



# Flooding

## What Causes Flooding?

- Heavy or prolonged rainfall or severe storms (e.g., thunderstorms)
- Rapid snowmelt
- Environmental factors such as drainage, soil type, and flood control systems
- Sea level rise and storm surges

## By 2070, Brampton is expected to see:

- **More precipitation:** Under a high-emissions climate change scenario, it is expected that precipitation will increase across all seasons, leading to more frequent and severe flooding. This is of particular concern during the winter season, as warmer temperatures will result in less snow and more mixed precipitation, leading to more winter floods such as the 2022 Churchville flood
- **Greater number of people at risk:** In 2020, roughly 3% of Brampton's population was at risk of flooding. By 2070, if we continue business-as-usual, this increases to 20%.
- **Damage to property, infrastructure & health:** An increase in flooding and erosion can cause stormwater infrastructure to become overwhelmed, leading to basement flooding and property damage. Flooding can also result in physical injuries and mental health impacts such as anxiety and depression.

- **Changes to our natural systems:** An increased frequency and severity of flooding can impact the health of our natural systems. Changes in precipitation timing, amount, and intensity lead to altered stream flow, water chemistry, runoff, and erosion, which in turn threaten species survival and habitat & waterway quality.
- **Increased financial cost** – it is estimated that a 1-in-100-year storm, which has a 1% chance of happening in a given year, may cost roughly \$1.6 billion for the city, while a 1-in-25-year storm will cost roughly \$500 million. These include direct (structural, content, etc.) and indirect (road, utility, etc.) damages.

## What can we do?

Protecting people, natural systems, buildings, and infrastructure from flooding will be essential as the impacts of climate change continue to worsen. We all have a responsibility to reduce the impacts of flooding both now and for future generations.

Some adaptation actions that can be taken include:

- Flood-proofing homes, buildings and infrastructure (e.g. installing a backwater valve, downspout disconnection),
- Protecting and enhancing natural spaces, and
- Reducing the amount of high-risk flooding locations

# Three Steps to Cost-Effective Home Flood Protection

## ► Step 1: Simple, no Cost Fixes



Remove debris from nearest storm drain or ditch and culvert.



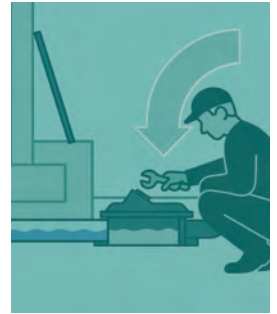
Clean out eaves troughs.



Check for leaks in plumbing, fixtures and appliances.

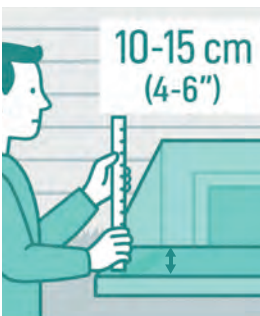


Test your sump pump.

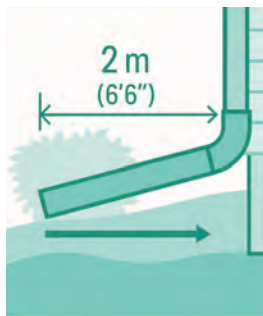


Clean out your backwater valve.

## ► Step 2: Affordable Investments



Install window wells that sit 10-15 cm (4-6") above ground, and window well covers (where fire escape requirements permit).



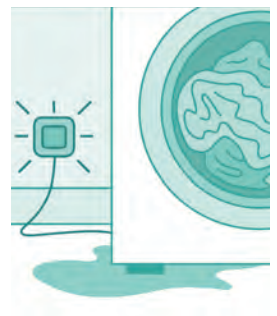
Disconnect downspouts, cap foundation drains and extend downspouts and sump discharge pipes to direct water at least 2 m from foundation.



Store valuables and hazardous materials in watertight containers and secure fuel tanks.



Remove obstructions to floor drain.



Install and maintain flood alarm.

## ► Step 3: Larger Projects



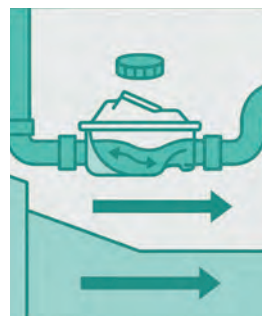
Install a rain garden to collect stormwater (at least 5 m from the foundation).



Convert paved areas to vegetation which absorbs more water and less heat.



Correct grading to direct water at least 2 m away from foundation.



Install backwater valve.



Install backup sump pump and battery.