



Tracey Cook
Deputy City Manager

Toronto Water
City Hall, 24th Fl. East
100 Queen Street West
Toronto, Ontario M5H 2N2

Lou Di Gironimo
General Manager

Tel: 416-392-8200
Fax: 416-392-4540
Lou.DiGironimo@toronto.ca
www.toronto.ca

2019 CAPITAL BUDGET BRIEFING NOTE

Basement Flooding Protection Program – Program Status Update

Issue:

City Council, through the creation of the City's Basement Flooding Protection Program, has directed staff to reduce the risk of basement flooding across the City through a combination of public drainage system improvements and through the use of policies, by-laws, and incentives to reduce flood risks on private and public properties.

This briefing note provides an update on Toronto Water's efforts to reduce the risk of basement flooding in the City. Specifically, ward by ward progress updates are provided to summarize the progress to date on Environmental Assessment studies, infrastructure upgrades, and private property flood protection device subsidies.

Background:

Basement Flooding Environmental Assessment (EA) Studies

Environmental Assessment (EA) studies are undertaken that assess the capacities of the City's existing storm, sanitary, and combined sewer drainage systems and recommend infrastructure improvements to these systems to reduce future basement and surface flooding. Deficiencies in private drainage systems are not identified and not assessed through the City's Basement Flooding EA studies.

The Basement Flooding Protection Program (BFPP) was expanded to be City-wide following the severe storm of July 8, 2013. This expansion resulted in the creation of new Basement Flooding study areas, bringing the total to 67 study areas. City Council, at its meeting on March 10 and 11, 2015, requested the General Manager, Toronto Water, to initiate and expedite the completion of new Basement Flooding EA studies for the remainder of the City, specifically Study Areas 42 through 67, and in the order of priority as shown in Schedule A to the report (December 18, 2014) from the General Manager, Toronto Water. The Council decision can be viewed at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.EX3.1>

On August 7, 2018, the Black Creek Watershed was significantly impacted by a severe storm event whose rainfall intensity exceeded that of a 100 year return period storm event. Many homes in the area were flooded and this event reinforced and accelerated improvements to the program. To construct more infrastructure upgrades sooner, the schedule for new EA studies is being substantively accelerated, and the duration of the study and design process is being

shortened through the incorporation of business process review recommendations. Some of the notable changes include the acceleration of the start of some EA studies by more than 5 years, the bundling of study areas into single contracts through the hiring of additional consultants to support the delivery of more studies, and improved transitions from city staff to city staff and from consultant to consultant within EA studies and design stages.

As of December 31, 2018, EA studies have been completed for 35 Basement Flooding Study Areas. EA studies for eight study areas are underway, of which six EA studies are scheduled to be completed in early 2019 (Study Areas 20, 34, 36, 38, 40, 41), and two EA studies (43 and 45) are planned for completion in 2020. The schedules for Study Areas 42, 44, and 46 to 67 have been updated as per Table 1 below.

A preliminary schedule (subject to future adjustments) for undertaking Basement Flooding EA studies was provided in the December 18, 2014 Staff Report. Toronto Water is committed to providing City Council with an updated schedule when there is a change in the EA schedule (e.g. advancement or delay of an EA study start) that exceeds one year. As per the commitment in the 2014 Staff Report and following the update provided with the approved 2018 Capital Budget, the revised schedule for study areas 42, 44, and 46 to 67 are provided in Table 1.

Table 1 – Revised Schedules for Basement Flooding Areas 42, 44, and 46 to 67

Basement Flooding Study Area	EA Study Start Year	Revised EA Study Start Year
42	2018	2019
44	2018	2019
46	2018	2019
47	2018	2019
48	2018	2019
49	2018	2019
50	2020	2019
51	2020	2019
52	2020	2019
53	2020	2019
54	2022	2019
55	2022	2019
56	2022	2019
57	2022	2019
58	2022	2019
59	2024	2019
60	2024	2019
61	2024	2019
62	2018	2019
63	2025	2019
64	2025	2019
65	2025	2019
66	2025	2019
67	2025	2019

Implementation of Infrastructure Upgrades

Infrastructure upgrades to reduce the risk of basement flooding are prioritized and scheduled, as per Council approved criteria to protect the greatest number of properties as soon as possible, within approved budgets, and are coordinated with other capital projects. By the end of 2018, it is projected that approximately \$370 million has been spent on construction and activities supporting construction (engineering, design, studies, flow monitoring, etc.) within the BFPP.

A key criteria in the decision to proceed with the design and construction of BFPP infrastructure upgrades is the requirement for storm sewer upgrade projects to cost less than or equal to \$32,000 cost per benefitting property. This threshold was adopted by City Council at its meeting of September 21, 2011. The adopted staff report can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.PW7.6>

Projects that meet the \$32,000 cost per benefitting property threshold at the completion of the EA stage, proceed to preliminary design. At the completion of preliminary design, projects that meet the \$32,000 cost per benefitting property threshold, proceed to detailed design and construction. While many projects meet the \$32,000 cost per benefitting property threshold, there are also many projects that do not meet it. Of the \$2.54 billion of recommended infrastructure improvement projects identified to date, approximately 57% of the total value do not meet the \$32,000 cost per benefitting property threshold or cannot be constructed due to physical constraints. These projects have not been scheduled for implementation within the 5 year capital plan, in accordance with City Council direction. The remaining projects are either constructed or in various stages of implementation: under construction, in the design process (i.e. preliminary design or detailed design stages), and planned to begin the design process. The attached ward profiles in Schedule A provide further information on the implementation status in each ward.

Basement Flooding Protection Subsidy Program

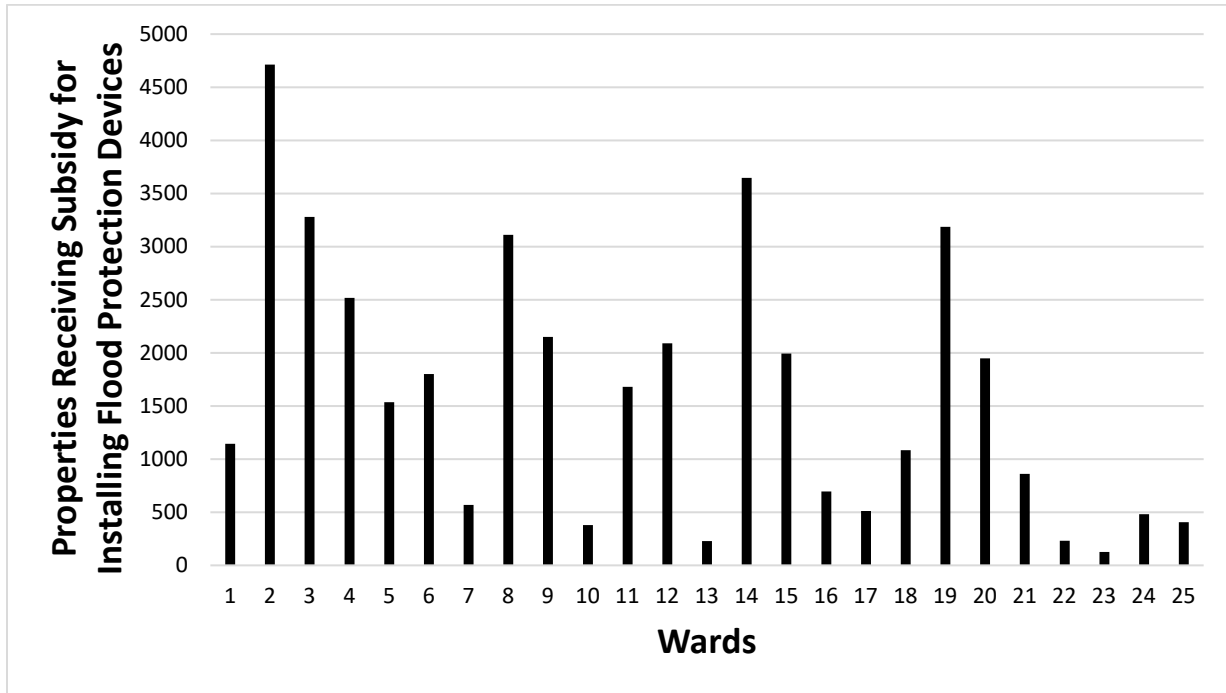
The City's Basement Flooding Protection Subsidy Program (BFPS) offers property owners of single-family, duplex and triplex residential homes financial assistance of up to \$3,400 per property to install flood protection devices, including a backwater valve, sump pump, and pipe severance and capping of the home's storm sewer or external weeping tile.

The BFPS was initially created for homeowners in response to the May 12, 2000 storm event, and was initially known as the "Voluntary Private Home Isolation from Public Sewer System Program". As a result of properties being impacted by subsequent storm events including the August 14, 2003, August 19, 2005 and May 17, 2006 storm events, the program was expanded City wide. City Council at its meeting in July 2006 adopted a report to expand the program City-wide and requested the General Manager of Toronto Water to incorporate funding to support the Program in its 2007 Capital Budget submission. The Council decision can be viewed at:

<http://www.toronto.ca/legdocs/2006/agendas/council/cc060725/pof6rpt/cl041.pdf>

Since the subsidy program was expanded City wide in 2006, over 40,376 applications have been approved with \$48.3 million in total subsidy payments issued to property owners by Toronto Water as of December 2018. On average, the City currently issues approximately \$1,600 in subsidy payments to participating properties. The number of subsidy applications approved by the City have varied considerably from ward to ward as shown in Figure 1.

Figure 1 - Number of Properties Receiving a Subsidy for Installing Flood Protection Devices by Ward (up to end of June 2018)



Urban Flooding Strategy

Urban flooding within the City of Toronto can occur in a variety of ways and can also influence the City in variety of ways. Toronto Water's efforts to upgrade municipal stormwater drainage as part of the City's Basement Flooding Protection Program will reduce basement flooding risks in the City. However, program improvements are warranted to better consider causes of flooding beyond that of municipal drainage systems, and to better consider consequences that are different than that of basement flooding impacts (e.g. transportation and electrical system disruptions, social impacts, etc.)

Toronto Water has been working with the Chief Resilience Officer since the Fall of 2017 to improve the City's approach to urban flooding. This task has consisted of meeting regularly with a stakeholder group consisting of applicable City divisions, agencies, and external partners to assess existing efforts to address flooding and shape a framework for the future. Through this process, Toronto has corresponded internationally with partner cities and organizations to determine best practices and approaches.

The efforts of this urban flooding working group and its recommendations will be presented as part of the City's Resilience Strategy, which is scheduled for presentation to City Council in 2019. Toronto Water views these efforts as being complimentary and beneficial to its efforts to improve the levels of service being provided by the municipal drainage system assets.

Key Points:

Progress in the Basement Flooding Protection Program varies considerably from ward to ward. This briefing note provides a ward by ward summary in Schedule A and highlights the accomplishments achieved to date. Specifically, the progress regarding EA studies, construction of infrastructure upgrades, and participation in the subsidy program is provided.

A substantive acceleration of EA study efforts is being pursued, with the goal of increasing and accelerating the delivery of drainage system upgrades in the City. These summaries highlight that while significant effort has been expended, there still remains a great deal of effort to achieve the enhanced level of service to reduce the risk of basement flooding across the entire City.

The summary for each City ward includes:

- A map showing the limits of each ward, the private properties that have installed flood protection devices, and the boundaries for the EA studies along with different shading to identify the portions of each ward where EA studies have been completed, are ongoing, or are planned to begin;
- A pie chart and table illustrating the proportion of each ward where an EA study has been completed, is ongoing, and is planned to begin in the future.
- A pie chart illustrating the status of the infrastructure improvement works that were recommended through completed EA studies. The chart is subdivided into five categories, namely 'Constructed', 'Under Construction', 'Design Process Initiated', 'Planned for Design Initiation', and 'Deferred Projects'. To align with the typical budgeting cycle, expected construction costs to the end of the 2018 calendar year have been estimated. The pie charts represent the portions of the ward where EA studies have been completed. Infrastructure improvement costs for the portions of the ward not yet studied are not estimated within the provided values.
- As projects move through the implementation process, cost estimates are updated and replaced with actual costs, which results in variations in the values from year to year.
- Bar charts are provided to illustrate the accomplishments of the City's Basement Flooding Protection Subsidy Program, which provides financial assistance to pay for some of the costs of installing flood protection devices. Both program participation and program expenditure summaries up to December 2018 are provided.

Prepared by: David Kellershohn, Manager, Stormwater Management, Water Infrastructure Management, Toronto Water, Phone: 416-392-8255
Email: david.kellershohn@toronto.ca

Further information: Graham Harding, Director, Water Infrastructure Management, Toronto Water, Phone: 416-397-4631 email: graham.harding@toronto.ca

Date: January 24, 2019