
2015 CAPITAL BUDGET BRIEFING NOTE

Strengthening "Green Infrastructure" in Basement Flooding Environmental Assessments and Projects

Background:

- Budget Committee, at its meeting of February 4, 2015, during consideration of the 2015 Rate Supported Budgets - Toronto Water and 2015 Water and Wastewater Rates and Service Fees, requested a briefing note on:
 - c) how to strengthen the "green infrastructure" in all basement flooding Environmental Assessments and projects.
- <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.BU4.1>

Issue:

- Under the City's Basement Flooding Protection Program, Environmental Assessment (EA) studies are being undertaken in basement flooding study areas of the City. The EA studies consider and recommend solutions, including infrastructure improvements involving "green infrastructure" to reduce the risk of future flooding during extreme storm events.
- The implementation of "green infrastructure" projects recommended in Basement Flooding EAs occur through the engineering design and construction assignments for the Basement Flooding Protection Program, which are delivered by engineering consultants and managed by Engineering and Construction Services.

Key Points:

Basement Flooding Environmental Assessment Studies

- The purpose of Toronto Water's Basement Flooding EA studies is to investigate the causes of basement and surface flooding and recommend solutions, including infrastructure improvements to build capacity and resilience in the City's storm, sanitary and combined sewer network and reduce future flooding risks from extreme storm events.
- The Basement Flooding EAs follow the Municipal Class EA process, which requires that a range of feasible solutions are considered to address the problem. Basement Flooding EA study solutions include source controls, conveyance controls, and end-of pipe solutions.

- Given the nature of a severe storm, in which a large volume of rainfall occurs over a short duration of time that can overload the sewer system, infrastructure solutions are required to build additional capacity to accommodate significant volumes of stormwater. These solutions include upsizing existing sewers, building underground storage tanks, and using storage within existing pipes.
- "Green infrastructure" solutions recommended in the EA studies for basement flooding protection have included stormwater wet and dry ponds that provide temporary storage in the storm sewer system to manage surcharges during extreme storms (i.e. end of pipe solutions). Stormwater ponds have been recommended in EAs when public open space is available to accommodate the above-ground infrastructure. This is challenging in the City's built-up neighbourhoods. City parks are typically the only available area.
- "Green infrastructure" within the public right-of-way can include bioswales and bioretention units (i.e. bio-retention units). These measures can help manage stormwater during smaller storms; however they are less effective at providing basement flooding protection during larger storms. These measures also help improve stormwater quality.
- Toronto Water has strengthened stormwater quality improvement requirements in the Request for Proposals for future Basement Flooding EA studies (Areas 34 to 41) that will begin in 2015. "Green infrastructure" solutions will be considered for stormwater quality improvement in these EA studies.

Implementation of "Green Infrastructure" in Basement Flooding Projects

- Basement Flooding EA studies may recommend "green infrastructure" at locations within the public right-of-way; however, confirming the constructability of the infrastructure requires technical analysis and a detailed assessment of site conditions during the preliminary and detailed engineering design process led by Engineering and Construction Services.
- There are technical challenges with implementing "green infrastructure" projects within the public right-of-way. These issues include limited space, conflicts with other infrastructure, tree impacts, parking requirements, soil conditions, etc. These challenges may make implementation of "green infrastructure" not feasible.
- Despite these challenges, Toronto Water is committed to advancing "green infrastructure" projects and has been collaborating with City Planning to implement approved "green infrastructure" pilot projects including the Queensway Sustainable Sidewalk, Keele South of Lawrence Ave. W., Fairford Parkette, and South Station Street.
- To further advance the implementation of "green infrastructure" projects, Toronto Water is working jointly with City Planning on the development of a Green Streets guideline that will include technical design standards for "green infrastructure" projects within the public right-of-way. The impact of "green infrastructure" on City operations will be assessed and quantified.

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