



SUBJECT: Stormwater Management Update

TO: Committee of the Whole

FROM: Capital Works

Report Number: CW-10-19

Wards Affected: All

File Numbers: 155-08-2

Date to Committee: September 9, 2019

Date to Council: September 23, 2019

Recommendation:

Approve the establishment of a 50% grant up to a maximum of \$250 for third party assessments for Home Flood Protection Program inspections. The recommendation of \$5,000 annual cost is proposed to be funded from account SD0113 Storm Drainage Climate Change Adaptation.

Purpose:

This report is an annual update of the progress of the Flood Vulnerability, Mitigation and Prioritization and Stormwater Management program.

Background and Discussion:

Earlier this year, city council approved a Climate Emergency Declaration recognizing that climate change is having an impact on community infrastructure, homes and businesses across Canada. Burlington experienced a major ice storm in 2013 and a major flood event in 2014, resulting in millions of dollars in damages.

As reported in the recent Take Action Burlington: An Update on Our Local Environment report, Burlington can expect more frequent and higher intensity rain, ice and windstorms with a changing climate, causing:

- High Lake Ontario water levels at times.
- Flooded basements from overland water flow and sewer backups.
- Damage to grey and green infrastructure such as roads, buildings and tree canopy.

Planning for resiliency now is crucial to protecting the community from the impacts of climate change in the future.

Following the August 4, 2014 flooding event, a comprehensive study entitled “August 4, 2014 Flood Vulnerability, Prioritization and Mitigation Study Report” was undertaken by Amec Foster Wheeler. This report is available for viewing on the City of Burlington website.

The recommendations from the Flood Study provided critical information which lead to the Council approval of an additional \$20M for our stormwater capital infrastructure enhancement program 2015-2024.

Since this event, staff have provided annual update reports summarizing progress made on implementing the recommendations of this study. The last report, CW-02-18 entitled “Flood Study Update”, was presented to the Committee of the Whole on January 15, 2018.

Broadly speaking the projects undertaken can be categorized as:

- Reducing the risk of riverine flooding by increase the capacity of creek channels and bridge/culvert structures,
- Improvements to the city’s stormwater and wastewater collection systems,
- Programs for property owners to assist them in increasing the flood resilience of their homes; and,
- Development of new design guidelines to provide for increased flood protection in new construction.

The city’s Stormwater Management Design Standards are also in the process of being updated with a report to be presented to the Committee of the Whole in the fall of 2019. The design standards will include updated modeling, standards for storm sewers and low impact development measures. It is important to note that with a changing climate, the ability to rely on historic flows and storm events is no longer an option. Storms are surpassing 100 year events and are becoming more frequent and intense, making it challenging to plan for the future. City staff work in close collaboration with our partners at the Region of Halton, Conservation Halton and various transportation authorities, as well as community engagement activities.

A list of stormwater capital projects that have been completed, are in progress, and are planned can be found in Appendix A.

The city is involved in a number of other stormwater activities to improve resiliency to climate change in our community. The following is a summary and additional details can be found in Appendix B – City of Burlington Climate Adaptation – Stormwater Management Activities.

1. Plumbing Permit Fee Reimbursement Program

Since the August 4, 2014 storm, 855 plumbing permits have been issued for back water valves, disconnections of foundation drains from sanitary sewer and installation of sump pumps. These measures reduce the risk of basement flooding due to sanitary sewer backup into the basement.

2. Home Flood Protection Program

The Home Flood Protection Program (HFPP) was piloted in Burlington from 2016-2018 by the Intact Centre for Climate Adaptation from the University of Waterloo.

The HFPP provided a confidential, on site, 60-90 minute flood risk assessment service to owners with single detached homes, semi-detached homes and townhouses. Assessments were completed inside and outside of the dwelling. The service featured an easy-to-read summary report and an optional 15 minute follow-up conversation with the assessor.

The areas of focus were Aldershot, Headon Forest, Millcroft and Orchard, however home owners from across the city took advantage of this program. A total of 130 assessments were completed in Burlington.

The HFPP was finalized in Burlington at the end of 2018. The cost of the pilot program to the City was \$50,000. In April 2019, the Intact Centre released the HFPP Final Report entitled “Water on the Rise: Protecting Canadian Homes from the Growing Threat of Flooding” which is currently available for viewing on our city website. HFPP assessments are still being offered to residents by the University of Waterloo Intact Centre for a fee. In addition a simplified version of this assessment is being developed to allow property owners to undertake self assessments for more common routine items for free. This program provides practical specific recommendations that property owners can undertake to their property to reduce the risk of flooding and mitigate damages should flooding occur. Staff believe that this program can provide valuable information to property owners in assessing their risk to flood damage and measures they can take to mitigate this specific to their own individual property and circumstances. As such it is recommended that the city continue to support this program by promoting the existence of this service and providing a subsidy of up to the lesser of 50% or \$250 of the assessment fee for third party assessments under this program.

3. Creek Erosion and Maintenance Operations (Roads, Parks and Forestry)

Roads, Parks and Forestry (RPF) regularly inspect and maintain city owned watercourses, removing creek debris and identifying areas with erosion problems. The next comprehensive Creek Condition Inventory Survey Report will be completed in 2021. RPF also maintains rural ditches.

4. Coordination with Halton Region

City staff continues to coordinate with Halton Region staff on an Enhanced Basement Flooding Prevention Subsidy Program including subsidies for weeping tile disconnection and sump pump installation, downspout disconnection, backwater valve installation, and sewer lateral repair. Capital Works staff have been assisting with the inspections of downspout disconnection locations to ensure no new drainage issues are being created. Disconnection of the downspouts ensures water from this source does not enter the sanitary sewer system and also provides opportunity for enhanced infiltration to the ground where these downspouts are directed to pervious surfaces such as lawns.

5. Coordination with Conservation Halton

In April 2015, Conservation Halton (CH), in association with Environmental Water Resources Group Limited (EWRG), finalized its "August 4th, 2014 Storm Event, Burlington" report. City staff are working to respond to recommendations in the report, such as a new higher capacity Regal Road bridge, installation of rain gauges in partnership with Conservation Halton and updated watershed models.

6. Coordination with 407-ETR

The culvert crossing improvement at Ingersoll Drive was completed in the spring of 2018. The Ingersoll Drive culvert crossing has been reinstated to its original design capacity.

7. Coordination with MTO

MTO is undertaking culvert rehabilitation works for the QEW culvert crossings at Tuck Creek and Shoreacres (complete), as a result of damage from the August 2014 storm. Burlington staff participate in coordinating meetings with MTO to support this work.

8. Railway Authorities

Capital Works, in coordination with CN and Metrolinx, initiated an inspection and rehabilitation design project for the city's 11 major railway culverts. Design work

has been initiated for the replacement of 4 of the 11, with plans to replace these in the next 5-10 years, subject to budget approval.

9. Burlington Official Plan

Water resource policies were updated in the adopted new Official Plan (April 2018). This included policies related to watershed management, stormwater management, natural hazards and watercourses. Updated policies reflect current stormwater management best practices, such as encouraging low impact development (LID) measures and the potential retrofit of existing ponds and stormwater management facilities to improve function. The new Official Plan more accurately reflects natural hazards and areas subject to Conservation Authority Regulations and better reflects current technical standards as well as related plans and policies.

10. Stormwater Design Standards

The city's Stormwater Management Design Standards are in the process of being updated. A report will be presented to the Committee of the Whole in the fall of 2019.

Over the past 2 years, the Ministry of Environment has been working on a Low Impact Development guidelines document. There have been significant delays in its finalization; however it will be a reference document for our new standards upon its issuance.

11. International Urban Cooperation (European Union Partnership Project) – Växjö, Sweden

Funded by the European Union, the International Urban Cooperation (IUC) program supports initiatives on urban development and climate change, such as the Urban Agenda, the Sustainable Development Goals, and the Paris Agreement.

City-to-City Cooperation on Sustainable Urban Development

Växjö was paired with the City of Burlington, as both were considered to be facing related sustainable development challenges and climate change risks including flooding. Växjö and Burlington are sharing knowledge and best practices on sustainable urban solutions including flood control, stormwater management and water quality improvements in addition to broader sustainable development initiatives including district energy, bio-energy, actions on climate change, tall wood buildings, eco-systems services, urban park strategies and community engagement.

12. Municipal Natural Assets Initiative (MNAI) – Watershed-level project in Ontario's Greenbelt

In April of this year Council endorsed a proposal for the city to participate on a MNAI project on Grindstone Creek, along with Conservation Halton and the City of Hamilton as partners. The purpose of the project is to better understand the role of natural assets in building resiliency in communities and how best to protect and manage these assets.

Capital Works staff have been coordinating with Conservation Halton, City of Hamilton and Royal Botanical Gardens (RBG) staff regarding a proposed project related to Grindstone Creek. A draft Memorandum of Understanding (MOU) has been prepared. Final details are being worked out with the MNAI. We anticipate this will lead to the signing of the MOU in the summer and commencement of the project in the fall. One of the goals of this initiative is to develop leading edge, sustainable, cost effective and climate resilient flood management and stormwater management infrastructure.

Depending on the number of partners that sign the MOU, it is anticipated that the City of Burlington will be required to fund a total of \$35,000 in 2019 and 2020. Council approved in April that the 2019 funding would be financed from the Tax Rate Stabilization Reserve Fund.

Financial Matters:

All Flood Mitigation projects are included in the approved 2019 Stormwater Capital Budget and 2020-2028 Forecast. According to current construction estimates, adequate funding is available for the existing and future flood mitigation projects.

The city's Plumbing Permit Fee Reimbursement Program has been funded out of the Tax Rate Stabilization Reserve Fund. \$30,000 from the Tax Rate Stabilization reserve Fund was approved by the 2019 budget for the continuation of the plumbing permit fee reimbursement program. A total of \$318,348 has been expended.

The following is a summary of the costs related to this program:

- 2014 = \$176,983
- 2015 = \$ 60,709
- 2016 = \$ 14,953
- 2017 = \$ 26,985
- 2018 = \$ 35,626
- 2019 = \$ 3,092 (as of May 31, 2019)

Funding for the Home Flood Protection Program Assessments is proposed to be funded from the existing Capital Orders SD 0013 – Stormwater Drainage Climate Change Adaptation Account at an upset limit of \$5,000 annually. Demand for this program is anticipated to be moderate, given the development of free self help tools for homeowners under this program, however the availability of this service to homeowners is important in more complex situations on private property.

Source of Funding

The city's Plumbing Permit Fee Reimbursement Program is funded through the Tax Rate Stabilization Reserve Fund.

Public Engagement Matters:

Updates continue to be posted on the City's website at:

www.burlington.ca/flood

<http://www.burlington.ca/en/services-for-you/Storm-Water-Management.asp>

<http://www.burlington.ca/en/services-for-you/environmental-assessments-projects.asp>

A number of public meetings, resident consultations and neighbourhood meetings have taken place for various projects and initiatives since 2016. Details about these activities can be found in Appendix C – Community Engagement Activities. In addition to these activities, staff have also been engaged on an international level to learn about stormwater management in other jurisdictions and share information about Burlington's activities. Details about these activities are also found in Appendix C.

Conclusion:

Significant progress continues to be made on the design and implementation of flood mitigation projects and initiatives. These projects collectively are an important part of the city's Climate Change Adaptation program, making Burlington more resilient to the increasing risk of severe rainfall/runoff events.

Respectfully submitted,

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Appendices:

Appendix A - Status of City of Burlington Stormwater Capital Program Projects

Appendix B - City of Burlington Climate Adaptation – Stormwater Management Activities

Appendix C - Community Engagement Activities

Notifications:

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Report Approval:

All reports are reviewed and/or approved by Department Director, Director of Finance and Director of Legal. Final approval is by the City Manager.