Welcome

Lawrence Park Neighbourhood Investigation of Basement Flooding & Road Improvement Study Class Environmental Assessment

Public Information Centre 2

View displays and discuss the study with project staff

Feel free to ask questions and fill out a comment sheet

TORONTO

Purpose of this Study

Study Purpose

The City of Toronto has initiated a Master Plan (Approach 3) Municipal Class Environmental Assessment (EA) study to address issues relating to

- deteriorating road conditions,
- traffic,
- pedestrian safety,
- drainage problems, and
- basement flooding

in the Lawrence Park Neighbourhood. Measures that improve stormwater quality and reduce storm runoff will also be incorporated.

The study is being planned under the requirements set out in the Municipal Class Environmental Assessment (MCEA) document dated October 2000, amended in 2011. The MCEA process provides members of the public and interest groups with opportunities to provide input at key stages of the study.

The key stages of the study will:

1. Define the problem,
2. Evaluate alternative solutions,
3. Assess impacts of the preferred solutions, and
4. Identify measures to lessen any adverse impacts.

TORONTO

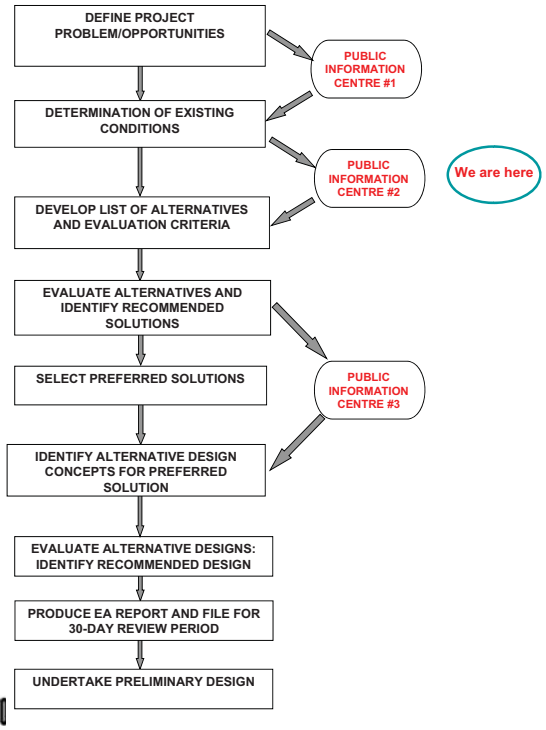
Objectives of Tonight's Meeting

- Provide background on the study,
- Summarize existing conditions within the study area,
- Present a long list of alternatives that address existing issues,
- Present a list of criteria to evaluate each alternative,
- Outline the next steps in the study process, and
- Receive your feedback and answer your questions.

TORONTO

Municipal Class Environmental Assessment Process

This study is being undertaken as a Master Plan (Approach 3) project under the Municipal Class Environmental Assessment (EA) process. The flow chart illustrates the key steps to be undertaken as part of the EA process.



TORONTO

Existing Conditions

The existing conditions within the study area are listed below:

- Geotechnical Findings
- Sewer and Drainage System
- General Areas where Surface or Basement Flooding has Occurred
- Tree Inventory
- Widths of the Paved Road Surface
- Sight Lines
- Traffic
- Sidewalks & Key Destinations

TORONTO

Geotechnical Findings

A geotechnical investigation was undertaken in the Spring of 2013. In total approximately 90 boreholes were installed at representative locations within the study area.

The purpose of this investigation was to evaluate the roadways, investigate pavement thickness and composition and; explore the underlying subsurface conditions. Groundwater elevations were also recorded at representative sites. This information, in turn, will be used to assist in defining the type of road and sewer reconstruction measures that may need to be undertaken.

Provided below are typical roadway maintenance and rehabilitation activities.

Activities

Routine Preventive Maintenance
Undertake maintenance treatments such as routing and sealing existing cracks in the asphalt pavement, patching potholes, patching road surface defects around maintenance chambers etc.; Preventive measures are meant to preserve the pavement, mitigate future deterioration and maintain or improve driving comfort.

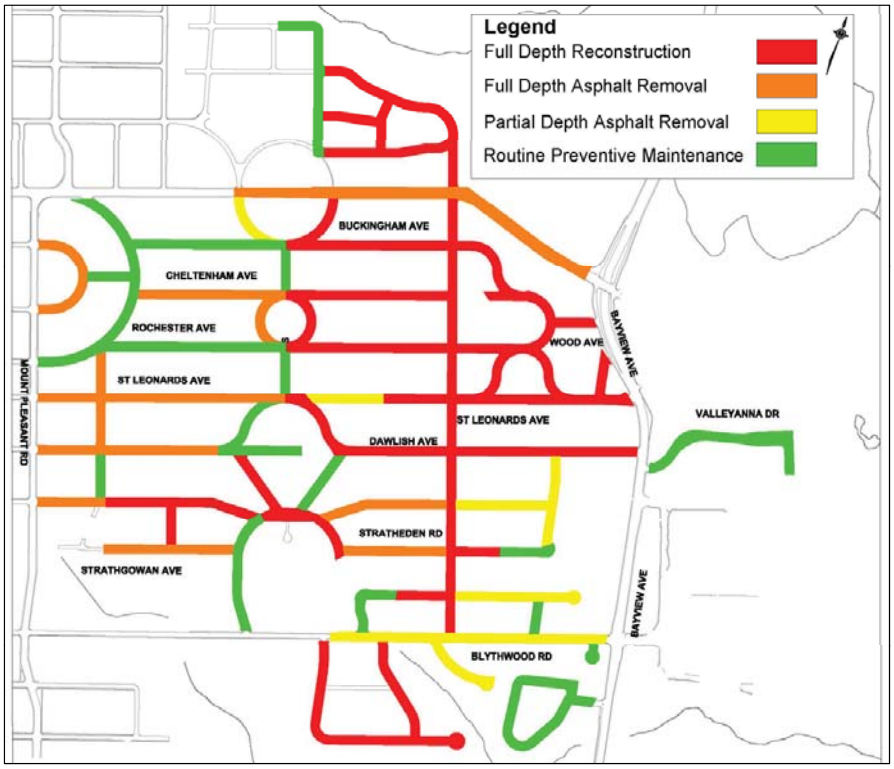
Partial Depth Asphalt Removal (Mill and Overlay)
Mill (i.e. remove the existing asphalt concrete to a specified thickness) and Overlay (i.e. repave with a specified layer of hot mix asphalt.) Existing deficient curb and sidewalk will be repaired.

Full Depth Asphalt Removal
For flexible pavement, remove the existing asphalt, regrade, level and compact the existing granular material and repave the roadway with hot mix asphalt. For composite pavement, remove the existing asphalt to expose the underlying concrete slab, repair the concrete slab and joints and repave the roadway with hot mix asphalt. Existing deficient curb and sidewalk will be repaired.

Full Depth Reconstruction
Remove existing asphalt, concrete and underlying granular materials and excavate to the road design subgrade elevation. Reconstruct the roadway by placing and compacting the granular sub-base followed by the granular base and then repave roadway with hot mix asphalt. Existing deficient curb and sidewalk will be repaired.

TORONTO

Existing Roadway Conditions and Representative Rehabilitation Measures

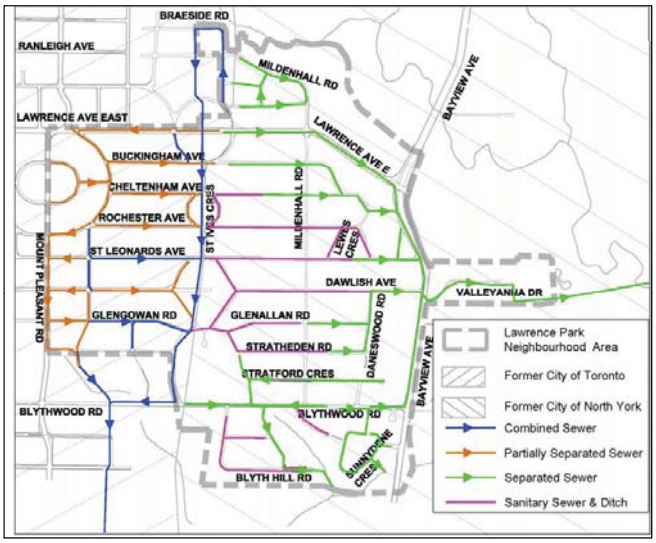


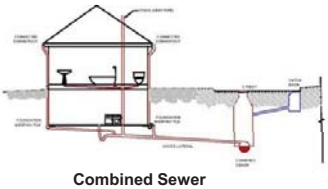
TORONTO

Existing Sewer and Drainage System

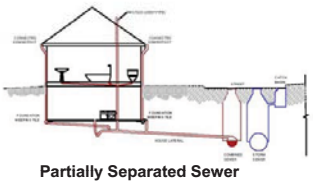
The accompanying figure illustrates the types of sewer systems that exist within the study area.

- The former City of Toronto area was initially serviced by a combined sewer system. Over time, a sewer separation program has been undertaken along several streets.
- The former City of North York area was originally serviced by a sanitary sewer system and ditches to convey stormwater runoff. Over time, storm sewers have been constructed along several streets.





Combined Sewer



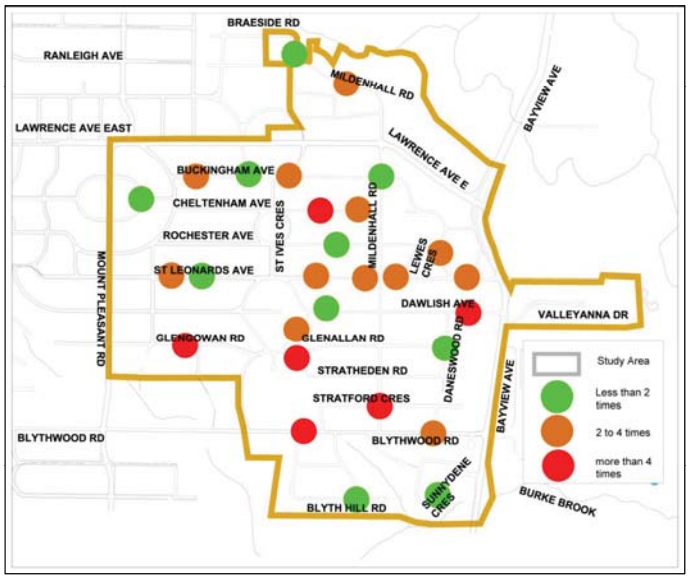
Partially Separated Sewer

Separated Sewer

TORONTO

General Areas where Surface or Basement Flooding Has Occurred

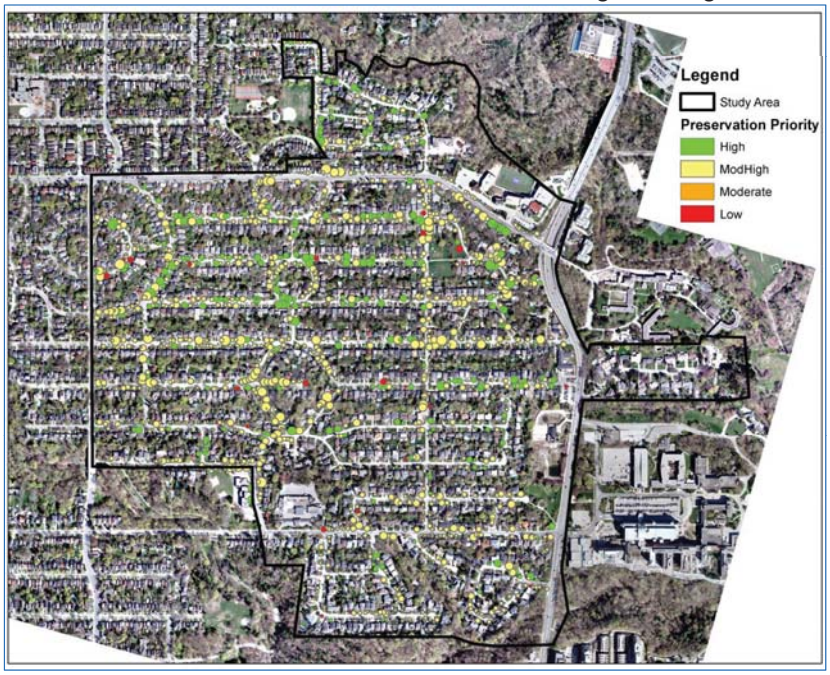
The accompanying figure illustrates the general locations of surface or basement flooding recorded in questionnaires that were submitted in February 2013. Recently significant rainfall events which have resulted in flooding occurred in May 2000, August 2005, May 2013 and July 2013.



TORONTO

Tree Inventory

A tree inventory of the study area was undertaken. All trees that may be impacted by construction work within the right of way were inventoried and assessed for preservation priority. A preservation priority level of either “High”, “ModHigh”, “Moderate” or “Low” was assigned by a certified arborist to each tree based on its diameter at breast height, biological health, and general condition.

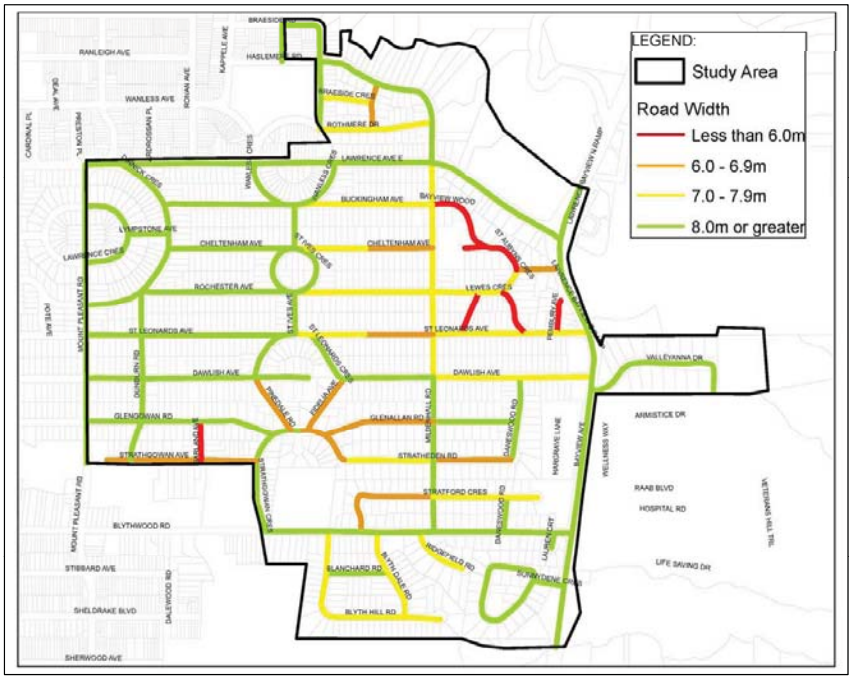


TORONTO

Width of the Paved Road Surface

The City property set aside to provide amenities to private properties such as paved road, curbs, sidewalks, above and underground utilities (i.e., water supply, sewage, hydro, gas, telecommunications), boulevards, street trees and signage. The typical Right-of-way is 20m (66') on local roads in the City.

Provided below is a summary of the average paved road widths for streets in the study area.



Sight Lines

- The ability of a stopped vehicle to see the approaching traffic is called the sightline
- The Project Team has conducted a sightline review of the intersections within the Lawrence Park Neighbourhood
- Six locations with a lack of sight distance are identified:
  - Lawrence Crescent / Mount Pleasant Road (south intersection)
  - St. Leonards Avenue / Mount Pleasant Road
  - Dawlish Avenue / Mount Pleasant Road
  - Strathgowan Crescent / Blythwood Road
  - Rochester Avenue / Mildenhall Road
  - Wanless Crescent / Lawrence Park Avenue (east intersection)

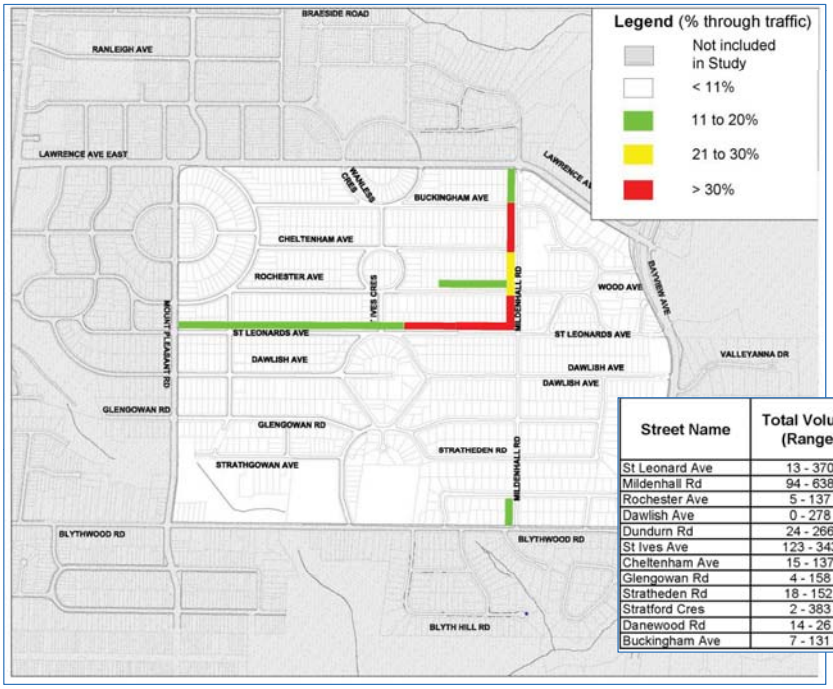
Traffic

- To understand travel patterns in the study area traffic surveys and counts were conducted. Modelling was then undertaken to determine traffic movements, particularly the percentage of through traffic (infiltration) of vehicles
- To understand travel operations in the area turning movements at intersections were studied and the Level of Service (LOS) was estimated at several intersections
- To understand the state of safety in the study area measurements and safety indicators were studied and a collision analysis for the last 5 years was carried out

TORONTO

Traffic Volume & Percent Through Traffic - AM

Provided on the accompanying figure is the percentage of through traffic for each street in the area. The table summarizes morning peak hour total volume and morning percentage peak hour through volume for representative streets in the area.

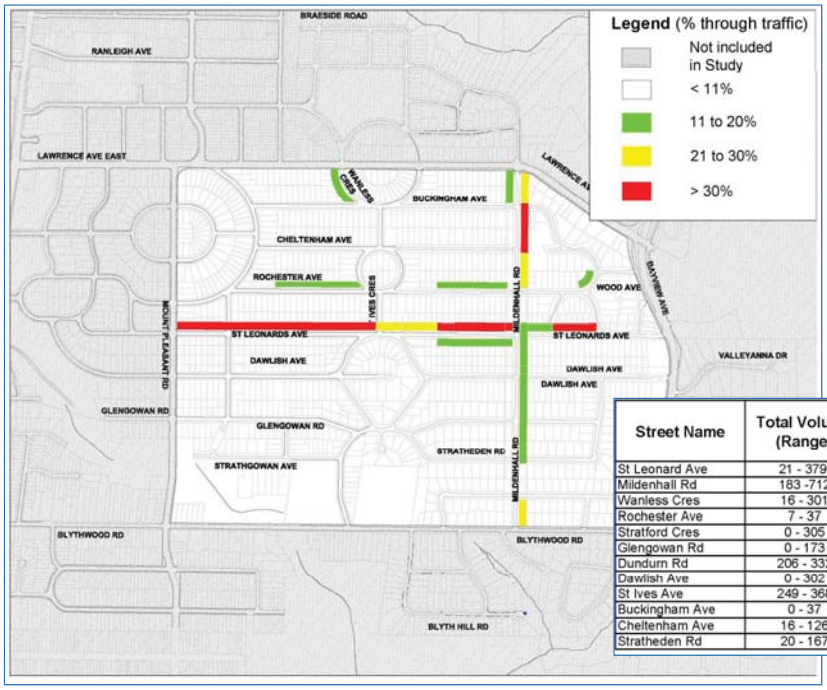


Street Name	Total Volume (Range)	% Through Traffic (Range)
St Leonard Ave	13 - 370	0 - 62
Mildenhall Rd	94 - 638	0 - 35
Rochester Ave	5 - 137	0 - 11
Dawlish Ave	0 - 278	0 - 6
Dundurn Rd	24 - 266	0 - 6
St Ives Ave	123 - 343	0 - 1
Cheltenham Ave	15 - 137	0
Glengowan Rd	4 - 158	0
Stratheden Rd	18 - 152	0
Stratford Cres	2 - 383	0
Danewood Rd	14 - 26	0
Buckingham Ave	7 - 131	0

TORONTO

Traffic Volume & Percent Through Traffic - PM

Provided on the accompanying figure is the percentage of through traffic for each street in the area. The table summarizes evening peak hour total volume and evening percentage peak hour through volume for representative streets in the area.

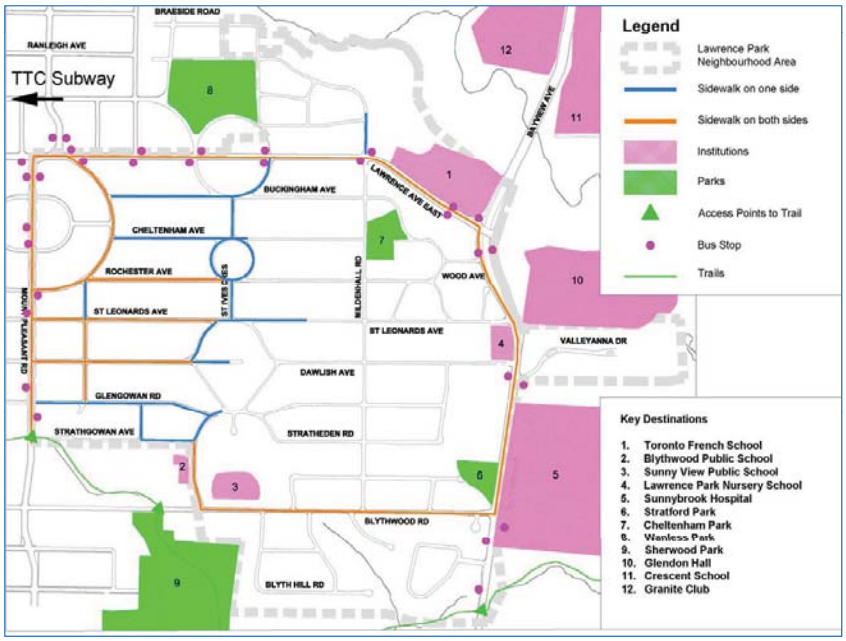


Street Name	Total Volume (Range)	% Through Traffic (Range)
St Leonard Ave	21 - 379	11 - 92
Mildenhall Rd	183 -712	7 - 37
Wanless Cres	16 - 301	0 - 13
Rochester Ave	7 - 37	0 - 11
Stratford Cres	0 - 305	0 - 10
Glengowan Rd	0 - 173	0 - 8
Dundurn Rd	206 - 332	0 - 7
Dawlish Ave	0 - 302	0 - 6
St Ives Ave	249 - 368	0 - 1
Buckingham Ave	0 - 37	0
Cheltenham Ave	16 - 126	0
Stratheden Rd	20 - 167	0

TORONTO

Existing Sidewalks & Key Destinations

Provided on the accompanying figure is the location of streets where sidewalks do, or do not exist. Also shown are several of the key destination points within, or close to, the study area.



TORONTO

Presenting a Long List of Alternatives

To address the existing conditions and issues, a long list of alternatives or options can be considered for each of the following items listed below. After reviewing your comments and reviewing the details for each option, the next public information meeting will present a short list of alternatives in order to arrive at a final preferred recommendation:

- Basement and Surface Flooding
- Stormwater Quality
- Roadway Maintenance and Rehabilitation
- Roadway Cross Sections
- Sight Lines
- Traffic

Evaluation Criteria

The following criteria will be used to evaluate each alternatives. It will help determine which alternatives should continue to be considered in selecting a preferred alternative or final recommendation.

Socio-Cultural

- Pedestrian Safety
- Vehicular Safety
- Impact on Urban Greenspace / Recreational Use (Trees, Parks, Open Spaces)
- Disruption to Community During Construction
- Potential Impact to Archaeological and/or Natural Heritage Sites

Natural Environment

- Potential Impact on Terrestrial Systems (Vegetation, Trees, Wildlife)
- Potential Impact on Aquatic Systems, Aquatic Life and Aquatic Vegetation
- Potential Impact on Soils, Groundwater and Surface Water

Technical

- Technical Effectiveness
  - Surface and Basement Flooding
  - Stormwater Quality Improvement
  - Traffic Operations
  - Roadway Conditions

Economic

- Capital Costs
- Operating/Maintenance Costs

Methods for Reducing Basement and Surface Flooding

Source Controls

Source control measures involve managing stormwater where it originates (roofs, roads, driveways), before it enters the City's sewer pipes.

Measures include:

- Downspout disconnection
- Rain barrels
- Catchbasin inlet controls
- Pervious pavements
- Soakaway pits
- Rain gardens
- Tree planting
- Low impact/Green development

Conveyance Controls

Conveyance control measures help to control stormwater as it travels along the drainage system (in pipes or along the road).

Measures include:

- Sewer pipe diversions, replacement or twinning
- Underground storage pipes
- Overland relief sewers and diversion
- Sealing Sanitary Manholes

End-of-Pipe Controls

End-of-Pipe control measures manage stormwater just before it is discharged to a watercourse (stream, river, or lake).

Measures include:

- Surface dry ponds
- Surface wet ponds or constructed wetlands
- Underground storage tanks

TORONTO

Stormwater Quality

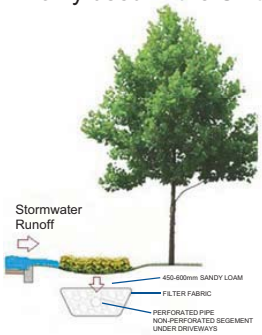
In 2003, the City of Toronto completed the Wet Weather Flow (WWFMP) Master Plan.

The overall objective was to develop a long-term plan to protect our environment and sustain healthy rivers, streams and other water bodies. One of the significant contributors to water pollution is stormwater runoff.

For this study area a number of different alternatives to treat stormwater runoff have been identified. The following board illustrates several types of measures that can be integrated into road or sewer reconstruction projects. The proposed measures include bioretention units and perforated pipe systems. These units, as shown in the accompanying schematic, allow treatment and infiltration of stormwater prior to discharging it to our streams or rivers.

Provided on the next slide are four general types of bioretention units which are being considered for this study area. The first two have been constructed within Toronto, the third is in an adjacent municipality. The fourth is commonly used in the United States.

Bioretention Unit



Perforated Pipe Illustration

Perforated Pipe System

Perforated Pipe Photo

TORONTO

Stormwater Quality Alternatives

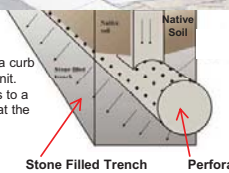
Stormwater is initially directed to a perforated pipe system located under the road. Excess flows are then directed to a conventional storm sewer.

Perforated Pipe System

Alternative No.1

Stormwater is directed to catch basins and a perforated pipe system located in the boulevard.

Alternative No.2



Stormwater is directed via a curb cut to the bioretention unit. Stormwater then infiltrates to a perforated sewer located at the bottom of the unit.

Stone Filled Trench

Perforated pipe

Alternative No.3

Alternative No.4

Stormwater is directed via a curb cut to the bioretention unit. Stormwater then infiltrates through the unit and is directed to a storm sewer located within the roadway.

TORONTO

Roadway Maintenance and Rehabilitation

- The pavement maintenance and rehabilitation alternatives for each road in the neighbourhood will depend on the findings and recommendations of the geotechnical investigations.
- The maintenance and rehabilitation alternatives will consist of: Full Depth Reconstruction, Full Depth Asphalt Removal, Partial Depth Removal, and Routine Maintenance.
- The Project Team will coordinate the pavement maintenance and rehabilitation recommendations with road improvement strategies, including timing of implementation, sewer reconstruction measures, and road types.
- The City will undertake necessary maintenance in accordance with Provincially mandated Minimum Maintenance Standards for Roads. Maintenance work may include filling potholes, localized and extensive patch work.

TORONTO

Alternative Roadway Cross Sections

The following boards illustrate existing roadways within the study area together with conceptual alternatives of what the roadways could look like after reconstruction.

The proposed illustrations are conceptual in nature and are intended to illustrate alternatives which incorporate:

- Widening of roadway width to meet the City's desired requirements (8.5m for local roads)
- Incorporation of improved drainage features to reduce flooding and improve stormwater quality
- Incorporation of sidewalks according to City's policies, that is:
  - Sidewalks are mandatory on both sides of collector and arterial roads, and on at least one side of local roads, where possible
  - Consideration is given to balance cost, existing conditions, community and local Councillor input (for local roads), and priority is given to creating pedestrian links
- Protection of existing trees where possible

Road cross sections illustrating urban (curb & gutter) and rural (swales) are shown. In several cases the conceptual illustration is the same as the existing roadways which suggests no changes may occur (or be proposed).

TORONTO

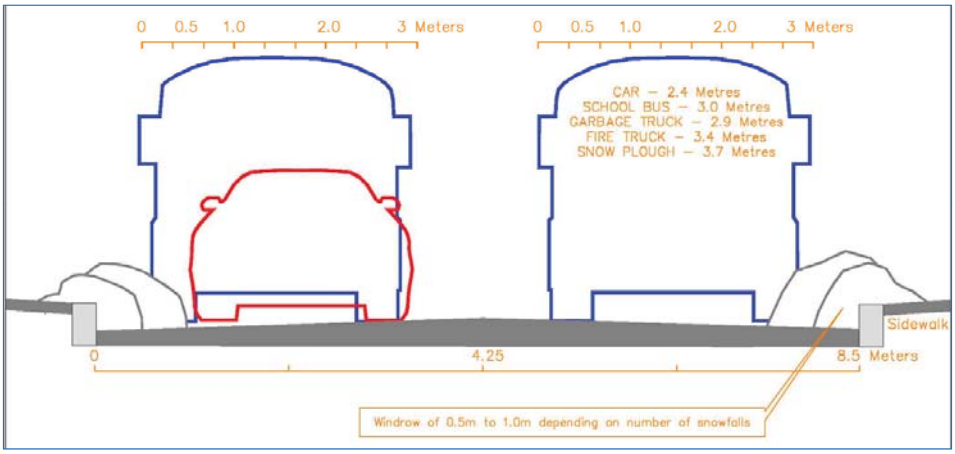
Preferred Road Width

The recognized transportation infrastructure policy for a local residential roadway within the City consists of a 20.1m Right-of-Way (ROW), an 8.5 metre paved road surface, concrete curb and a 1.7 – 2.0 metre sidewalk on one or both sides of road.

There are a number of factors which are considered in determining the road width. These include:

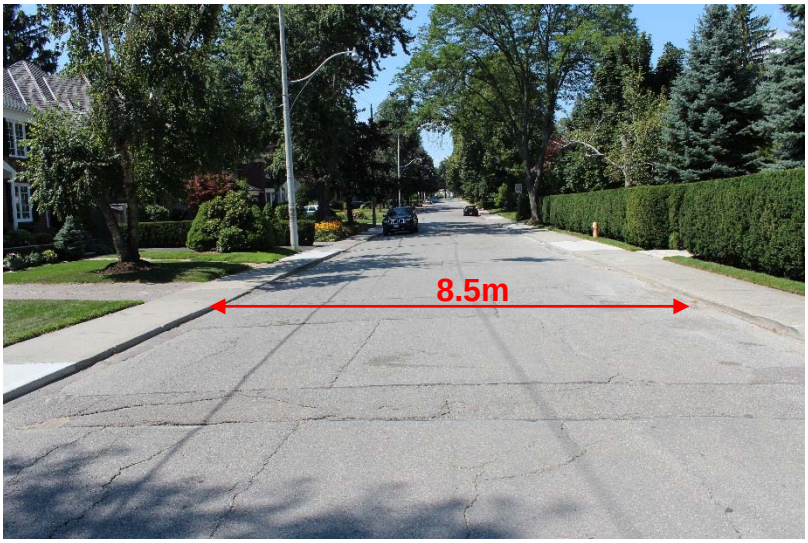
- Requirements for emergency vehicle access
- Requirements for service vehicle access
- Considerations for cyclist and pedestrian / vehicle conflicts
- Considerations for safe two way traffic flow
- Requirements for winter road maintenance
- Requirements for parking
- Provision of adequate widths for underground structures

Provided below is an illustration of several of the factors which are taken into consideration when defining the preferred road width.

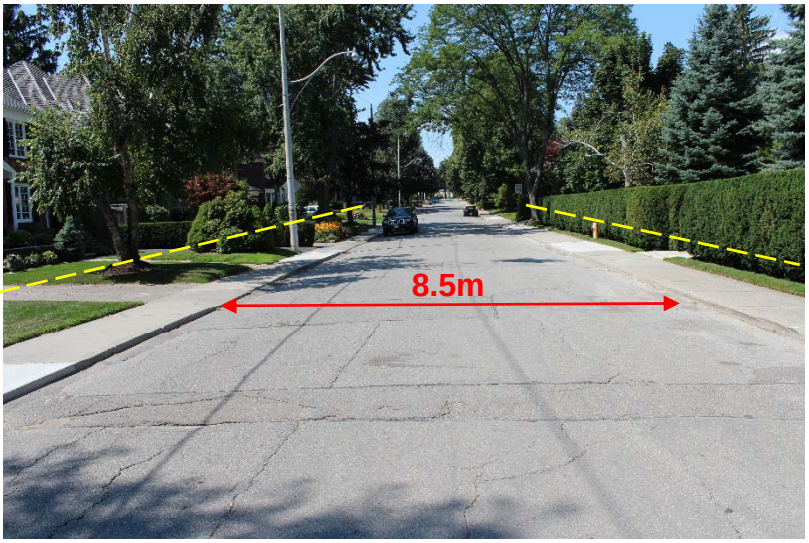


TORONTO

Alternative Roadway Cross Sections



Existing



Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Key Features

- The roadway cross section would remain as is
- This is referred to as the Do Nothing option in the Environmental Assessment Process

Alternative Roadway Cross Sections

Existing

Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Key Features

- Existing road width would be increased from 7.5m to 8.5m
- Existing ditches on each side of roadway would be regraded to convey required flows

Alternative Roadway Cross Sections

Existing

Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Existing tree may have to be removed due to road reconstruction

?

Key Features

- Existing road width would be increased from 7.0m to 8.5m
- Existing swale on left side of roadway would be replaced with ditch to convey required flows
- Curb would be installed on right side of roadway

Alternative Roadway Cross Sections

Existing

Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Existing tree may have to be removed due to road reconstruction

?

Key Features

- Existing road width would be increased from 6.9m to 8.5m
- Existing ditches on each side of roadway would be regraded to convey required flows
- Sidewalk constructed on one side of roadway

Alternative Roadway Cross Sections

Existing

Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Key Features

- Existing road width would be increased from 7.5m to 8.5m
- Existing swales to be replaced with curbs and storm sewer system
- Sidewalk constructed on one side of roadway

Note: Existing retaining wall on left side of roadway to be removed

Alternative Roadway Cross Sections

Existing

Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Existing tree may have to be removed due to road reconstruction

?

Key Features

- Existing road width to remain at 8.5m
- Sidewalk, with boulevard to be constructed on one side of roadway

Alternative Roadway Cross Sections

Existing

Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Existing tree may have to be removed due to road reconstruction

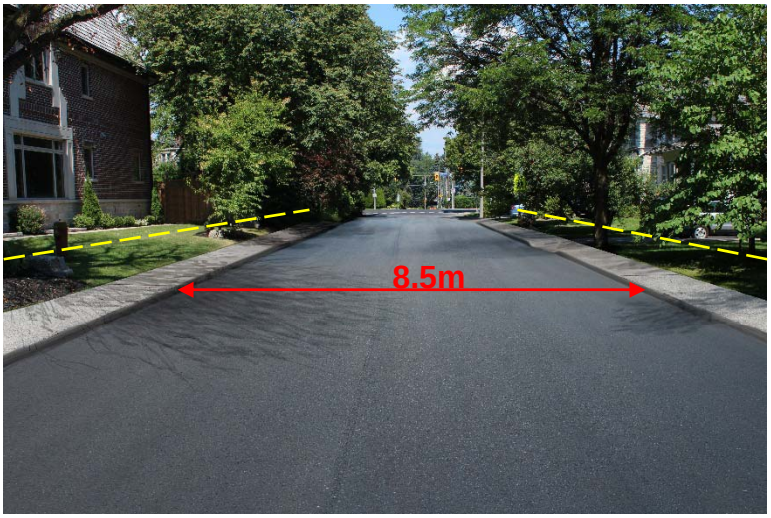
?

Key Features

- Existing road width would be increased from 8.0m to 8.5m
- Existing ditches on each side of roadway would be regraded to convey required flows
- Sidewalk constructed on both sides of roadway

Alternative Roadway Cross Sections

Existing



Conceptual

Legend

Road Width

Approximate Limit of Municipal Right of Way

Key Features

- Existing road width would be increased from 8.0m to 8.5m
- Existing swales would be replaced with storm sewer system
- Sidewalk constructed on both sides of roadway

Sight Lines

Several alternatives can be considered to address the sight line problems at the identified locations:

- Removal of Obstructions
- Provide Signage for approaching traffic, e.g. Hidden Driveway
- Temporary reduction of posted speed
- Provide STOP sign at local roads
- Provide signals for intersections at Major Arterials

Traffic Considerations

Several alternatives will be considered to improve Traffic Operations & Safety in the Area:

- Road widenings & intersection improvements, e.g. cross walks
- Addition of turning lanes
- Installation of traffic control devices (e.g. signing, signalization)
- Drainage improvements which will also improve traffic, including pedestrian & cyclists safety.
- Geometric design options, e.g. sidewalks, improving sight distance if needed.

Next Steps

Following this Public Information Centre, the study team will review and consider your comments related to the long list of alternatives and evaluation criteria.

The next Public Information Centre (PIC #3) is expected to be held in Early 2014 to present the recommended solutions.

For more information on this study, or to provide your comments, please contact:

Kate Kusiak, Public Consultant Unit
55 John Street, Metro Hall, 19th Floor
Toronto, ON M5V 3C6
Tel: 416-392-2962
TTY: 416-338-0889
Fax: 416-392-2974
Email: kkusiak@toronto.ca

TORONTO

Thank You and Questions

TORONTO