# WELCOME TO OUR PUBLIC OPEN HOUSE

## SCARBOROUGH-MALVERN LIGHT RAIL TRANSIT (LRT)

Preliminary Planning for a Transit Project Assessment Study

**May 20, 2009 and May 21, 2009**

## PLEASE SIGN IN

**Members of the Project Team are available to discuss the project with you.**
**Please feel free to ask questions and fill out a comment sheet.**

**Visit us at: www.toronto.ca/involved/projects/transit_city**

# Purpose of Today's Open House

- present the study background and a project update
- respond to your comments from the previous public open houses
- present the preferred design that has been developed for the Scarborough-Malvern LRT project
- identify the potential impacts and proposed mitigation measures
- obtain your further comments on the preferred design in order to finalize the design and take it forward for approvals
- answer any questions and concerns about this project

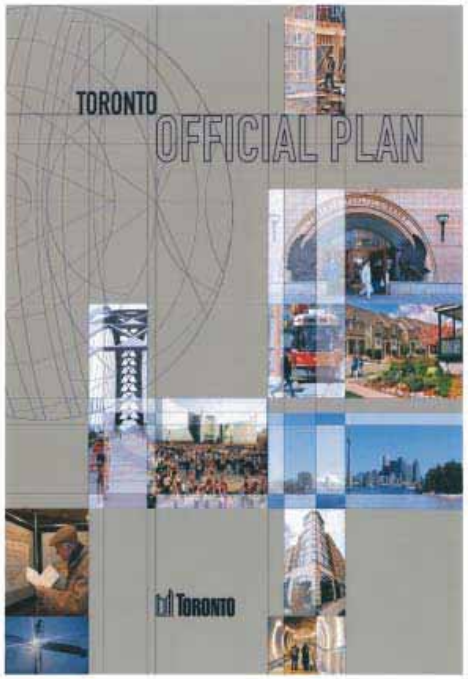


# Toronto Official Plan

The Toronto Official Plan supports continued growth in order to ensure the City's vitality and economic growth.

It also places greater emphasis on using available road space, focusing on movement of people, rather than vehicles, in order to address the future growth in travel.

Transit, walking, and cycling in conjunction with providing a better variety and density of transit-oriented development are major cornerstones of the Official Plan.

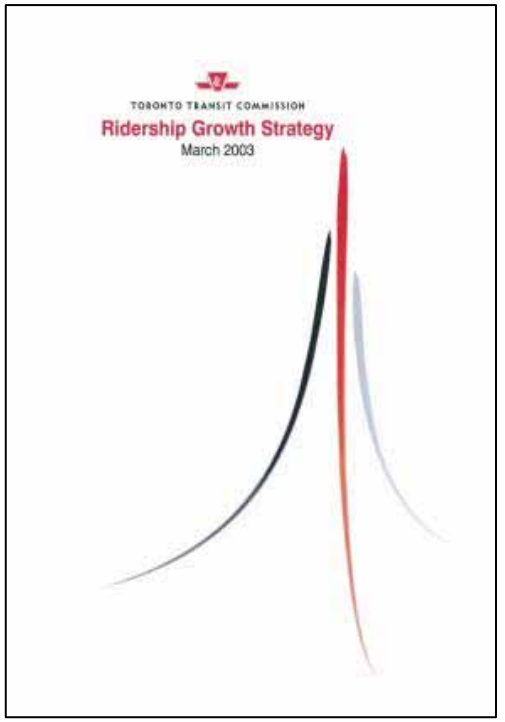



***The Toronto Transit City Light Rail Plan, including the Scarborough-Malvern Light Rail Transit project, implements the Toronto Official Plan by moving more people and encouraging new development and intensification along identified transit corridors, allowing a more productive and efficient use of the City's infrastructure and rights-of-way.***

# TTC Ridership Growth Strategy / Transit City

In support of the Toronto Official Plan, the TTC prepared a strategy that focuses on increasing service and improving the speed and reliability of the TTC, and identifies corridors for transit infrastructure investment.

The Ridership Growth Strategy set the stage for the Toronto Transit City Light Rail Plan that recommends a widely-spaced network of electric light rail lines, each on its own right-of-way throughout the City to meet future transit demand.




***The Toronto Transit City Light Rail Plan, including the Scarborough-Malvern Light Rail Transit project, builds on the TTC Ridership Growth Strategy and implements the transit policies of the Toronto Official Plan, providing fast, reliable, and accessible transit throughout the City.***

# Toronto Transit City Light Rail Plan

- seven new LRT lines, including the Scarborough-Malvern LRT project
- reserved rights-of-way
- total of 120 km of new fast and reliable light rail transit service
- projected 175 million passengers by 2021
- connect to existing and planned local and regional transit lines

"The Toronto Transit City LRT Plan is a bold vision for public transit. It will allow us to tackle climate change and reduce congestion while improving service in all parts of the City"

Mayor David Miller


In June of 2007, the Province announced, "Move Ontario 2020", a plan to fund 52 transit projects in Ontario, including funding for the TTC's Transit City LRT Plan.

Premier Dalton McGuinty

# Official Plan Amendment

An amendment to Map 5 of the Toronto Official Plan is required in order to identify the segment of Morningside Avenue, from Kingston Road to Sheppard Avenue, and the sections of roadways in the general vicinity of University of Toronto Scarborough Campus (UTSC) (i.e. portions of Ellesmere Road and Military Trail), as part of the Official Plan "Surface Transit Priority Network".

Currently, the segments of Eglinton Avenue East and Kingston Road along which the LRT is proposed to be constructed and operated are identified as such in the Official Plan.

This amendment will enable public works related to the proposed Scarborough-Malvern LRT project to proceed upon approval of the Transit Project Assessment Study.

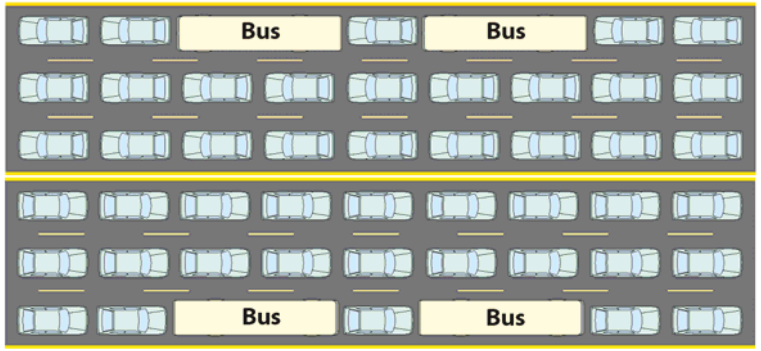
An additional amendment to the Right-of-Way widths identified in Ma 3 of the Official Plan for a section of Morningside Avenue, north of Kingston Road (presently 30 metres), and Military Trail (presently 27 metres) may also be required to provide the 36 metres, as reserved for the rest of the project.

# Transit City – Moving People in the 21st Century

## Future without Improved Transit

**"DO NOTHING"**

Will result in a lack of travel alternatives to the private auto and an increasing dependency on private auto travel.



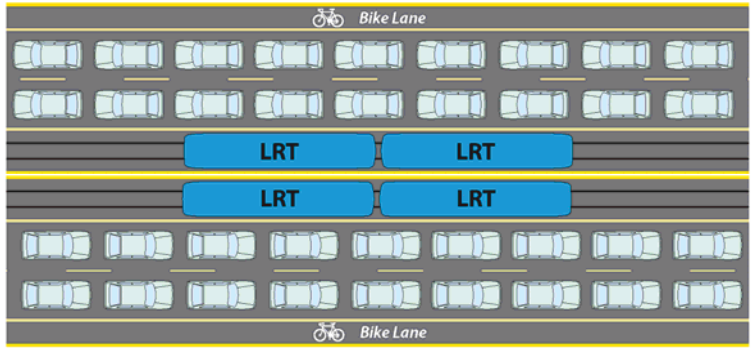

**FUTURE OUTCOME**

Congestion will increase, along with increased travel times and longer delays, due to the planned increase in population and employment in the City and surrounding regions.

## Future with Transit City

**"PROVIDE FREQUENT AND RELIABLE TRANSIT"**

Provide an attractive alternative to private auto use, achieved by re-allocating road space to create reserved transit lanes.




**FUTURE OUTCOME**

Re-allocation of road space for transit may increase congestion at specific locations, which may be mitigated with changes to travel behavior (i.e. alternative travel modes, routes, and / or times).

For those choosing not to alter their travel behavior, increased travel times and longer delays will be encountered.

## *People Movement Capacity For 3 Lanes Per Hour*

**3300 vehicles and buses**

**5300 people**

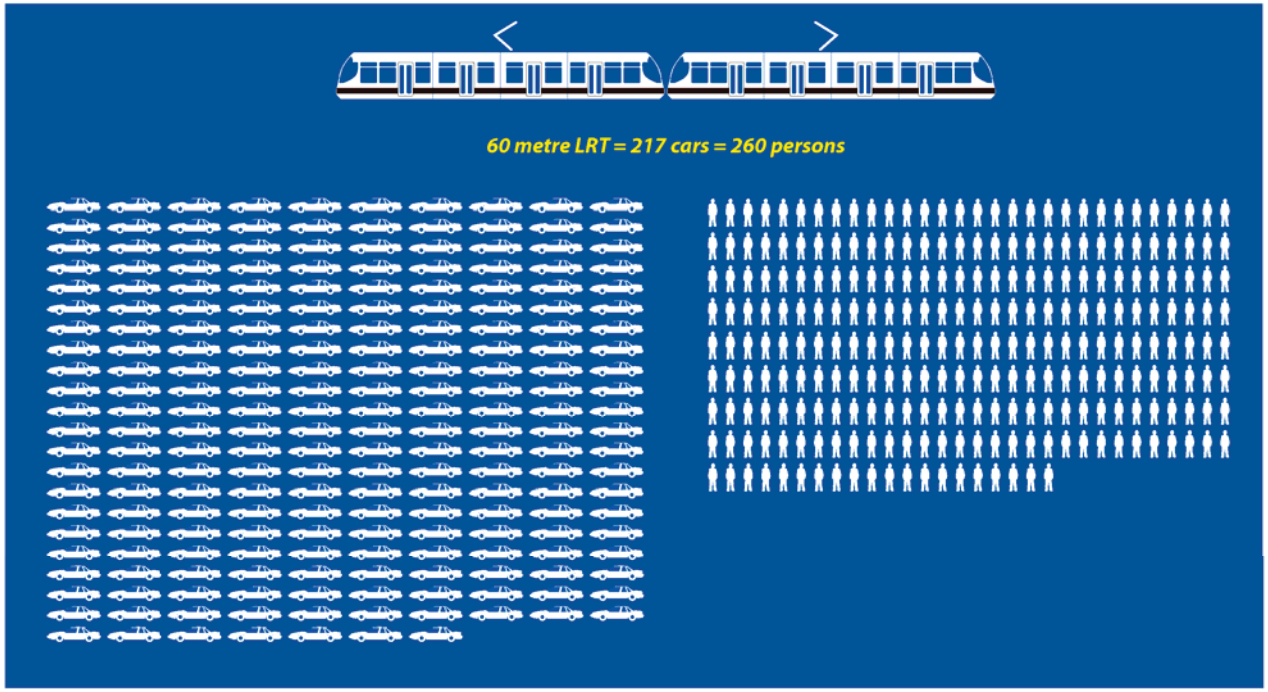
**2000 vehicles + 40 Light Rail Vehicles**

**7600 people**

**43% Increase**

# Transit City – Moving People in the 21st Century

## People Movement Capacity



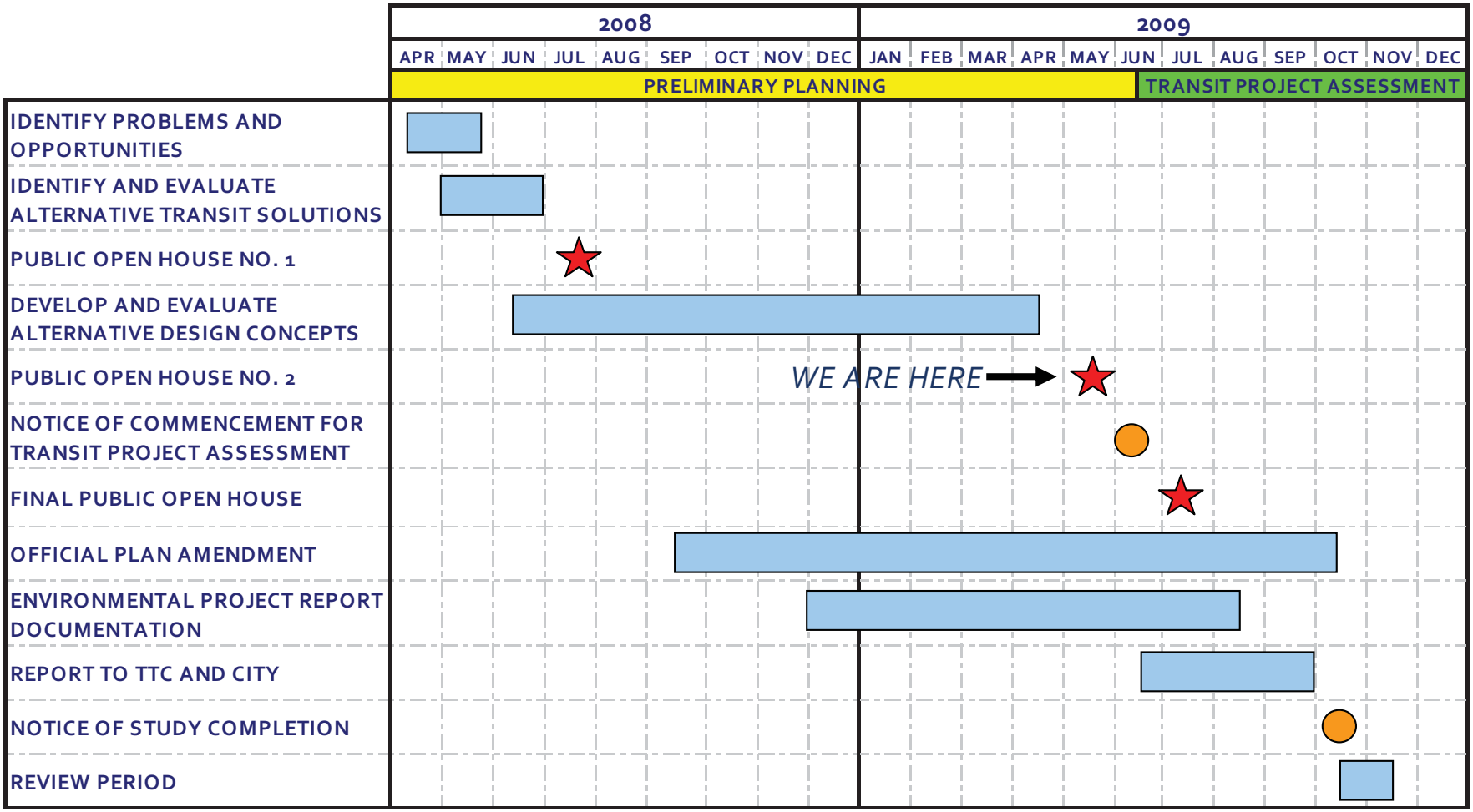

***Toronto Transit City Light Rail Plan will increase capacity for people movement in an economically and environmentally responsible manner.***

# Transit City – Moving People in the 21st Century

Vehicular traffic will be affected:

- travelling by car may be more difficult due to lane re-allocation to create transit only lanes in specific locations (e.g. Eglinton Avenue East, Kingston Road)
- traffic patterns will change due to:
  - transfer from private auto to transit mode
  - change in driving habits:
    - different routes
    - different travel times
  - conditioning from the construction period
  - longer term changes:
    - live and work closer
    - change to a sustainable travel mode (bike lanes, etc.)

# Study Schedule and Process



# Project Objectives and Background

At the previous public open houses held on July 23rd and 24th 2008, the Scarborough-Malvern LRT Transit project was introduced to identify, analyze, and recommend a preferred design that will provide a high quality transit service corridor connecting Kennedy Station with the northern Scarborough area, in a manner that:

- is affordable
- makes transit a more attractive travel option by improving travel times, comfort, and reliability of service
- supports other City objectives such as good urban design, and creates a more attractive walking and cycling environment

and that:

- respects other road users, adjacent properties, and the natural environment
- supports the City's growth objectives of providing a better variety and density of transit-oriented developments

At that time it was recommended that the existing bus service along Eglinton Avenue East, Kingston Road, and Morningside Avenue be replaced with electrically powered "light rail" vehicles operating in reserved lanes in the centre of the roadway.

# Issues Raised from Open House No. 1

Summary of the July 23rd and 24th Public Open Houses:

- over 120 people attended the 2 open houses
- received 120 comment sheets or e-mails from you
- concerns identified with the proposed Scarborough-Malvern LRT project were primarily traffic, route issues, and protection of green spaces
- there was general support for the project

***A "Frequently Asked Questions" handout is available that addresses issues / questions received to-date, and provides other project information. If your issue / question is not presented here, or you have not received a response, staff are available to speak to you tonight.***

# Work Completed Since Open House No. 1

- responded to received comments and considered identified issues / concerns
- refined project study recommendations, and documented in a project feasibility report, including identified design issues
- developed alternatives, conducted analysis, and completed evaluations for identified design issues
- undertook extensive consultation with stakeholders including City of Toronto departments, TRCA*, MTO*, and the UTSC*
- selected a preferred design in conjunction with the stakeholders
- conducted a detailed assessment of the preferred design, identifying opportunities, potential impacts, and potential mitigation measures
- prepared draft Transit Project Assessment Study report documentation

* TRCA – Toronto and Region Conservation Authority, MTO – Ministry of Transportation of Ontario, UTSC – University of Toronto Scarborough Campus

# New Transit Vehicle

PORTO, PORTUGAL

VALENCIA AND ALICANTE, SPAIN

The LRT vehicles used for the Toronto Transit City Light Rail Plan, including the Scarborough-Malvern project, will be typical modern LRT vehicles and have:

- larger capacities – about twice as long as the standard streetcar in Toronto
- enhanced accessibility – low floor vehicles with level loading from the on-street platforms
- loading from all doors – significantly reduces the time spent serving stops
- operator cabs at both ends – the vehicle can operate in either direction and not require a loop to turn around
- a modern design – some typical examples are shown

ENHANCED ACCESSIBILITY

MINNEAPOLIS, USA

# Overall Project Schedule

The remaining project study schedule is:

- Public Open Houses No. 2 **May 20 and 21, 2009**
- Final Public Open House **Summer 2009**
- Completion of Project Assessment Study **Fall 2009**

The following is the project schedule subject to approvals and funding:

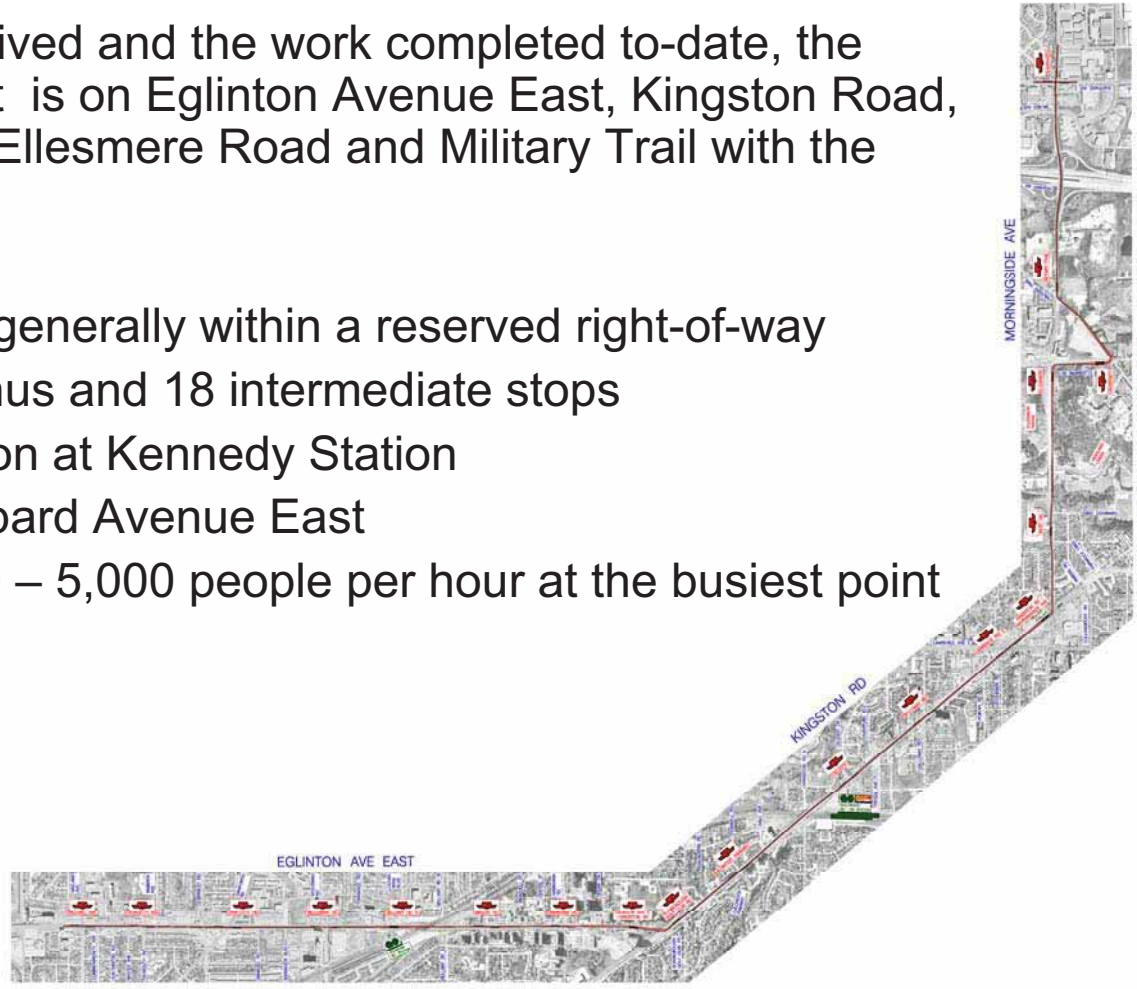
- Commencement of Design **2013**
- Commencement of Construction **2014**
- Project Completion **2018**
- Scheduled Revenue Service **2019**

The SMLRT project is part of the provincial ***Move Ontario 2020*** announcement, and is included in the 16 - 25 year plan in the Metrolinx, ***BIG MOVE*** Regional Transportation Plan.

# Recommended Project

Based on the comments received and the work completed to-date, the recommended LRT alignment is on Eglinton Avenue East, Kingston Road, and Morningside Avenue via Ellesmere Road and Military Trail with the following features:

- 13 km at-grade alignment, generally within a reserved right-of-way
- 20 stops, including 2 terminus and 18 intermediate stops
- westerly terminus connection at Kennedy Station
- northerly terminus at Sheppard Avenue East
- projected ridership of 4,600 – 5,000 people per hour at the busiest point



# Recommended Project – Eglinton Avenue East

Major features include:

- 4.7 km section length in the centre of the roadway, from Kennedy Station to Kingston Road (connection to Kennedy Station being co-ordinated with another study)
- integrated connection with local bus routes and the proposed Kingston Road Bus Rapid Transit (BRT) at Kingston Road, with local urban design / landscaping opportunities
- intermediate LRT stops include:
  - Midland Avenue
  - Falmouth Avenue
  - Danforth Road
  - McCowan Road
  - Bellamy Road North / Eglinton GO Station
  - Mason Road
  - Markham Road
  - Eglinton Avenue East / Kingston Road
- connections with other transit service include:
  - GO – Kennedy Station
  - GO – Eglinton Station
  - TTC - Scarborough Rapid Transit (SRT)
  - TTC - Bloor-Danforth Subway
  - TTC - proposed Eglinton Crosstown LRT

# Preferred Design – Kingston Road BRT Connection

In addition to providing an integrated connection with the proposed Kingston Road Bus Rapid Transit (BRT) and TTC local bus routes, the Eglinton Avenue East and Kingston Road intersection presented a number of challenges:

- maintain existing traffic and pedestrian movements
- allow for efficient LRT operations, including turning movements onto Kingston Road and storage and turn-back capability

The preferred design addresses all of these challenges, including providing urban design / landscaping opportunities (identified by green areas).

# Recommended Project – Kingston Road

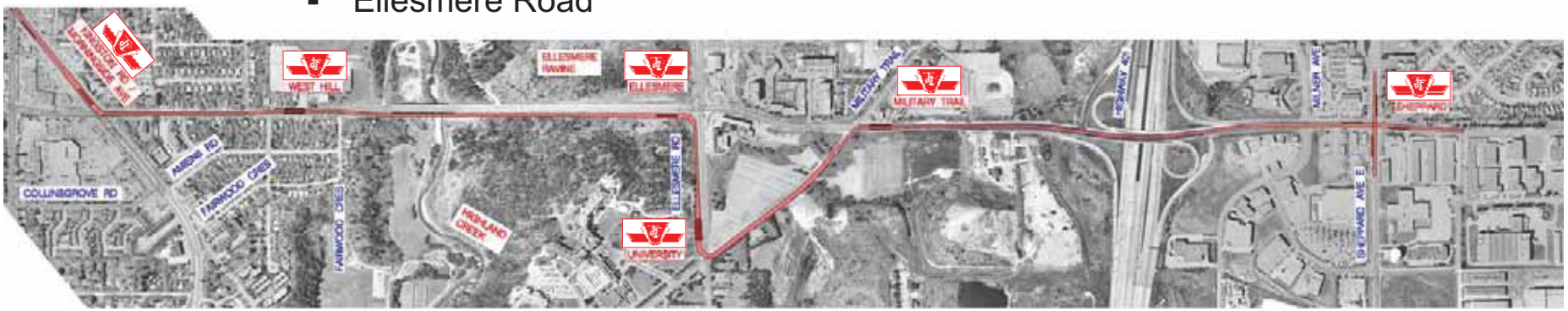
Major features include:

- 3.6 km section length in the centre of the roadway, from Eglinton Avenue East / Kingston Road intersection, including a connection with the Kingston Road BRT, to the Morningside Avenue intersection
- an integrated connection with local bus routes is provided at the Kingston Road / Morningside intersection, including reserved bus lanes east of Morningside Avenue
- intermediate LRT stops include:
  - Scarborough Golf Club Road
  - Guildwood Parkway
  - Celeste Drive / Guildwood GO
  - Galloway Road
  - Lawrence Avenue East
- connections with other transit service include GO / VIA – Guildwood Station

# Recommended Project – Morningside Avenue

Major features include:

- section length of 4.2 km from Kingston Road / Morningside Avenue intersection to the intersection of Sheppard Avenue, including a connection with the Sheppard East LRT (northern terminus has been modified due to the proposed extension of Scarborough RT line to Malvern Town Centre):
  - in the centre of the roadway from Kingston Road to a realigned Beath Street
  - off-street along the east side of Morningside Avenue to Ellesmere Road over the Highland Creek valley, including a new Highland Creek bridge
  - off-street along south side of Ellesmere Road into the University of Toronto Scarborough Campus (UTSC)
- intermediate LRT stops include:
  - Kingston Road / Morningside Avenue
  - West Hill C.I. Beath Street
  - Ellesmere Road
  - UTSC
  - Military Trail / Morningside Avenue

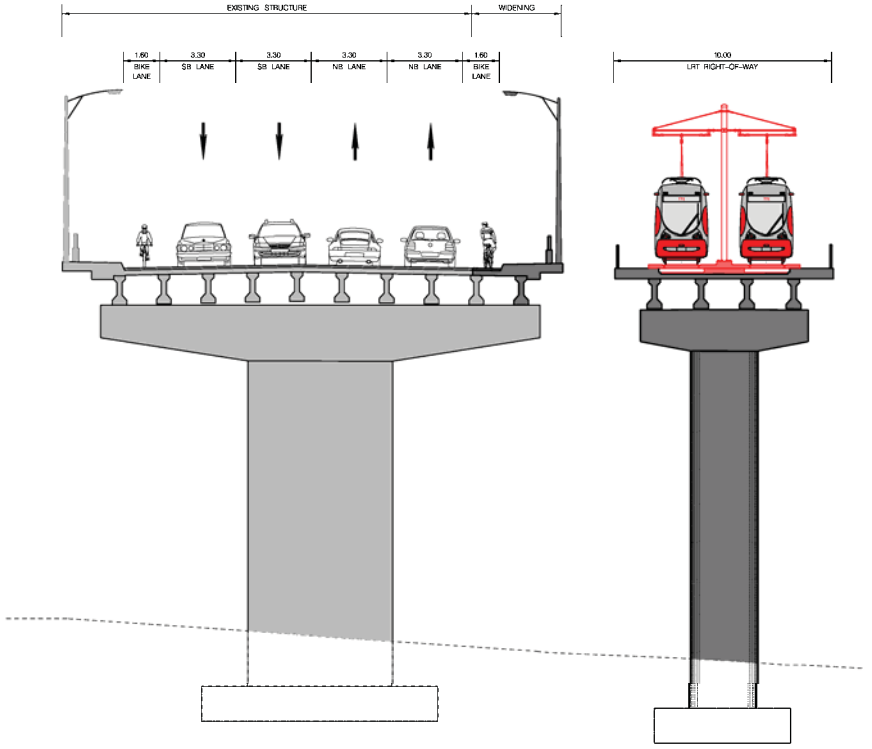


# Preferred Design – Highland Creek Crossing

A number of alternatives were investigated for the Highland Creek crossing for the LRT right-of-way, including widening the existing bridge structure or constructing a new separate bridge structure.

Although widening the existing bridge structure could potentially be less expensive, it was recommended to construct a new separate bridge structure:

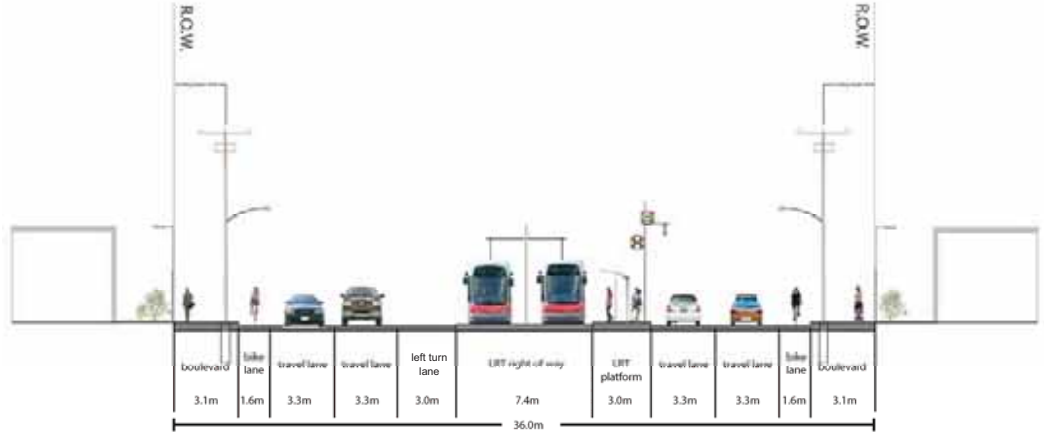
- simplified engineering design and construction
- capability of fully addressing identified environmental concerns
- minimized traffic impacts during construction
- avoided operational and maintenance issues when the LRT is in service



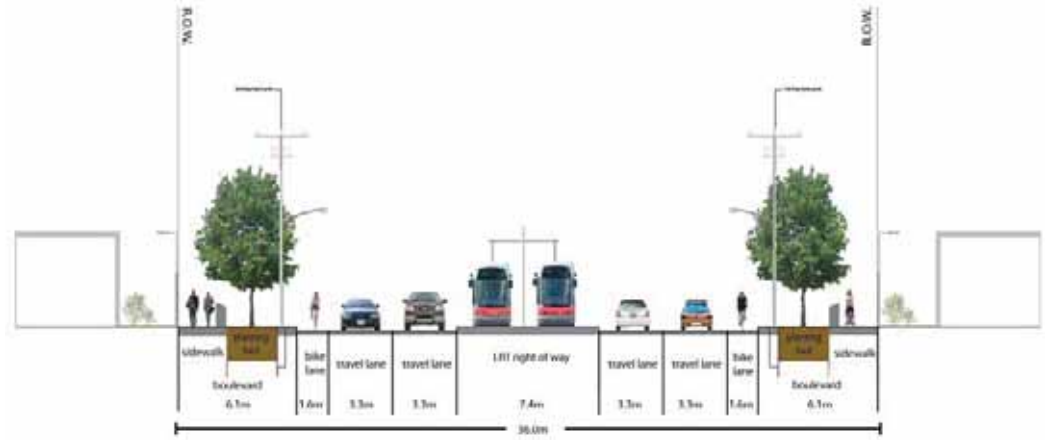

**Existing Bridge Widened for Bike Lanes**

**New Bridge for LRT**

# Preferred Design – Recommended Typical Cross-Section




**TYPICAL INTERSECTION ALONG EGLINTON AVENUE EAST AND KINGSTON ROAD**




**TYPICAL MIDBLOCK ALONG EGLINTON AVENUE EAST AND KINGSTON ROAD**

The recommended typical cross-section presents opportunities to provide:

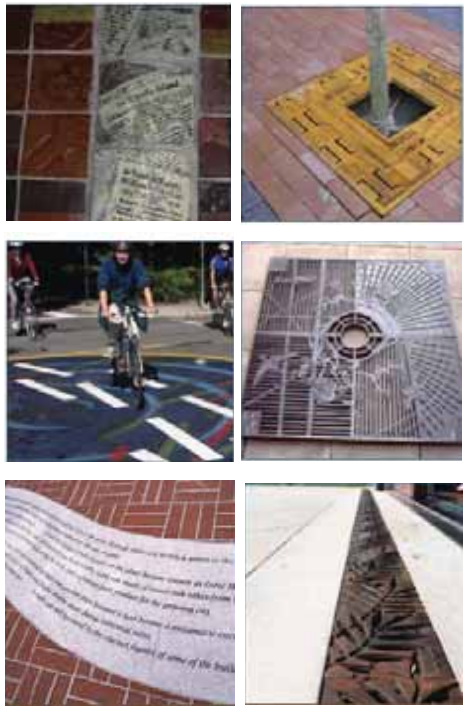
- increased tree canopy area
- designated bike lanes on both sides of the roadway
- urban design, landscaping, and streetscaping features

**Note: Trees / plantings, street furniture, pedestrian treatments, and other urban design elements to be defined during the detailed design stage.**

# Preferred Design – Streetscape Design

The City and the TTC will enhance the urban design environment on all the Transit City project rights-of-way. Streetscape elements with co-ordinated street furniture and landscaping will be incorporated into the projects during the design phases of each project. During this transit project assessment stage, opportunities are being identified and protected, for the implementation of urban design elements along the alignment.


***STREET FURNITURE***



***PEDESTRIAN TREATMENTS***

***TREES / PLANTINGS***

# Preferred Design – Substations

Power substations convert the higher voltage power provided by the hydro distribution lines into lower voltage direct current needed to operate the light rail vehicles. Substations are quiet, safe and designed to fit into their surrounding community.

Electrical substations are located about 1.5 km apart along the LRT alignment. Ten new electrical substations are required for the project, and potential locations have been identified.

The large project drawings indicate the potential locations where the substations may be located.

# Assessment of the Preferred Design

An assessment was undertaken for the preferred design, addressing:

- Traffic
- Property
- Environment
  - Natural Heritage (vegetation, wildlife, fisheries and aquatic ecosystem)
  - Air Quality
  - Noise and Vibration
  - Archaeological Resources
  - Cultural and Built Heritage
  - Socio-economic / Community

# Traffic

The implementation of the preferred design for the Scarborough-Malvern LRT project will result in the following :

- a right-in / right-out arrangement at non-signalized side streets and entrances to ensure safe LRT operations, with left-turn and U-turn opportunities being provided at other nearby locations

- left-turns may not be provided at specific major signalized intersections in order to improve transit operations, but left-turn and U-turn opportunities will be provided at other nearby locations

- travelling by transit will be improved, but travelling by car may be more difficult due to the re-allocation of road space to create reserved transit right-of-way along Eglinton Avenue East and Kingston Road

# Traffic – Non-signalized Intersections

EXISTING CONDITIONS

LEGEND

PERMITTED TURNING MOVEMENTS


TRAFFIC MOVEMENTS WITH LRT OPERATION

At existing non-signalized sideroad intersections and entrances, there will be a right-in / right-out arrangement to ensure safe LRT operations throughout the project limits.

The preferred design has carefully considered each location to ensure that either an existing or new signalized intersection is nearby to provide a U-turn opportunity.

During the design phase, the City and the TTC will conduct additional studies to investigate opportunities to minimize these impacts. In addition, the City may undertake local traffic monitoring studies during LRT operations to investigate any identified issues.

# Traffic – Left Turns

During the development of the recommended design, 4 locations were identified with LRT operational issues that would affect the speed and reliability of the transit service, and presented safety issues associated with transit patrons, pedestrians, and / or vehicular traffic. These locations were:

- Eglinton Avenue East at Brimley Road and Danforth Road intersections
- Eglinton Avenue East and Kingston Road intersection
- Kingston Road and Morningside Avenue intersection
- Highway 401 / Morningside Avenue interchange

A transit-traffic analysis was conducted for each location and specific design recommendations were made to ensure effective and safe LRT operations and pedestrian movement. Recommended changes to turning movement arrangements included:

- eastbound and westbound left turn movements at both Brimley Road and Danforth Road will not be provided
- all left turn movements at the Kingston / Morningside intersection (i.e. eastbound, westbound, northbound, and southbound) will not be provided
- eastbound right turns at the Kingston / Morningside intersection will not be provided
- provision of a 2-stage north / south pedestrian crossing at the Kingston / Morningside intersection

# Traffic – Increase in People Movement Capacity

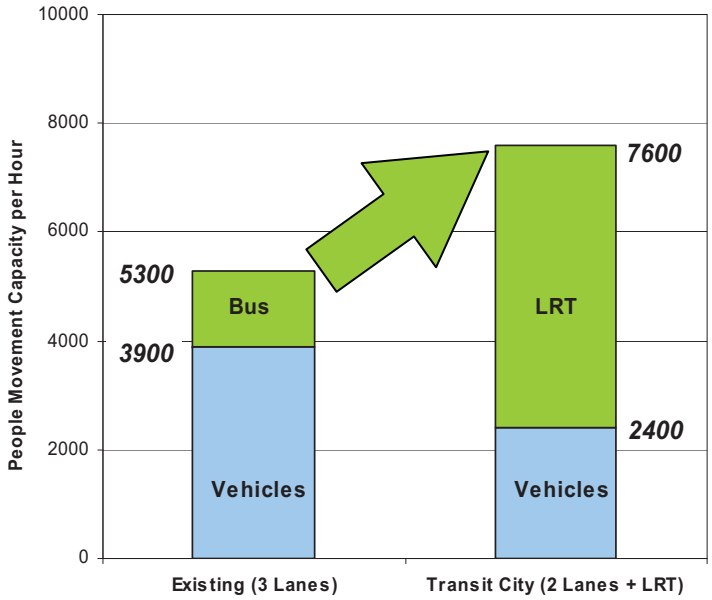
The Scarborough-Malvern LRT project with the allocation of roadway space for a reserved transit right-of-way will increase the overall people movement capability for each corridor, consistent with the Toronto Official Plan, but will change the vehicular travel capacity:

- along Eglinton Avenue East, estimated 30 - 35% reduction in existing roadway vehicle capacity
- along Kingston Road, estimated 40 - 50% reduction in existing roadway vehicle capacity
- redistributed left turn movements as a result of U-turn provisions may increase delays for left turn movements

To be noted, and consistent with the Toronto Official Plan, vehicle usage trends have been recognized in recent years (*Source: 2006 Transportation Tomorrow Survey*):

- reduced automobile ownership
- switching to other travel modes, most notably transit and cycling
- more people working from home
- increased carpooling

**43% Increase in People Movement Capacity**



# Potential Property Impacts

Generally, there is sufficient road right-of-way along most of the alignment to construct the recommended Scarborough-Malvern LRT project, but property will be required.

## Eglinton Avenue East and Kingston Road

The majority of the property requirements may be 2 – 3 metres along property frontages in order to provide the Official Plan's designated 36m right-of-way.

## Morningside Avenue

The majority of the property requirements between Kingston Road and Beath Street may be a couple of metres along the property frontages in order to provide the Official Plan's designated 30m right-of-way along Morningside Avenue. If Council adopts the proposed 36m designation, the additional property would be acquired over time as development occurs.

Due to the narrower Morningside Avenue right-of-way, and in order to provide a LRT stop and a signalized intersection in the vicinity of West Hill C.I., full properties may be impacted.

Properties may be impacted along Morningside Avenue north of Highland Creek, and along Ellesmere Road and Military Trail.

# Natural Heritage Assessment

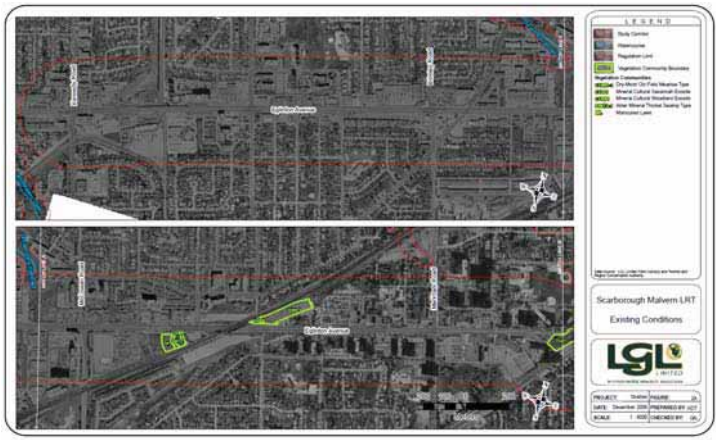
## Existing Conditions

- no major natural features along Eglinton Avenue East, Kingston Road, and most of the Morningside Avenue corridors due to the highly developed urban environment, where natural features have mostly been disturbed
- no watercourses or fish habitat along the Eglinton Avenue East, Kingston Road, and most of the Morningside Avenue corridors
- no rare, threatened or endangered wildlife have been identified

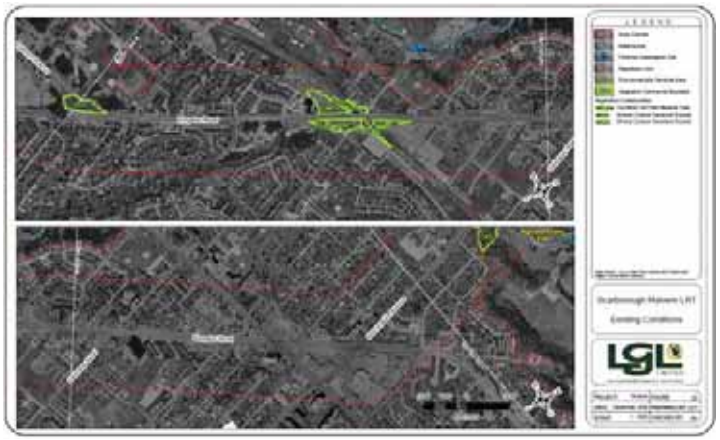
## Highland Creek Area Features

- one valued ecosystem component along study corridor is the Highland Creek valley area, including Highland Forest / Wetland Complex ESA, Morningside ANSI, and Highland Creek, located along Morningside Avenue between Ellesmere Road on the north and Highland Creek on the south
- eighteen (18) regionally rare plant species have been identified in the Highland Forest ESA and Morningside ANSI
- evidence suggests wildlife, including deer, cross Morningside Avenue
- aquatic species recorded within or near the project area are considered to be either very common, common, or non-native in Ontario
- to be noted, no rare, threatened or endangered wildlife have been identified in Highland Creek area in recent years

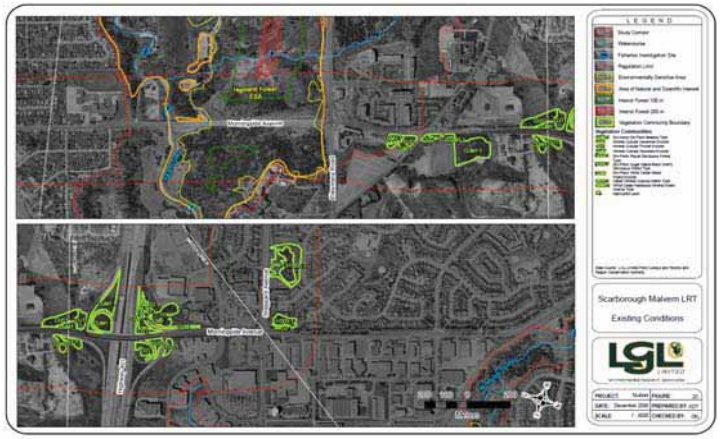
# Natural Heritage Assessment - Features



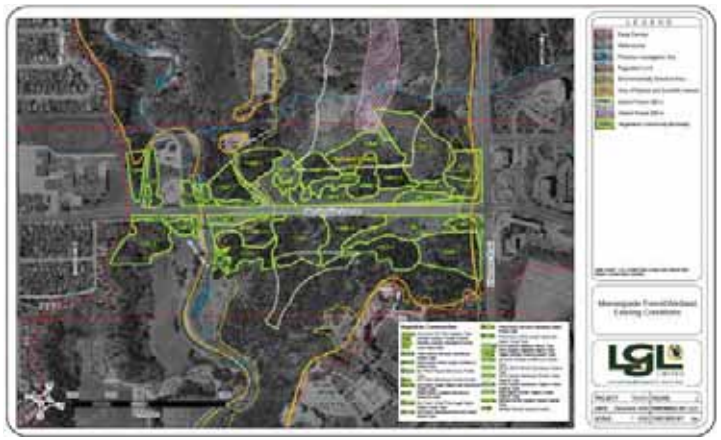

EGLINTON AVENUE EAST




KINGSTON ROAD




MORNINGSIDE AVENUE




HIGHLAND CREEK AREA

# Natural Heritage Assessment – Vegetation

## Potential Project Impacts on the Terrestrial Ecosystem – Vegetation

- minor direct loss of vegetation along the Eglinton Avenue East, Kingston Road, and most of the Morningside Avenue corridors
- removal of mature vegetation communities along the east side of Morningside Avenue in the Highland Creek area, directly affecting 2.8 ha of mixed forests, 1.0 ha of wetlands, and 0.5 ha of cultural meadow
- creating new forest edges that may result in further indirect impacts (sunscald, windthrow, invasion of exotic species, etc.)

## Recommended Mitigation

- during the design phases, conduct a detailed tree inventory and prepare a tree / vegetation protection and compensation plan
- prepare an erosion and sedimentation control plan
- determine the precise location of potentially affected rare plant species during the design phases, and develop site-specific mitigation
- monitor during construction to ensure mitigation is being followed

# Natural Heritage Assessment – Wildlife

## Potential Project Impacts on the Terrestrial Ecosystem – Wildlife

- negligible loss of wildlife habitat along the Eglinton Avenue East, Kingston Road, and most of the Morningside Avenue corridors
- physical removal of mature vegetation communities and wetlands along the east side of Morningside Avenue in the Highland Creek area will result in direct loss of wildlife habitat
- creation of a new forest edge will in the short-term disturb “edge habitat”, such as small mammals and a variety of birds
- increased wildlife crossing widths will increase the exposure to vehicle conflicts and wildlife mortality, however the increase is considered minor
- noise, light, and visual intrusion may alter wildlife activities, patterns, and behavior, but given the extent of urbanization, wildlife tolerances to human activities, and the limited project impact area, no significant adverse effect is anticipated

## Recommended Mitigation

- during the design phases, prepare a vegetation / natural areas protection plan and an erosion and sedimentation control plan, and appropriate restoration plans for natural areas disturbed during construction
- conduct nesting bird survey prior to construction
- vegetation removals will occur outside the nesting season
- monitor during construction to ensure mitigation is being followed

# Natural Heritage Assessment – Fisheries

## Potential Project Impacts on the Fisheries and Aquatic Ecosystem

- minor loss of fish habitat, potentially negligible, associated with the construction of the new Highland Creek crossing
- potential disruption and alteration to fish habitat through changes to water quality and quantity, alterations to base flow conditions, and changes in water temperatures
- potential short-term impacts (i.e. fish kills) during construction

## Recommended Mitigation

- during the design phases, if required, prepare a fish habitat restoration / compensation plan for any identified harmful alteration to fish habitat
- construct temporary and permanent stormwater management facilities
- prepare an erosion and sedimentation control plan, during the design phases
- adhere to the Highland Creek meander belt analysis recommendations for the new bridge design
- adopt construction best practices into the contract documents, including but not limited to: refueling location restrictions, erosion and sediment control, in-water and vicinity working and timing restrictions, etc.
- prepare emergency response plan for potential spills
- monitor and provide on-site environmental investigations during construction to ensure mitigation is being followed
- provide post-construction monitoring to ensure permanent mitigation is effective

# Air Quality Assessment

## Existing Conditions

- transportation-related emissions in the City of Toronto contribute to the increasingly poor regional air quality
- City of Toronto and the surrounding regions experience periods of elevated pollution levels, with both ozone and fine particulate levels that regularly approach or exceed levels for which health effects are known to occur

## Potential Project Impacts

- short-term and localized impacts associated with dust and exhaust emissions during construction
- long-term reduction in the increase of pollution levels due to transportation-related sources

## Recommended Mitigation

- implement best management practices to minimize dust and exhaust emissions during construction, including preparation of an Air Quality and Dust Control Plan

## Project Benefits

- Scarborough-Malvern LRT project and the Toronto Transit City Light Rail Plan is expected to help reduce overall emissions of common air contaminants resulting in improved local and regional air quality by providing a viable alternative to the use of personal vehicles

| | Scarborough-Malvern LRT | Overall Transit City Plan |
|---|---|---|
| Annual Ridership | 14,100,000 | 164,000,000 |
| Auto Trips Removed / Year | 5,330,000 | 53,325,000 |
| $CO_2$ Savings / Year (Tonnes) | 20,600 | 213,314 |

# Noise and Vibration Assessment

## Existing Conditions

- Eglinton Avenue East, Kingston Road and Morningside Avenue currently have significant traffic volumes and high ambient noise levels

## Potential Project Impacts

- temporary and localized increase in noise levels during construction

## Recommended Mitigation

- detailed design will consider individual noise impact mitigation, if warranted (none have been identified at this time)
- incorporate suitable control measures to reduce noise to acceptable levels within stops and in the surrounding community
- adhere to noise by-laws in the City of Toronto during construction
- temporary and localized increase in noise levels during construction will be mitigated adopting best management practices during construction, including a Noise Management Plan
- minimal noise and vibration impact due to:
  - advances in vehicle and track technology over existing TTC streetcar infrastructure (produces noise and vibration levels comparable to the operation of a diesel powered bus)
  - modern LRT vehicles are constructed to be quieter
  - track construction will include continuously welded rail to minimize the number of rail joints, and the use of rubber sleeves that isolates the rail from the concrete

# Noise Assessment

## Noise Analysis Results

A noise analysis was carried out in accordance with the established MOE / TTC Protocol. The future noise levels were predicted for identified Noise Sensitive Areas (i.e. existing and proposed residential development, nursing homes, group homes, hospitals and other institutional land uses where people reside). The changes of the noise levels for each corridor are summarized in the following table:

| Corridor | Sound Level Change Along Corridor (dBA) | | Increment Requiring Mitigation (dBA) | Mitigation Required According to MOE / TTC Protocol (Yes / No) |
|---|---|---|---|---|
| | Day | Night | | |
| **Eglinton Avenue East** | +0.4 to +0.8 | -0.6 to +1.2 | 5 | No |
| **Kingston Road** | -0.1 to +2.5 | -0.2 to +2.8 | 5 | No |
| **Morningside Avenue** | -0.3 to +3.6 | -0.2 to +3.5 | 5 | No |

Notes:

- example noise levels are 50 dBA for a clothes dryer and 60 dBA for an air conditioning unit
- existing and future noise levels for all SMLRT corridors generally fall in this 60 – 70 dBA range
- changes of noise levels have the following characteristics:
  - 1 dBA increase = not normally perceivable
  - 3 dBA increase = just perceivable
  - 10 dBA increase = twice as loud (i.e. an air conditioning unit would be considered twice as loud as a clothes dryer)
- where the future noise levels with proposed improvements (i.e. with LRT operations) are predicted to have an incremental increase of less than 5 dBA, consideration of the provision of noise mitigation is not required according to the established MOE / TTC Protocol

# Vibration Assessment

## Vibration Assessment Results

A vibration assessment analysis was completed for the TTC Eastern Waterfront project in 2008. The analysis outlined the range of vibration levels expected at increasing distances from a TTC streetcar travelling on the latest track technology.

According to the study, the vibration levels resulting from TTC vehicles are well below the established MOE / TTC Protocol criteria value limit of 0.01 mm/s at a distance of 12 m from the track. At distances beyond 12 m from the track, the vibration levels are considered as not detectable.

Given the minimum distance between the centreline of the proposed SMLRT track and receptor is 15m, it is anticipated that receptor vibration levels will be well within the MOE / TTC Protocol criteria value of 0.01 mm/s. The following table provide some examples of sources of vibration with the associated vibration levels.

| Source of Vibration | Typical Ground Vibration Level (mm / s) | Distance from Source (m) |
|---|---|---|
| Jumping | up to 250 | 0 |
| Heel drop | up to 150 | 0 |
| Hammering nail | up to 100 | 0 |
| Walking | up to 40 | 0 |
| Shutting door | up to 30 | 0 |
| Sliding door | up to 10 | 0 |
| Truck traffic over smooth surface | 0.01- 0.2 | 10 - 20 |
| Truck traffic over rough surface | 0.1- 2.0 | 10 - 20 |
| Bulldozer, small | 0.1 | about 8 |
| Compactor | 2.0 | 15 |
| Pile driver | 1.0 - 3.0 | 25 - 50 |

# Archaeological Resources Assessment

## Existing Conditions

- no known / registered archaeological sites identified

## Potential Project Impacts

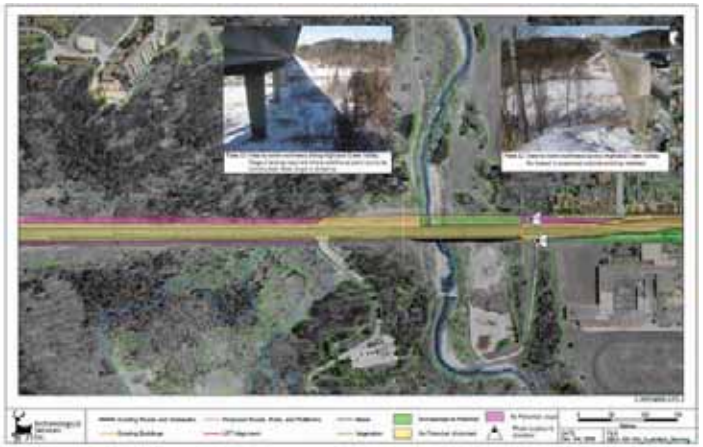
- no potential impacts to known archaeological sites identified (based on completion of a Stage 1 archaeological assessment, and where no registered sites within the study area have been identified)
- potential for archaeological resources exist in areas that remain undisturbed by development and construction activities, generally located along the alignment section bounded by Morningside Avenue from south of Highland Creek northerly to Morningside Avenue and Military Trail (indicated by shaded green areas on the following boards)

## Recommended Mitigation

- conduct a Stage 2 archaeological assessment on any lands that have been identified to have potential archaeological potential
- develop an archaeological monitoring plan prior to construction

# Archaeological Resources Assessment

MORNINGSIDE AVENUE / KINGSTON ROAD



HIGHLAND CREEK AREA

U of T SCARBOROUGH CAMPUS AREA

MORNINGSIDE AVENUE / MILITARY TRAIL

# Cultural and Built Heritage Resources Assessment

## Existing Conditions

- 7 built heritage (4 designated and 3 identified as potential sites) and 4 designated cultural landscapes were identified within the corridor

## Potential Project Impacts

- no designated built heritage buildings or cultural landscapes will be directly affected, but one resource under the Ontario Heritage Act is located in close proximity
- one identified built heritage building has been identified as a potential full property requirement
- three identified built heritage buildings or cultural landscapes may be affected by minor localized grading during construction or subject to premature deterioration

## Recommended Mitigation

- prior to detail design, heritage impact assessments / statements will be undertaken for potential affected sites in order to identify the specific heritage significance of these resources and to provide appropriate recommendation measures (i.e. retention, documentation, document and salvage)

EGLINTON AVENUE EAST

KINGSTON ROAD

# Cultural and Built Heritage Resources Assessment

KINGSTON ROAD

KINGSTON ROAD

KINGSTON ROAD

MORNINGSIDE AVENUE

HIGHLAND CREEK AREA

# Socio-Economic / Community Assessment

## Potential Project Impacts

- short-term, localized road diversions and / or closures during construction
- travelling by car may be more difficult, during and post-construction
- limited noise impacts during construction
- localized impacts associated with dust and exhaust emissions during construction

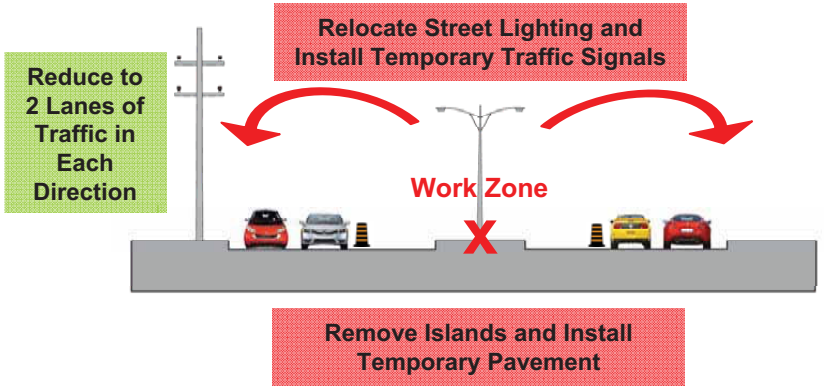
## Potential Project Benefits

- provide safe, fast, and reliable transit service, that is a viable alternative to vehicular travel
- attract new business in the area based on the provision of increased people movement capacity
- provide employment opportunities during the 4 year construction period
- increase employment opportunities over operating life of SMLRT

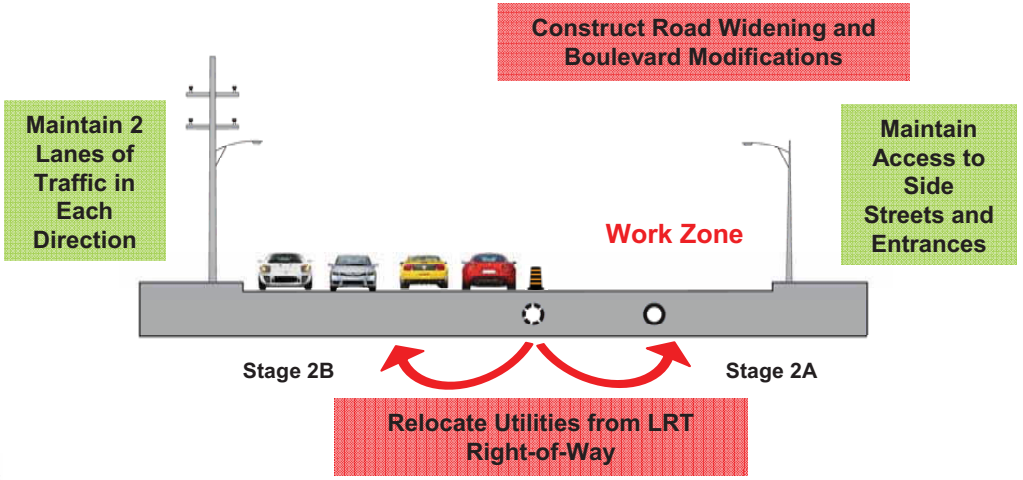
## Recommended Mitigation

- implement and monitor during construction, effective traffic, noise, dust, etc. management plans

# Construction Staging

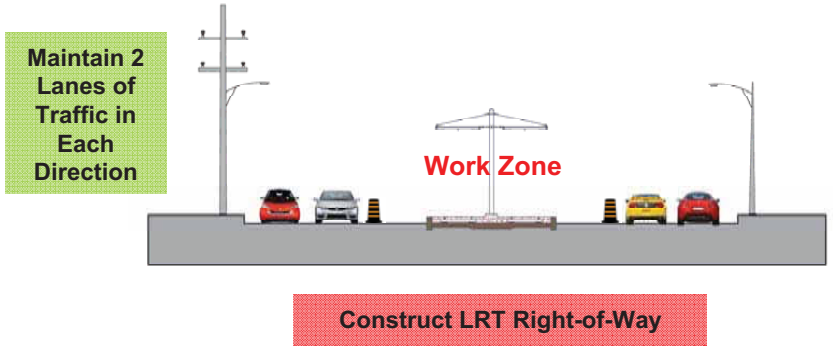



## Stage 1




## Stage 2A

**Note: Stage 2B Symmetrical**




## Stage 3

# Project Benefits

The benefits by implementing the Scarborough-Malvern LRT project include:

- ✓ supports the City's growth, including its economic vitality
- ✓ ensures that transit is a more attractive travel option by improving travel times, comfort, and reliability of service
- ✓ increases the people movement capacity in all corridors, generally without the widening of roadways and in an environmentally sound manner
- ✓ provides enhanced accessibility features for all customers
- ✓ provides alternative travel choices for non-drivers, including transit and enhanced environments for cycling and walking
- ✓ encourages and contributes to improved neighbourhood livability
- ✓ provides employment opportunities during construction and LRT operations
- ✓ provides opportunities to include urban design and streetscaping features
- ✓ contributes to the overall reduction in energy consumption and pollution levels

# Next Steps

- review and respond to your questions and input received from today's open house (please leave your comments with us)
- conduct individual meetings with affected property owners
- continue with process to amend the Toronto Official Plan
- publish Notice of Commencement for the Transit Project Assessment Study
- conduct final Public Open House
- obtain approvals:
  - TTC Commission, August 26, 2009
  - Planning and Growth Management Committee, September 16, 2009
  - City Council, September 30, 2009
- finalize the Environmental Project Report
- publish Notice of Completion for the Transit Project Assessment Study
- submit the Environmental Project Report for public review

# Contact

There are 5 ways to submit your comments:

1. Hand in your **Comment Sheet** before you leave tonight
2. Email: malverntransit@toronto.ca
   Web: www.toronto.ca/involved/projects/transit_city
3. Phone: 416-392-6900 (24 hours / 7 days comment line)
   TTY: 416-397-0831
4. Fax: 416-392-2974
5. By Mail: Scarborough-Malvern LRT
   Public Consultation Unit
   Metro Hall, 19th Floor
   55 John Street,
   Toronto, Ontario, M5V 3C6

***Please Provide Your Comments by Friday, June 5th, 2009***

# Freedom of Information and Protection of Privacy Act

Comments and information regarding this study are being collected to meet the requirements of the *Environmental Assessment (EA) Act*. This material will be maintained on file for use during the study and may be included in project documentation.

Information collected will be used in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

You are encouraged to contact members of the Project Team if you have any questions or concerns regarding the above information.