
2023 CAPITAL BUDGET BRIEFING NOTE

Basement Flooding Protection Program – Program Status Update and Project List: 2023 to 2027

Issue:

City Council, through the creation of the City's Basement Flooding Protection Program (BFPP), has directed staff to reduce the risk of basement flooding across the City through a combination of public drainage system improvements and 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. Ward by ward updates are provided in Schedule B to summarize the progress to date on Basement Flooding studies, infrastructure upgrades, and subsidies granted for private property flood protection devices.

City Council has directed the General Manager of Toronto Water to submit an updated five-year list of Basement Flooding Protection Program capital projects through the annual Capital Budget submission process, in response to that request, this briefing note provides a list of projects proposed for construction initiation in 2023 through 2027.

In 2022, the cost estimates of many planned Basement Flooding Projects have been adjusted to align with market rates. The resulting cost escalation impacts program outcomes, with fewer Basement Flooding Projects constructed per year, and challenges forecasting the projects that can be constructed each year within available budget envelopes. This is reflected in the attached list of projects.

As directed by City Council on December 17, 2019, the attached ward profiles and list of projects by ward, provide communication to Councillors on the rate-supported studies and projects proceeding in their respective wards.

Background:

The Basement Flooding Protection Program (BFPP) increases the City of Toronto's resilience to climate change and the hazard of flooding. Toronto Water specifically contributes to the achievement of action items B1.1, B1.2, and B1.3 of the City's [Resilience Strategy](#) through its:

- efforts to upgrade municipal drainage infrastructure

- continuous contributions to research; and
- annual consideration of the program's accomplishments.

The BFPP was expanded City-wide following the severe storm of July 8, 2013 and resulted in the creation of new Basement Flooding study areas (bringing the total to 67 study areas). At its meeting on [March 10 and 11, 2015](#), City Council requested the General Manager, Toronto Water, 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).

Since the inception of the program, severe rain events have continued to highlight the importance of completing Basement Flooding studies for the entire city, improving the level of service of the City's infrastructure, and increasing the city's resilience to extreme weather.

Basement Flooding Studies

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

As of December 1, 2022, studies have been completed for 43 Basement Flooding Study Areas and 24 study areas are underway. All remaining studies (Areas 42, 44, 46 to 67) are scheduled for completion by the end of 2023. Opportunities to expedite study schedules are continually sought and implemented through the duration of studies.

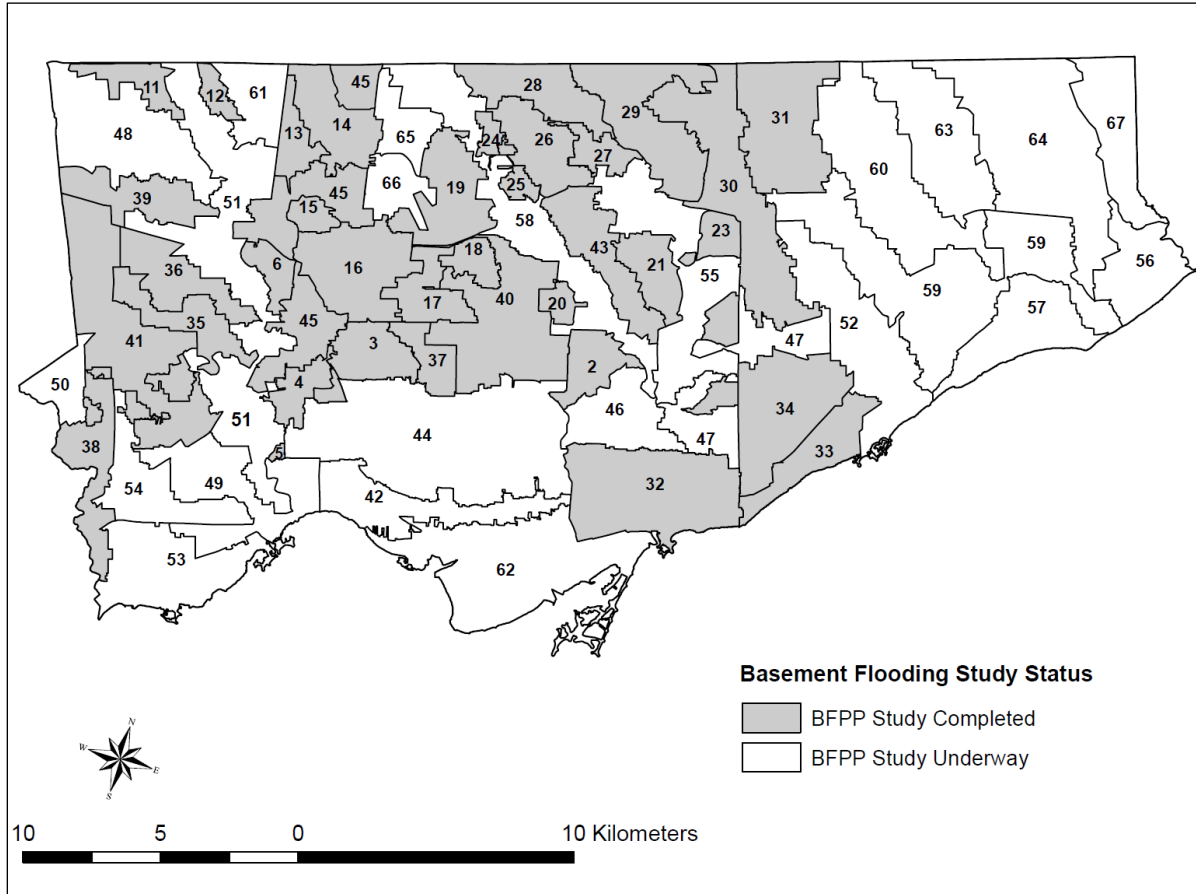
Figure 1 depicts the status of the 67 Basement Flooding Study Areas.

Toronto Water is committed to providing City Council with an updated schedule when there is a change (e.g. advancement or delay of a study start) that exceeds one year. As all studies are underway, and studies were commenced as reported in the previous briefing note, a schedule update is not required.

Infrastructure upgrades are identified through Basement Flooding Studies, which follow the Environmental Assessment (EA) Study process. These are complex studies that examine the sewer system and above ground areas, and prepare recommendations to reduce the risk of flooding. EA studies can take two or more years to complete due to their complexity.

To ensure that solutions are properly scoped and located when they are constructed, the corresponding EA study is reviewed and refreshed every 10 years as appropriate. Basement Flooding Study Areas will be prioritized to be revisited in sequence based on completion date, with older studies advanced first.

Figure 1 - Status of Basement Flooding Study Areas



Cost Escalation and Impact on Implementation

In 2022, Toronto Water received revised cost estimates of many planned Basement Flooding Projects that reflect updated construction market rates. Increases in future construction cost estimates impacts the delivery of planned projects across the Basement Flooding Program. These impacts include fewer projects proceeding to construction in the 5-year capital plan and challenges forecasting the start of construction for new BFPP projects. These impacts are reflected in the attached BFPP Project List. The List includes fewer projects, considers additional uncertainty in forecasting construction start years, and reflects projects targeted to start in construction years 2, 3, 4 or 5 of the budget are at increased risk of being scheduled outside of this range.

Implementation of Infrastructure Upgrades

Infrastructure upgrades to municipal drainage systems 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 2022, it is projected that approximately \$844 million will have been spent on

construction and activities supporting construction (engineering, design, studies, flow monitoring, etc.) within the BFPP.

A key criterion 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 \$68,000 per benefitting property. Properties are considered to be benefitting if they move from not meeting the targeted levels of service for drainage to meeting the targeted levels of service upon completion of infrastructure upgrades. The targeted levels of service, as previously adopted by City Council, consist of the 100-year design storm for drainage systems, and the May 12, 2000 design storm (as recorded at Oriole Yard) for sanitary drainage systems.

On November 25, 2020, Council also directed that, following the completion of all 67 Basement Flooding studies, and once all qualifying projects under \$68,000 per benefitting property have been scheduled for implementation, Basement Flooding Projects will be sequenced in accordance with the principle of implementing projects that achieve the greatest impact.

The adopted staff report can be found at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2020.IE17.5>

Projects that meet the \$68,000 cost per benefitting property threshold at the completion of the study stage proceed to preliminary design. The goal of the preliminary design stage is to ensure the physical constructability of projects and to better define project cost estimates. The design is refined at this stage, which may result in scope changes and a significant cost increase. At the completion of preliminary design, projects that meet the \$68,000 cost per benefitting property threshold proceed to detailed design and construction. Only once projects are moved into the detailed design stage, should they be communicated to the public as projects that will be proceeding to construction.

Projects that do not meet the \$68,000 cost per benefitting property threshold at the study stage, or at the completion of the preliminary design stage, are removed from the long-term capital plan and added to the deferred projects list. These projects will be prioritized for design and construction in the future on the basis of prioritizing projects that achieve the greatest impact. Projects may be sequenced for detailed design and construction as the replacement of the existing drainage systems becomes warranted due to poor structural condition.

The attached ward profiles in Schedule A provide further information on the implementation status in each ward.

Water User Consultation on Water Fees, Charges and Programs

As authorized by City Council in July 2021 ([2021.IE23.6](#)), Toronto Water and the Chief Financial Officer and Treasurer will be consulting with water customers and stakeholders in November 2022 and April 2023 on the possible implementation of a Stormwater Charge to fund the City's Stormwater Management Program (including Wet Weather Flow Master Plan and

BFPP). The Stormwater Charge would be based on a property's impervious (hard surface) area rather than water consumption. Revenues from a Stormwater Charge would be removed from the City's water rate. Staff will report back to Executive Committee and City Council in Q2 2023 on the outcomes of the consultation.

External Funding of the Basement Flooding Protection Program

Toronto Water will continue to explore external funding opportunities for Basement Flooding Projects as they become available, and if the projects fit potential funding program eligibility parameters. This includes applications that are being submitted under the Federal government's Disaster Mitigation and Adaptation Fund.

Two major projects currently underway that have received funding from the federal Disaster Mitigation and Adaptation Funding program are the [Mid-Town Toronto Storm Sewer Relief](#) project and the [Fairbank Silverthorn Storm Sewer](#) project. The Mid-Town Toronto Storm Sewer Relief project is at the 95% detailed design phase and is planned to tender in 2023. The Fairbank Silverthorn Storm Sewer project is divided into three major construction contracts. The first major contract started construction in October 2021 and is 20% completed.

Basement Flooding Protection Subsidy Program

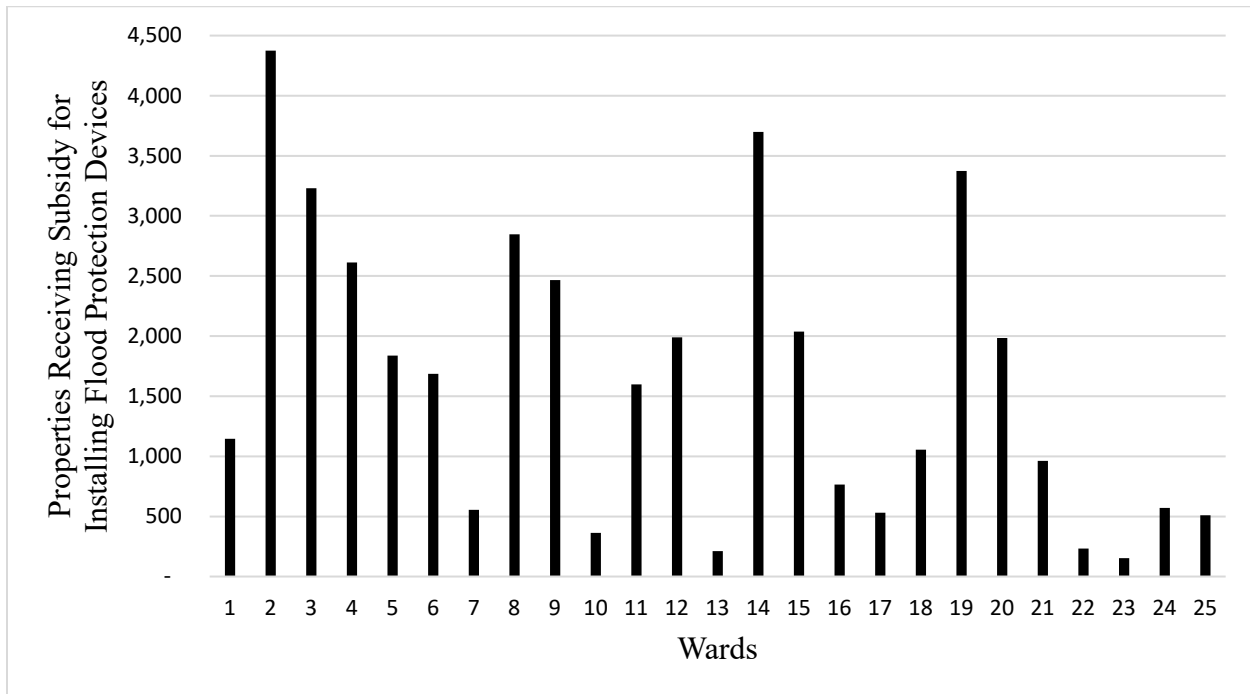
The City's Basement Flooding Protection Subsidy Program (BFPS) offers property owners of single-family, duplex and triplex residential homes financial assistance of up to \$3,400 per property to install flood protection devices, including a backwater valve, sump pump, and pipe severance and capping of the home's storm sewer or external weeping tile. Properties are eligible for one-time subsidies for each flood protection device, and not per incident of flooding.

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 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 40,792 homes have installed flood protection devices. This has resulted in \$70.2 million in total subsidy payments issued to property owners by Toronto Water as of June 30, 2022. The number of subsidy applications approved by the City varies considerably from ward to ward as shown in Figure 2.

Figure 2- Number of Properties Receiving a Subsidy for Installation Flood Protection Devices by Ward (up to end of June 2022)



No-Fault Grant for Basement Flooding Damages in the Rockcliffe Special Policy Area

On July 19, 2022, Council authorized the implementation of a recurring no-fault grant program for basement flooding damages. Starting in 2023, the subsidy will provide \$7,500 to eligible properties within the Rockcliffe Special Policy Area and the hydraulically connected sewer catchment. This program will be applicable to properties where beneficial works have been identified by a completed BFPP EA Study but the work is not yet commissioned.

The Council decisions can be viewed at:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2022.GL32.1>

Key Points – BFPP Program:

- The cost to construct BFPP solutions has increased over time. The construction cost estimates for many future Basement Flooding Projects have increased due to market rates. These cost increases impact the number of BFPP projects that can be delivered in the 5-year capital plan, and result in challenges forecasting project construction starts. This is reflected in the list of projects in Schedule B, with projects being categorized in years 2, 3, 4 and 5 to recognize challenges forecasting construction start.
- Flooding can occur on private property due to localized, non-infrastructure related causes, and not all future flooding can be rectified by infrastructure improvements to public sewer and drainage systems. Flooding risks that property owners may need to assume could include, but are not limited to:

- private plumbing (such as improperly connected or disconnected backwater valves, downspouts connected internally to plumbing, cross-connections to sewer infrastructure and other issues)
- private property grading
- reverse slope driveways, and
- exterior access/stairways to lower levels of a home.

Additionally, properties constructed in regulatory floodplains are at risk of riverine flooding.

Key Points – Ward Profile Summaries (Schedule A):

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

“Ward Profile

A substantive acceleration of study efforts has occurred, 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 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 studies along with different shading to identify the portions of each ward where studies have been completed, are ongoing, or are planned to begin;
- A pie chart and table illustrating the proportion of each ward where a 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 studies. The chart is subdivided into five categories, namely 'Constructed', 'Under Construction', 'Design Process Initiated', 'Planned for Design Initiation', and 'Deferred Projects'. Construction costs are estimated and subject to change. The pie charts represent the portions of the ward where 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 June 30, 2022 are provided.

Key Points – Project List 2023-2027 (Schedule B):

- Table 1 (attached) contains a 5-year list of projects organized by year and by Ward. This list reflects Toronto Water's 2022 Capital Budget, and the 2023 to 2027 Capital Budget Plan.
- This briefing note uses the best available scheduling information at the time of writing. Schedule and scope change requests applicable to projects listed in this briefing note may have not yet been submitted to the Infrastructure Coordination Unit (ICU). Likewise, since the writing of this briefing note, the need for project changes may have arisen and the information presented may change. As change requests are processed, the City's website application (T.O. INview) will be updated and may not reflect some proposed schedules and scopes within this briefing note.
- The scheduling of construction projects is subject to change, due to capital coordination issues, necessary regulatory approvals and funding availability. Schedules are updated throughout the year through submissions to the Infrastructure Coordination Unit. These updates are regularly uploaded to the City's website.
- The cost to construct BFPP solutions has increased over time resulting in challenges forecasting project construction starts. Projects must be prioritized within available budget envelopes and escalating project cost estimates results in fewer projects commencing per year. This is reflected in the list of projects in Schedule B, with projects being categorized into years 2, 3, 4 and 5 to recognize challenges forecasting construction starts beyond 2023. Projects commencing construction in 2024 will be confirmed in collaboration with Engineering and Construction Services upon the approval of the 2023 rate-based budget.
- To ensure that as many projects as possible are initiated without delay, moving forward, recommended projects from studies will continue to be assigned for preliminary design at the same time those projects are presented to the public as part of the Basement Flooding study process. If solutions need to change as a result of feedback received through the public review process, sufficient time exists within the engineering design process to incorporate any changes prior to construction.
- This briefing note lists projects that have been removed, during 2022, from the long-term capital plan and moved into the BFPP deferred projects list, upon completion of preliminary design. The list does not include projects that had been moved into the BFPP deferred projects list through budget submissions in prior years.

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