



# **Basement Flooding Study Area 53**

## **Lake Shore Boulevard West/Mimico Creek**

Municipal Class Environmental Assessment Study  
September 12, 2022



# Learn about our Study

We invite you to read through this presentation to learn more about the City's Municipal Class Environmental Assessment and capacity study about basement flooding in the Lake Shore Boulevard West and Mimico Creek area.

You will learn about:

- the purpose of the study
- what solutions have been considered and the preferred solution
- how impacts will be managed
- how to get in touch with City staff to ask questions or share your comments



# Study Purpose

The City is undertaking a Basement Flooding Study to:

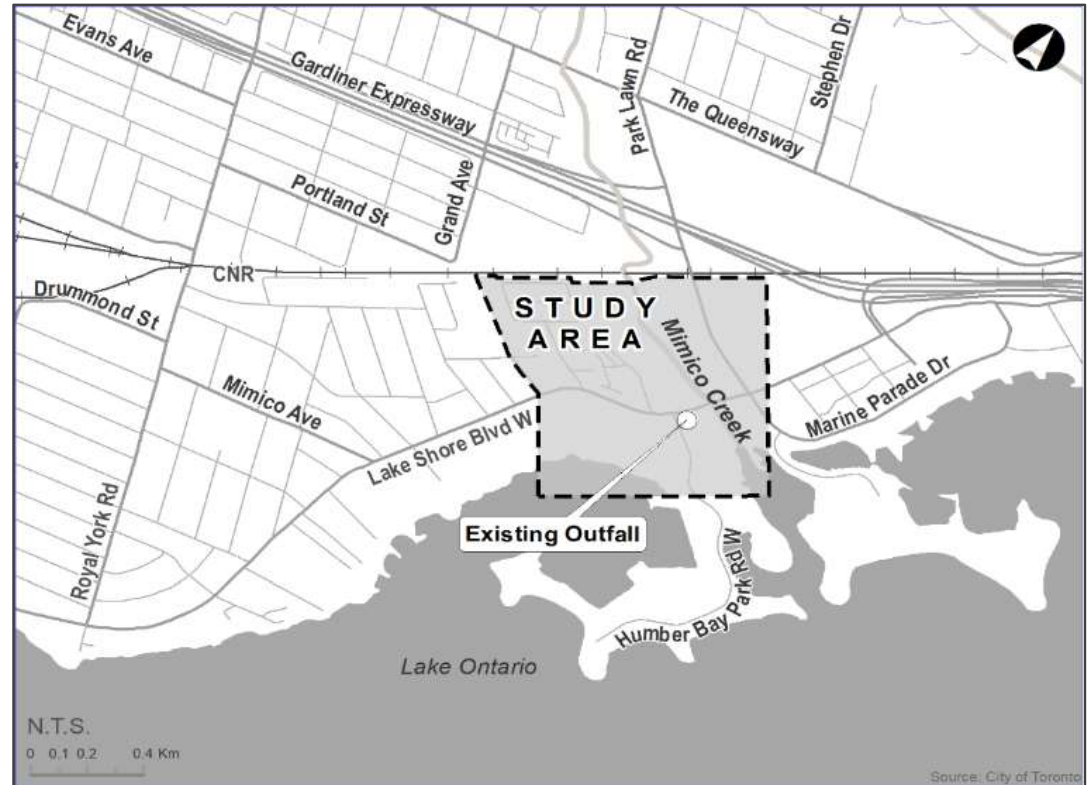
- examine the existing stormwater drainage and sanitary sewer systems and identify the causes of basement flooding and/or surface flooding (severe ponding on streets during extreme storms)
- analyse drainage system capacities
- identify and evaluate solutions
- make recommendations to reduce the risk of future basement flooding in the area and increase capacity in the City's storm and sanitary collection and overland drainage systems



# Study Area

The Study Area is located within Etobicoke – Lakeshore Ward bounded by:

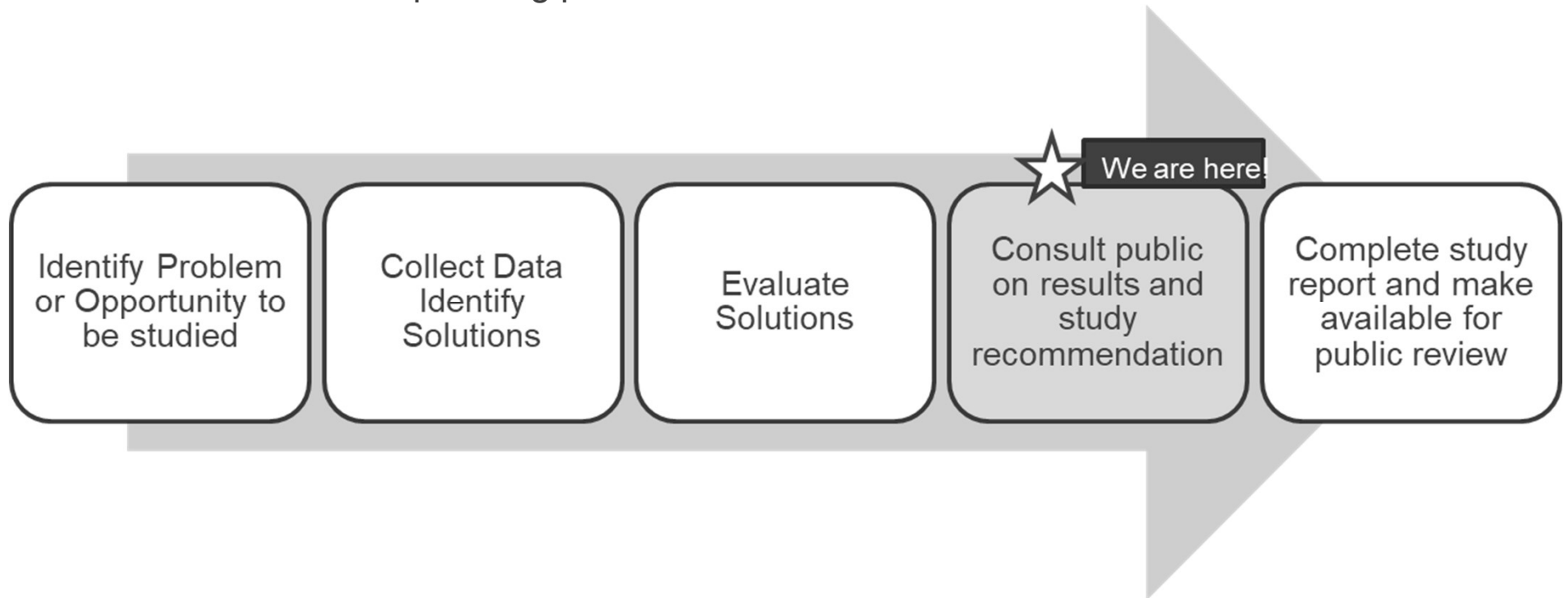
- Lakeshore West Rail Corridor (CN Rail line) to the north
- Park Lawn Road to the east
- Humber Bay Park to the south
- Louisa Street to the west





# Study Process

The study is being undertaken in accordance with the Municipal Engineers Association's Municipal Class Environmental Assessment process. The Schedule B planning process involves completion of Phases 1 and 2 of the planning process.





# About Basement Flooding



# Factors Contributing to Flooding

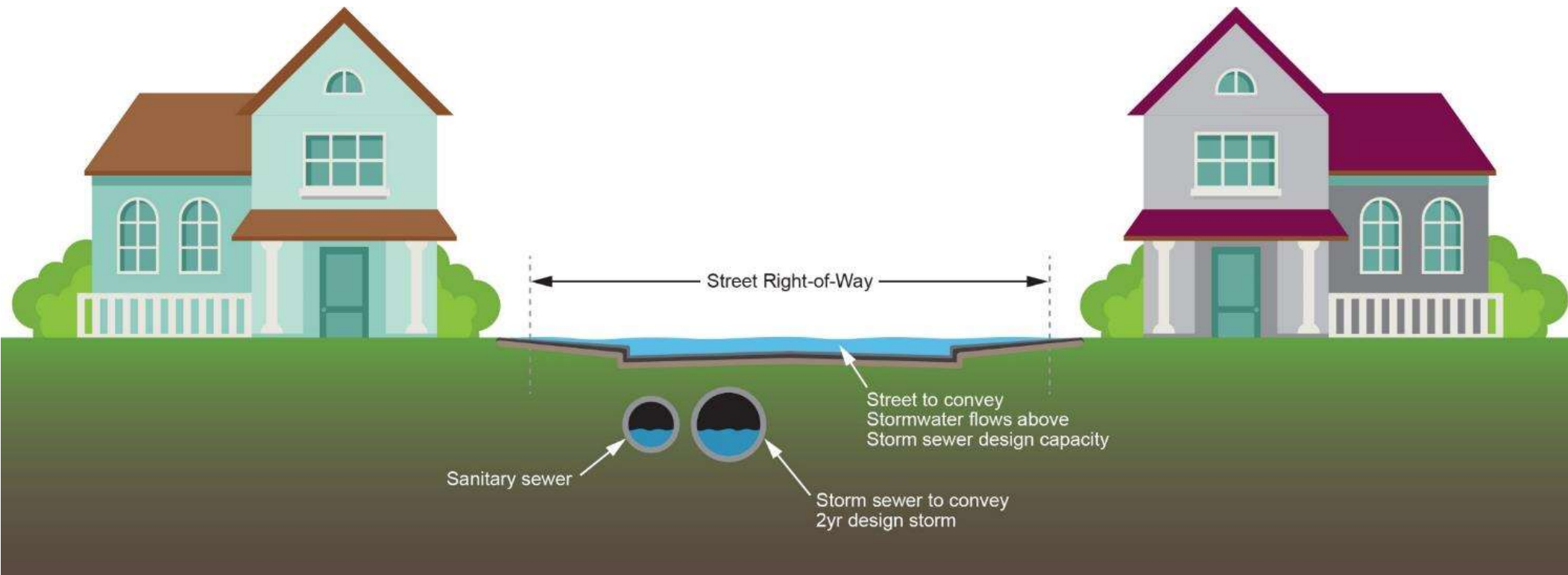
There are a number of factors contributing to flooding within the City, including:

- Surcharge (overflow) of the sanitary sewer during heavy rainfall
- Surcharge of the storm sewer system, which may result in increasing the flow to the sanitary sewer system through potential interaction between the two systems
- High groundwater table, above the sewer or basement elevation
- Accumulation of surface rainwater runoff in low-lying areas
- Backup from sewer outfall or accumulation of sediment in the outflow conduit
- High overland flow depth on the right-of-way
- Undersized storm sewer or undersized catchbasins resulting in high overland flow
- Blocked/broken storm and sanitary sewers, maintenance holes and catchbasins



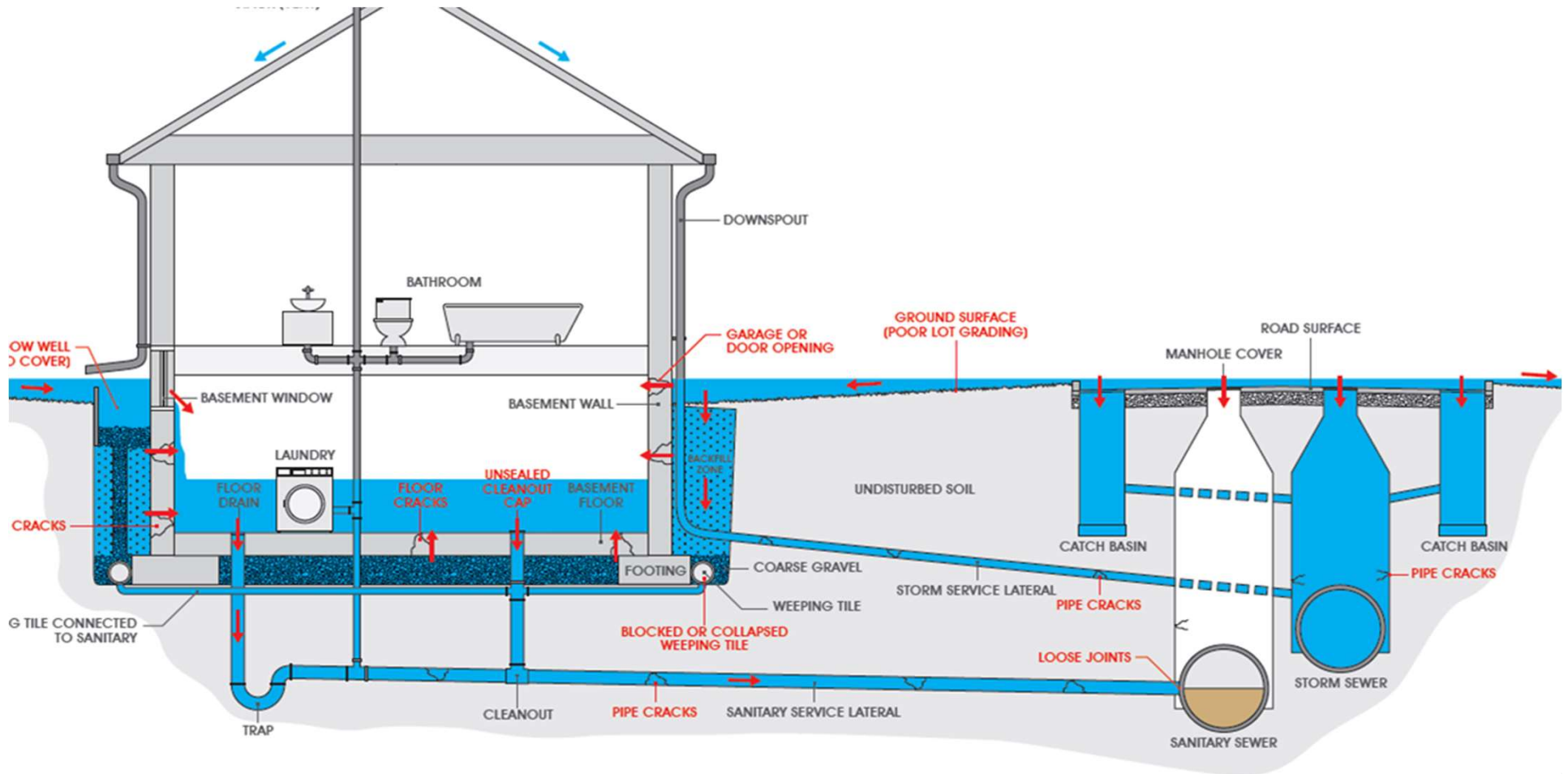
# Storm Drainage System

- Storm sewers (or minor system) convey stormwater runoff from up to 2 year event
- Streets (or major system) convey major storms that exceed the storm sewer capacity
- Temporary ponding on streets is expected during major rain storms





# Typical Causes of Basement Flooding

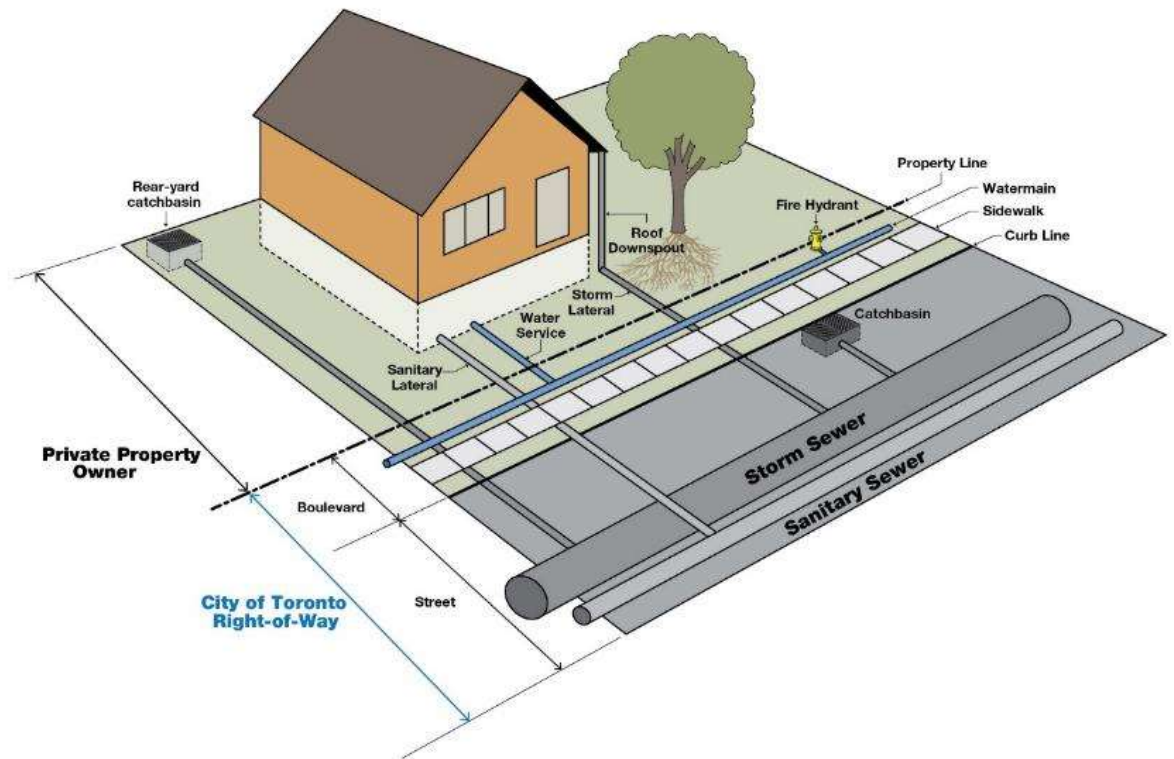




# Areas of Responsibility – City

The City is responsible for infrastructure within the public Right-of-Way and plans to achieve a higher than existing level of service for:

- Sanitary Sewers
- Storm Sewers
- Catchbasins within roadways
- Overland drainage within roadways

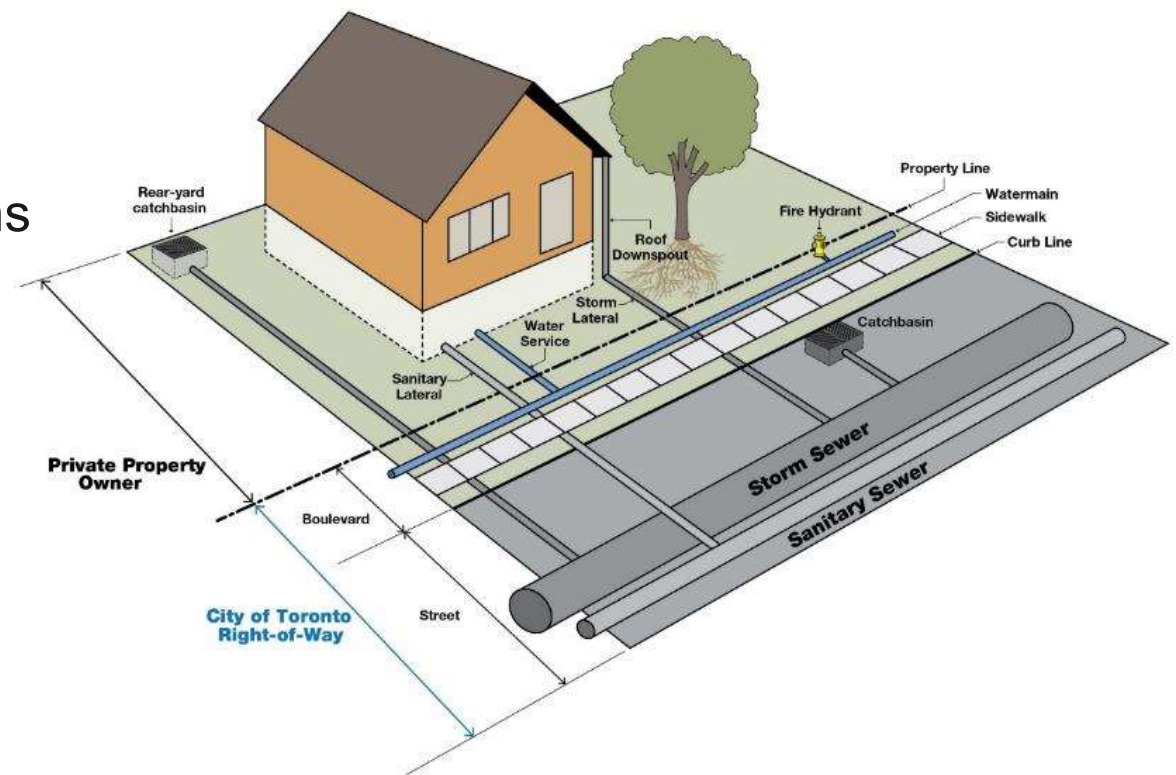




# Area of Responsibility – Property Owner

Each homeowner is responsible for the operation and maintenance of drainage systems on private property including:

- Lot grading
- Front and rear-yard or driveway drainage catchbasins
- Foundation drains
- Sump pumps and backwater valves
- Private tree roots and what you put down the drains (fats, oils, grease, etc.)
- Disconnecting downspouts





# Property Owner – Potential Solutions

Source control solutions that can be implemented by property owners include:



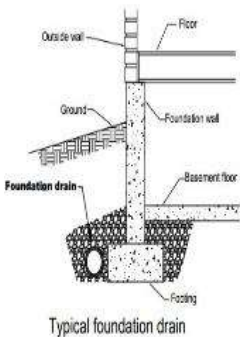
**Maintaining  
front and  
rear-yard  
drainage or  
driveway  
catchbasins**



**Installing  
backwater  
valve**



**Installing  
permeable  
paving**



**Disconnecting  
foundation  
drains from  
sanitary sewer  
and installing /  
maintaining  
sump pumps**



**Improving  
lot  
grading**



**Disconnecting  
downspouts**



**Using  
rain  
barrels**



# Existing Study Area Conditions



# Existing Conditions

The City and its consultants have examined a number of factors related to flooding as shown in the map on slide 15, they include:

- Overland flow (i.e., the amount of surface drainage conveyed on the road during large rainfall events)
- History of locations where flooding has been reported
- Locations of sags in the roadway where overland flow will pond, which are vulnerable to surface and basement flooding

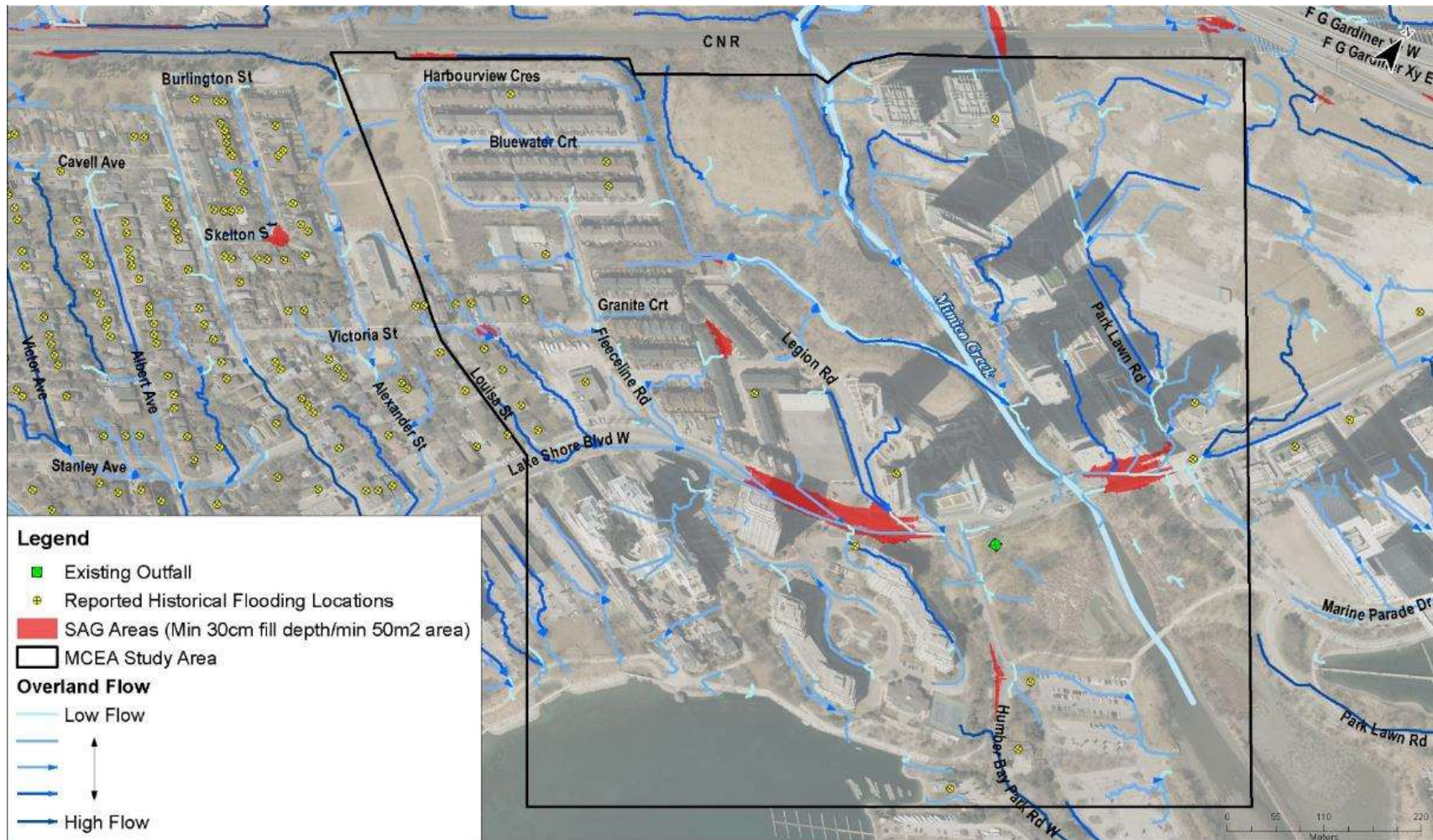
Our findings show that the existing storm sewer infrastructure is soon approaching its service life and comprised of old clay pipe. The existing Mimico Creek outfall does not have capacity to receive additional flow from upstream



Existing Mimico Creek Outfall



# Flooding Details





# Natural Environment Conditions

- The study area falls within the Mimico Creek valley - part of the City's Natural Heritage System and regulated by Toronto and Region Conservation Authority
- Natural communities are concentrated within Humber Bay Park and along Mimico Creek valley, north of Lake Shore Boulevard West
- Mimico Creek and its tributary from Legion Road to Mimico Creek north of Lake Shore Blvd West provide direct fish habitat
- Site investigations observed active Cliff Swallow and Barn Swallow nests under the pedestrian bridge over Mimico Creek and Lakeshore Blvd West bridge
- The following Species at Risk identified within the focus area: Barn Swallow, American Eel, Red-headed Woodpecker, Little Brown Myotis, Eastern Small-footed Myotis, Northern Myotis, Tri-colored Bat & Blanding's Turtle
- Several candidate Significant Wildlife Habitat have also been identified, as well as general wildlife that may utilize the vegetation communities and isolated trees and shrubs



# Geomorphic Assessment

- A fluvial geomorphological assessment of Mimico Creek has been completed, focused on outfall improvements
- The investigation identified that the banks for a section of the creek (Reach M-0) is lined with boulders and concrete rubble, providing stability and protection against erosion
- The majority of the channel length is lined with small rock and larger armourstones. This prevents erosion of the channel banks and therefore limits the movement of the channel overtime, maintaining its straight shape.
- The area for proposed stormwater outfall upgrades is densely vegetated with mature trees further onto the banks and shrubs and wetland-type vegetation closer to the water
- Reach M-0 has accumulation of sediments consistent with the low gradient and backwater effects due to the proximity to Lake Ontario
- The discharge area of the existing outfall has no direct connection to Mimico Creek
- The wetland on the west embayment provides a barrier from direct stormwater discharge



# Geomorphic Assessment



Existing Mimico Creek Outfall



West Bank Embayment (Wetland)

Wetland areas, identified as embayments, have been created for habitat purposes and are considered as sensitive areas





# Cultural Heritage Resources

- Cultural heritage resources include archaeological resources, built heritage landscapes and cultural heritage landscapes
- The focus area appears to be in areas of deep and extensive disturbance removing all archaeological potential
- A field review must be conducted to confirm these results prior to construction
- There are two built heritage resources and one cultural heritage landscapes within the focus area, not anticipated to be directly impacted (see next slide for details):
  - BHR 1 – Lake Shore Boulevard West Bridge over Mimico Creek
  - BHR 2 – Mimico Creek Pedestrian Bridge
  - CHL 1 – Mimico Creek



# Cultural Heritage Resources





# Evaluation of Alternative Solutions



# Alternative Solutions

Three alternative solutions have been identified to address surface and basement flooding within the study area

## Alternative 1

- Do nothing

## Alternative 2

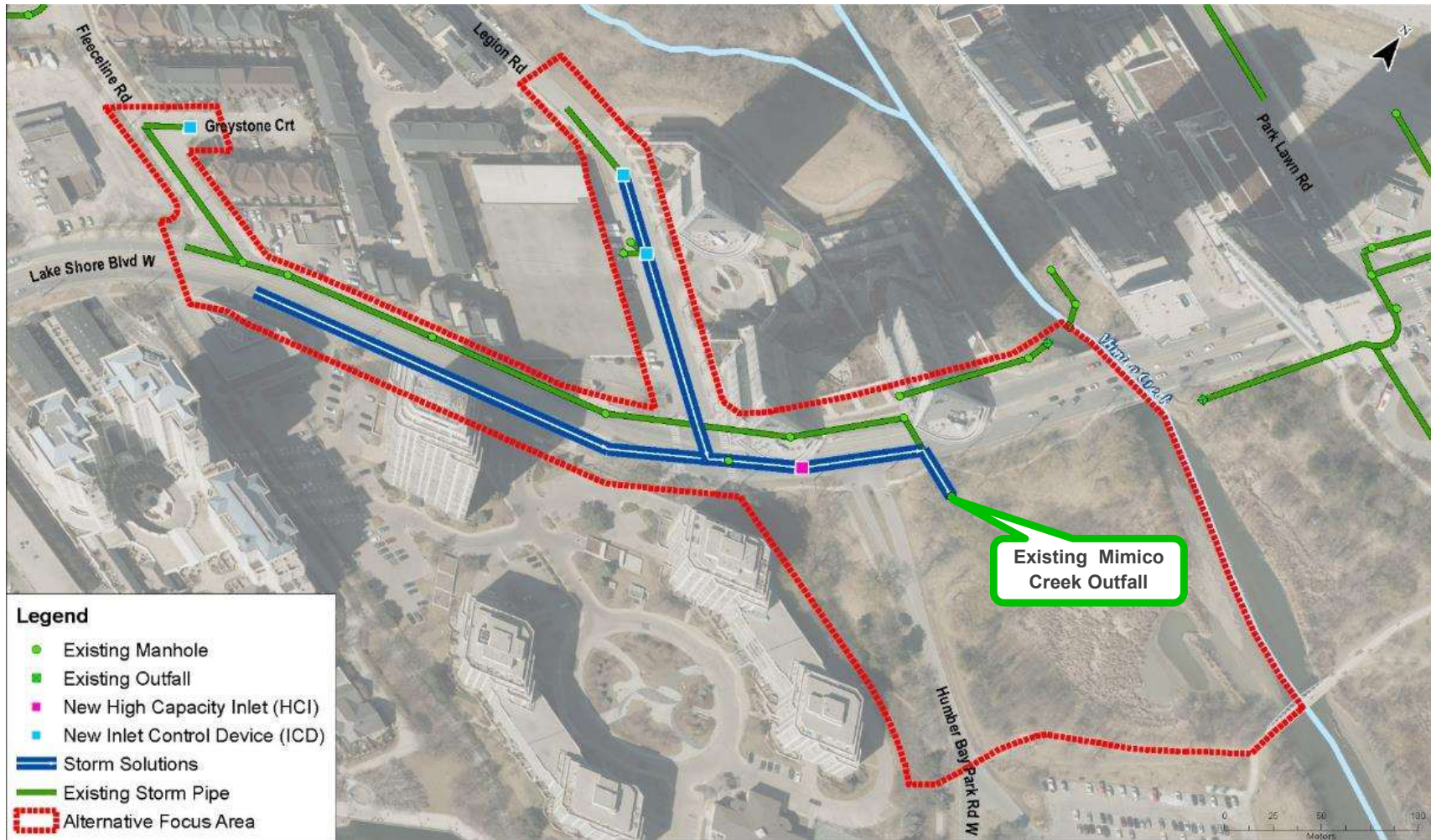
- new 1500 mm storm sewer (307 m length) on Lake Shore Blvd W, south of TTC streetcar tracks
- four high capacity inlets on Lakeshore Blvd W
- upsizing local storm sewer on Legion Road to 450 mm and 750 mm, with inlet controls devices upstream
- upsizing existing Mimico Creek outfall to 1500 mm at Humber Bay Park

## Alternative 3

- new 1500 mm storm sewer (307 m length) north of Lake Shore Blvd, along existing sewer alignment
- upsizing storm sewer crossing over the TTC streetcar tracks
- four high capacity inlets on Lakeshore Blvd W
- upsizing local storm sewer on Legion Road to 450 mm and 750 mm, with inlet controls devices on the upstream
- upsizing existing Mimico Creek outfall to 1500 mm at Humber Bay Park

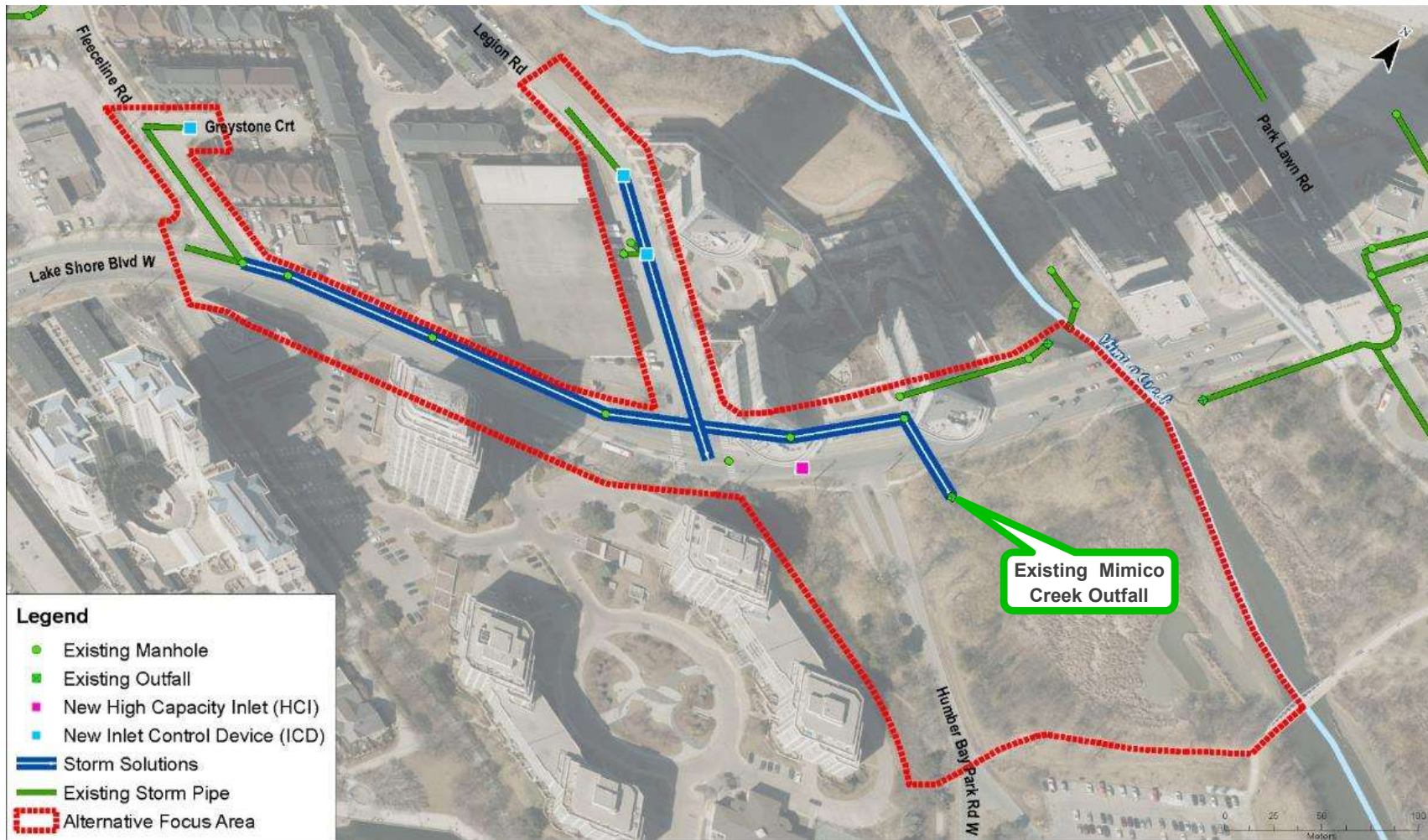


# Alternative 2





# Alternative 3





# Evaluation Criteria for Alternatives

Each alternative solution was evaluated based on their ability to address the Study's purpose and the criteria below

## Natural Environment

Potential impacts on:

- ✓ Terrestrial and Aquatic systems (vegetation, trees, wildlife)
- ✓ Trees (estimated number and type potentially requiring removal)
- ✓ Species at Risk (SAR) and SAR habitat
- ✓ Surface and groundwater
- ✓ Water course form and function
- ✓ Environmental Permitting and Approvals

## Socio-Cultural

- ✓ Land use impacts (parks, ravines, open spaces)
- ✓ Disruption to existing community during construction (traffic, noise, dust)
- ✓ Potential impacts to archaeological and cultural resources

## Technical

- ✓ Effectiveness in reducing surface and basement flooding and improving stormwater runoff quality
- ✓ Feasibility of implementation (available space, accessibility, constructability, approvals)
- ✓ Impacts on operating and maintenance requirements

## Economics

- ✓ Capital cost
- ✓ Operating and maintenance costs



# Evaluation Summary

Criteria	Alternative 2	Alternative 3	Summary
<b>Natural Environment</b>	Medium Constraints	Medium Constraints	<p>Similar natural environment impacts:</p> <ul style="list-style-type: none"> <li>• Tree and shrub removal required</li> <li>• Direct fish habitat in Mimico Creek and TRCA Regulated Area</li> <li>• Potentially suitable habitat for Species at Risk identified and may be affected</li> <li>• Area deemed as Highly Vulnerable Aquifer</li> <li>• Increase in discharge to Mimico Creek has potential to increase erosion potential and/or alter sediment deposition patterns within the wetland areas and/or watercourse</li> <li>• Proposed alteration could alter existing vegetation at the stormwater outfall discharge point impacting bank stability and flow energy dissipation</li> <li>• Areas of Mimico Creek where no bank protection exists may require protection</li> <li>• Ontario Regulation 166/06 permit required</li> </ul>
<b>Socio-Cultural</b>	Low Constraints	Medium Constraints	<p>Similar socio-cultural impacts:</p> <ul style="list-style-type: none"> <li>• Portion of Humber Bay Park space and area around Mimico Creek outfall will be temporarily impacted during construction</li> <li>• Field review needed to confirm potential impacts to archaeological resources</li> <li>• No direct or indirect impacts anticipated to built heritage resources or cultural heritage landscapes</li> <li>• Alternative 3 directly fronts condominiums on Lake Shore Blvd West (east of Legion Road) and potentially have more traffic disruption during construction</li> </ul>



# Evaluation Summary

Criteria	Alternative 2	Alternative 3	Summary
<b>Technical</b>	Medium Constraints	High Constraints	<p>Similar technical impacts:</p> <ul style="list-style-type: none"> <li>• Similar effectiveness in reducing surface and basement flooding and improving stormwater runoff quality</li> <li>• Similar impacts on operating and maintenance</li> <li>• Alternative 2 is more feasible with the installation of the new larger storm sewer on the south side of TTC streetcar tracks</li> <li>• Alternative 3, the storm sewer is required to cross TTC streetcar tracks and requires more complicated approvals from TTC</li> <li>• Alternative 2 has more available space for construction</li> <li>• Alternative 2 has less disruption to access fronting Lake Shore Blvd West as it avoids condominiums east of Legion Road</li> </ul>
<b>Economics</b>	Medium Constraints	Medium Constraints	<ul style="list-style-type: none"> <li>• Capital cost for Alternative 2 estimated to be \$4.5 million</li> <li>• Capital cost anticipated to be higher for Alternative 3 related to crossing TTC tracks and traffic management</li> <li>• Similar operating and maintenance costs</li> </ul>



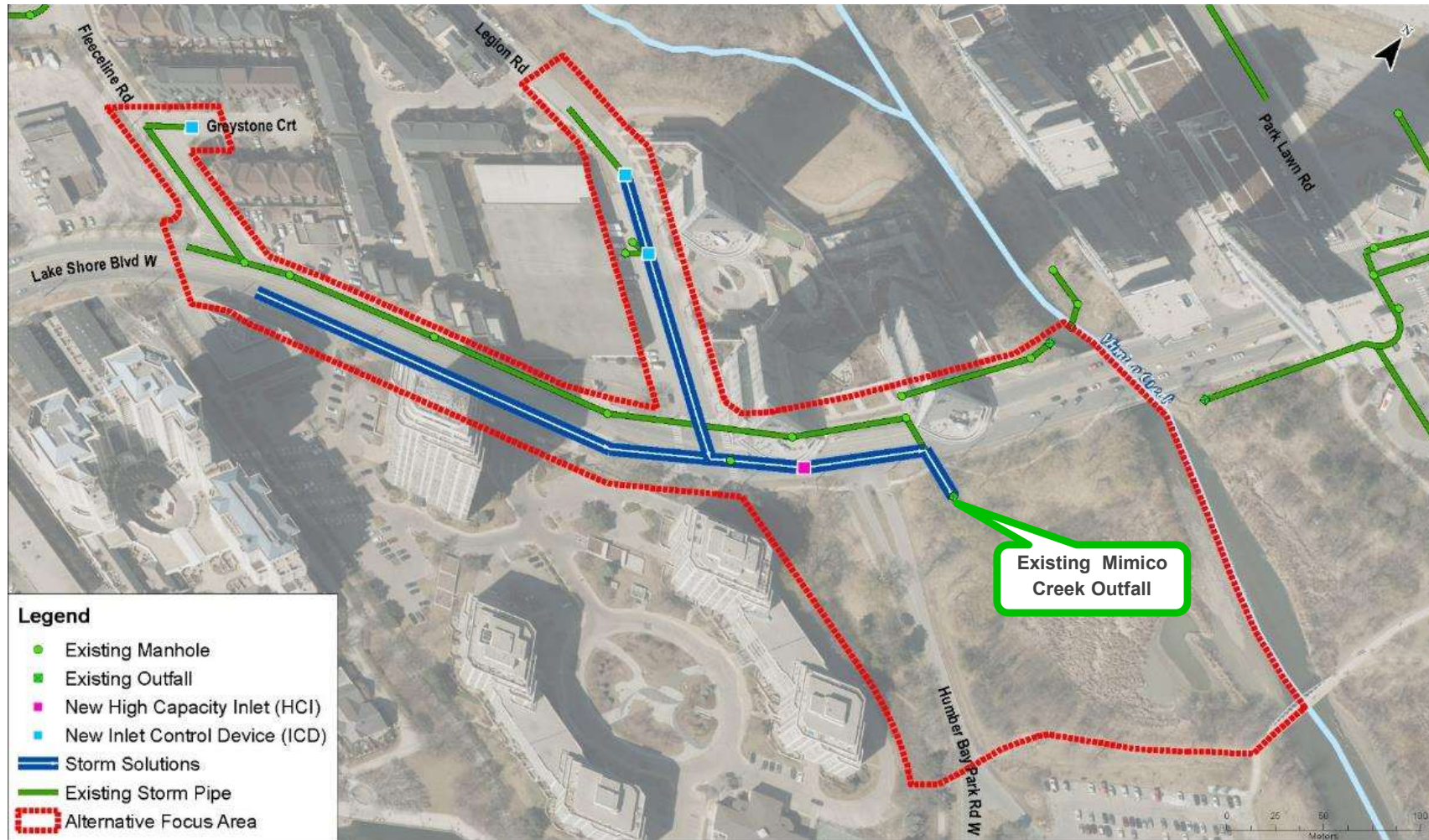
# Preferred Solution

Based on the evaluation of alternative solutions, the preferred solution is Alternative 2

- Alternative 2 has better constructability with the installation of the new larger storm sewer on the south side of the TTC streetcar tracks
- Alternative 2 results in less disruption to the community during construction with less construction activity fronting directly the condominiums/businesses and reduced impacts to TTC streetcar operations
- Alternative 2 is anticipated to have lower capital cost



# Preferred Solution – Alternative 2





# Preferred Solution – Alternative 2

Solution	Description	What does it involve?
<b>New 1500 mm storm sewer (307 m in length) on the south side of the TTC tracks on Lake Shore Boulevard West</b>	Increase the size of the sewer pipe by replacing the old sewer with a larger pipe	<ul style="list-style-type: none"> <li>• Road excavation within City property limits (primarily road ROW)</li> <li>• Removal of old sewer and structures (manholes &amp; catchbasins) and disconnection of sewer service line(s)</li> <li>• Placement of new sewer, reconnection of sewer service line(s) and restoration of road and boulevard</li> </ul>
<b>Upsizing of local storm sewer on Legion Road to a 450 mm and 750 mm pipe</b>	Increase the size of the sewer pipe by replacing the old sewer with a larger pipe	<ul style="list-style-type: none"> <li>• Road excavation within City property limits (primarily road ROW)</li> <li>• Removal of old sewer and structures (manholes &amp; catchbasins) and disconnection of sewer service line(s)</li> <li>• Placement of new sewer, reconnection of sewer service line(s) and restoration of road and boulevard</li> </ul>



# Preferred Solution – Alternative 2

Solution	Description	What does it involve?
<b>Four (4) High Capacity Inlets on Lake Shore Blvd</b>	The rapid collection of surface drainage in low lying areas that have no direct outlet to reduce surface ponding depths	<ul style="list-style-type: none"> <li>• Addition of “speed bump” or “curb cut” to redirect overland flow to new high capacity inlets, such as a large “curb drain”</li> <li>• This is in combination with the storm sewer upsizing to convey the larger resulting sewer flows</li> </ul>
<b>Inlet Control Devices on the upstream portion of Legion Rd and Greystone Court</b>	Installation of inlet control devices (ICDs) on catchbasins to limit release into the storm sewer system to control back-up (surcharge)	<ul style="list-style-type: none"> <li>• A plastic or metal plate / device installed inside the catchbasin outlet (not visible from surface)</li> <li>• Minimal effort and time to install</li> <li>• Keeps more water on the surface</li> </ul>
<b>Upsizing of the existing Mimico Creek outfall to 1500 mm at Humber Bay Park</b>	Increase the size of the existing outfall by replacing it with a larger outfall	<ul style="list-style-type: none"> <li>• Establishment of construction access to existing outfall, including clearing vegetation within construction footprint</li> <li>• Reconstruction of existing outfall with temporary diversion</li> <li>• Restoration of construction area</li> </ul>



# Mitigation of Potential Impacts and Next Steps



# Tree Review

- A tree inventory is being completed to support the alternatives evaluation and impact assessment process
- Trees immediately surrounding the existing Mimico Creek outfall will require removal. The size of the trees ranges between 1 cm and 75 cm, with an average of 15 cm diameter at breast height. Ash trees are the most common trees in the outfall area
- Impacts to the city owned trees within the road right of way will be minimized to the extent possible:
  - Trees along Lakeshore Boulevard West are between 1 cm and 55 cm, with an average diameter of 17cm. Siberian elm trees were most common here
  - The most common trees encountered along Fleeceline Road were Sugar maples. The average diameter of all trees here is 18 cm, ranging between 7 cm and 35 cm
  - The average diameter of all trees along Legion Road is 9 cm, with the trees ranging from 1 to 18 cm. Pear trees were the most common trees inventoried in this area
- The estimated number of anticipated removals and protections will be documented in the project file report and reviewed during the design phase based on the final construction access and footprint





# Mitigation of Potential Impacts

Mitigation measures will be reviewed and refined during the detailed design

## Habitat and Trees

- Vegetation removal to occur outside of the breeding bird season of April to August
- If stockpiles of gravel and sand are required during the active turtle season (April to October), install turtle exclusion fencing around stockpiles prior
- Implement erosion and sediment control mitigation measures
- Spill Prevention and Contingency Plan to be developed prior to construction
- Prepare tree removal and protection plans, along with tree protection barriers and signage where required
- Any damaged trees will be pruned through the implementation of proper arboricultural techniques, under supervision of a certified arborist
- On-site inspection during construction





# Mitigation of Potential Impacts

## Sediment and Watercourse Protection

- Develop hydraulic model prior to the installation of new outfall to determine the impacts to the current banks required to prevent erosion
- Consider additional sediment inputs into the embayment, the creek, and its effects to the navigability of the watercourse through the detailed hydraulic model
- Consider and investigate the effects of increased sediment inputs to aquatic habitat

## Construction Measures

- Complete Traffic Management Plan
- Conduct a field review to confirm the result of archaeological potential Use of Best Management Practices for dust control and vibration monitoring during construction
- Use of low noise equipment during construction, where possible
- Notify impacted property owners prior to construction
- Maintain access to fronting properties



Lake Shore Boulevard West and Legion Road



# From Study to Construction

- All City basement flooding projects are prioritized and scheduled to protect the greatest number of properties as soon as possible, within approved budgets and coordinated with other construction work as per Council approved criteria
- Projects are also prioritized for implementation based on a City Council adopted \$68,000 cost per benefitting property threshold
- Projects with a cost-benefit less than \$68,000 per property at the preliminary design stage may proceed to construction
- Projects that exceed the \$68,000 cost per benefitting property threshold will be moved into the State-of-Good-Repair's long term capital plan



# Contact us

## Thank you for viewing the study information

- Contact us if you have any questions or submit comments by email or phone
  - Mae Lee, Senior Public Consultation Coordinator 416-392-8210 or [FloodingStudy@Toronto.ca](mailto:FloodingStudy@Toronto.ca)
- The study team will review your feedback and finalize the preferred solution
- A project file report will then be completed later this year and made available for a 30-day public review

**[www.toronto.ca/BF53](http://www.toronto.ca/BF53)**