

Executive Summary

The objective of this Municipal Class Environmental Assessment (EA) Addendum is to update the Scarborough Waterfront EA (Aquafor Beech Limited, 2010) in order to integrate the development and evaluation of the flood control, combined sewer overflow (CSO) control and stormwater quality solutions while allowing renewed public/agency consultation.

This EA Addendum is being undertaken since the Technical Update (Stantec Consulting Ltd, 2018) to the original Scarborough Waterfront EA identified significant differences in the collection system configuration, estimated flooding potential and CSO generation potential. These differences suggest that the solutions recommended in 2010 may not meet the City flood mitigation or water quality targets. The 2010 EA recommended solutions were Schedule C works under the Municipal Class EA framework. The current collection system understanding, and the larger extent of necessary flood solutions represents a change to the previously proposed infrastructure projects, thus requiring an Addendum to the 2010 EA.

Solution Development and Evaluation

The principles originally laid out in the Wet Weather Flow Master Plan (WWFMP) study (Aquafor Beech Limited, 2003) and the original EA (Aquafor Beech Limited, 2010) study to identify and assess control alternatives have been respected. The hierarchy is that source controls are considered first, followed by conveyance and then end-of-pipe controls.

Through the EA Addendum process, alternative solutions to mitigate against excessive sewer surcharge, potential basement flooding and combined sewer overflows were developed and evaluated. Refer to **Table ES-1** for a summary of the alternative solutions. A total of 5 alternative solutions were developed including a reference alternative (the “Do-Nothing”) and the previously recommended alternative solution from 2010. These were subsequently evaluated following an approach like that adopted in the original EA. The alternatives were evaluated using a pair-wise comparison method using several criteria within four categories: Natural Environment, Social-Cultural, Technical and Economic.

The evaluation results indicate that Alternative 5, a combination of Source Controls, Conveyance Upgrades to address flooding potential and an underground storage tank to address combine sewer overflows is the preferred alternative followed by Alternative 2, the preferred alternative from the 2010 EA.



Table ES-1: Alternative Solutions

Alternatives	Control Measures At Source	Control Measures Conveyance	Control Measures End-of-Pipe
1. Do Nothing	<ul style="list-style-type: none"> Maintain current measures such as downspout disconnection, street sweeping and other bylaws 	<ul style="list-style-type: none"> Maintain current capacity and maintenance frequency 	<ul style="list-style-type: none"> Maintain Dunkers facility
2. 2010 EA Preferred Alternative	<ul style="list-style-type: none"> Maintain current measures such as downspout disconnection, street sweeping and other bylaws Encourage other measures such as tree planting, rain barrels, rain gardens and bioretention units on private property (5-10% uptake short-term and 20-50% uptake long-term) 	<ul style="list-style-type: none"> Select sewer upgrades, new sewers and in-line storage pipes to address flooding clusters identified in 2010 Bioretention units within City right-of-way (25% application over 10 years and 75% application over 50 years) 	<ul style="list-style-type: none"> Maintain Dunkers facility One wet pond and 2 infiltration units for runoff water quality improvements Four CSO storage tanks to reduce CSO volumes/frequency.
3. Aggressive Source Controls	<ul style="list-style-type: none"> Maintain current measures such as downspout disconnection, street sweeping and other bylaws Actively promote other measures such as tree planting, rain barrels, rain gardens and bioretention units on private property (long term uptake of 30%) 	<ul style="list-style-type: none"> Maintain current capacity and maintenance frequency Bioretention units within City right-of-way (long-term application to 50% of the area) 	<ul style="list-style-type: none"> Maintain Dunkers facility
4. Conveyance Upgrades	<ul style="list-style-type: none"> Maintain current measures such as downspout disconnection, street sweeping and other bylaws Encourage other measures such as tree planting, rain barrels, rain gardens and bioretention units on private property (5-10% uptake) 	<ul style="list-style-type: none"> Combined Sewer Separation Retrofit of Dual MH/Overflow Weir Adjustments Sewer upgrades to address areas at risk of flooding based on most recent model update Opportunistic application of bioretention units within City right-of-way (5% application) 	<ul style="list-style-type: none"> Maintain Dunkers facility
5. Conveyance Upgrades + CSO Storage Tank	<ul style="list-style-type: none"> Maintain current measures such as downspout disconnection, street sweeping and other bylaws Encourage other measures such as tree planting, rain barrels, rain gardens and bioretention units on private property (long-term uptake of 20%) 	<ul style="list-style-type: none"> Combined Sewer Separation Retrofit of Dual MH/Overflow Weir Adjustments Sewer upgrades to address areas at risk of flooding based on most recent model update Application of bioretention units within City right-of-way (long-term application to 40% of the area) 	<ul style="list-style-type: none"> Maintain Dunkers facility CSO storage tank at Warden overflow to further reduce CSO frequency (a 1,000m³ tank will reduce CSO frequency to 2 in average year whereas a 1,500m³ tank will virtually eliminate overflows in the average year [1991])



Recommended Solution

The recommended solution includes a combination of stormwater conveyance and management measures:

Source Control Measures

- ✓ Roof downspout disconnection rate of 75% (achievable through the City's mandatory downspout disconnection program)
- ✓ Moderate uptake (20% of the private area) of private property source control measures such as rain gardens (bioretention/biofiltration units) or soak away pits (infiltration trenches)
- ✓ Moderate implementation (ultimately up to 40% of publicly owned lands) of public-side source control measures such as bioretention/biofiltration units and/or boulevard trees in infiltration trenches (soil cells).

Conveyance Control Measures

- ✓ Surface flow management
 - Installation of high capacity inlets at select locations;
 - Installation of new catchbasins at select locations; and
 - Installation of inlet control devices at select locations.
- ✓ Upgrade of Existing Combined, Storm and Sanitary Sewers
 - Increasing the size of sewer pipes by replacing the existing sewers with larger ones;
 - Optimizing existing sewer capacity by redirecting sewer flow to new sewers; and
 - Deepening shallow sanitary or combined sewers.
- ✓ Combined Sewer Separation
 - Adding new storm sewers and redirecting catchbasins away from combined sewers toward new storm sewers;
 - Eliminating dual manholes and combined sewer overflow pipes; and
 - Increasing the crest elevation of overflow weirs.

End-of-Pipe Control Measures

- ✓ A minimum 1,500m³ off-line underground storage tank in the City easement immediately south of Warden Ave. Following a storage event, the tank would be dewatered (automatically using a small pump) to the sewer system for treatment at the Ashbridges Bay wastewater treatment plant.

The above recommended conveyance and end-of-pipe measures are sized to meet City flood mitigation targets and to eliminate combined sewer overflows from all sewer outfalls during an average year. Conceptual designs of the recommended conveyance and end-of-pipe measures were prepared and are presented herein. An opinion of probable costs was prepared and indicates a total net cost to the City of \$339M for the recommended works on public property. Guidance with respect to the implementation of the recommended solutions is also provided.

