
2022 CAPITAL BUDGET BRIEFING NOTE

Basement Flooding Protection Program – Program Status Update and Project List: 2022 to 2026

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. Ward by ward progress updates are provided 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. Accordingly, this briefing note provides a list of projects proposed for construction initiation in 2022 through 2026.

In 2021, Toronto Water has updated the cost estimates of many planned Basement Flooding Projects to align estimates with market rates. The resulting cost escalation impacts program outcomes, with fewer Basement Flooding Projects constructed per year. 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, organized by ward, provide communication to Councillors regarding rate-supported studies and projects proceeding in each ward.

Background:

The Basement Flooding Protection Program (BFPP) increases the resilience of the City of Toronto by making "Toronto more resilient to climate change, including the hazards of flooding and heat". Specifically, Toronto Water contributes to the achievement of action items B1.1, B1.2, and B1.3 of the Toronto Resilience Strategy through its efforts to upgrade municipal drainage infrastructure, its continuous contributions to research, and its annual consideration of the

program's accomplishments. Toronto's Resilience Strategy can be found at:
https://www.toronto.ca/ext/digital_comm/pdfs/resilience-office/toronto-resilience-strategy.pdf

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>

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.

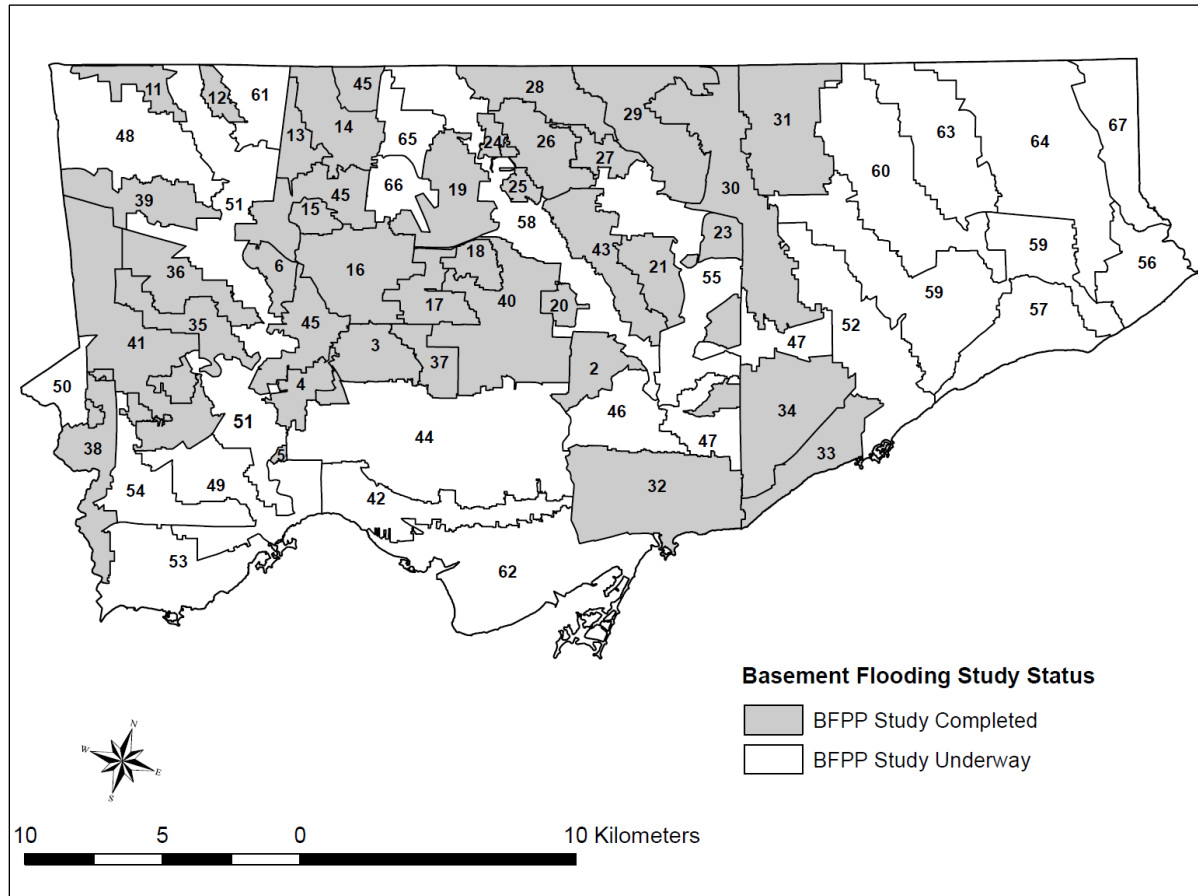
As of October 1, 2021, studies have been completed for 43 Basement Flooding Study Areas and 24 study areas are underway. Study Areas 42, 44, and 62 commenced in 2019 and, due to the size and complexity of the downtown area, are projected for completion in 2023. 21 study areas, Study Areas 46 through 61, and 63 through 67, were awarded in August 2019, and are scheduled for completion in 2022. 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 in schedule (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 the EA Study process. To ensure that solutions are properly scoped and located when they are constructed, the corresponding EA study should be reviewed and refreshed where appropriate once it reaches ten years of age. Accordingly, 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 2021, Toronto Water has updated the cost estimates of many planned Basement Flooding Projects to reflect construction market rates. Increases in future construction cost estimates impact the delivery of planned projects across the Basement Flooding Program resulting in fewer projects proceeding to construction in the 5 year capital plan. This is reflected in the BFPP Project List, with fewer projects listed, and some projects that were previously targeted to start in construction years 3, 4 or 5 of the budget, 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 2021, it is projected that approximately \$679 million will have 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 \$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 or to address land development needs.

With the cost per benefitting property value increasing to \$68,000, Toronto Water reviewed the BFPP deferred projects list, and adjusted project cost estimates to account for cost escalation over time. Projects with adjusted cost per benefitting property estimates under the \$68,000 value were moved from the deferred projects list to the BFPP planned project list, to be advanced as aligned with program budgets and design and construction capacity. Future cost estimates identified through an EA study refresh or preliminary design, may increase the costs of these projects beyond \$68,000, resulting in the project being added again to the deferred projects list. This revised list of projects has been included in Schedule B.

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

External Funding of the BFPP

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

Basement Flooding Protection Subsidy Program

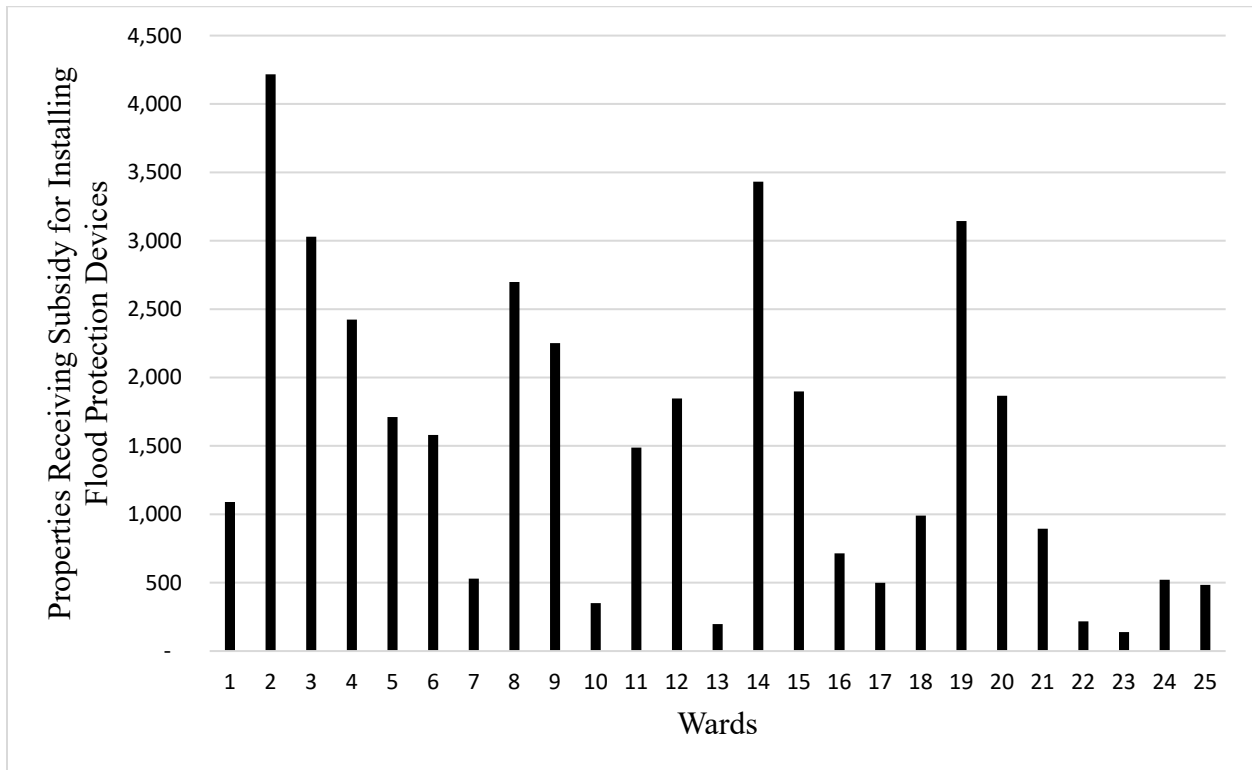
The City's Basement Flooding Protection Subsidy Program (BFPS) offers property owners of single-family, duplex and triplex residential homes financial assistance of up to \$3,400 per property to install flood protection devices, including a backwater valve, sump pump, and pipe severance and capping of 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/c1041.pdf>

Since the subsidy program was expanded City wide in 2006, over 38,200 homes have installed flood protection devices. This has resulted in \$65.5 million in total subsidy payments issued to property owners by Toronto Water as of June 20, 2021. 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 2021)



Key Points – BFPP Program:

- The cost to construct Basement Flooding Protection Program solutions has increased over time. The cost estimates for many future Basement Flooding Projects have been increased to reflect recent market data. These cost increases impact the number of BFPP projects that can be delivered in the five year capital plan. This is reflected in the list of projects in Schedule B, which has been revised to reflect project delivery within program budget.

Key Points – Ward Profile Summaries (Schedule A):

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 studies, construction of infrastructure upgrades, and participation in the subsidy program is provided.

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 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 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'. To align with the typical budgeting cycle, expected construction costs to the end of the 2021 calendar year have been estimated. 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, 2021 are provided.

Key Points – Project List 2022-2026 (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 2022 to 2026 Capital Budget Plan.
- This Briefing Note uses the best available scheduling information at the time of writing. Schedule and scope change requests matching the schedules and scopes proposed 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 that are shown in the tables in this BN. As change requests are processed, the City's website (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.

- 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. Should 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 such changes prior to construction.
- This briefing note lists projects that have been removed, during 2021, 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.
- Table 2 (attached) lists projects that had previously exceeded the \$32,000 cost per benefitting property threshold, and upon review and analysis of cost escalation over time, are eligible to advance under \$68,000 threshold. Upon future study or preliminary design, the scopes and cost estimates of listed projects may be refined, resulting in cost per benefitting property estimates increasing beyond the \$68,000 threshold, resulting in projects being added to the deferred projects list.

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