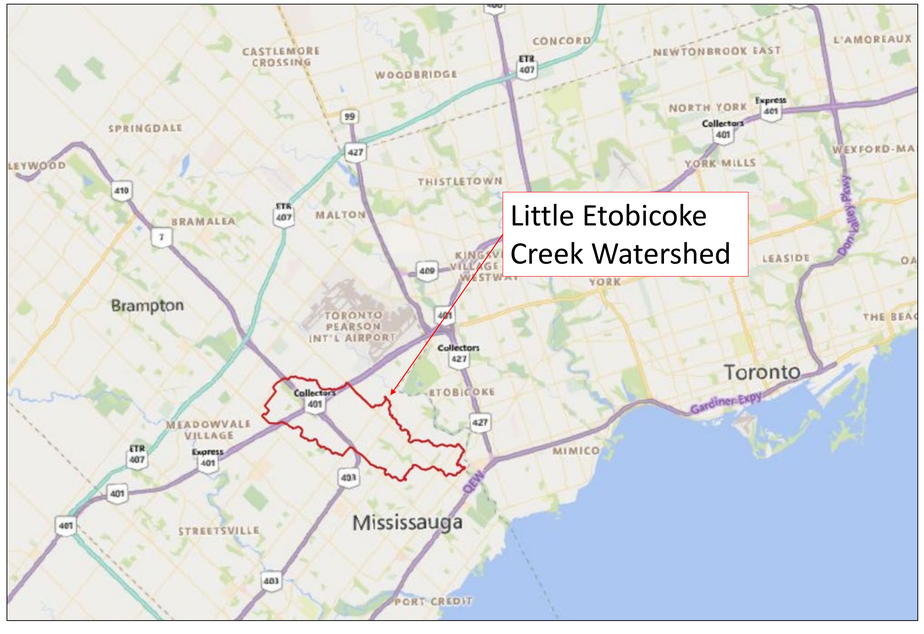
Welcome

Welcome to the online Public Information Centre No. 2

Little Etobicoke Creek Flood Evaluation Study

Municipal Class Environmental Assessment – Master Plan

http://www.mississauga.ca/flooding



Project Overview

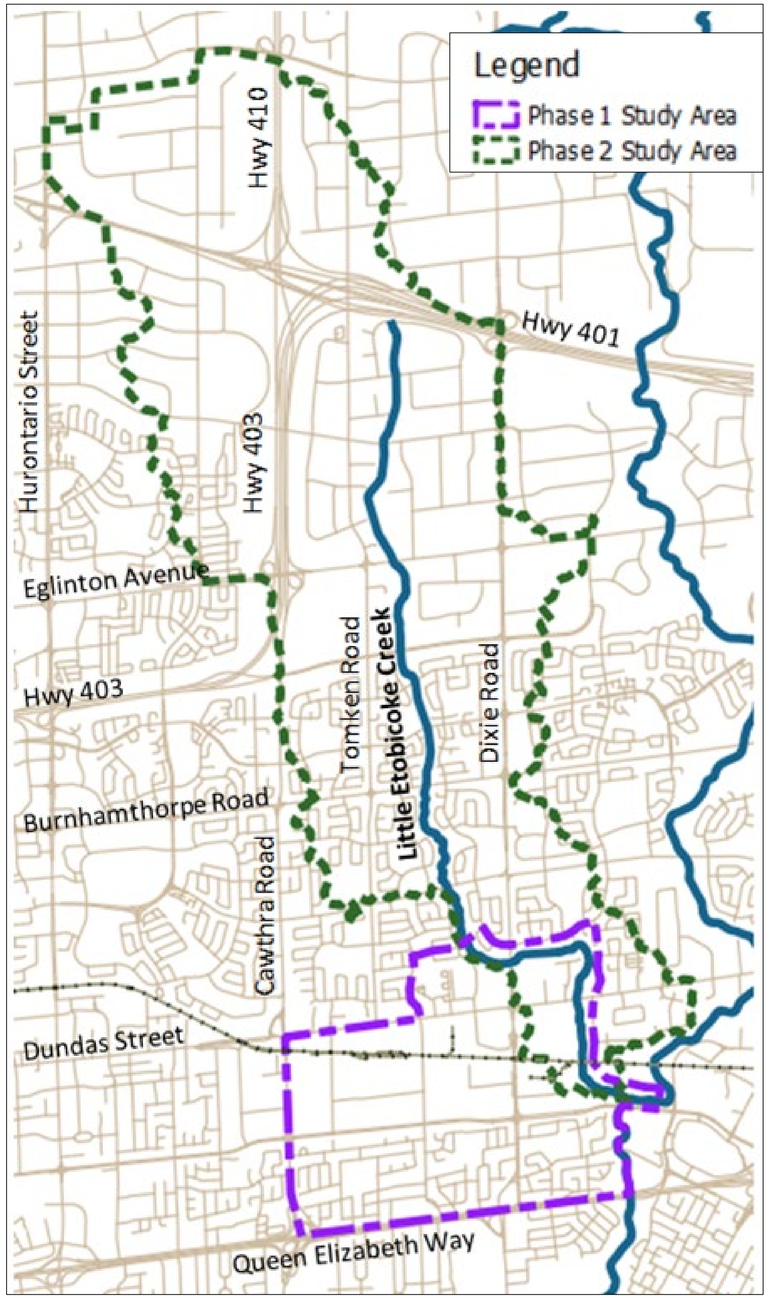
The study was completed as two phases:

- Phase 1 expanded upon previous studies of the overland spill from Little Etobicoke Creek during high flow conditions, particularly in the Dixie Road and Dundas Street area
- Phase 2 identified overland urban flood risk throughout the Little Etobicoke Creek watershed and developed, assessed, and recommended mitigation measures

Objectives of the Little Etobicoke Creek Flood Evaluation Study are:

- To quantify and account for the flow entering other subwatersheds as a result of spill originating from the Creek near Dixie Road
- To identify areas at risk of riverine and urban flooding
- To develop a plan to mitigate risks to people, property, and infrastructure

PIC No.2 provides interested parties the opportunity to identify any local information or concerns. At the end of the study, a Master Plan Report documenting the entire study will be available for public review.



Municipal Class Environmental Assessment

Schedule A Projects	Typical or Emergency Operational Projects	Pre-approved – Proceed to construction
Schedule A+ Projects	Typical Infrastructure Projects	Pre-approved – Notify public prior to implementation
Schedule B Projects	**Phase 1** Problem or Opportunity	Identify and describe problem/opportunity
	Phase 2 Alternative Solutions	• Prepare environmental inventory • Identify/evaluate alternative solutions • Establish the preferred solution • Prepare and file project file
Schedule C Projects	**Phase 3** Alternative Design Concepts for Preferred Solutions	• Evaluate alternative design concept • Identify environmental effects • Mitigation and preferred concept
	Phase 4 Environmental Study Report	Prepare and file Environmental Study Report (ESR) documenting Phases 1-3 for public review
	Phase 5 Implementation	Project constructed/restore disturbed areas

Project Timeline

Background

2012 Began 2D model to define flooding at Dixie-Dundas study area

2013 Significant flooding on July 8, 2013

2015 Finalized 2D modelling of flooding at Dixie-Dundas study area

Study Phase 1

2017 Master Plan commenced

PIC No. 1

2018 Expanded 2D modelling to define flooding to QEW as part of Phase 1

2019 Identify flood clusters, focus areas, and mitigation efforts

Study Phase 2

PIC No. 2

2020 Finalize Master Plan

Upstream of Dixie Road

For more information on the concurrent *Dixie-Dundas Flood Mitigation Project,* visit: http://www.mississauga.ca//flooding

Master Plan Approach

Study Phase 1

- Reviewed in PIC No. 1
- Background review
- Model of flood spill at Queen Frederica Drive

Study Phase 2

Flood Characterization Modelling

Flood Clusters and Flood Causes

Flood Mitigation Modelling

Flood Mitigation Alternatives Evaluation

Dixie-Dundas Flood Mitigation Project

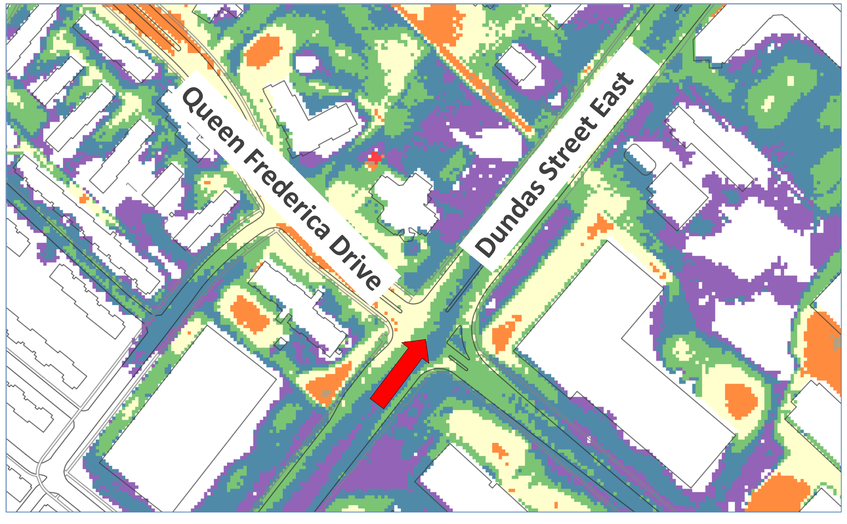
Project designed to protect flood-vulnerable residences and businesses as well as to enable future growth as outlined in the *Dundas Connects Master Plan* (City of Mississauga 2018)

Project Understanding

Dundas Street East – July 8, 2013

- The estimated Little Etobicoke Creek peak flow on July 8, 2013 was 130 m^3/s
- For comparison, the Regional event has a significantly higher estimated peak flow of 200 m^3/s

Video Source: https://www.youtube.com/watch?v=_vHedGvWa5Q



Max Depth (m)

- <= 0.10
- 0.10 - 0.30
- 0.30 - 0.50
- 0.50 - 080
- 1.00 - 1.50
- 1.50 - 2.00
- > 2.00

Camera location and general direction

MISSISSAUGA

Matrix Solutions Inc. ENVIRONMENT & ENGINEERING

Types of Flooding

	Riverine	Urban
Major System (Overland Flow)	Flooding is a natural feature of river systems. • High water levels from creeks and rivers • Standing and flowing water in floodplains	Occurs when the roadways and other surface flow paths cannot contain major flows. • Large, less frequent storm events • Flooding onto private property from the public right of ways • Ponding in low areas (e.g. road sags and underpasses) • Basement flooding via windows or doors
Minor System (Storm Sewers)	Occurs when culverts or ditches cannot convey flows from a certain storm event. • Flow spilling from ditches	Occurs when the storm sewer system does not have capacity to convey a certain storm event. • Smaller, more frequent storm events • Basement flooding via floor drains • Flow coming out of catch basins (perhaps at reverse sloped driveways)

Minor System and Urban Flooding are being assessed in the *Little Etobicoke Creek Flood Evaluation Study and Master Plan.* Note that urban flooding can also occur independently within private property due to poor lot grading or blockages (downspouts, private ditches, or catch basin inlets).

The focus of the concurrent *Dixie-Dundas Flood Mitigation* is to solve the major system riverine flooding by keeping flows within the Little Etobicoke Creek valley corridor. More information about this project will be available at this link: http://www.mississauga.ca/flooding.

Agency Roles and Responsibilities

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 to complete this comprehensive Master Plan.

City of Mississauga	Region of Peel	Conservation Authority (TRCA*)
▪ Road drainage ▪ Storm sewers ▪ Parks ▪ Greenbelt ▪ Trails ▪ City trees ▪ Creek erosion and flow management	▪ Regional roads ▪ Sanitary sewers ▪ Watermains	▪ Floodplain mapping and management policies ▪ Flood forecasting and warning ▪ Flood messaging ▪ Flood hazard management

* Note: Infrequent floods currently spill to Credit Valley Conservation (CVC) jurisdiction

Approach

Study Phase 1 and Dixie-Dundas Project

Phase 1 expanded upon previous studies of high flow conditions where Little Etobicoke Creek (TRCA jurisdiction) spills to an adjacent watershed (CVC jurisdiction).

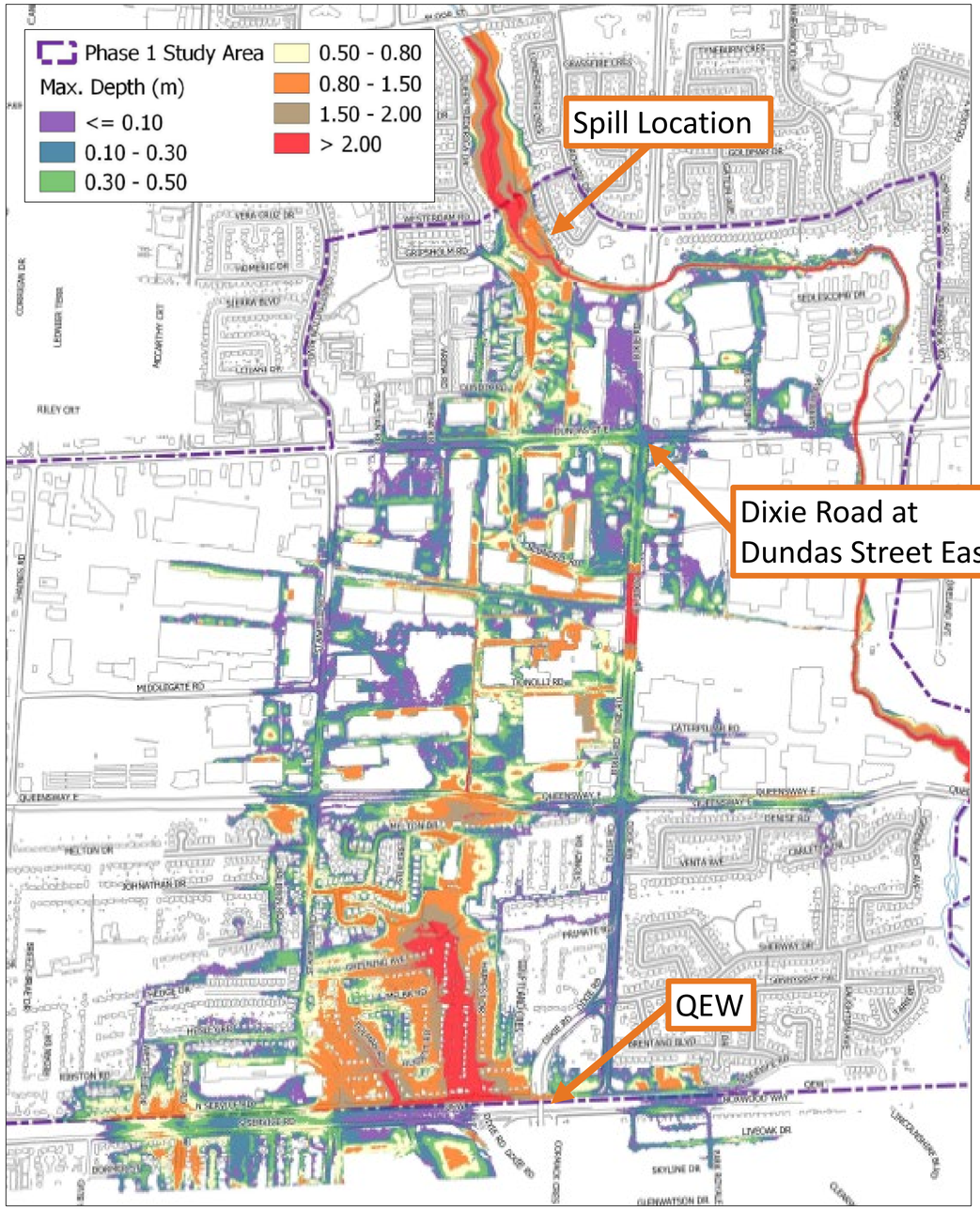
Phase 1 objectives were to:

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

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

The Dixie-Dundas Flood Mitigation Project objectives are to:

- Seek solutions to protect existing flood-vulnerable residences and businesses by addressing flooding from Little Etobicoke Creek
- Enable future growth and fulfill the *Dundas Connects Master Plan* (City of Mississauga 2018) by lifting the development restrictions (Special Policy Areas) set in place due to flooding



Study Phase 2 Approach

Study Phase 1

Study Phase 2

Flood Characterization Modelling

- Develop two-dimensional (2D) model of entire watershed
- Characterize flood risk

Flood Clusters and Flood Causes

- Identify flood cluster areas
- Identify mechanisms of flooding
- Recommend cluster areas for further assessment

Flood Mitigation Modelling

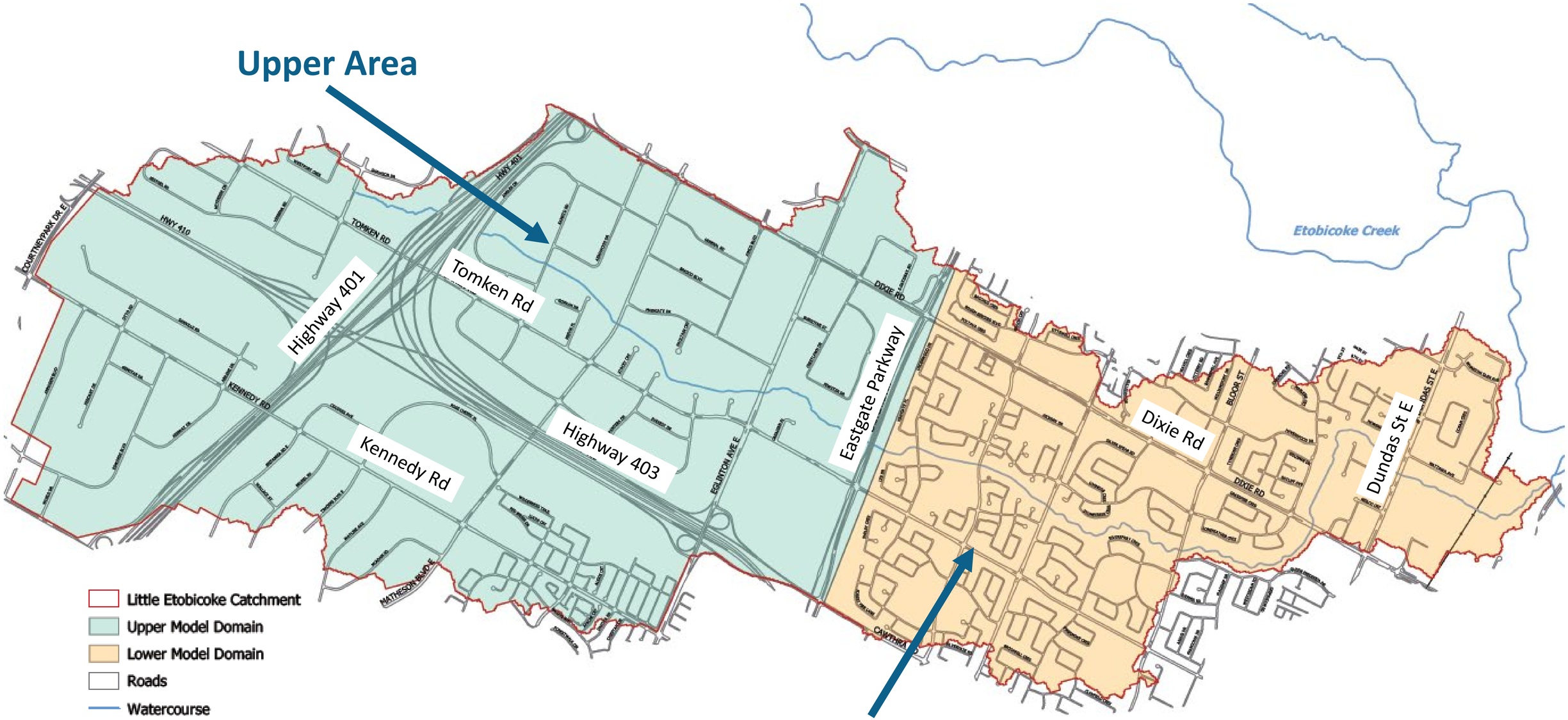
- Assess existing sewer system
- Develop three-way coupled models
- Analyze six key focus areas

Flood Alternatives Evaluation

- Evaluate mitigation alternatives for the six focus areas
- Summarize recommendations for all flood clusters
- Recommend alternatives and next steps

Dixie-Dundas Flood Mitigation Project

Little Etobicoke Creek Drainage Area



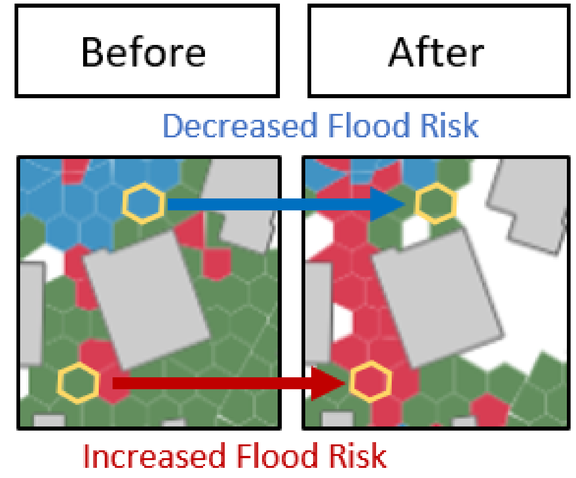
Risk Based Analysis

Flood risk is characterized based on depth, velocity, and the depth velocity product which follow current Ministry of Natural Resources and Forestry practices:

- **Low risk** areas are flooded, but vehicular and pedestrian access are still feasible
- **Medium risk** areas do not permit vehicular access, but pedestrian access is possible
- **High risk** areas do not facilitate safe access of any kind

The flood risk improvement was quantified based on the change in flooded area between the existing conditions and proposed solutions.

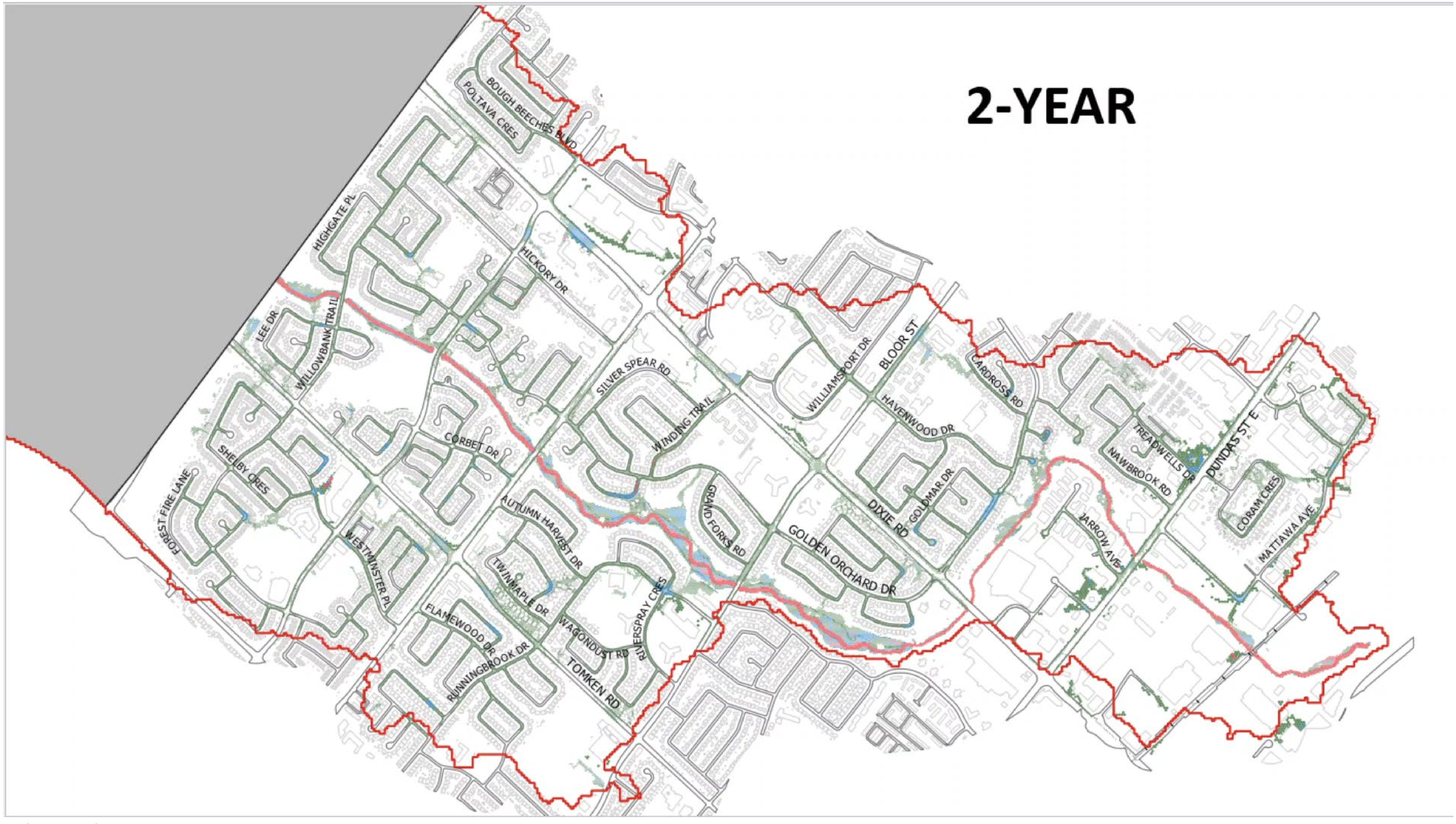
For each focus area, both the total areas with improved/eliminated flood risk and increased flood risk were tallied to support the evaluation.



Parameter	Low	Medium	High *
Depth	≤ 0.3 m	> 0.3 m and ≤ 0.8 m	> 0.8 m
Velocity	≤ 1.7 m/s	≤ 1.7 m/s	> 1.7 m/s
Depth-Velocity Product	≤ 0.37 m^2/s	≤ 0.37 m^2/s	> 0.37 m^2/s
* Exceedance of any one of the criteria results in high risk			

Risk Mapping – Upper Area

Risk Mapping – Lower Area



Level of Service – Upper Area

Manholes

- Level of Service ≤ 2-yr
- 2-yr < Level of Service ≤ 5-yr
- 5-yr < Level of Service ≤ 10-yr
- 10-yr < Level of Service

Sewer

- Level of Service ≤ 2-yr
- 2-yr < Level of Service ≤ 5-yr
- 5-yr < Level of Service ≤ 10-yr
- 10-yr < Level of Service

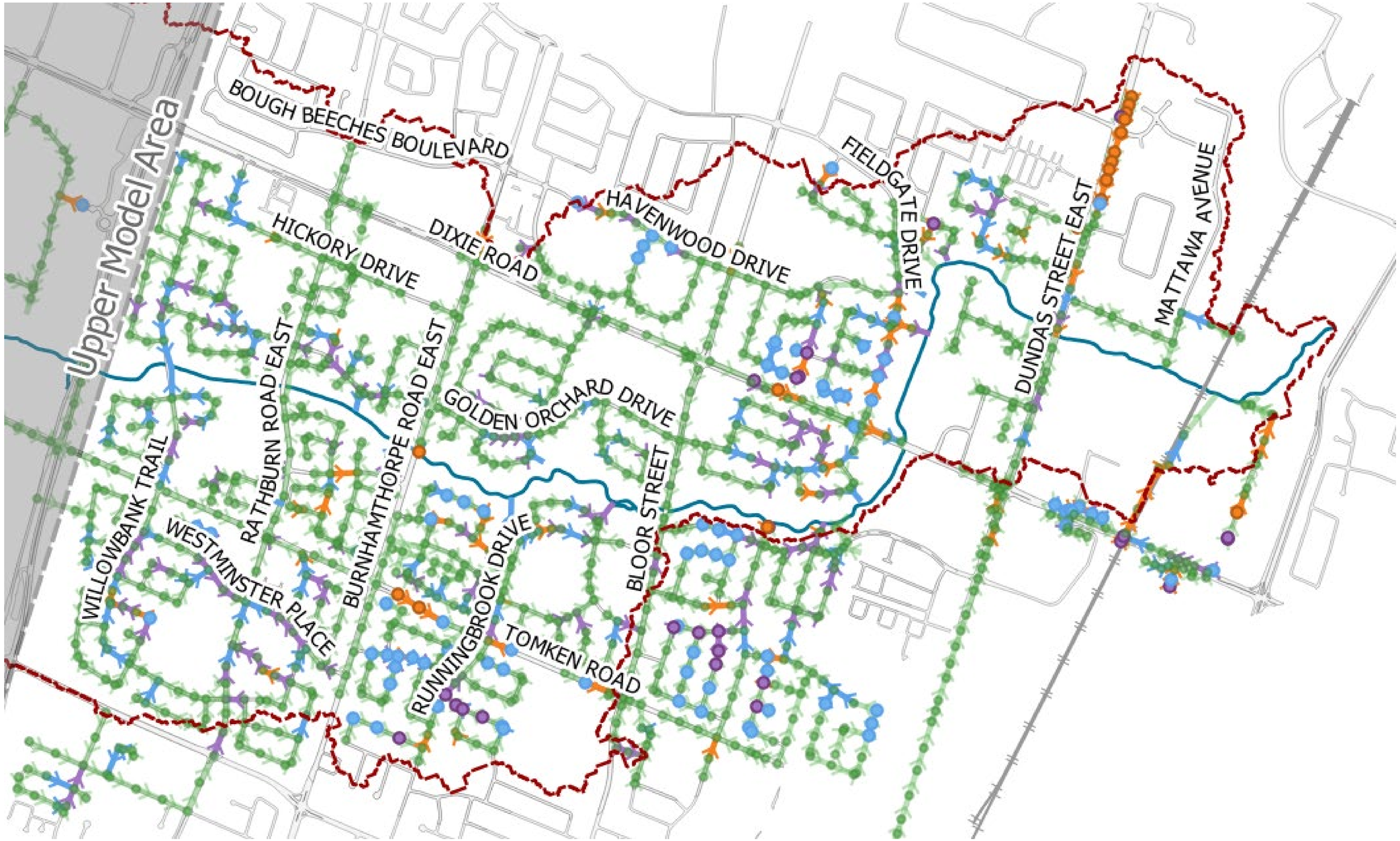
Level of Service – Lower Area

Manholes

- Level of Service ≤ 2-yr
- 2-yr < Level of Service ≤ 5-yr
- 5-yr < Level of Service ≤ 10-yr
- 10-yr < Level of Service

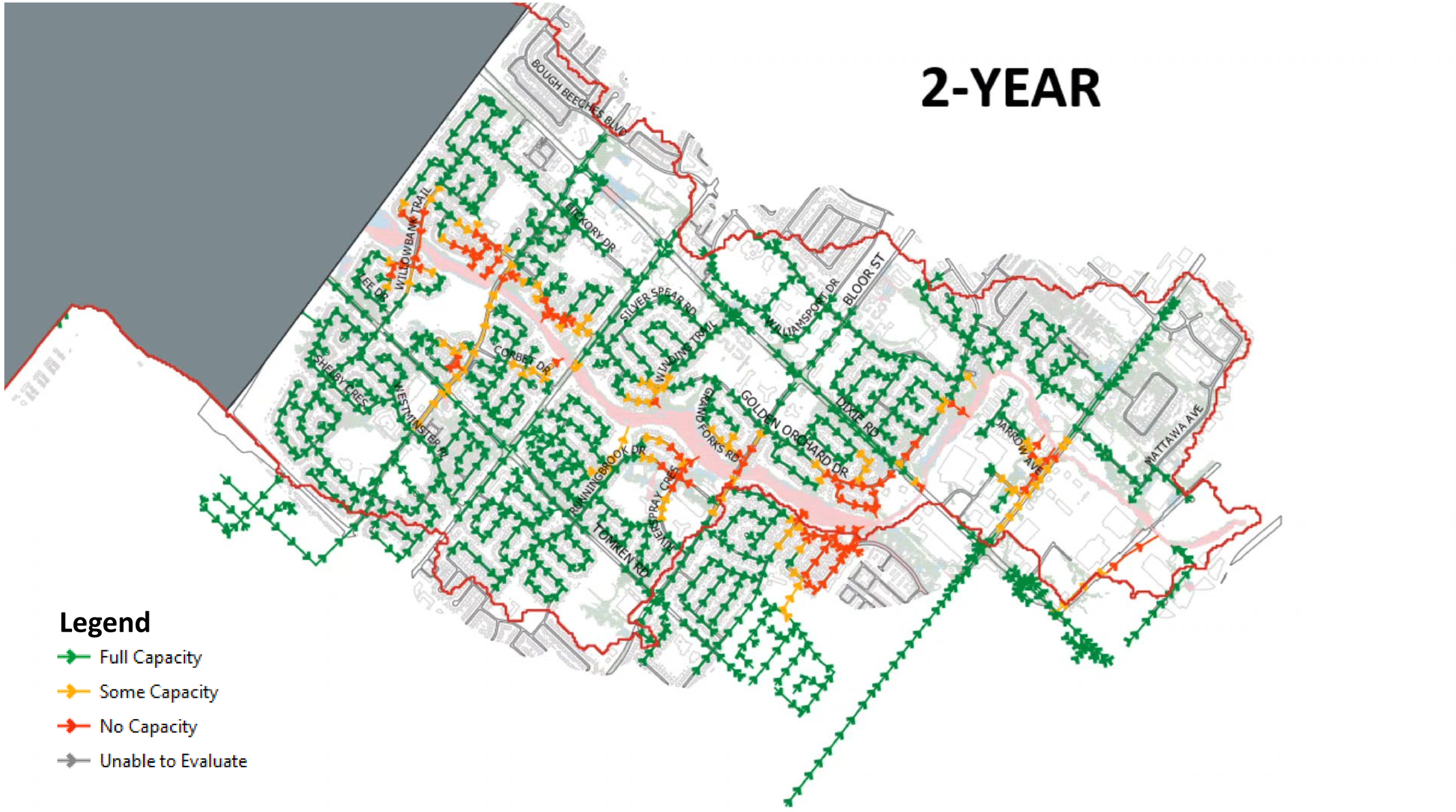
Sewer

- Level of Service ≤ 2-yr
- 2-yr < Level of Service ≤ 5-yr
- 5-yr < Level of Service ≤ 10-yr
- 10-yr < Level of Service

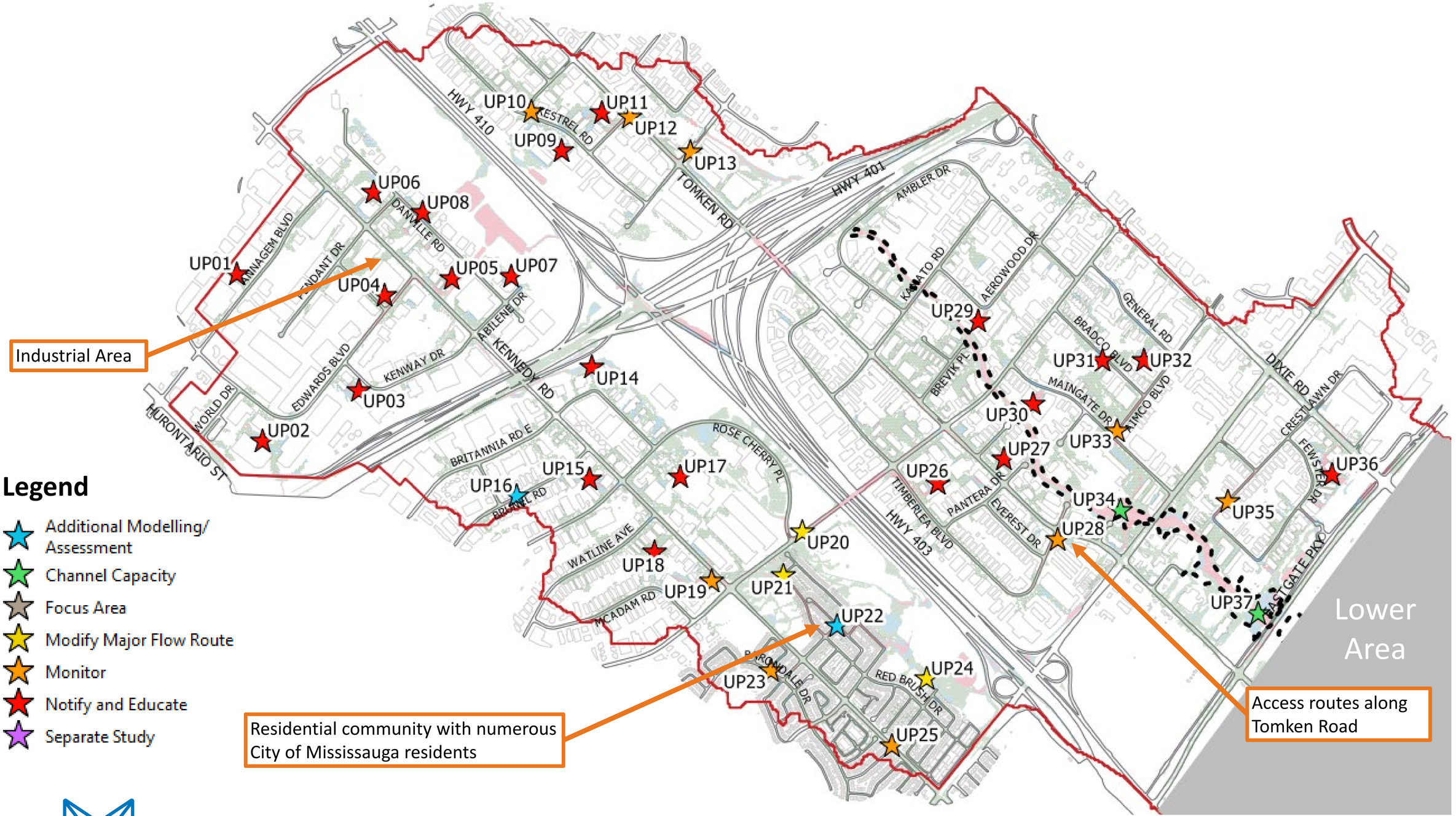


Riverine Backwater – Upper Area

Riverine Backwater – Lower Area



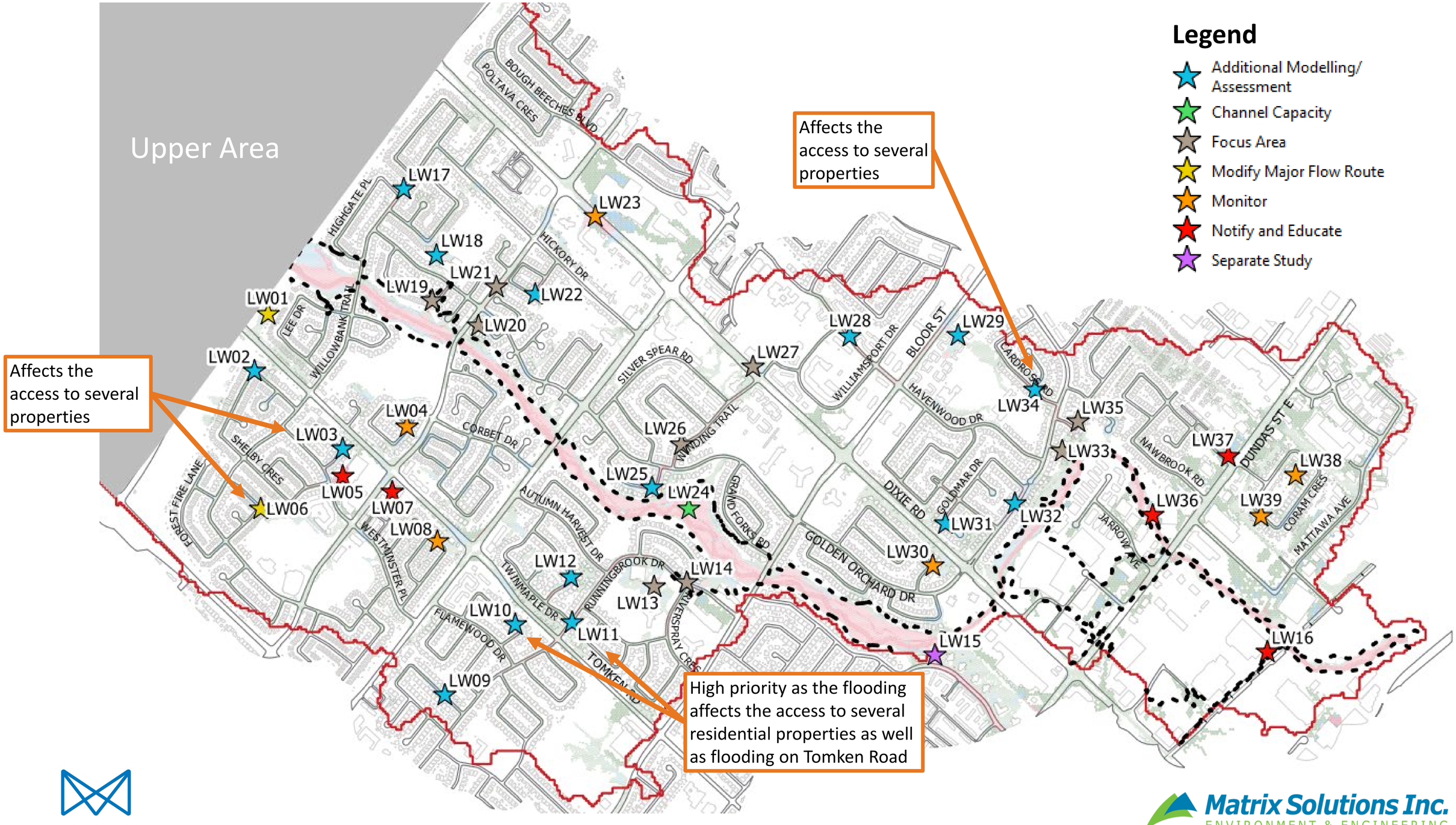
Flood Clusters – Upper Area



Legend

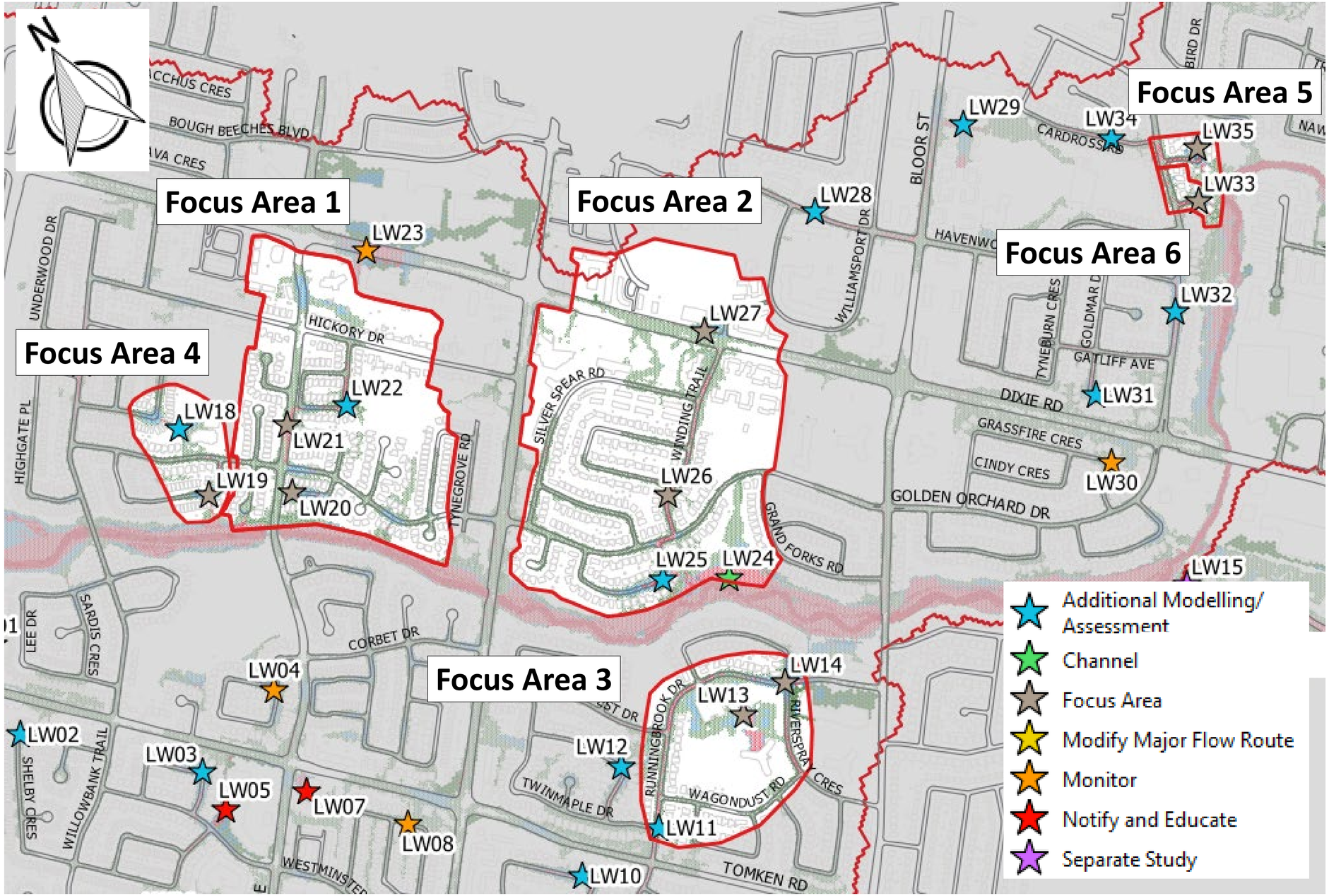
- Additional Modelling/ Assessment
- Channel Capacity
- Focus Area
- Modify Major Flow Route
- Monitor
- Notify and Educate
- Separate Study

Flood Clusters – Lower Area



Focus Areas

Focus Areas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Focus Area 1
Focus Area 2
Focus Area 3
Focus Area 4
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Focus Area 6
LW01
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LW35
BOUGH BEECHES BLVD
UNDERWOOD DR
HICKORY DR
HIGHGATE PL
TYNEGROVE RD
SILVER SPEAR RD
WINDING TRAIL
GRAND FORKS RD
WILLIAMSPORT DR
BLOOR ST
CARDROSS RD
BIRD DR
GOLDMAR DR
TYNEBURN CRES
GATLIFF AVE
DIXIE RD
GRASSFIRE CRES
CINDY CRES
GOLDEN ORCHARD DR
LEE DR
SARDIS CRES
CORBET DR
SHELBY CRES
WILLOWBANK TRAIL
TWINMAPLE DR
RUNNINGBROOK DR
RIVERSPRAY CRES
WAGONDUST RD
TOMKEN RD
Additional Modelling/ Assessment
Channel
Focus Area
Modify Major Flow Route
Monitor
Notify and Educate
Separate Study

Evaluation Criteria

Criteria	Definition	None	Low	Medium	High
Flood Risk Reduction	• total reduction in flood risk severity (e.g., change from high to low risk) and impacts based on location/land use	no change in flood risk	up to 5,000 m^2 reduction in flood risk	between 5,000 and 10,000 m^2 reduction in flood risk	greater than 10,000 m^2 reduction in flood risk
Social Impacts	• anticipated disruption during construction (e.g., traffic delays) • level of long-term impact to people and property (e.g., loss of park space) • public perception and stakeholder acceptance	no change in the situation	low disruptions, low chance of disagreement	moderate disruptions, split views on approvals	high disruptions, high chance of disagreement
Downstream Impacts/Residual Flooding	• potential transferal of the flood risk to another location and impacts based on location/land use • increase risk of basement flooding	no change in flood risk	up to 5,000 m^2 increase in flood risk	between 5,000 and 10,000 m^2 increase in flood risk	greater than 10,000 m^2 increase in flood risk
Capital Costs	• construction costs of mitigation solution	no costs (do nothing)	less than $200,000	between $200,000 and $500,000	greater than $500,000

Focus Area 1

It is recommended that Additional Inlets and Localized Regrading be implemented for this area. Design should assess the sewer capacity to optimize the benefits with potential basement flooding.

Recommended measure 1c addresses flooding at flood clusters LW20 and LW21.

Flood cluster LW22 requires further study to determine the appropriate mitigation solution.

Flood Cluster ID	ID	Alternative Description	Evaluation				Recommendation
			Flood Risk Reduction	Social Impacts	Downstream Impacts	Capital Costs	
LW20, LW21, LW22	1a	Storage facility in Golden Orchard Park	Low	Medium	Low	High	Not Recommended
	1b	Upsizing sewer capacity	Low	Low	Low	Medium	Not Recommended
	1c	Additional inlets and localized regrading	Medium	Low	Low	Low	Recommended
	1d	Overland flow path at Golden Orchard Park	Low	Low	Medium	Low	Not Recommended
	1e	Do nothing	None	None	None	None	Not Recommended

Focus Area 2

It is recommended that Additional Inlets and Localized Regrading as well as an Overland Flow Path through Kennedy Park are pursued for this area as flood remediation efforts would reduce high risk areas.

Recommended measures 2c and 2d address flooding at flood clusters LW26 and LW27.

Flood cluster LW25 requires further study to determine mitigation solutions.

Flood Cluster ID	ID	Alternative Description	Evaluation				Recommendation
			Flood Risk Reduction	Social Impacts	Downstream Impacts	Capital Costs	
LW25, LW26, LW27	2a	Storage facility in Kennedy Park	Low	Medium	Low	High	Not Recommended
	2b	Upsizing sewer capacity	Low	Low	Low	Medium	Not Recommended
	2c	Additional inlets and localized regrading	Medium	Low	Low	Low	Recommended
	2d	Overland flow path through Kennedy Park	Medium	Low	Low	Low	Recommended
	2e	Do nothing	None	None	None	None	Not Recommended

Focus Area 3

It is recommended that an Outlet Pipe be constructed from the sewer along Runningbrook Drive to Little Etobicoke Creek through Cedarbrook Park. Further study should be conducted to evaluate the benefits of Upsizing the Sewer Capacity.

Recommended measure 3a addresses flooding at flood clusters LW13 and LW14.

Measure 3b requires further study to determine if it may improve the flooding for flood cluster LW11.

Flood Cluster ID	ID	Alternative Description	Evaluation				Recommendation
			Flood Risk Reduction	Social Impacts	Downstream Impacts	Capital Costs	
LW11, LW13, LW14	3a	Outlet pipe	Medium	Low	Low	Low	Recommended
	3b	Upsizing sewer capacity	Low to Medium*	Medium	Low*	Medium	Further Study
	3c	Overland flow path	Medium	Medium	Medium*	High	Not Recommended
	3d	Do nothing	None	None	None	None	Not Recommended

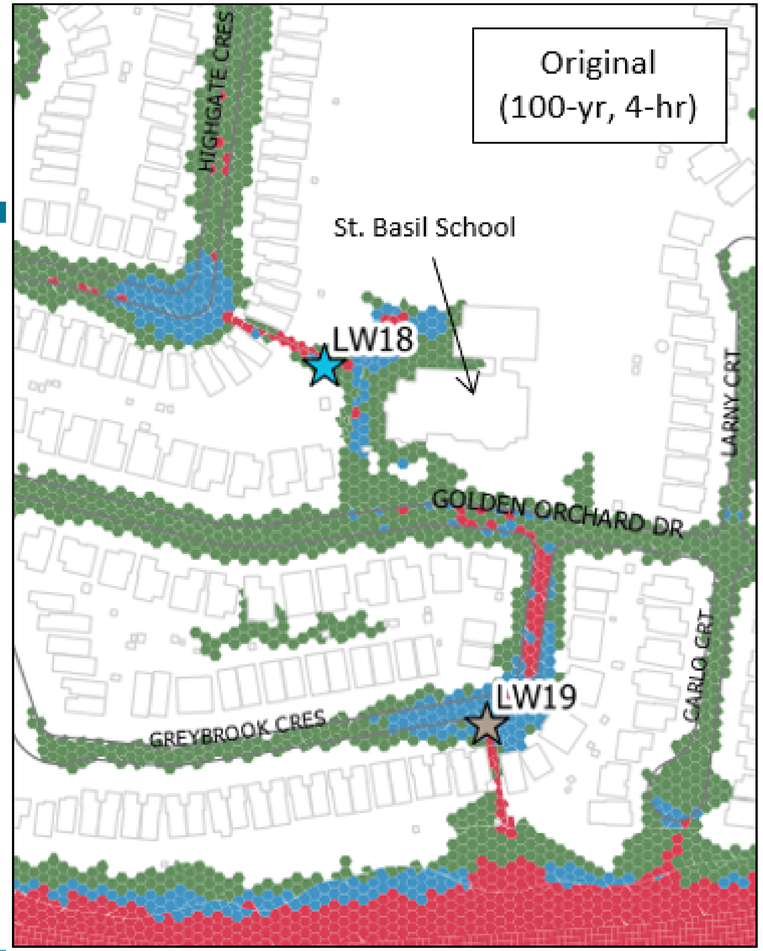
* Evaluation was not explicitly modelled and was estimated based on level of service and riverine modelling

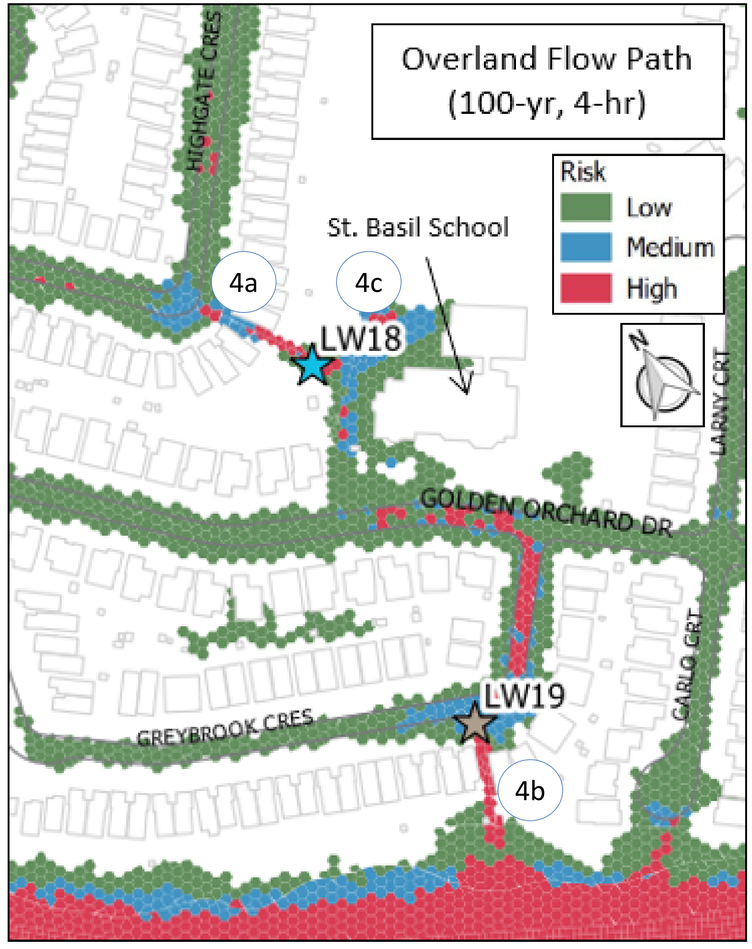
Focus Area 4

It is recommended that an Overland Flow Path be constructed at Greybrook Crescent and that the feasibility of a Storage Facility be explored at Hickory Green Park.

Recommended measure 4b addresses flooding at flood clusters LW19.

Alternative 4a is not recommended as a solution on its own, however, combining alternative 4a and 4c may prove advantageous to address flood cluster LW18. Further study is recommended.



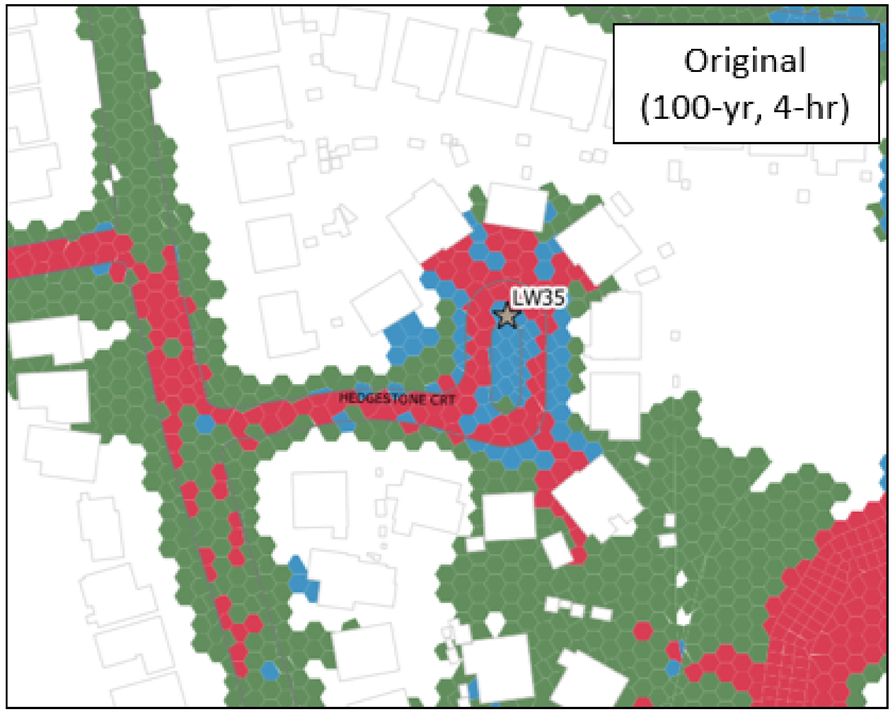


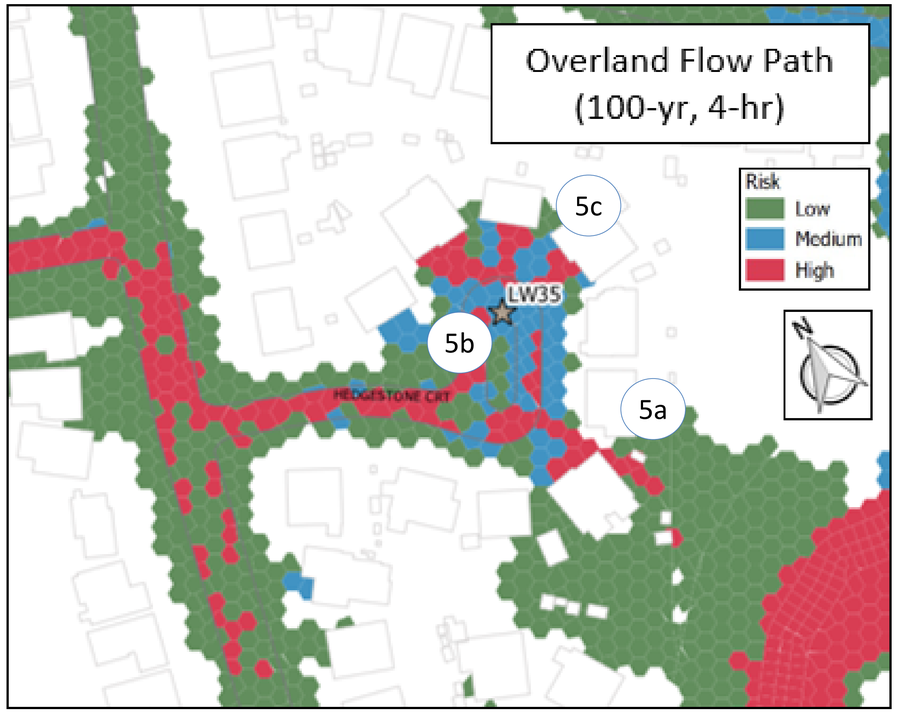
Flood Cluster ID	ID	Alternative Description	Evaluation				Recommendation
			Flood Risk Reduction	Social Impacts	Downstream Impacts	Capital Costs	
LW18, LW19	4a	Overland flow path at Highgate Crescent	Low	Low	Medium	Low	Not Recommended
	4b	Overland flow path at Greybrook Crescent	Low	Low	Low	Low	Recommended
	4c	Storage facility in Hickory Green Park	Medium*	Low	Low*	High	Further Study
	4d	Do nothing	None	None	None	None	Not Recommended

* Evaluation was not explicitly modelled and was estimated based on level of service and riverine modelling

Focus Area 5

It is recommended that an Overland Flow Path at Hedgestone Crescent, Additional Inlets, Upsizing the Existing Outlet, and Public Education (for homeowners with reversed slope driveways) be pursued for this focus area.



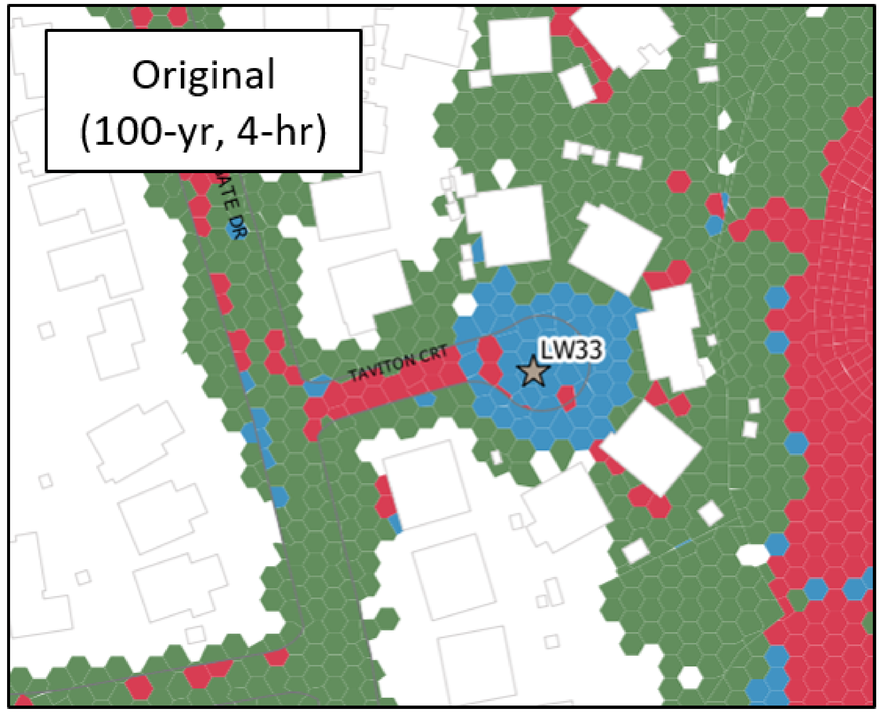


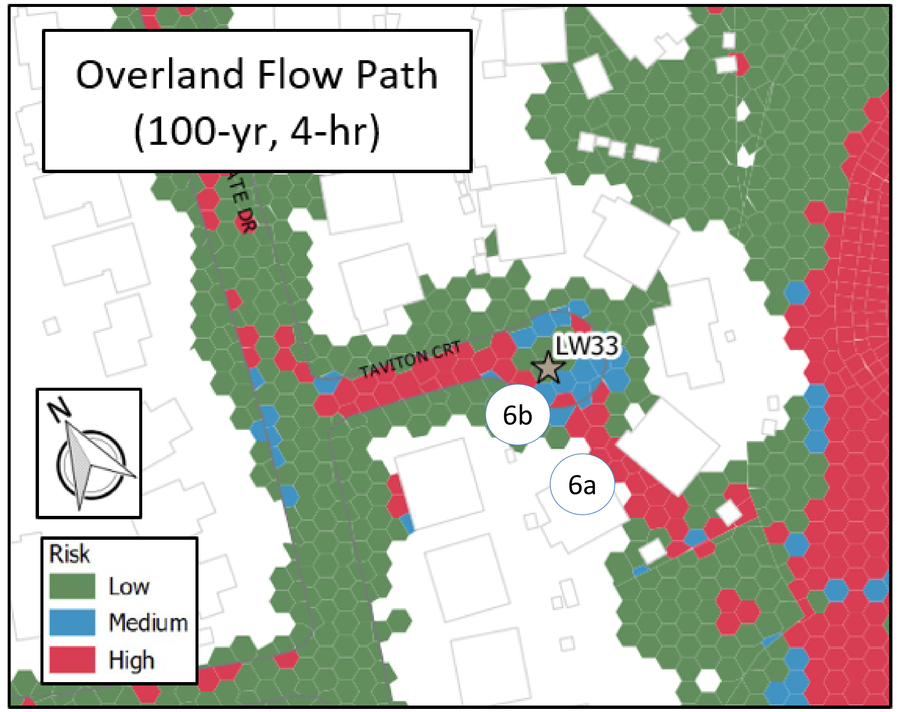
Flood Cluster ID	ID	Alternative Description	Evaluation				Recommendation
			Flood Risk Reduction	Social Impacts	Downstream Impacts	Capital Costs	
LW35	5a	Overland Flow path at Hedgestone Court	Low	Medium	Low	Low	Recommended
	5b	Additional inlets and upsize the existing outlet	Low*	Medium	Low*	Low	Recommended
	5c	Public education	None	Low	Low	Low	Recommended
	5d	Do nothing	None	None	None	None	Not Recommended

* Evaluation was not explicitly modelled and was estimated based on level of service and riverine modelling

Focus Area 6

It is recommended that an Overland Flow Path at Taviton Court, Additional Inlets, and Upsizing the Sewer Outlet be constructed for this focus area.





Flood Cluster ID	ID	Alternative Description	Evaluation				Recommendation
			Flood Risk Reduction	Social Impacts	Downstream Impacts	Capital Costs	
LW33	6a	Overland flow path at Taviton Court	Low	Medium	Low	Low	Recommended
	6b	Additional inlets and upsize the sewer outlet	Low*	Medium	Low*	Low	Recommended
	6c	Do nothing	None	None	None	None	Not Recommended

* Evaluation was not explicitly modelled and was estimated based on level of service and riverine modelling

Conclusion

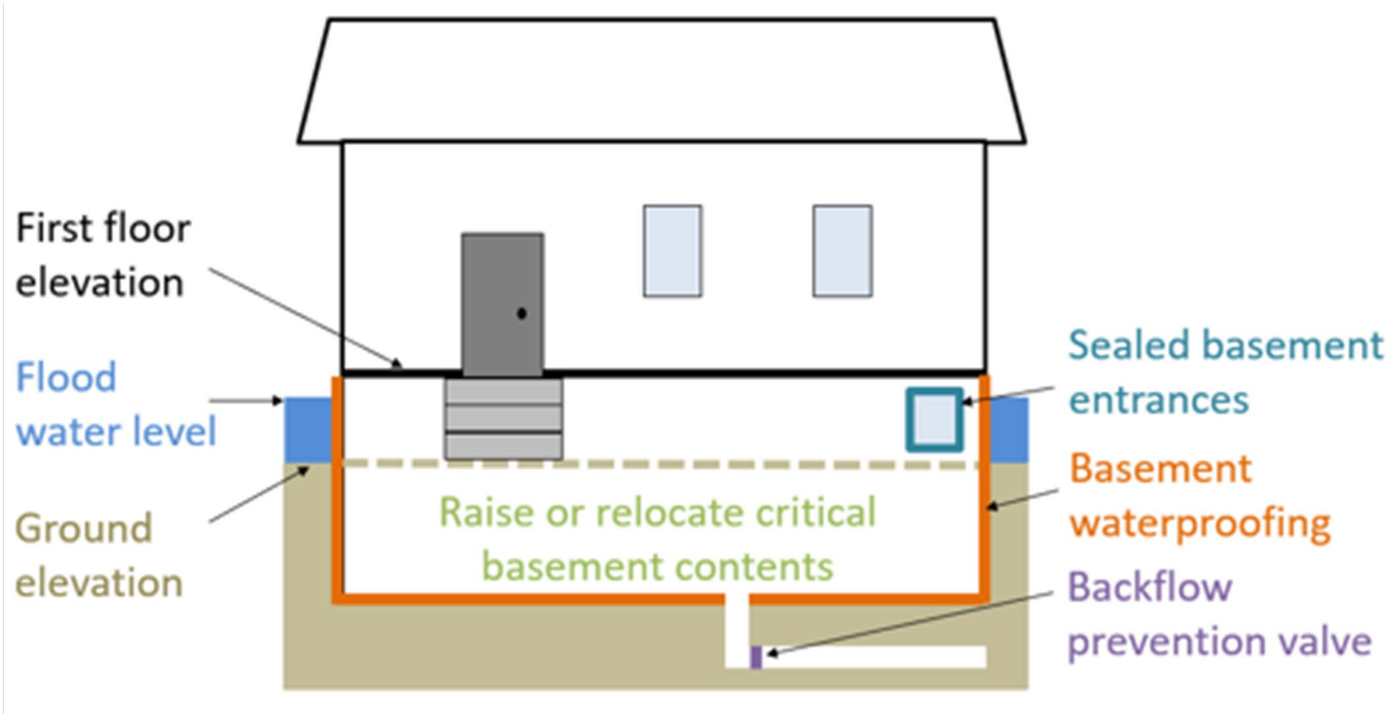
What Can You Do?

Homeowner Scale

As a property owner or manager, preparing for emergencies and being aware of flood risks is an important responsibility. Here are a few tips:

- Have a sump pump installed or a portable water pump available in case water seeps into your basement
- Keep easements clear
- Keep drains around your property including roadside catch basin inlets free from debris
- Report any blocked storm drains to 3-1-1

For more information, please visit:
http://www.mississauga.ca//flooding



Stay Involved!

- If a flood warning has been issued, monitor local media including the City's website, Twitter (@citymississauga), and Facebook feeds for updates
- Notify the City when there is flooding

Conclusion

Study Phase 1

1. Mapped flood spill
2. Initiated the Dixie-Dundas Flood Mitigation EA (separate and ongoing)

Study Phase 2

1. Completed flood risk assessment and characterization including:
   a. Overland flow
   b. Sewer system
   c. Riverine backwater
2. Identified flood clusters
3. Evaluated mitigation solutions for six focus areas
4. Recommended solutions for each focus area as well as next steps for the remaining flood clusters

Next Step

We will integrate the feedback we receive from this PIC into the final Master Plan.

Contact Information

If you would like to be included on the project mailing list and/or provide input, please complete the project comment form available at

http://www.mississauga.ca/flooding

and submit by email to

elizabeth.dollimore@mississauga.ca

or

khofbauer@matrix-solutions.com

Input from Public Information Centre No. 2 will be received until

October 16, 2020

Thank you for participating!

COVID-19 Community Engagement Update: While we continue to respond to this pandemic, we are working hard to deliver essential services and projects to keep our City moving and safe. While we can't connect in-person at this time, we still want to connect! Please find above how we can connect on this project and for you to share your input.

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