Water on the Rise: Limiting Home, Building and Community Risk

As climate change and extreme weather events continue to impact residents, businesses, and communities across the country, flooding has emerged as the costliest and the most pervasive natural disaster in Canada.

According to Public Safety Canada, the cost of the federal Disaster Financial Assistance Arrangements program, which provides funding support to provinces and territories for major natural disasters, is approaching $1 billion dollars annually. Approximately 75% of this cost is attributable to flood events. [i]

Catastrophic losses for property and casualty insurance sector in Canada are also on the rise, having exceeded $1 billion dollars annually in the last 10 out of 11 years (2019-2009), compared to $405 million annually from 1983 to 2008. Water-related damages accounted for more than half of this increase.[ii]

Moreover, individuals impacted by flooding suffer not only financial, but also long-lasting mental distress.

To address this imminent challenge, this brochure outlines practical actions that **homeowners**, **communities** and **commercial real estate** owners and property managers can implement today to get ahead of the bigger storms that are coming.

These actions have been informed through a nation-wide consultation with hundreds of subject matter experts in Canada, supported by the Intact Financial Corporation, the National Research Council of Canada, Standards Council of Canada, CSA Group, the Real Property Association of Canada (REALPAC) and the Building Owners and Managers Association of Canada (BOMA Canada).

The timely deployment of flood-resilience measures cannot be overstated as flood risk is rising in Canada in concert with changing climate.

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[i] Parliamentary Budget Officer of Canada. 2016. Estimate of the Average Annual Cost for Disaster Financial Assistance Arrangements due to Weather Events.
[ii] Insurance Bureau of Canada. 2019. Facts of the Property and Casualty Insurance Industry in Canada.

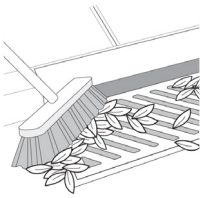
HOME FLOOD PROTECTION PROGRAM

Three Steps to Cost-Effective Home Flood Protection

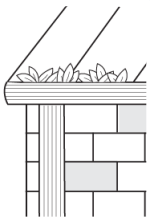
Complete these 3 steps to reduce your risk of flooding and lower the cost of cleanup if flooding occurs. For items listed under step 3 check with your municipality about any permit requirements and the availability of flood protection subsidies. **Applicable only in homes with basements*

Step 1: Maintain What You've Got at Least Twice per Year

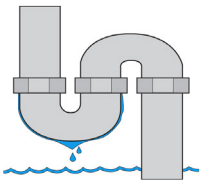
Do-It-Yourself for $0



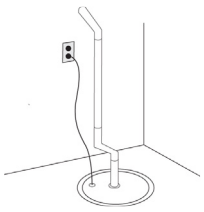
Remove debris from nearest storm drain or ditch & culvert



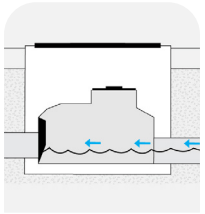
Clean out eaves troughs



Check for leaks in plumbing, fixtures and appliances



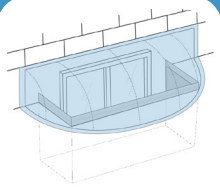
Test your sump pump*



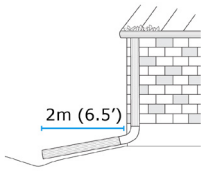
Clean out your backwater valve

Step 2: Complete Simple Upgrades

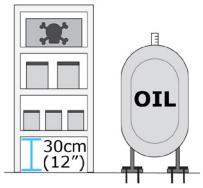
Do-It-Yourself for Under $250



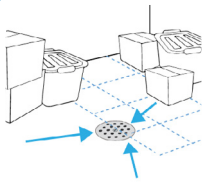
Install window well covers (where fire escape requirements permit)*



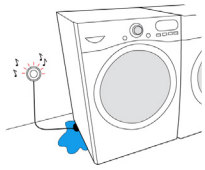
Extend downspouts and sump discharge pipes at least 2m from foundation



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



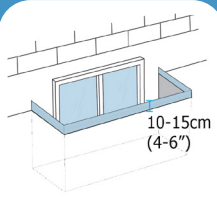
Remove obstructions to floor drain



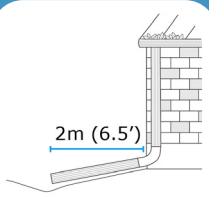
Install and maintain flood alarms

Step 3: Complete More Complex Upgrades

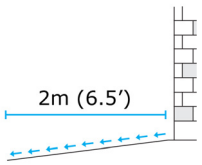
Work with a Contractor for Over $250



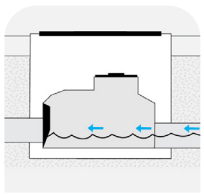
Install window wells that sit 10-15cm above ground and upgrade to water resistant windows*



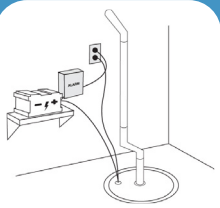
Disconnect downspouts, cap foundation drains and extend downspouts to direct water at least 2m from foundation



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



Install backwater valve



Install backup sump pump and battery*

Note: Not all actions will be applicable to each home. Completing these steps does not guarantee the prevention of flooding.

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For Additional Resources Visit:
www.HomeFloodProtect.ca

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Examples of Flood Risk Reduction Approaches for Communities

Types of Flooding	Examples of Flood Risk Reduction Approaches
Riverine flooding (also known as fluvial flooding) Occurs when water levels in watercourses rise and spill over their banks. Riverine flooding can be caused by extreme rainfall, snowmelt, ice build-up and debris jams.	• Proactive maintenance of culverts, bridges and other flood control structures; • Proactive vegetation management along water- courses, including debris removal; and • Flood-proofing properties adjacent to watercourses (e.g., through installing floodwalls and berms, re-grading lots and encouraging homeowners to elevate electrical equipment above potential flood levels).
Overland flooding (also known as pluvial flooding) Occurs when excess stormwater flows over private properties, entering homes through lowest building openings (e.g., basement windows and doors) causing damage.	• Proactive clearing of catch basins and culverts to allow overland water to drain; • Removal of snow from critical overland flow paths prior to spring thaw to prevent overland flow obstructions; • Re-grading of lots and roadways to carry overland water away from properties, onto the right of ways; and • Introducing additional storage facilities (e.g., through stormwater ponds, underground tanks, etc.) to store rainwater and reduce overland flow.
Storm and/or sanitary sewer back-up Occurs when the storm and/or sanitary sewer systems are overloaded, causing surcharge and back-up into basements.	• Installing backwater valves (i.e., backflow prevention devices) on storm and/or sanitary sewer laterals to prevent surcharging sewer water from entering basements; • Disconnecting roof leaders from sanitary sewers; • Sealing and bolting manhole covers in low lying areas, where water accumulates and has a higher risk of contributing to sewer surcharge; and • Implementing stormwater diversion projects (e.g., through installing pipes that carry excess stormwater from overwhelmed areas to areas with more capacity).
Foundation system failures Occurs when foundation drainage systems fail and water enters basements though foundation drains / seeps through the foundation walls.	• Installing sump pumps and sump pump back-up systems; and • Installing impermeable layer of soil around homes (i.e. foundation backfill areas) to reduce the risk of water infiltration and seepage through foundation walls

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For More Information Read:
Weathering the Storm: Developing a Canadian Standard for Flood-Resilient Existing Communities

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Key Flood-Resilience Measures for Commercial Real Estate In Canada

Plans & Procedures

Emergency plans: emergency preparedness and response plans are in place and include flood event procedures.

Practice drills: building operations staff are trained on flood event procedures. Annually, practice drills are performed with tenants and procedures are updated as required.

Emergency funds: dedicated funds are available for emergency operations, including flood events. Designated staff have access to both credit cards and sufficient amounts of cash to be used for emergency operations.

Tenant communication channels: tenant and stakeholder communication channels have been established for emergency situations, including flood events. Tenant contact details are regularly updated.

Emergency operations centres: designated space is available for building operations staff to use as emergency operations centres. This space is equipped with water, non-perishable food supplies and emergency kits and is located above expected flood levels.

Emergency response supply contracts: standing orders are in place with fuel suppliers, restoration and landscaping companies to provide goods and services at pre-arranged prices, under set terms and conditions, as required for flood events.

Emergency contact information: contact information of risk management personnel, insurance adjusters and insurance brokers is maintained and current.

Insurance documentation: documentation to access business interruption insurance (e.g., financial statements, lease agreements and inventory counts) is regularly updated, backed-up electronically and stored offsite.

Equipment & Supplies

Critical equipment and supplies: critical equipment and supplies are available on-site to respond to flood emergencies, (e.g., sandbags, sump pumps, portable generators, fuel, portable lights, extension cords, dehumidifiers, protective clothing, etc.).

Portable flood barriers and sandbags: for buildings with critical operations (e.g., buildings housing data centers), portable flood barriers and sandbags are available to protect the building from overland flooding.

Back-up generation: onsite back-up generation equipment and fuel are available and have the capacity to provide electrical power to at least one elevator, all building sump pumps, heat pumps, boiler, smoke evacuation fans, fire sprinkler and fire alarm systems, stairwell pressurization systems, and emergency lighting equipment for 24-72 hours.

Emergency lighting: battery operated emergency lighting is available in critical mechanical and electrical rooms, as well as in emergency exit stairwells for building evacuations, should backup generation equipment malfunction. A process is in place to regularly test all battery-operated lighting and systems.

Elevator water sensors: elevators are equipped with water sensors that prevent them from proceeding to flood-inundated levels.

Backwater valves: backwater valves have been installed on storm and sanitary sewer pipes.

Hazardous materials storage: hazardous materials are protected from flooding (e.g., chemicals used in building operations are stored in sealed containers, or in inflammable cabinets located above expected flood levels). Where hazardous materials are stored, floor drains are protected from spills.

Major Retrofits

Elevating and flood-proofing critical equipment: heating, cooling, ventilation, and air conditioning (HVAC) equipment; electrical transformers, switchgear and service panels, as well as communication systems are elevated above expected flood levels. If not feasible to elevate, these systems are flood-proofed (e.g., with equipment elevated off the ground and drains at the lowest points on the floor).

Protecting server rooms: server rooms are located on higher floors,preferably on a raised platform, with a sump pump installed at the lowest point. Water sensors are installed for leak detection.

Protecting high-voltage and telecommunication pull rooms: high-voltage and telecommunication pull rooms are waterproofed and equipped with drainage.

Isolating electrical circuits: for multi-level parkades, electrical circuits have been isolated for each parking level. MR5. Electrical panel upgrades:electrical panels are equipped with WIFI enabled breakers to allow for remote shut off.

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For More Information Read:
Ahead of the Storm: Developing Flood-Resilience Guidance for Canada's Commercial Real Estate.

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