constructed. This document has been developed to specifically formalize the Amendment to the DMNP EA for the identified design changes in accordance with the amendment process detailed in Chapter 9 of the EA and Conditions 6.1 and 6.2 from the MECP Conditions of Approval.

Changed baseline conditions, value engineering initiatives, and risk mitigation measures have informed the detailed design process to date. The Proposed Modifications to the design for the DMNP EA are for Reach 1 (the area north of and including the Lakeshore Bridge) and the construction phasing. Modifications include:

#### Reach 1 – Hydraulic Modifications (in vicinity of the Lake Shore Bridge):

- Four-bay Lake Shore Bridge and upstream sediment trap configuration
- HONI utility bridge across Don River (to remain)
- Flow diversion structures (Adjustable and fixed sideflow weir to detachable flow curtain)

#### **Revised Phasing Approach to DMNP:**

- Overall PLFP construction phasing approach
- Interim sediment management area
- Keating Channel revetment

The Co-proponent Team has reviewed each of the Proposed Modifications and used the approved EA's Amendment Process, including an Effects Assessment and Screening Criteria to determine that the modifications should be classified as Minor.

## 1. Introduction

## 1.1 Project Background - DMNP EA

The Don Mouth Naturalization and Port Lands Flood Protection Project (DMNP) Environmental Assessment (EA) was completed by Toronto and Region Conservation Authority (TRCA) in 2014 on behalf of and in co-operation with Waterfront Toronto (WT) and the City of Toronto (the City). The DMNP project will ultimately transform the existing mouth of the Don River ("the Don Mouth") including the Keating Channel, into a healthier, more naturalized river outlet to the Toronto Inner Harbour and Lake Ontario, and remove the risk of flooding on the lands. This project is a key component of Waterfront Toronto and the City of Toronto's plans to renew and revitalize Toronto's waterfront. It is a precedent-setting project which will allow development in the Lower Don Lands.

The Preferred Alternative for the DMNP EA includes a new three outlet river valley system that incorporates the Keating Channel combined with two new naturalized valley sections developed through a combination of cut and fill. The Keating Channel remains as the primary conveyance channel for large flood events but will act as a formalized public water feature along the north side of the future Villiers Island. The primary naturalization valley segment includes a low-flow river channel that flows south and then west into the Inner Harbour, with an approximate location halfway between the Ship Channel and the Keating Channel. The river valley system will be stabilized to prevent erosion and movement and with a second naturalized valley segment that includes an overflow wetland spillway to the south along the Don Roadway before discharging into the Ship Channel. Figure A-1 provides an overview of the preferred alternative.



Figure A-1. Conceptual Design for the DMNP



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A Notice of Approval to Proceed with the Undertaking for the DMNP EA (EA 03 03 02) was provided to TRCA, the City, and WT on January 28, 2015, based on the March 2014-dated version of the EA. A copy of the Notice of Approval to Proceed is included in Appendix A. The approved EA, including individual Chapters and Appendices can be accessed at the below link:

#### https://trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/donmouth-environmental-assessment/

## 1.2 Project Background - Port Lands Flood Protection and Enabling Infrastructure

The Port Lands Flood Protection (PLFP) Project, led by Waterfront Toronto, represents the amalgamation and simultaneous pursuit of Objectives defined in the DMNP EA (approved in 2014) and the Lower Don Lands Environmental Assessment (LDL EA) Master Plan (approved in 2010 with Addendum approved in 2014). While the DMNP EA focused on flood protection and naturalization, the LDL EA Master Plan identified the location and types of roads, bridges, servicing, and transit infrastructure that would be required in the Lower Don Lands area to support development. Although the scopes for each EA differed, their geographic areas overlapped. The PLFP Project merged both projects together for detailed design and construction which created benefits in optimizing design, constructability, and schedule of the individual initiatives. Figures A.2 and A.3 provide Study Areas used for each EA.

In December 2020, some scope from the Gardiner East EA was added to the PLFP Project. The added scope includes demolition of the Gardiner Expressway from the Don River to Logan Avenue, widening of the Lake Shore / Don River Bridge, and rebuilding Lake Shore Boulevard east of the Don River. These components were added to PLFP to optimize design and construction efforts. Figure A.4 provides a Study area used for the Gardiner East EA.

This document focuses on Proposed Modifications within the DMNP EA only.



Figure A-2. DMNP EA Study Area





Amendment #1



Figure A-3. LDL EA MP Study Area





## **1.3 DMNP EA Amendment Process**

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Conservation

The DMNP EA describes, in Section 9.2 – DMNP Approach to Post EA Modifications, the process by which changes incurred through adaptive monitoring, detailed design and construction phasing will be documented and subject to the appropriate level of review and approval. When a need to modify the project is identified, an internal effects assessment is conducted by the Co-proponents to assess the impact of the modifications on environmental components (as predicted in the EA). When project modifications are identified, the Co-proponents will prepare a



technical memorandum to document the proposed modifications and their potential effects. This will form the basis from which the magnitude (i.e., minor or major) of the proposed modifications can be determined. The technical memorandum will include the following information:

1. The need for modifications (e.g., new information from the monitoring program, funding changes, etc.);

2. A description of the design and functions;

3. A description of the proposed modifications;

4. An assessment of how modifications will affect project outcomes (not applicable for this amendment);

5. An assessment of the predicted effects on the environment;

6. A comparison of the anticipated effects of the proposed modifications to the effects predicted from the original design; and,

7. A conclusion on the magnitude of the proposed modification (minor or major).

The technical memorandum will assess the magnitude of the proposed change in relation to the predicted effects outlined in the EA by screening the proposed modifications against the set of criteria shown in Figure A-5. If the proposed modification does not change or reduces the environmental effects identified in the EA, then the modification will be considered minor and will not trigger any further action. Where there is the potential to increase negative environmental effects identified in the EA, then the modification may be considered major and the appropriate regulatory body will determine the need for any additional regulatory requirements.

In addition, Condition 6.1 of the MECP Conditions of Approval for the DMNP, states that changes in the design of the undertaking that result in no new net effects shall also be considered minor amendments. And, that in such cases, the proponents will be required to provide an Addendum to the Ministry to document the change and demonstrate there are no new net effects. Thus, proposed modifications both with and without any new or changed net effect implications can be considered minor.

Further, Condition 6.2 (of the Conditions of Approval) allows the Co-proponents to meet with the Ministry about whether any minor changes can be permitted without an amendment. The Co-proponents met with MECP on March 5, 2021 and, per MECP direction, are proceeding with the submission of a Technical Memo to formally amend the proposed modifications later described in this document.

The screening criteria included in the EA have been reviewed by TRCA, WT and the City and determined to be sufficient; Figure A-5.





Does the change alter the spatial extent of the floodplain, may be affected?	spillway or low flow channel such that flood conveyance
YES – TRCA, in consultation with regulators, will determine if further regulatory action is required	NO – proceed if all other screening criteria are met.
Does the change alter the type of crossing of the floodplai may be affected?	in, spillway or low flow channel such that flood conveyance
YES – TRCA, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
Does the change reduce the spatial extent of the naturaliz	ed area?
YES – Co-proponents, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
Does the change reduce the anticipated quality and / or fu	nction of the naturalized area?
YES – Co-proponents, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
Does the change adversely affect the function of river mai	nagement controls?
YES – Co-proponents, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
Does the change affect a condition of approval of the EA o	or any other approval or permit?
YES – Co-proponents, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
For modifications to construction activities (including pha interim uses such as businesses and recreational users a were not assessed in the EA?	ising), is the change likely to cause nuisance effects to nd / or permanent uses such as future area residents that
YES – Co-proponents, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
For modifications to sediment, debris and ice managemen technology that is used), is the change likely to cause nuis recreational users and / or permanent uses such as future	nt activities during establishment (including changes to the sance effects to interim uses such as businesses and e area residents that were not assessed in the EA?
YES – TRCA, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.
Is the change likely to result in adverse effects related to i Harbour?	ncreased turbidity within the Keating Channel or Inner
YES – Co-proponents, in consultation with regulators, will determine if further regulatory action is required.	NO – proceed if all other screening criteria are met.

#### Figure A-5. Screening Criteria for Post EA Modification (Table 9-1 in EA)

## **1.4 Current Status of the PLFP Project**

The PLFP Project is currently within a phased design and construction implementation process to meet requirements defined in a Delivery Agreement (DA) between Waterfront Toronto and the three levels of government. The DA requires substantial completion of all works to be achieved for all PLFP Project components by March 31, 2024.

Figure A-6 shows a recent aerial photo of the site (February 2021). Design for all components pertaining to the DMNP has either begun or been completed. Similarly, construction is underway and the following major components, pertaining to the DMNP, are advancing or completed:

• Essroc Quay Lakefill component (also known as the Cherry Street Lakefill Project) was completed in 2019;



- River valley and Ship Channel Spillway areas are under construction from Polson slip to Ship Channel wetlands;
- Cherry Street and Commissioners Street Bridges are either delivered or are in construction; and
- Soil and groundwater management systems were implemented as per the Community Based Risk Assessment for the Port Lands, as developed in consultation with MECP during Detailed Design.



Figure A-6. Site Condition (Drone Photo February 2021)

## 2. Update to the Existing Conditions

## 2.1 Original Conditions and Assumptions

Chapter 3 - Description of the Potentially Affected Environment, of the approved EA, details the existing (preconstruction) physical environment within the DMNP EA Study Area (Figure A-2). Since approval of the EA in 2014, monitoring of the physical environment has confirmed all previous baseline information however, the regulatory flow and lake levels have been updated, changes have been made to adjacent projects, and changes to the funding and construction phasing have occurred. These changes are detailed in the sections that follow.

### 2.1.1 Hydraulics / Hydrology Regulatory Flood Flow

The approved EA used TRCA's Hydrological Model, that was developed for the Don River watershed in 2003, to determine the hydrograph for the Regulatory Flood at the Don Mouth. At the time, the model calculated the volume of a Regulatory Flood to be 1,694 m<sup>3</sup>/s. The resulting hydrograph was then used as an input to the Delft 3D model to determine the extent of flooding during a Regulatory event under existing conditions and used to test the Preferred Alternative was able to convey the Regulatory Flood into the Inner Harbour.

Typically, TRCA updates their watershed hydrological models every 10 years or so, to reflect changes in land use within a watershed, improvements in spatial data collection and analysis, and advancements in hydrological modeling and computing capabilities. In 2018, TRCA completed their review of the hydrological model for the Don Watershed. As a result of this work, volume of the Regulatory Flood for the Project Area was revised to 1,560m<sup>3</sup>/sec.

A Delft 3D hydrodynamic model was used in the DMNP EA to determine the extent of flooding during a Regulatory event and to test the preferred alternative. The model uses a curvilinear grid system, which, at the time of the EA, was suitable for the shoreline boundary conditions in a meandering river system as found in the preferred alternative for this project. Since EA approval, TRCA has adopted a new model software: MIKE 21. Combined with much more powerful computing systems, MIKE21 allows for a significant increase in model resolution to test smaller-scale infrastructure influences on overall flow behaviour, that were not available to the team during the earlier EA period. The use of the MIKE 21 model during detailed design, coupled with the revised volume of the Regulatory Flood has enabled project designers to make many of the modifications documented herein.

### 2.1.2 Lake Ontario High Water Levels

The approved EA stated that there is little gradient at the south end of the Don River, which means that water levels under normal, or low flow, conditions, are influenced more by the lake than by the river. For the purposes of hydraulic modeling, the team assumed a lake level of 75.2 metres above sea level (mASL), which was moderately higher than the average annual lake level condition for Lake Ontario. At the time the DMNP EA was written (2010), the 100-year high lake level condition was identified as 75.7m IGLD85.

Since approval of the DMNP EA, Lake Ontario has experienced two record setting high lake levels in 2017 and 2019. As such, TRCA undertook two separate studies, one following each record high lake level condition to recalculate flood frequency curves for Lake Ontario. As a result, the 100-year high lake level condition was recalculated as 76.05 m IGLD85 (Baird 2019a; report provided in Appendix B1), and then later as 76.20 m IGLD85 (Baird 2019b; report provided in Appendix B1), report high lake level condition did not require modifications to the overall design or functioning of the DMNP EA.



### 2.1.3 Ecological and Water Quality Monitoring

A comprehensive monitoring program has been a critical element of the DMNP from pre-design through to postestablishment. The monitoring program is carried out throughout the life of the project and consists of EA compliance monitoring, baseline conditions monitoring and environmental performance monitoring. Fish, water temperature, and sediment have been continually monitored throughout the design and construction. Annual updates have been provided via the DMNP EA Annual Compliance Reports. At this time, there are no significant changes to the baseline ecological or water quality conditions from the approved EA.

## 2.2 Adjacent Projects and Planning

One of the seven Objectives of the DMNP EA is to successfully co-ordinate design and construction with adjacent planning initiatives. At the time the EA was approved in 2014, available information on adjacent projects was used to highlight coordination efforts. Since approval, several projects in proximity to the PLFP Project have advanced in planning, design, and construction. Changes to adjacent projects have influenced the detailed design and construction work undertaken for the PLFP project as detailed below.

### 2.2.1 Cherry Street Lake Filling

The Cherry Street Lake Filling Project was completed in 2019. The project delivered new aquatic habitat at the west extent of the Keating Channel via a habitat cove (North cove), a connecting shoreline, and a second cove facing the Inner Harbour (West cove) which is protected by a carp gate. None of the habitat features (coves or shoreline) were considered in the DMNP EA. A separate Fisheries and Oceans Canada (DFO) Authorization was granted to construct the project. The implementation of the Cherry Street Lake Filling Project represents the early establishment of additional improvements to existing aquatic habitat and the creation of new wetland habitat within the PLFP Project area. The habitat coves also resulted in the reduction to the total amount of aquatic habitat that was permanently lost due to lake filling. The Cherry Street Lake Filling Project provided approximately 12,300 m<sup>2</sup> of new habitat within the Keating Channel / Inner Harbour.

Figure A-7 shows the current condition of the Cherry Street Lake Filling site. The photo was taken by a drone in September 2020. The internal channel in the lakefill area is a temporary feature to enable conveyance of stormwater flows until the connecting storm sewers can be rediverted.







Figure A-7. Completed Cherry Street Lake Filling Project (looking east)

### 2.2.2 Gardiner Expressway and Lake Shore Boulevard East Reconfiguration EA

WT and the City jointly completed an EA study to determine the future of the elevated Gardiner Expressway and Lake Shore Boulevard East from approximately Lower Jarvis Street to approximately Leslie Street. The EA study was undertaken in a manner that fully integrated environmental, technical, and urban design considerations. The Gardiner East EA was executed with the goals of revitalizing the waterfront, reconnecting the City with the Lake, balancing modes of travel, achieving sustainability, and creating value. During its development, the Gardiner East EA acknowledged the DMNP EA and included considerations for their coordinated implementation, specifically for the design of the alternatives (for the realigned Gardiner) in regard to Don River crossing locations for both the elevated expressway and for Lake Shore Boulevard.

The Gardiner East EA identified a preferred alignment for the Gardiner Expressway. The Gardiner's future alignment will dictate pier locations within its footprint and within the Don River. During detailed design for the Sediment and Debris Management Area (SDMA) of the DMNP EA, it was determined that the proposed construction of the full SDMA with the existing Gardiner ramps to DVP in place, caused significant challenges from a ramp stability and constructability perspective. This component of the Gardiner East EA, the realignment of the expressway and its ramps to and from the Don Valley Parkway, must be closely coordinated with the layout of the future SDMA.



### 2.2.3 Broadview Eastern Flood Protection EA

The Broadview Eastern Flood Protection (BEFP) Class EA is anticipated to be submitted for the mandated 30-day agency and public review in April 2021. This EA focuses on eliminating flood risk from the Don River for 8 hectares of land east of the river and north of the Metrolinx rail embankment that would remain vulnerable to flooding following the implementation of the DMNP EA and the City's Port Lands and South of Eastern Transportation and Servicing Master Plan (TSMP; 2017). Once approved, and implemented, the preferred alternative identified in the BEFP will eliminate the need for the grading solution at the Eastern Avenue underpass from the DMNP EA, and the Broadview Extension Flood Protection Landform from the City's TSMP. Figure A-8 provides an overview of the BEFP EA Study Area.



Figure A-8. Broadview Eastern EA Study Area

#### 2.2.4 Rail Projects

Several rail projects within the DMNP EA Study Area have been introduced and advanced, since 2014. The Projects include the East Harbour Station, Union Station Rail Corridor Improvements, an Electrification Transit Project Assessment for the Union Station Rail Corridor, the Ontario Line, and the possible decommissioning of the Keating Rail spur line into the Port Lands. Pending the outcome of the Gardiner East EA Amendment process, there may also be realignment of the Harbour Lead rail spur between the Don Roadway and Carlaw Avenue. Rail projects in the vicinity of the PLFP Project are being closely coordinated amongst project teams.

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### 2.2.5 East Harbour Precinct

Design within the Cadillac Fairview East Harbour Precinct and subdivision planning is advancing, including preliminary designs for a flood protection landform (FPL) along the Don Roadway, which was identified in the DMNP EA. The EA Co-proponents are coordinating closely with Cadillac Fairview's infrastructure planning and design, including the FPL, to ensure coordination in the overall PLFP Project.

#### 2.2.6 Coxwell Bypass Tunnel

The Coxwell Bypass Tunnel is the first of three planned phases for the 22 km Don River and Central Waterfront Wet Weather Flow System by the City of Toronto. This initiative will keep combined sewer overflows (CSO) out of waterways within the City. Construction of the tunnel has begun and is coordinated with the PLFP Project. The DMNP EA identified a potential CSO access shaft in the future SDMA within the onshore section, to the west of the Don River. The City has since determined that an access shaft in the SDMA is not required, instead there will be two access shafts on the east side of the river, north of Lake Shore Boulevard.

### 2.2.7 Funding Approach

The DMNP EA was executed on the basis that it would be constructed in phases, funded by the release of incremental development fees retrieved from expansion within the Villiers Island and Keating Channel Precincts. This funding / construction strategy was assumed to take approximately 20-30 years to fully implement, starting in 2014 and ending between 2034-2044. That funding (and resulting phasing) approach was not pursued following the approvals of the DMNP EA in 2014. Instead, a Contribution Agreement between Waterfront Toronto and the three levels of government was executed to provide upfront funding for the PLFP Project, as opposed to incrementally generated funds. The resultant design and construction timeline have been compressed from 20 - 30 years to approximately seven years (2018-2024).

## 3. Description of and Rationale for Proposed Modifications

The PLFP Project is being pursued with a phased design and construction implementation approach. This approach makes use of the best available information to inform design of project components. <u>Section 2, Update to the Existing</u> <u>Conditions</u>, provides critical information updates necessary to advance the design process. This updated information has been used to adjust the design of certain components within the DMNP EA while maintaining (or enhancing) the project's ability to fulfill Objectives. These design changes, per the approved EA, will be referred to as Proposed Modifications throughout this document.

For the purpose of describing different areas of the river within the DMNP EA, the valley design has been broken into four reaches (Reaches 1 to 4) and two sub-reaches (Reaches 2a and 3a), describing the Keating Channel and the Greenway respectively, as illustrated in Figure A-9.



Figure A-9. Don River Reaches (per DMNP EA)



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## 3.1 Reach 1 – Hydraulic Modifications

The DMNP EA provides that the final layout of the SDMA and final configuration, size, and depth of the sediment trap will be determined during detailed design (pages 6-20 and 2-1). The Detailed Design of components within Reach 1 (between the Don Narrows and Lake Shore Boulevard) and Reach 2a (within the Keating Channel) is nearing completion. Through the design, constructability, and value engineering process, some of these components have been subject to modifications from the defined parameters in the DMNP EA.

The EA provided a list of components within Reach 1 and the east end of Reach 2a. These components are listed in the table (included within Figure A-10). Components in red font are the ones to which modifications are proposed.

The plan in the middle of Figure A-10 was provided in the EA as a conceptual design for the SDMA. The Proposed Modifications are within the plan on the right side of Figure A-10, with changed components in red bubbles. The Proposed Modifications within Reach 1 pertain to the following components:

- Potential Sediment Trap Extension (represented by bubble #2)
- Adjustable Upstream Weir and Sideflow Weir (represented by bubbles #10 and #11, respectively)
- Lengthening of the Lake Shore Boulevard Bridge (represented by bubble #13)
- Removal of the Hydro One Bridge (represented by bubble #15)

The Proposed Modifications for Reach 1 will achieve Regulatory Flood Protection with a 50 cm vertical freeboard while lessening the total footprint of construction north of Lake Shore Boulevard.

Please refer to Appendix C for a PLFP Hydrodynamic & Sediment Transport Modeling Report.







Figure A-10. Reach 1 (SDMA) Components Table & Plan (per EA) and Proposed Configuration





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### 3.1.1 Lengthening of the Lake Shore Boulevard Bridge

The DMNP EA states, on page 6-9:

"To improve flood conveyance, the existing Lake Shore Boulevard and Harbour Lead rail bridges will be lengthened from the two bays that currently exist to include a total of five bays, for a total length of approximately 120 metres. The soffit heights for the lengthened portions of the bridges will be approximately 78.1 metres."

The Proposed Modification will lengthen the Lake Shore Boulevard and Harbour Lead rail bridges from 2 bays to 4 bays. Each structure will have a length of approximately 98 m. Further, the soffit heights for the lengthened portions of the bridge will range between 76.801 and 77.960 m. Please refer to Appendix D for the general arrangement drawings for the four-bay Lake Shore Boulevard Bridge.

This Proposed Modification is possible as a result of updates to the TRCA Hydrological Model, improved modeling software, and detailed design of the river dimensions to confirm conveyance. The original intent of the bridge lengthening was to ensure the Regulatory Flood could be conveyed; this intent will remain intact.

The rationale for the change is value engineering the original system down in scale to achieve cost efficiencies while maintaining required functionality.

#### 3.1.2 Potential Sediment Trap Extension Configuration

In reference to Reach 1, the DMNP EA states:

"The length of this reach is approximately 315 metres and the channel width ranges from approximately 40 to 120 metres." (page 6-6) and "A trap bed level of 70 m (i.e., the trap was 1.6 m below the existing bed level at Lake Shore Boulevard) was used for the model" (EA Appendix N, page 199).

The Proposed Modification will reduce the channel width from the EA's upper limit of 120 metres to approximately 98 metres. This is to match the planned reduction of the Lake Shore Boulevard Bridge's length of 98 metres. The sediment trap will be designed to scour to a depth lower than what was originally considered in the DMNP EA to accommodate the Regulatory Flood flow.

The Proposed Modification is possible as a result of updates to the TRCA Hydrological Model, improved modeling software, and detailed design of the river dimensions to confirm conveyance and sediment transport. The original intent of the sediment trap configuration was to ensure that flood flows could be conveyed, and that sediment could deposit naturally as a result of increased sectional area; this intent will remain intact.

The rationale for the change is value engineering the original system down in scale to achieve cost efficiencies while maintaining required functionality.

#### 3.1.3 Hydro One Utility Bridge across Don River

The DMNP EA states, on page 6-65:

"The HONI utility bridge that currently crosses the Don River upstream of Lake Shore Boulevard will need to be relocated to avoid impeding flows during the Regulatory Flood."



The Proposed Modification will leave the bridge in place. The Don River, in the vicinity of the HONI Bridge, will be designed to scour to a depth lower than what was originally considered in the DMNP EA to accommodate the Regulatory Flood flow.

This Proposed Modification is possible as a result of updates to the TRCA Hydrological Model, improved modeling software and detailed design of the river dimensions to confirm conveyance. The original intent of the bridge removal was to avoid impedance of the Regulatory Flood caused by the relatively narrow channel conditions located between its two abutments. The updates and improved modeling have identified that the bridge abutments do not impede the flow.

The rationale for the change is to avoid infrastructure modifications that are not required to meet EA Objectives.

#### 3.1.4 Flow Control Structures

The DMNP EA states, on pages 6-13 and 6-14:

"It is proposed that an adjustable weir will be installed to allow for flexibility in operation. The maximum height of the new weir structure will be set at approximately 76 metres and a bed elevation of approximately 71 metres, which will provide conveyance of flood events greater than the two-year event. The final elevation will be determined at detailed design.

A sideflow weir will be installed to the south of the Lake Shore Boulevard crossing to permit a portion of flows greater than the two-year event to pass into the Keating Channel from the east, with a bed elevation of approximately 70 metres and a crest height of approximately 75 to 76 metres."

The Proposed Modification will replace the adjustable (upstream) and fixed (downstream) sideflow weir structures with a single detachable flow curtain. Please refer to Appendix E for slides detailing the detachable flow curtain.

The Proposed Modification is possible as a result of advancing detailed design within the river valley system – particularly within Reaches 1, 2, and 2a to meet flow splitting requirements. The original intents of the structures were to:

- Direct a portion of baseflows into the naturalized channel,
- Open in order to maximize flood flows into the Keating Channel during flood events, and
- Reduce sedimentation into the Keating Channel.

The above intents will remain intact while eliminating risk of failure (risk that proposed weir would not open as designed to maximize flood conveyance into the Keating Channel) associated with the original structures.



## **3.2 Construction Phasing Modifications**

### 3.2.1 Overall Phasing Approach

The DMNP EA describes a four-stage phasing plan to complete all works within the DMNP EA. The four individual phases included:

- **Phase 1**: Construction of the new Keating Channel Bridge and Removal of Existing Keating Channel Bridge and Abutments;
- Phase 2: Construction of the Greenway;
- Phase 3: Construction of the New River Valley Footprint; and
- Phase 4: Naturalization of the Southern Dockwall of Polson Slip.

The DMNP EA describes that construction phasing provides opportunities for public and private investment to allow for intensified redevelopment. The flood protection phases ensured that partial flood protection allowed for phased development to occur within the Lower Don Lands in a manner that matched anticipated market demands. As a result, development in those areas would be integrated with the phasing strategy for the flood protection works and the build-out of the river. It was assumed that the implementation of Phases 1-3 of the PLFP Project would take 20 – 30 years.

Following completion of the EA, the three levels of government agreed to provide upfront funding to cover most aspects of the DMNP EA and some of the LDL Master Plan EA, instead of the piecemeal funding approach described above. Table A-1, below, provides a comparison of the phasing approach described in the EA versus the approach current being pursued.

	Phasing Approach	Timeline
Approved EA	<ul> <li>Phase 1: Construction of the new Keating Channel Bridge and Removal of Existing Keating Channel Bridge and Abutments;</li> <li>Phase 2: Construction of the Greenway; and</li> <li>Phase 3: Construction of the New River Valley Footprint.</li> </ul>	20-30 years
Proposed Modification	Phases 1-3 (same as above)	7-12 years

#### Table A-1. Phasing Approach Comparison and Timelines

### 3.2.2 Sediment and Debris Management Area Phasing

The EA identified, through its Phasing Approach, that the SDMA (Reach 1) would be constructed in a single Phase (within Phase 2).

The Proposed Modification will introduce a two phased approach with the following features:

- The area behind the west dockwall (interim graded area as shown in Figure A-11) will be lowered to the pier cap elevation of the existing Gardiner to DVP ramps, and the existing dockwalls reinforced and lowered,
- Temporary rock revetments will be installed on the up and downstream side of this lowered area, and
- The existing riverbed will be dredged lower in most locations, except under the northernmost DVP ramp at the east dockwall due to clearance issues preventing interim reinforcement of that dockwall.





This interim phase will remain in-place until the overhead Gardiner ramps can be demolished. It will provide protection against the Regulatory Flood. Dredging will take place north of the Lake Shore Bridge during the interim phase approach, to maintain interim design depths. A detailed analysis for the dredging operation is currently under development. Regarding the SDMA works yard (west of the river within Reach 1), the intent is to proceed with most construction during PLFP, subject to determination of final Gardiner ramp layout. The duration of this interim phase is anticipated to be approximately 5 years.

Works that will not be pursued until the Gardiner Expressway ramps have been removed include:

- Full excavation of the sediment trap to a width of ~98 m.
- Dockwall works currently prohibited by the overhead clearance restriction beneath the ramps; this includes west riverbank features including a boat ramp and slip.
- Full dredging of the sediment trap to an elevation of ~70 mASL.
- Any remaining elements in the SDMA works yard that could not be accommodated due to conflict with existing piers.

The partially graded area is anticipated to be overtopped to convey flood waters for a flow of approximately 750 m<sup>3</sup>/s – which is defined by an event greater than the 350-year return period but less than the Regulatory Flood (1,560 m<sup>3</sup>/s). Further, the 50-year recurrence period for the combination of still water levels and storm flows, the inundation frequency of the partially graded area within Reach 1 is greater than 50 years. Please refer to Appendix F for the Inundation Frequency Study.

Figure A-11 provides an overview of the interim phase that will be pursued as part of the PLFP Project. The remaining work, which includes full river excavation, dockwall reinforcement, and localized dredging will be pursued by the City of Toronto following the removal of the Gardiner-DVP ramps.



Figure A-11. Phased Construction Approach north of Lake Shore Boulevard





The Proposed Modification is possible as a result of advancing detailed design and value engineering to avoid incurring significant throwaway cost and risk by reinforcing the existing Gardiner-DVP ramp piers.

The original intents of the single-phase construction approach within Reach 1 were to ensure Regulatory Flood conveyance and provide an area north of Lake Shore where sediment could be managed. These intents will remain intact, and significant throwaway cost and risk will be avoided.

Please refer to Appendix G for a technical memo pertaining to environmental considerations of the interim graded area.

### 3.2.3 Keating Channel Phasing

The EA identified, through its phasing approach, that changes to the Keating Channel, including the provision of revetment throughout, would be constructed in a single Phase (Phase 3). Further, the EA states on page 6-13:

"The Keating Channel will be narrowed through placement of stone revetments that will act to stabilize the existing Keating Channel dockwall and provide fish habitat structure."

The Proposed Modification will defer full reinforcement throughout the entire channel and, instead, provide two habitat shoals and some localized revetment – for sections of dockwall requiring reinforcement to enable PLFP construction.

The Proposed Modification is possible as a result detailed design which will ensure the stability of dockwalls within the channel. The original intents of the revetment placements were to stabilize dockwalls and provide aquatic habitat; both will remain intact and will progress in tandem with future development.

In addition, aquatic habitat features have already been constructed as part of the Cherry Street Lake Filling Project.

Figure A-12 provides an overview of revetment and habitat shoal placements that will be delivered as part of the PLFP Project.



Figure A-12. Keating Channel Revetment and Habitat Shoals within PLFP





## 4. Effects and Screening Assessment of the Proposed Modifications

## 4.1 Effects Assessment

The DMNP EA was developed to provide a certain degree of flexibility in project design and construction. This flexibility was to address potential changes to the conceptual design, construction techniques and baseline conditions.

Per Section 9.2 of the DMNP EA, when a need to modify the project is identified, an internal effects assessment is conducted by the Co-proponents to assess the impact of the modifications on environmental components (as predicted in the EA). To compare the originally anticipated net effects with new / changed net effects resulting from the Proposed Modifications, the original effects and mitigation measures were reviewed and assessed for variance.

#### 4.1.1 Anticipated New or Changed Net Effects

The anticipated new / changed net effects resulting from the Proposed Modifications are summarized in Table A-2. Per the table, there are no anticipated new or changed net effects. Please refer to Appendix H for a more detailed breakdown of each Objective and the Construction and Establishment phase Criteria and Indicators.

	New / Changed Net from Reach 1 – Hydra	Effects Resulting aulic Modifications	New / Changed Net Effects Resulting from Phasing Modifications		
Objective	Construction	Establishment	Construction	Establishment	
Naturalization	None	None	None	None	
Flood Protection	None	None	None	None	
Operational Management and Constructability	None	None	None	None	
Integration with Infrastructure	None	None	None	None	
Recreational and Cultural Opportunities	None	None	None	None	
Co-ordination with Other Planning Initiatives	None	None	None	None	
Consistency with Waterfront Toronto Sustainability Framework Objective	None	None	None	None	

Table A-2. Summary of Effects Assessment of Proposed Modifications



### 4.1.2 Additional Benefits as a Result of Design Modifications

Although there are no anticipated or changed net effects, additional benefits are expected as a result of implementing the proposed modifications.

#### Additional Benefits Resulting from Phasing Modifications

Accelerated phasing will compress the previously anticipated 20-30 year temporal boundary to approximately seven to 12 years (depending on timing of the final SDMA and Broadview Eastern Flood Protection Project). The following paragraphs explain the expected additional benefits to the environment.

- The incremental development approach assumed that residents would gradually be introduced to Villiers Island while adjacent construction continued. The accelerated construction timeline will eliminate the presence of residents and businesses, thereby eliminating the majority of predicted effects from construction.
- It was originally assumed that the Coxwell Bypass combined sewer outflow (CSO) would have been completed before Keating Channel works within PLFP. This would have resulted in improved water quality in the channel, which would have been potentially impacted by the later phase earth works for the river valley if spread out over 20-30 years. With the river completed up front, natural systems will be able to function under existing poor water quality conditions, but as water quality continues to improve, there will be continuing improvements in ecological function of the naturalized areas in PLFP.
- Areas that were to be naturalized for terrestrial habitat over an extended period of time will be naturalized in an accelerated fashion. This will decrease the impact of creating attractive terrestrial habitats only to be impacted by future adjacent river construction works over a prolonged period of time. Utimately, the new phasing will result in the avoidance of early habitat creation and establishment, but subsequent disturbance in a later phase of construction work. The majority of flood protection will be provided within seven years (and up to 12 years) from the start of detailed design as opposed to 20-30 years.
- The Broadview Eastern Flood Protection Project will increase the total area of land to be flood protected by about 8 ha, while enabling the Transit Hub and Cadillac Fairview development to advance, and eliminates the need for multiple flood protection structures required at the Eastern Avenue and Broadview Avenue Extension underpasses.
- Combining the Lake Shore Bridge lengthening (DMNP) and widening (Gardiner East EA) into a single mobilization represents an improvement to overall nuisance effects and costs.

#### Additional Benefits to Risk Vulnerability

 The dual weir system (adjustable upstream and fixed down stream) proposed in the DMNP EA was explored in detail during detailed design, with many approaches considered. However, each of the various weir configurations were associated with different types of risk, whereby there was the potential that the weir would not open fully as designed during a flood event when needed. As such, a much simpler fail-safe system was explored and adopted, leading to the proposed detachable flow curtain system. This system provides the desired flow-splitting function during base flow conditions, but will readily open during a flood event and is more cost effective in its operations and maintenance.





 The phased approach to construction north of the Lake Shore Bridge will reduce risk associated with underpinning the Gardiner – DVP ramps. The approach may result in an increased potential for sediment deposition downstream. In order to mitigate this increased potential, increased dredging frequency will be pursued until 2028, when the Gardiner Expressway ramps to and from the Don Valley Parkway are demolished and the remaining construction can occur.

## 4.2 Screening Assessment

A set of screening criteria are used to identify if a proposed modification results in a change to a critical aspect of the approved EA (refer to Figure A-5 or text below). The screening criteria are in the form of questions where a 'Yes' response signifies that the modification is major and needs to be examined in more detail and a 'No' response signifies a minor modification with no need to go into more detail. If the proposed modification does not change or reduces the environmental effects identified in the EA, then the modification will be considered minor and will not trigger any further action. Where there is the potential to increase negative environmental effects identified in the EA, then the modification will determine the need for any additional regulatory requirements.

The Screening Criteria are as follows:

- Does the change alter the spatial extent of the floodplain, spillway or low flow channel such that flood conveyance may be affected?
- Does the change alter the type of crossing of the floodplain, spillway or low flow channel such that flood conveyance may be affected?
- Does the change reduce the spatial extent of the naturalized area?
- Does the change adversely affect the function of river management controls?
- Does the change affect a condition of approval of the EA or any other approval or permit?
- For modifications to construction activities (including phasing), is the change likely to cause nuisance effects to interim uses such as businesses and recreational users and / or permanent uses such as future area residents that were not assessed in the EA?
- For modifications to sediment, debris and ice management activities during establishment (including changes to the technology that is used), is the change likely to cause nuisance effects to interim uses such as businesses and recreational users and / or permanent uses such as future area residents that were not assessed in the EA?
- Is the change likely to result in adverse effects related to increased turbidity within the Keating Channel or Inner Harbour?

Table A-3 provides screening for each of the Proposed Modifications. The Proposed Modifications, per their description and rationale, do not trigger a "yes" response to any of the Screening Criteria and as such are considered to be minor by the Co-proponents.

	Proposed Modifications						osed Modifications	
	Reach 1 – Hydraulic Modifications		Phasing Modifications					
Screening Criteria	4 Bay LSB and Sediment Trap	Flow Control Structure	HONI Utilities Bridge	PLFP Phasing Approach	SDMA Phasing	Keating Phasing		Commen
Alter spatial extent or type of crossing of the floodplain such that flood conveyance is affected?		No		No	No	No	•	The <b>Reach 1 hydraulic modifications</b> ensure flood com Bridge, reconfigured upstream sediment trap, and leaving conveyance of the Regulatory Flood or the ability to achie The <b>phasing modifications</b> will provide flood protection approach to SDMA construction will convey the Regulato full implementation of the realigned Gardiner-DVP ramps
Reduced spatial extent of naturalized area?		No		No	No	No	•	The <b>Reach 1 hydraulic modifications</b> have no impact of Although not all Keating Channel revetment will be provide naturalized areas will not be impacted. The CSLF habitat project will offset.
Reduced quality / function of naturalized area?		No		No	No	No	•	The <b>Reach 1 hydraulic and phasing modifications</b> have naturalized area which is consistent with the Effects Asse Hydraulics and Hydrology / Sedimentation on Sustainabil Fauna and Effects of Water Quality on Wetland and Aqua
Adversely affect the river management controls?		No		No	No	No	•	The <b>Reach 1 hydraulic modifications</b> have no impact of the flow control structures with a single detachable cur management controls. The <b>phasing modifications</b> have no impact on the river
Affect approval of EA or other approval / permit?		No		No	No	No	•	The <b>Reach 1 hydraulic and phasing modifications</b> hav permit.
Modifications to construction phasing or sediment and debris management operations to cause nuisance effects to interim uses or future users?		No		No	No	No	•	The <b>Reach 1 hydraulic modifications</b> have no impact on The <b>phasing modifications</b> have no impact on interim uses / presence of interim users.
Increased turbidity in Keating / Inner Harbour?		No		No	No	No	•	The <b>Reach 1 hydraulic modifications</b> have no impact of Harbour. The <b>phasing modifications</b> have no impact on turbidity

 Table A-3.
 Screening of Proposed Changes for Classification



#### nts

veyance is not affected. The 4-Bay Lake Shore g the HONI Bridge in-place will not impede eve a 0.5m vertical freeboard. e earlier than originally anticipated. The phased ory Flood, with full freeboard provided following the

on the spatial extent of the naturalized area. ded at once, the requirements for total extent of t coves and additional compensation throughout the

we negligible impact on the quality or function of the essment from the approved EA (Indicators: Effects of ility of Vegetation Communities and Associated atic Habitat, Appendix H).

on the river management controls. The replacement rtain represents an improvement to the river

management controls.

ve no impact on the approval of the EA or any other

on interim users. users, given that the accelerated timeline will negate

on turbidity within the Keating Channel / Inner

within the Keating Channel / Inner Harbour.





## 5. Consultation

Consultation with stakeholders has been on-going throughout the detailed design and construction of the PLFP. Consultation with respect to the Proposed Modifications began in 2018, and continues. Consultation has taken the form of meetings, workshops, and formal submissions (including drawings and reports with the opportunity to comment). The comment process is iterative, with all comments regarding the proposed modifications to-date addressed. The following stakeholders have been identified as interested in at least one of the Proposed Modifications:

- Stakeholder Advisory Committee (SAC)
- Landowner and User Advisory Committee (LUAC)
- Public Meetings
- Construction Liaison Committee (CLC)
- Indigenous Groups
- Agency Engagement:
  - Ports Toronto
  - o CreateTO
  - Metrolinx
  - o Transport Canada
  - Fisheries and Oceans Canada
  - o Ontario Ministry of Natural Resources and Forestry (MNRF)
- Others
  - o Cadillac Fairview
  - o Utility Owners

Below is a summary of specific meetings, submissions, notices, and other forms of consultation with stakeholders regarding the Proposed Modifications.

### 5.1 Stakeholder Advisory Committee Meetings

- Ten occurrences since March 2018 (typically every 3-6 months)
- March 10, 2020:
  - Reach 1 Hydraulic Modifications
  - o Phasing approach, specific to the Keating Channel
- February 26, 2020:
  - o Interim v. Full Build Condition SDMA (and Lower Don Trail)
  - o High Lake Level Analysis and Crossings
- May 28, 2020:
  - o Interim v. Full Build Condition SDMA and sediment management implications
  - Fixed weir (south of Lake Shore) and flow curtain
- October 22, 2020:
  - High Lake Level Analysis and Crossings
- November 12, 2020:
  - Lake Shore Boulevard East Public Realm (and Bridge) combining DMNP and Gardiner East EA Scopes (including 4-bay bridge)

## 5.2 Landowner and User Advisory Committee Meetings

- Three occurrences since February 2019 (typically every 8-10 months)
- November 13, 2020:
  - Lake Shore Boulevard East Public Realm (and Bridge) combining DMNP and Gardiner East EA Scopes (including 4-bay bridge)

## **5.3 Public Meetings**

- Five occurrences since February 2018 (typically every 6-8 months)
- December 4, 2020:
  - Lake Shore Boulevard East Public Realm (and Bridge) combining DMNP and Gardiner East EA Scopes (including 4-bay bridge)

## 5.4 Construction Liaison Committee Meetings

• Thirteen occurrences since April 2018 (typically every 3 months)

## 5.5 Indigenous Groups

- March 18, 2021, Mississaugas of the Credit First Nation
  - Contents of this Report, including an update to baseline conditions, description of proposed modifications, screening and assessment
- During detailed design and construction, project details were presented at several informal community BBQs hosted by MCFN. We provided more detailed project updates and presented design elements for review and comment to MCFN Chief, Council and staff.
- A Memorandum of Understanding was executed between MCFN (the Treaty First Nation), and Waterfront Toronto in 2020 and a resulting Working Group Committee meets regularly to discuss MCFN participation in Waterfront Toronto projects, including PLFP.
- An Indigenous Design Support and engagement process co-chaired by Waterfront Toronto and MCFN and facilitated by the MinoKamik team under contract with Michael Van Valkenburgh Associates, is also underway to inform the PLFP public realm design. This involves detailed discussions with the First Nations and Indigenous associations listed below.
- Project updates and offers to meet have been regularly circulated to:
  - o Alderville First Nation
  - o Beausoleil First Nation
  - Chippewas of Georgina First Nation
  - o Curve Lake First Nation
  - Hiawatha First Nation
  - o Mississaugas of Scugog Island First Nation
  - o Chippewas of Mnjikaning First Nation
  - o Huron-Wendat First Nation
  - o Metis Nation of Ontario

## 5.6 PortsToronto Consultation

• April 6, 2020:



- Page Turn Meeting to review phased approach to constructing the SDMA (drawing package circulation for review and comment followed)
- November 3, 2020:
  - Marine Bi-weekly Design Meeting to present preferred flow curtain alternative (to replace fixed weir and adjustable upstream weir)
- Water lot License Agreement and Discussions
  - Agreement executed January 1, 2020 included meetings to review required land, water lot, and construction impacting PortsToronto owned parcels including north of Lake Shore Bridge for SDMA
  - o Conversations ongoing for updates to original License Agreement
- September 17, December 4, 2020:
  - Dredging coordination meetings explanation of requirements for interim condition SDMA and Keating Channel dredge opportunities

## 5.7 CreateTO Consultation

- April 6, 2020:
  - Page Turn Meeting to review phased approach to constructing the SDMA (drawing package circulation for review and comment followed)
- November 3, 2020:
  - Marine Bi-weekly Design Meeting to present preferred flow curtain alternative (to replace fixed weir and adjustable upstream weir)

### 5.8 Metrolinx Consultation

- February 28, 2020:
  - Page Turn Meeting to review phased approach to constructing the SDMA and Lower Don Trail
- April 17, 2020
  - Waterfront Toronto circulated the 60% design drawings for the SDMA for review and comment
- December 3, 2020
  - Coordination meeting to discuss the projects impacting the Lower Don Trail specifically Ontario Line, Wilson Yard, HONI works near the Don Fleet Junction, City of Toronto emergency Gardiner repairs and construction of the SDMA.
- February 26, 2021
  - Waterfront Toronto circulated the 90% design drawings for the SDMA to Metrolinx for review and comment

## 5.9 Fisheries and Oceans Canada (DFO) Consultation

- June 4, 2020 Aquatic Habitat Toronto (AHT) meeting:
  - Four-Bay Lake Shore Bridge
- March 4, 2021 AHT meeting:
  - Update on all complete and upcoming Marine (in-water) works and mitigation
- Ongoing Request for Review Submissions
  - Requests for Review and appropriate advice for permitting being sought for all in-water works including Lake Shore Bridge and the SDMA



## 5.10 MNRF Consultation

- November 30, 2018, and March 27, 2020:
  - Lakes and River Improvement Act PLFP Applicability / Screening Meetings
- June 4, 2020 AHT meeting:
  - o Four-Bay Lake Shore Bridge and interim condition SDMA design and staging presentation
- March 4, 2021 AHT meeting:
  - Update on all complete and upcoming Marine (in-water) works and mitigation

## 5.11 Cadillac Fairview

- Ongoing Monthly Coordination Meeting since Winter 2020
  - Waterfront Toronto has organized monthly update meetings to provide regular project updates and coordination involving PLFP and Broadview Eastern Flood Protection Project progress as well as their projects involving the East Harbour Precinct and East Harbour Station plans.







## 6. Conclusion

The DMNP EA was developed to provide a certain degree of flexibility in project design and construction. This flexibility was built-in to address potential changes to the conceptual design, construction techniques and baseline conditions.

As detailed design has progressed in alignment with the governing Environmental Assessments, the Co-proponents (TRCA, City of Toronto, and Waterfront Toronto) have identified some minor changes from the preferred alternative presented in the DMNP EA. The modifications proposed in this report include:

#### Reach 1 – Hydraulic Modifications:

- Four-bay Lake Shore Bridge and upstream sediment trap configuration;
- HONI utility bridge across Don River (to remain);
- Flow diversion structures (Adjustable and fixed sideflow weir to detachable flow curtain);

#### **Revised Phasing Approach to DMNP:**

- Overall PLFP construction phasing approach;
- Interim sediment management area; and
- Keating Channel revetment.

Per section 9.2 of the DMNP EA and Conditions 6.1 and 6.2 from the MECP Conditions of Approval, the Coproponents have identified the proposed modifications, detailed within this document, to be Minor in nature. This is because they represent no new or changed net effects that were originally considered in the approved EA, and they do not trigger any of the Screening Criteria.

This document, along with the supporting appendices is the Co-proponent's submission to the MECP for inclusion in the project files as part of the public record.