

Welcome to Public Information Centre #1 for the

Little Etobicoke Creek **Flood Evaluation Study and Master Plan**

The purpose of this evening's Public Information Centre is to

Provide an overview of the proposed study Obtain public input regarding known flooding issues to inform the study

Please sign in if you would like to be included on the project mailing list

the City of Mississauga's website:

Visual information presented this evening is available on http://www.mississauga.ca/portal/stormwater/flooding



Last Comprehensive Flood Study





1985

Control – Little Etobicoke Creek

The outcomes from that study included:

- Identification of 7 flood hazard areas within the watershed where a significant flood hazard exists
- Identification of existing erosion problem areas and protective channel works
- Proposed flood mitigation schemes

since the 1988 study:

- Development in headwaters (east of 403/410)
- New roads (Eastgate Parkway)
- Increased impervious areas
- Climate change





- The last comprehensive flood study of Little Etobicoke Creek watershed was completed in 1988:
- **A Preliminary Engineering Study for Flood and Erosion**

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Significant changes have occurred within the watershed
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Project History - Recent Flooding

There have been several large flood events in the GTA in recent years:

- This shows an increase in frequency and intensity of extreme events
- May be an indication of climate change

Recent Flooding events include:

August 19th, 2005 Flooding

- Rainfall in excess if 100 mm recorded
- Produced estimated 25 year return period flow

July 8th, 2013 Flooding

- Largest flood on record for Etobicoke Creek
- Estimated 350-year peak flow in Little Etobicoke near Dixie Road



Dixie Road and Dundas Street



Cawthra Road and North Service Road

Project History - Recent Studies

Recent flooding spurred new studies focused on flood prone areas:

Floodplain Mapping in Applewood and Dundas / Dixie Special Policy Area (MMM Group, 2015)

- Develop updated flood hazard mapping for Little Etobicoke Creek through the Dundas / Dixie and Applewood SPAs
 - Develop 1D and 2D hydraulic models to estimate flood elevations
- Complete preliminary assessment of alternatives to reduce flood risk

DRAFT Special Policy Area and Flood Mitigation Review Dundas Street Transportation Master Plan (AECOM, 2016)

- Review of existing Special Policy Areas subject to flooding (Applewood SPA, Dixie District SPA)
- **Review boundaries and restrictions**
- Review potential flood mitigation measures that may reduce restrictions on intensification and transit along Dundas Street
- It should be noted that the SPA update process is at a preliminary stage, and results to date may be subject to significant changes

Dundas Connects (City of Mississauga, in progress)

- Master Plan for the Dundas Corridor focusing on changes to land-use, transit and public realm
- Mitigation measures being considered for flood constraints in Dixie Dundas area

Image: Regional Flood Depth Map (MMM, 2015)

Image: Dundas Corridor (Mississauga, 2017)

Study Overview

Following the recent focused studies, the current project will be completed as a comprehensive watershed scale study.

The study will be completed as two phases:

- Phase 1 will expand upon previous studies of the overland spill from area, during high flow conditions.
- Phase 2 will identify overland urban flooding risk throughout the Little Etobicoke Creek subwatershed and develop, assess and recommend remediation measures.

Objectives of the Little Etobicoke Creek Flood Evaluation study:

- To recognize and account for the flow entering other subwatersheds as a result of spill originating near Dixie Road and Dundas Street
- To identify areas at risk of riverine and urban flooding

At the end of the study, a Master Plan Report documenting the entire study will be available for public review.

Little Etobicoke Creek, particularly in the Dixie Road and Dundas Street

To develop a plan to mitigate risks to people, property and infrastructure

Master Plan and EA Process

The study will be completed as a Master Plan under the Municipal Class Environmental Assessment ("EA") process.

The study will follow Approach 2 of the Municipal Class EA Master Planning process which includes completion of Phases 1 and 2 of the EA process.

This method will fulfill planning, technical, and public input requirements for any future Class EA Schedule B projects undertaken by the City.

Phase 1- Study Description

Phase 1 expands upon previous studies which identified that under high flow conditions Little Etobicoke Creek (TRCA jurisdiction) spills to an adjacent watershed (CVC jurisdiction).

Phase 1 objectives are to:

- Identify the extents of flooding resulting from the spill
- Determine the quantity of flow entering other watersheds

Develop regulatory flood hazard mapping of the spill area

Phase 1 technical assessment includes expanding the existing model to allow for additional spill assessment of the July 8, 2013 and Regional storm events.

Results will be used by both TRCA and CVC to update their respective hydrologic and hydraulic models.

Phase 1 – Floodplain Spills

- Spills occur when water from the channel leaves the floodplain as a result of high flows.
- channel.
- Spill flow typically rejoins the channel somewhere downstream.
- In this case spilled flow leaves the Etobicoke Creek watershed and flows into Applewood Creek and Serson Creek subwatersheds.

Images: Floodplain Mapping in Applewood and Dundas / Dixie Special Policy Area (MMM, 2015)

Water from spills flows overland in a direction not in line with the

Traditional Floodplain Mapping - ABOVE

Traditional floodplain modelling could not represent spills well. As a result regulation mapping often includes arrows to indicate a spill, but the severity and impacts of the spill are ambiguous.

Modern Analysis Techniques - LEFT

Modern hydraulic models are able to characterize flow depths and velocities in multiple dimensions. As a result spill extents and flood risk can be mapped more accurately.

Phase 1 – Previous Study Results

July 8, 2013

Modelled depth of flooding from previous study.

Hurricane Hazel (Regulatory Storm)

Images: Floodplain Mapping in Applewood and Dundas / Dixie Special Policy Area (MMM, 2015)

Phase 2 – Study Description

The Phase 2 study area includes the entire Little Etobicoke Creek subwatershed (map on next panel).

Phase 2 objectives include:

- Identify existing preliminary flood cluster areas that are at risk of riverine and urban flooding
- Determine cause of flooding and contributing factors
- Develop and assess flood remediation works
- Prepare flood remediation plan

Methodology:

- **1. Data Collection**
- 2. Site Investigations
- 3. Develop Integrated Drainage Model
- 4. Identify Problems and Flood Cluster Areas
- **Complete Flood Characterization** 5.
- 6. Develop Potential Remedial Measures for Flood Cluster Areas
- 7. Investigate the Upstream and Downstream **Effects of Potential Remedial Measures**
- 8. Evaluate and Screen Options
- 9. Recommend Appropriate Remedial Measures
- **10. Complete Master Plan Report**

Phase 2 – Study Area

The Phase 2 study area includes the entire Little Etobicoke Creek subwatershed as shown below.

There are multiple government agencies working together to regulate flood risk and maintain drainage infrastructure within the City of Mississauga. The roles and responsibilities of each are summarized below. These agencies have come together in order to complete this comprehensive Master Plan study.

City of Mississauga

- Road Drainage
- Storm Sewers
- Parks
- Greenbelts
- Trails
- City Trees
- Creek Erosion and Flow Management

Conservation Authorities (TRCA and CVC)

Regulation of the Flood Plain Flood Warnings

Flooding Information

Your local knowledge and input are valuable to the success of this project. If you are aware of past flooding please indicate such on your comment sheet and/or at the discussion tables. Some information is provided below to assist you with this process.

Riveri (also called

Types of Flooding

ne Fluvial)	finite the second secon
the river corridor.	Occurs when the roadways
iver system, however	cannot contain major flows
occurred within the	Includes:
	Flooding onto private
	ways.
eks and rivers	Ponding in low areas
ins	(e.g. road sags and ur
nel corridors	Basement flooding via
s cannot convey flows from	Occurs when the storm sev
	capacity to convey a certai
	Includes:
of a road crossing	Basement flooding via
	Flow coming out of ca
	(perhaps at reverse sl
	1

Urban called Pluvial)

s and other surface flow paths vs.

property from the public right of

nderpasses) a windows or doors wer system does not have in storm event.

a floor drains atch basins loped driveways)

Phase 2 – Possible Study Outcomes

Flood Risk Characterization:

- Identify flood mechanisms and areas of high flood risk based on:
 - Frequency of flooding
 - Depth of flooding
 - Velocity of overland flow
 - Product of depth and velocity

Potential Causes of Floodir

Undersized channels (i.e., constrictions, low points in

Undersized structures (culverts,

Insufficient minor drainage syste (i.e. storm sewers)

Insufficient conveyance in the ri

Poorly defined overland flow pa topographic low points (on priva **Poor lot drainage**

Climate Change:

Increased storm frequency and intensities resulting from climate change can worsen the effect of any of the above flood types. This will increase flood risks.

reduce flooding.

າg	Possible Solution Options
banks)	 Channel and floodplain impl Bank improvements Flood protection landforms
bridges)	 Structure upgrades
em	 Sewer improvements Inlet improvements Stormwater management famous
ght-of-way	 Road regrading (i.e. road pro Raised curbs or sidewalks
aths and ate or public lands)	 Recommendations to private Regrading in public areas
	Recommendations to privat

Identify flooding characteristics in high risk land use areas Recommend and assess potential mitigation measures to

Comments from this evening's PIC #1 June 30 2017

Further ongoing study informatio http://www.mississauga.ca/portal/st

If you would like to be included on the project mailing list please sign the sheet at the Welcome Table.

Thank you for attending!

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