

Introduction

1 INTRODUCTION

The City of Toronto has undertaken a number of studies and initiatives pertaining to the expansion of transit. The objective of these studies is to provide a cost effective means of making Toronto a more liveable and environmentally sustainable city. These various studies and initiatives have been consolidated into one high-level plan for a Light Rail Transit (LRT) network in the City of Toronto, referred to as the Transit City Light Rail Plan.

This Light Rail Plan, comprising of eight light rail transit lines, including Scarborough Rapid Transit, as shown in Exhibit 1-1 was endorsed by the Toronto Transit Commission (TTC) in March 2007, and supported by the Province of Ontario in June 2007 as part of Move Ontario 2020, a strategic transit plan for the Greater Toronto and Hamilton Area (GTHA). The lines were part of the regional transportation plan approved by Metrolinx, called the Big Move, in December 2008.

The Scarborough Rapid Transit line is an important transportation asset that will be reaching the end of its service life and, at the same time, the demand for the service significantly exceeds its capacity. Demands are projected to keep growing. Additionally, there is significant demand, both current and future, for this service from the areas north and east of the current SRT line. In order to provide the benefit of this fast and reliable rapid transit service to a larger market area, the Transit Project Assessment also addresses the extension of the SRT to Malvern.

This Transit Project Assessment addresses three other important improvements to make the SRT more functional and attractive to users:

- A more-streamlined and efficient transfer connection between the SRT and the Bloor-Danforth Subway, to facilitate the high-volume transfer movement
- Modifications to Kennedy Station to accommodate the future implementation of two additional Transit City light rail lines: Eglinton Crosstown and Scarborough-Malvern; and
- Upgrading of the balance of the existing line's infrastructure to facilitate new larger trains and the construction of new infrastructure to allow storage and maintenance of the SRT vehicles.

Finally, the report addresses to the possibility of phased implementation of the overall project in response to possible funding constraints and any infrastructure needs associated with such phasing plans.

This study followed the new Transit Project Assessment Process approved by the Province of Ontario in June 2008, based on the new regulation named *"Transit Projects and Greater Toronto Transportation Authority Undertakings, Ontario Regulation 231/08"* for undertaking transit-related projects in the Greater Toronto Area. The purpose of this study was to obtain information on existing and future conditions and identify potential impacts, associated mitigation measures and implementation commitments for the functional design of the Scarborough RT.

This chapter introduces the Scarborough Rapid Transit line, the Transit Project Assessment Process that was followed, and presents the context by describing the planning policies that applied to this study. Chapter 2 of this report presents the preliminary planning studies, alternatives considered and a description

of the recommended transit project. Chapter 3 provides details on the existing and future conditions within the study area. Chapter 4 discusses potential impacts, identifies mitigation measures, and recommends monitoring activities and Chapter 5 presents the TTC's and City of Toronto's commitments to future action during the design, construction and operational phases. Chapter 5 also outlines permits and approvals. Chapter 6 outlines the consultation process and activities carried out throughout the preliminary planning and Transit Project Assessment Process.

Exhibit 1-1: Toronto Transit City Light Rail Plan



1.1 Study Area

The study limits for this Transit Project Assessment consist of three major zones for each of the project components. As illustrated in Exhibit 1-2, the study limits for each section are as follows:

Kennedy Station

This includes the existing Kennedy Station site, plus Eglinton Avenue from Ionview Road in the west to Midland Avenue in the east. The study area also extends north in the GO Stouffville / SRT / Hydro One Networks Inc. corridors approximately 1km north of Eglinton Avenue.

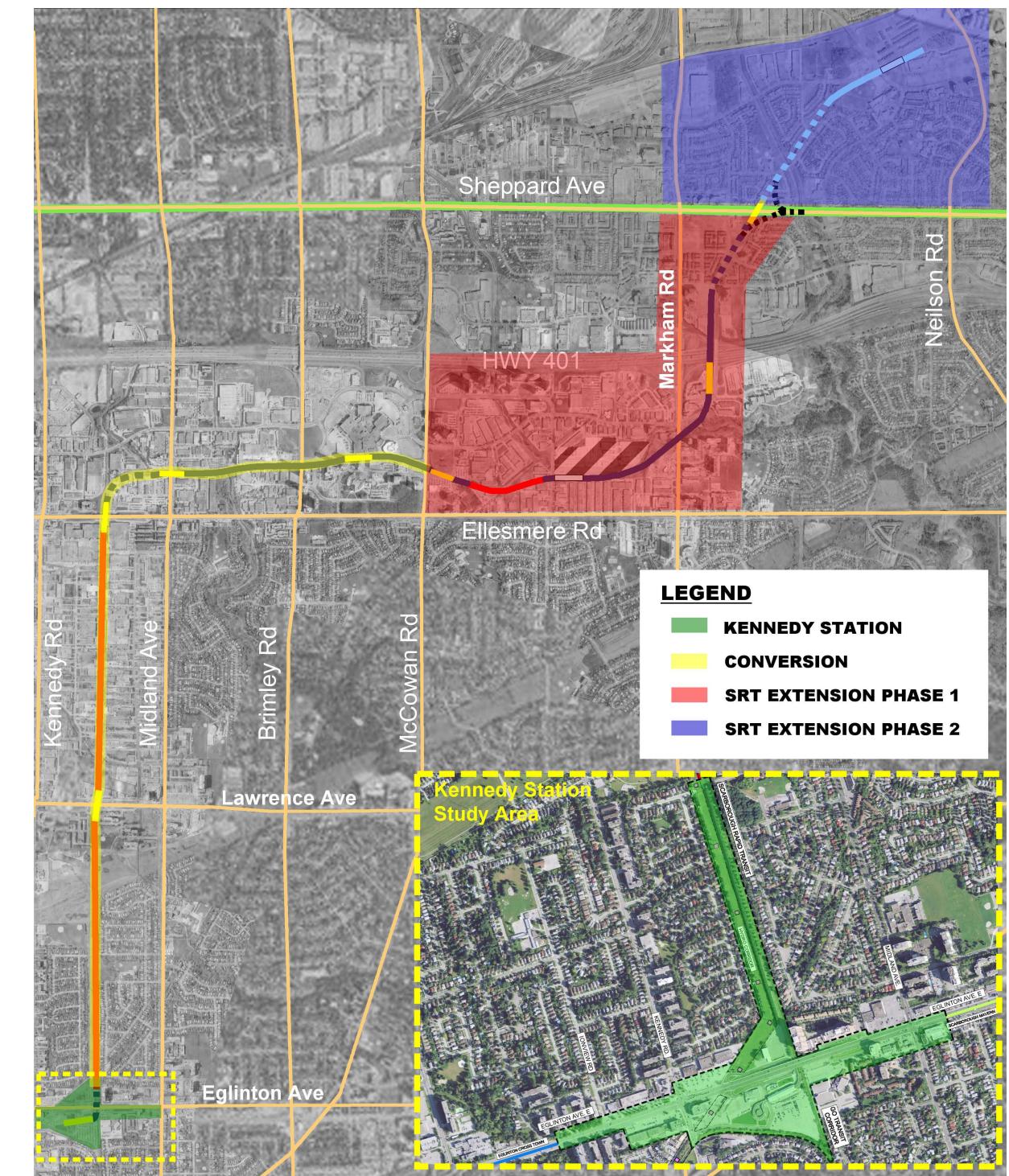
Conversion – Phase 1

The conversion component is limited to retrofit works on the existing line with the emphasis on changes at each of the existing stations, namely Lawrence East, Ellesmere, Midland, Scarborough Centre Station and McCowan Station.

Extension – Phases 1 and 2

For the extension, the study area covers the area bounded by McCowan Road, Ellesmere Road, Neilson Road, the CP Agincourt subdivision, Markham Road and Highway 401.

Exhibit 1-2: Overall Study Area

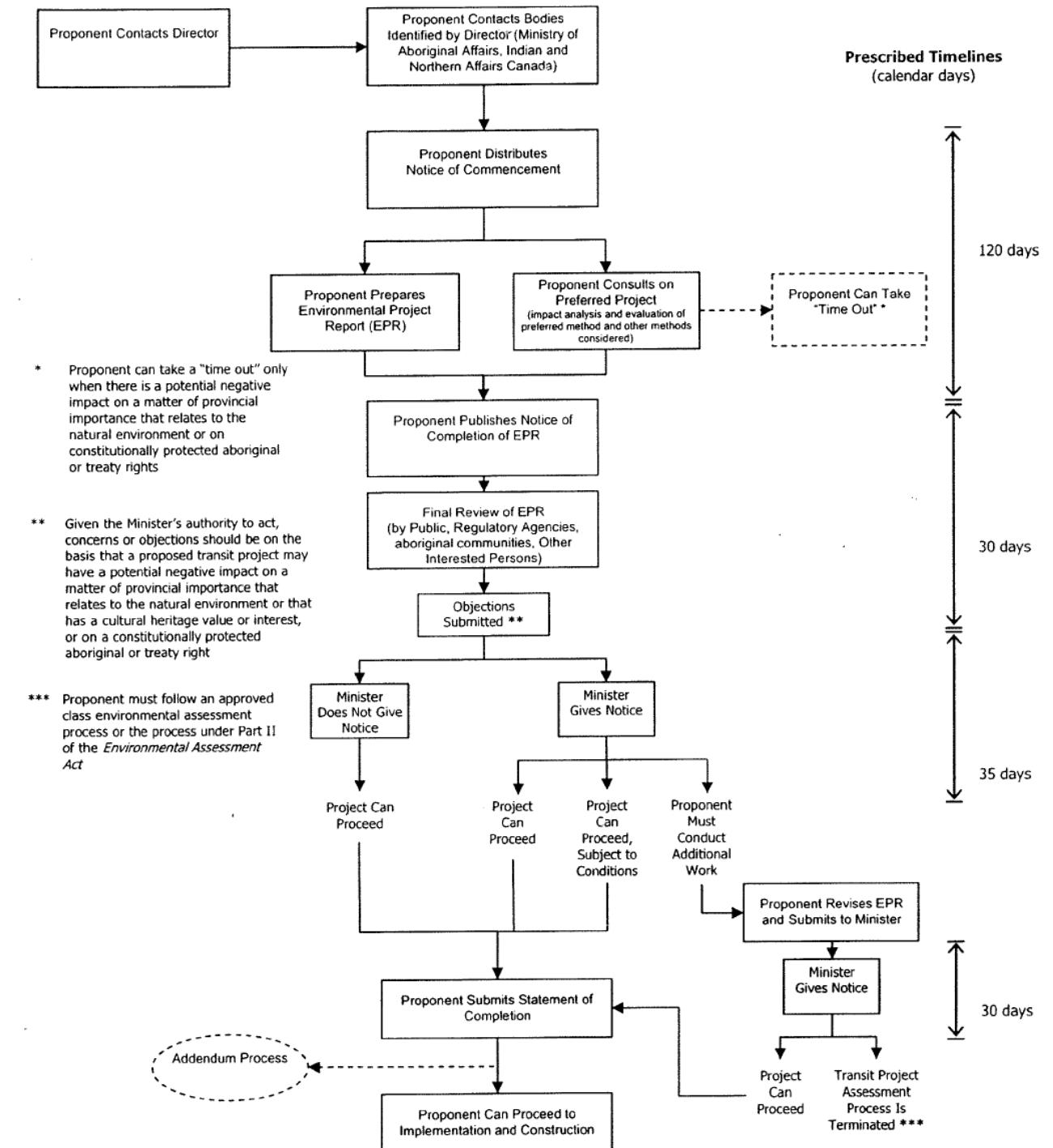


1.2 The Transit Project Assessment Process (2008)

The SRT is one of the TTC's and City of Toronto's LRT Transit Projects that is being carried out under the new Transit Project Assessment Process (TPAP). In June of 2008, Ontario Regulation 231/08, the Transit Project Regulation (*Transit Projects and Greater Toronto Transportation Authority Undertakings*), was made under the *Environmental Assessment Act* for undertaking transit-related projects in the Greater Toronto and Hamilton Area. Under this Regulation, a list of public transit projects (see Schedule 2, O. Reg. 231/08) were conditionally exempted from the requirements of the *Environmental Assessment Act* provided that the requirements outlined in O. Reg. 231/08 are successfully completed.

The Ontario's Transit Project Assessment Process Guide was developed by the Ministry of the Environment in March 2009 to highlight the key features of the new process. A summary of this new Process is provided in the following section and an outline of Transit Project Assessment process is provided in Exhibit 1-3.

Exhibit 1-3: Outline of Transit Project Assessment Process *



*Ontario Regulation 231/08

1.2.1 The Transit Project Assessment Process

The Transit Project Assessment Process Regulation provides a framework for an accelerated focused consultation and objection process for completing the assessment of potential environmental impacts of a transit project, so that decision-making can be completed within six months. In general, the key steps in the transit project assessment process, as recommended by the MOE Ontario's Transit Project Assessment Process Guide, are:

- Contact the Director of the Environmental Assessment and Approvals Branch for a list of bodies to contact and contact these bodies to help identify aboriginal communities that may be interested in the transit project e.g. Ministry of Aboriginal Affairs and Indian and Northern Affairs Canada;
- Distribute a Notice of Commencement. The Notice is to be distributed after proponent has determined the transit project with which it wants to proceed;
- Take up to 120 days to consult with interested persons, including regulatory agencies and aboriginal communities and document the process;
- Includes a "time out" provision with respect to potential negative impacts on a matter of provincial importance or on constitutionally protected aboriginal or treaty rights;
- Publish a Notice of Completion of the Environmental Project Report. The Notice will be published within 120 days of the Notice of Commencement;
- Provide 30 days for the public, regulatory agencies, aboriginal communities and other interested persons to review the Environmental Project Report. Objections may be submitted to the Minister during this period; and
- 35 days for the Minister to act.

The steps in the new transit project assessment process mirror elements of what is currently required in the environmental assessment process, including public consultation, assessment of potential effects of a proposed transit project, mitigation measures and documentation. The major features of the new Transit Project Assessment Process include:

- The proponent - in this case the Toronto Transit Commission and the City of Toronto – do not have to rationalize the need for transit or study planning alternatives (only alternative designs or plans for delivering the service) since the need for transit and the benefits to communities, the environment and the economy are clear.
- Only issues concerning matters of provincial importance related to the natural environment or cultural heritage value or interest, or constitutionally-protected aboriginal or treaty rights will be considered by the Minister through the objection process. This may include:
 - A park, conservation reserve or protected area;
 - Extirpated, endangered, threatened, or species of special concern and their habitat;
 - A wetland, woodland, habitat of wildlife or other natural heritage area (e.g. prairie);
 - An area of natural or scientific interest (earth or life science);
 - A stream, creek, river or lake containing fish and their habitats;

- An area or region of surface water or groundwater or other important hydrological feature;
- Areas that may be impacted by a known or suspected on- or off-site source of contamination such as a spill, a gasoline outlet, an open or closed landfill site, etc.;
- Protected heritage property;
- Built heritage resources;
- Cultural heritage landscapes;
- Archaeological resources and areas of potential archaeological interest;
- An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the Niagara Escarpment Planning and Development Act;
- Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the Oak Ridges Moraine Conservation Act, 2001 applies; and,
- Property within an area described as a key natural heritage feature or a key hydrologic feature in the Protected Countryside by the Greenbelt Plan under the *Greenbelt Act*, 2005.

There is a six-month time limit on the process, as shown by the process chart in Exhibit 1-3. The timeline includes 120 days for consultation on positive or negative environmental impacts and the preparation of an Environmental Project Report (EPR); a 30-day public and agency comment period and 35 days for the Minister of the Environment to respond to any public requests for a review of the project.

One of the major differences between an Environmental Assessment process and the new Transit Project Assessment Process Regulation is that, under the Regulation, qualified transit projects are exempted from Part II of the *Environmental Assessment Act*. Following a 30-day review period for the Environmental Project Report (EPR) prepared according to the Transit Project Assessment Process, the Minister of the Environment has 35 days to issue a notice to proceed with the project, require the proponent to take further steps or allow the project to proceed with conditions.

The Regulation provides a process for the proponent to have an option of taking a "time out" before continuing with the Transit Project Assessment Process, if required. The time out provision can be used only when issues arise with a potential negative impact either on a matter of provincial importance (i.e. natural environment, or cultural heritage value or interest) or on a constitutionally protected aboriginal or treaty right. The Regulation also includes an addendum process for proponents to make changes to a transit project after the Statement of Completion for the transit project is submitted.

1.2.2 Environmental Project Report

Documentation of the transit project assessment process must be submitted to Ministry of the Environment (MOE) within 120 days of distributing the Notice of Commencement. The document, known as the Environmental Project Report (EPR), documents the transit project assessment process, the conclusions reached, the impacts, the associated mitigation measures, and the future commitments for the transit project.

In accordance with the MOE Ontario's Transit Project Assessment Process Guide, this Environmental Project Report has been adjusted throughout the 120 day period to reflect input from aboriginal

communities, adjacent property owners, regulatory agencies and other interested persons.

This report provides a comprehensive summary of each step in the assessment study, including the assessment of design alternatives, and an assessment of any impacts and ways that such impacts can be mitigated.

1.2.3 Transit Project Assessment Approvals

If a person, including members of the public, regulatory agencies and aboriginal communities has concerns about this transit project, objections can be submitted to the Minister within 30 days of the Notice of Completion. Proponents will be given an opportunity to comment on the concerns raised in an objection before the Minister acts. After the 30 day review period has ended, the Minister has 35 days within which certain authority may be exercised. A proponent may not proceed with the transit project before the end of the 35 day period unless the Minister gives a notice allowing the proponent to proceed. Objections received after the 30 day objection period will not be considered by the Minister.

Whether there is an objection or not, if the Minister acts within the 35 day period, one of three notices may be issued to the proponent:

1. A notice to proceed with the transit project as planned in its Environmental Project Report;
2. A notice that requires the proponent to take further steps, which may include further study or consultation; or,
3. A notice allowing the proponent to proceed with the transit project subject to conditions.

If, within 30 days after receiving the Revised Environmental Project Report, the Minister is of the opinion that it still does not appropriately address negative impacts, the Minister can terminate the transit project Assessment Process and require the proponent to comply with Part II of the Environmental Assessment Act or to comply with an approved class environmental assessment before proceeding with the Transit Project. If the Minister does not act within the 35 day period, the transit project may proceed as planned.

1.2.4 SRT Preliminary Planning Phase

To refine the project components, preliminary planning activities were carried out from April 2008 to March 2010, before the "Notice of Study Commencement" was issued on April 6, 2010. The activities undertaken included:

- Contacting the Ministry of the Environment to obtain initial input to this study;
- Undertaking feasibility studies for the project (see Chapter 2 for details);
- Preparing a consultation plan to obtain public input (see Chapter 7 for details);
- Initiating pre-notification and pre-consultation activities with aboriginal communities, adjacent property owners, general public and regulatory agencies, for example, the Toronto and Region Conservation Authority (see Chapter 7 for details);
- Identifying potential federal environmental assessment and other federal regulatory requirements (see Chapter 7 for details);

- Defining the project details (see Chapter 2 for details); and
- Conducting various studies to identify the existing natural environment, social environment conditions, future transit operations (for example stop locations), the associated road improvements, property requirements, potential environmental impacts and mitigation measures (see Chapter 3 and 4 for details).

1.3 Study Team Organization

The study has been undertaken with direction from the Toronto Transit Commission (TTC) and the City of Toronto as co-proponents. City of Toronto staff representation on the study team included:

- City Transportation Services;
- City Planning (Transportation, Community Planning and Urban Design);
- Toronto Parks, Recreation and Forestry;
- City Technical Services; and
- City's Public Consultation Unit.

URS Canada Inc. was retained by TTC as the prime consultant to undertake the project management and associated technical work, including geometric design, preparation of presentation material for the public meetings and preparation of the EPR for the SRT Extension Project. In addition, AECOM was retained by TTC to undertake the environmental planning and associated technical work, including geometric design for the Kennedy Station Project. A project team was formed with the assistance of the following sub-consultants to provide the expertise required to complete the study:

- Golder Associates – Geotechnical and Contamination (extension);
- LGL Limited – Natural Environment;
- S.S. Wilson Associates – Noise and Vibration Analysis & Air Quality (conversion and extension);
- Planning Partnership – Socioeconomics (extension);
- Archaeological Services Inc. – Heritage and Archaeological for Kennedy.

1.4 Relevant Policies to the SRT

1.4.1 City of Toronto Planning Policies

1.4.1.1 Toronto Official Plan

The City of Toronto Official Plan presents a vision for a more liveable City where no new roads are built, future transportation demand is accommodated by transit and active transportation, transit is given priority over autos via an expanded network of rights-of-way, and new development is directed to locations with excellent transit service.

Growth areas rely on an efficient transportation network to support the growing travel needs of residents and workers. As illustrated in Exhibit 1-4, the OP designates Higher Order Transit Corridors to identify areas for future expansion of the transit system through higher order transit, which includes subways and the SRT. All these areas have the potential for reduced car dependency due to high population and employment densities – two factors that increase the viability of transit use.

The OP strives to decrease dependency on private automobiles and to achieve a wide range of sustainable transportation options that are seamlessly linked, safe, convenient, affordable and economically competitive. The proposed LRT network is one of the key elements of the City's transportation network and is crucial to supporting the growing travel needs of residents and workers over the next 30 years. Refurbishing and expanding the SRT supports the goals of the OP.

Designated Growth Areas

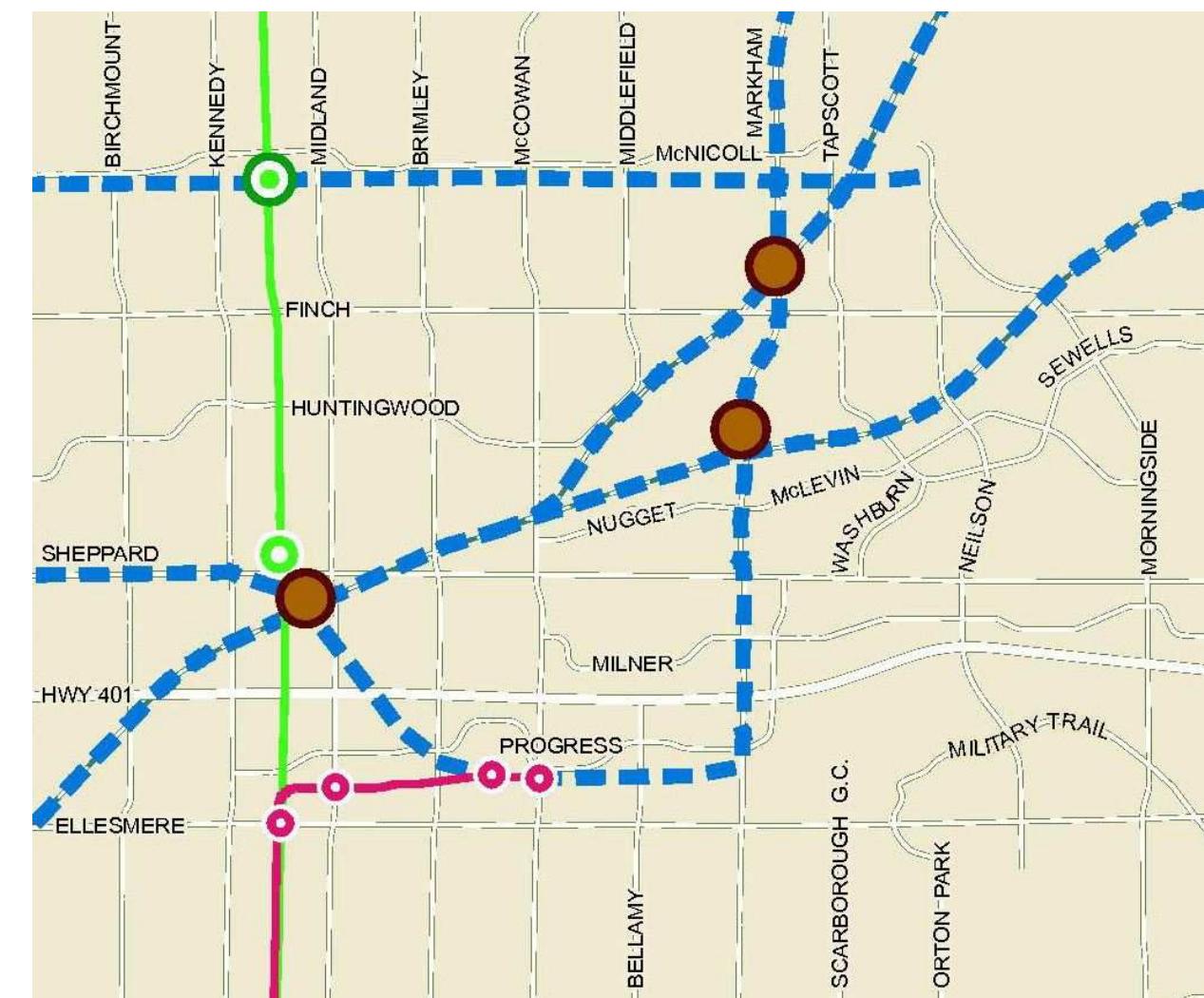
The Official Plan directs future growth to areas of the City that are well served by transit, the existing road network and existing infrastructure. Areas that have the most potential to accommodate growth and redevelopment are the Downtown and Central Waterfront, the Centres, the Avenues, and the Employment Districts.

Four key locations on the rapid transit system play an important role in how we manage growth. The Scarborough, North York, Etobicoke and Yonge-Eglinton Centres are places with excellent transit accessibility where jobs, housing and services will be concentrated in dynamic mixed use settings with different levels of activity and intensity. These Centres are focal points for surface transit routes drawing people from across the City and from outlying suburbs to either jobs within the Centres or to a rapid transit connection.

The potential of the Centres to support various levels of both commercial office job growth and residential growth outside of the *Downtown* is important. This Plan encourages creating concentrations of workers and residents at these locations, resulting in significant centres of economic activity accessible by transit.

Scarborough Centre sits at the eastern end of the Scarborough RT line and is served by two stations. Improving the Centre's connectivity will be crucial to its success. Improving its regional gateway function, improving service and extending the RT route is a key recommendation from the Official Plan. Ensuring that the SRT is maintained in a state-of-good-repair, and providing sufficient capacity for current and future demand in this corridor is, therefore, fundamental to the plan.

Exhibit 1-4: Toronto Official Plan Map 5: Higher Order Transit Corridors



1.4.2 TTC Policies

1.4.2.1 Ridership Growth Strategy

In support of the City's 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 to meet future transit demand throughout the City.

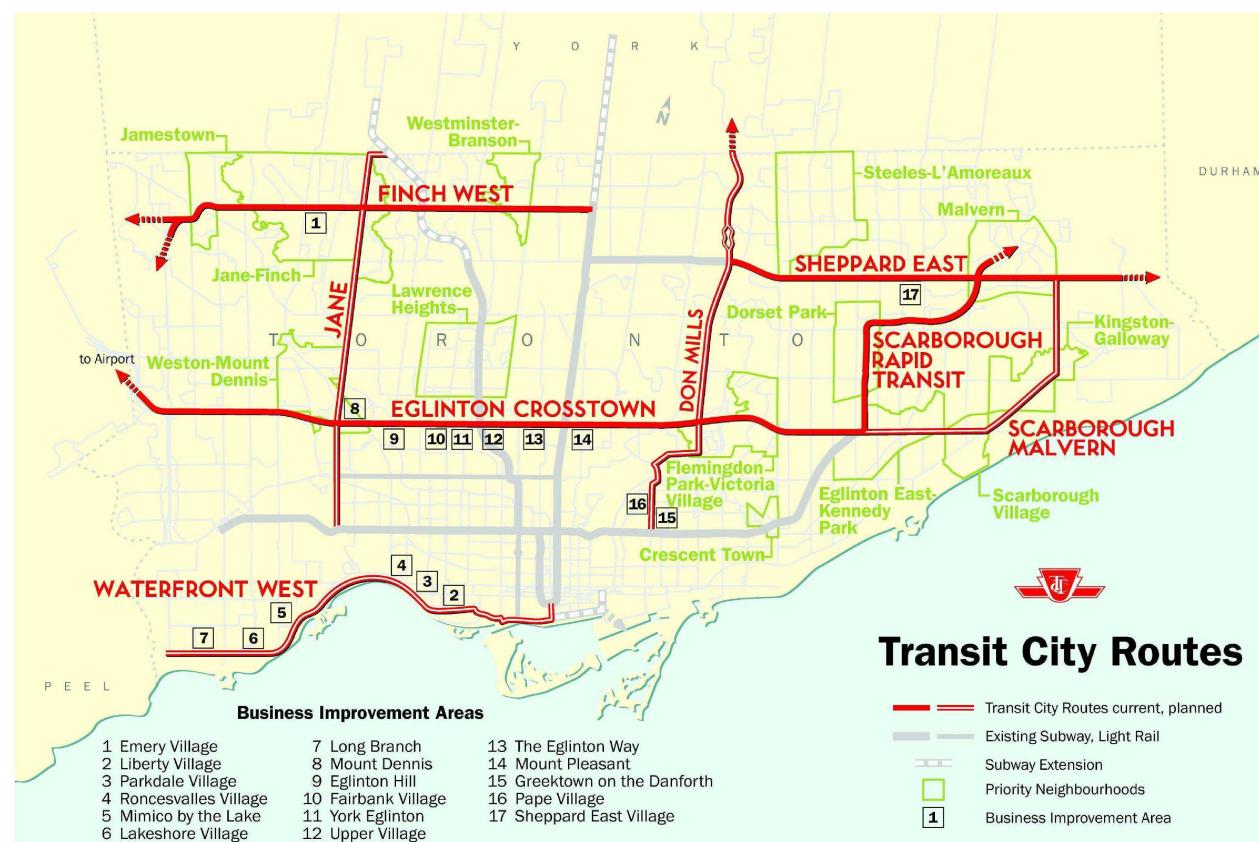
1.4.2.2 Toronto Transit City Light Rail Transit Plan

Over the past decade, the City of Toronto and the TTC have undertaken a number of studies and initiatives pertaining to the cost-effective expansion of transit as a means of making Toronto a more liveable and environmentally sustainable city. These plans and initiatives include:

- Toronto Official Plan (2002);
- TTC Ridership Growth Strategy (2003);
- TTC Building a Transit City (2004);
- Mayor Miller's "Transit City" Platform (2006).

These various studies and initiatives have been consolidated into one high-level plan for a light rail transit network in Toronto, referred to as the Toronto Transit City Light Rail Plan, as shown in Exhibit 1-5.

Exhibit 1-5: Toronto Transit City Light Rail Plan



The plan calls for the implementation of eight new electric light rail lines across the City of Toronto which would provide fast, reliable and environmentally-sustainable light rail transit services to all areas of Toronto, particularly to areas which do not have higher order transit services today. Fundamental to the plan is the

seamless interconnection of the proposed new lines with each other and with existing rapid transit routes including the planned extensions of the University-Spadina Subway to York University and York Region and the SRT to Sheppard Avenue and the Malvern community. The plan also provides the basis for the creation of a seamless Greater Toronto Area network of rail and bus rapid services.

The major objectives of the Toronto Transit City Light Rail Plan are to provide:

- faster travel between the major areas of the City of Toronto, thereby offering competitive travel times and a less stressful alternative to private cars;
- reliable and frequent service in road space reserved for transit customers thereby eliminating the delays caused by operating in mixed traffic;
- fully accessible design, so that people with all levels of mobility can use the service with confidence and ease;
- direct transit links to areas that are currently far removed from higher order transit services, including the north, west, and eastern parts of Toronto;
- connections with the existing and proposed rapid transit system, thereby adding further travel opportunities and maximizing integration of the new lines into the overall rapid transit network;
- interconnections or connection opportunities to the Greater Toronto Area (GTA) regional transit network, including the City of Mississauga, York Region, and Durham Region; and
- interconnection opportunities with GO Transit rail and bus networks.

The Toronto Transit City Light Rail (LRT) Plan was endorsed by the TTC Commission in March 2007, and supported by the Province of Ontario in June 2007 as a part of Move Ontario 2020, a strategic transit plan for the Greater Toronto Area and Hamilton (described in greater detail in the following sections).

The Transit City LRT Plan included an extension of the SRT, with connections to three of the seven new LRT lines. The Transit City LRT Plan was included by Metrolinx in its 2008 Regional Transit Plan and the extension and upgrading of the SRT was identified as a priority project.

This transit project supports these policies and plans by:

- Providing long-term capacity for the existing SRT by upgrading it to accommodate significantly larger trains and more frequent service;
- Upgrading the line to operate with high quality, state-of-the-art, light rail transit vehicles;
- Extending rapid transit to Centennial College and the Malvern community, and closer to the vast number of riders which come from communities beyond;
- Connecting the Sheppard East LRT to Scarborough City Centre, the Bloor-Danforth Subway, and all points beyond; and
- Greatly improving the passenger connection between the SRT and Bloor-Danforth Subway at Kennedy Station.

1.4.3 Provincial Planning Policies

There are a number of Provincial policies which are relevant to this project which are being presented in the following subsections.

1.4.3.1 Provincial Policy Statement

This project is consistent with the objectives of the Provincial Policy Statement of the Province of Ontario. The objectives are that transportation, transit and infrastructure facilities are to be planned to meet current and projected needs, providing for an efficient, cost-effective and reliable multi-modal transportation system that supports long-term economic prosperity. The Statement also states that public transit and other alternative modes of transportation are to be supported to improve energy efficiency and air quality.

1.4.3.2 Growth Plan for Greater Golden Horseshoe

This project is consistent with the objectives of the Growth Plan for the Greater Golden Horseshoe. Some of these objectives are:

- public transit will be the first priority for transportation and major transportation investments;
- major transit station areas and intensification corridors will be designated in official plans;
- major transit station area and intensification corridors will be planned to ensure the viability of existing and planned transit service levels; and
- major transit stations will be planned and designed to provide access from various transportation modes including pedestrians, bicycles and passenger drop-off.

1.4.3.3 MoveOntario 2020

MoveOntario 2020 is a plan approved by the Ontario government in 2007 for 902 kilometres of new or improved rapid transit designed to move people efficiently around the region. It will result in 800 million new transit trips per year, taking 300 million car trips off GTA roads. This will cut smog and reduce carbon dioxide emissions by 10 megatonnes by 2020. MoveOntario 2020 includes 52 transit projects at a cost of \$17.5 billion.

1.4.3.4 Regional Transportation Plan (Metrolinx)

Metrolinx developed the Regional Transportation Plan (RTP) called "The Big Move" to provide a strategic, long term vision, goals and objectives for future transportation across the Greater Toronto and Hamilton Area. The plan contains strategies, priority action and supporting policies that are needed to achieve the vision and goals. The priorities noted in the RTP include constructing a fast, frequent and expanded regional rapid transit network, providing a system of connected mobility hubs and completing walking and cycling networks with bike-sharing programs.

An upgrade and extension of the Scarborough RT is one of the top 15 transit priorities of the Big Move.

1.4.3.5 Transit Priority Statement

In 2008, the Government of Ontario approved the Transit Priority Statement, which discusses the need for expanded public transit infrastructure. Public transit, especially rapid transit, is identified as a priority to relieve traffic congestion, reduce greenhouse gas emissions and support sustainable urban development. The rationale and need for creating a 6 month environmental assessment process for transit projects is considered a key part of the province's priority statement (Regulation 231/08 - *Transit Projects and Greater Toronto Transportation Authority Undertakings*).

1.5 Relevant Background Reports

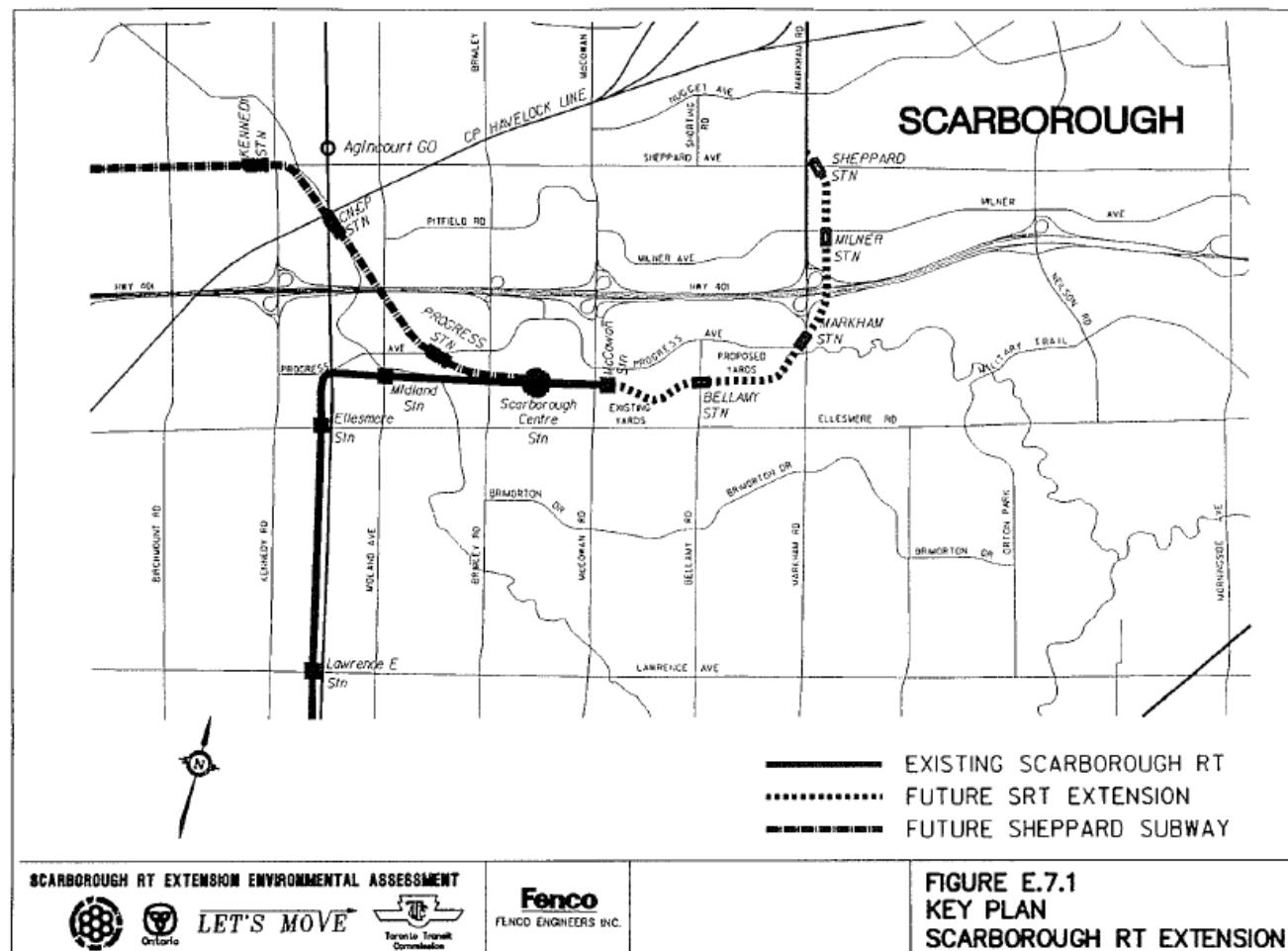
1.5.1 Scarborough RT Extension EA

The Scarborough Rapid Transit (SRT) Extension Project was identified as part of a comprehensive plan (known as Let's Move) for eight rapid transit projects, which was initiated in the early 1990's. In 1992, TTC and the former Metropolitan Toronto completed an Individual Environmental Assessment (EA) for the SRT which was submitted to the Ministry of the Environment (MOE) for approval in July of that year. The 1992 EA established the need and justification for transportation improvements to northeast Toronto area. It determined that extending the existing SRT line from McCowan Road to Sheppard Avenue East / Markham Road was the preferred undertaking. The project was known as the Scarborough Rapid Transit Extension Environmental Assessment. The definition of the environment within the Study Area, including the existing transportation planning context, transportation systems, natural environment, socio-economic environment, existing and planned land use, and future transportation demands was based on conditions of the early 1990's. This information served as a baseline for the generation of alternatives, the prediction of condition changes/environmental effects and the identification of environmental protection measures. Several separate technical reports were prepared to describe the existing conditions in greater detail.

Exhibit 1-6 illustrates the EA Approved Alignment for the 1992 SRT Extension. As part of the EA, TTC determined that a new maintenance facility was required. After assessing a number of alternative locations, a preferred site, east of Bellamy Road and south of Progress Avenue was selected.

In March 1994, upon review of the Scarborough Rapid Transit Extension Environmental Assessment Report, the Minister of the Environment and Energy authorized the Notice to Proceed with the Undertaking for the extension of the SRT from the existing terminal station at McCowan Road to a new terminus at the southwest corner of Sheppard Avenue East and Markham Road. The 1994 approval of the Undertaking remains in effect. Work was terminated on the project in 1995 when funding was withdrawn.

Exhibit 1-6: 1992 SRT Extension, EA Approved Alignment



1.5.2.1 Overview of Travel Demand and Ridership Trends from the Strategic Plan

Operational since 1985, the existing SRT has had a profound positive effect on travel patterns to and from Scarborough. The existing Scarborough Rapid Transit Line operates between Kennedy Station on the Bloor-Danforth Subway and McCowan Station. It presently carries 42,000 passengers daily with most of the passengers transferring between the Bloor-Danforth Subway and the SRT. There are four intermediate stops on the line – Lawrence East Station, Ellesmere Station, Midland Station, Scarborough Centre Station. The main focus of the Scarborough Rapid Transit has been to support land development and intensification in the general vicinity of the Scarborough City Centre and provide improved access from northeast Scarborough to downtown Toronto.

During peak periods, the SRT service operates every 3 minutes and 30 seconds, carrying about 3,800 people per hour in the peak direction, which is the maximum capacity of the line with the current vehicle fleet. The current fleet of 28 RT cars used on the line, acquired for the opening of service in 1985, is nearing the end of its useful service life.

Current travel patterns have been observed and the results are shown in Exhibit 1-7. Existing data identifies that 33% of passengers using the SRT are commuting from the Malvern area. Major destinations for passengers on the SRT include the Scarborough Centre (21%) and the downtown core (50%).

Origin and destination patterns have been projected for 2031 and the results strengthen the need for the SRT extension (Exhibit 1-8). SRT use from the Malvern area is predicted to increase. The percentage of passengers will rise by 10% from 33% to 43%. As well the percentage of passengers using the SRT in and around the Scarborough City Centre will increase from 23% to 27%. The downtown core remains as the dominant destination attracting over 50% of the riders in 2031 using the SRT to commute downtown. As a result, the statistics show that there is a current need for the extension of the SRT and this need will continue to grow in the future.

1.5.2 Scarborough RT Strategic Plan

The existing SRT Mark I vehicles will reach the end of their economic life by 2015. In addition, the TTC does not have a sufficient fleet of these vehicles to accommodate current demand. To address these issues, and improve the quality of the service, the TTC endorsed the recommendations of the 2006 Scarborough RT Strategic Plan, including replacing the existing fleet, upgrading the line to accommodate larger-capacity trains, and improving the passenger connection between the SRT and Bloor-Danforth Subway at Kennedy Station. The following provides a summary of key analysis and findings from this report.

Exhibit 1-7: Origins and Destinations (2008) for current SRT Passengers

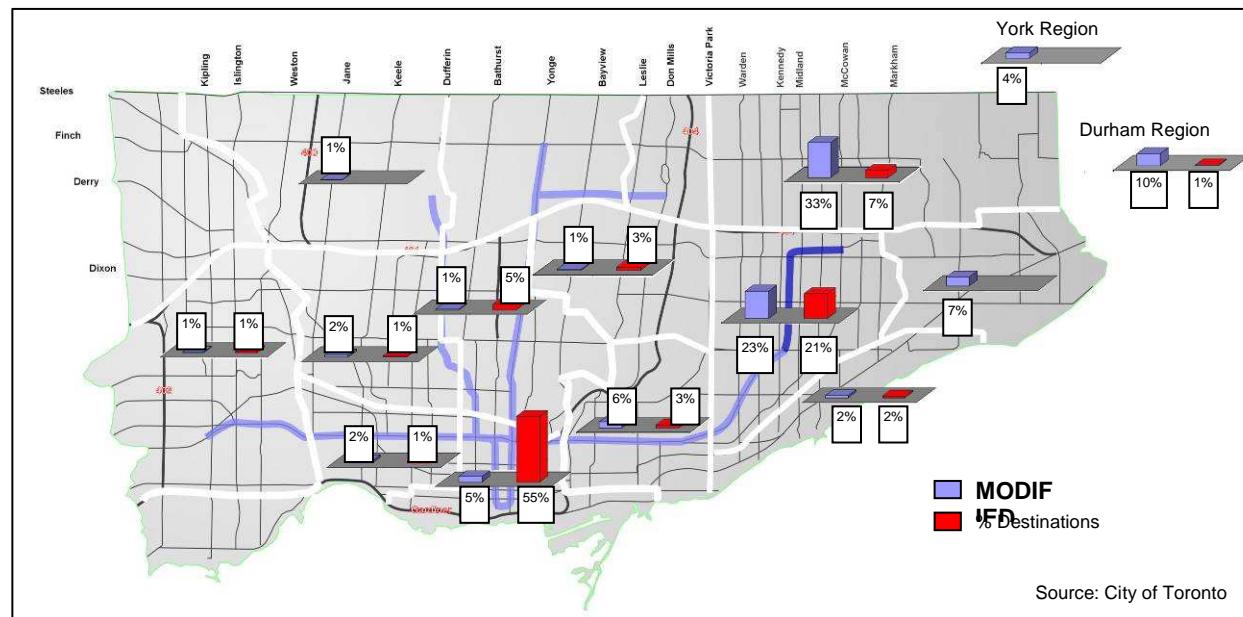
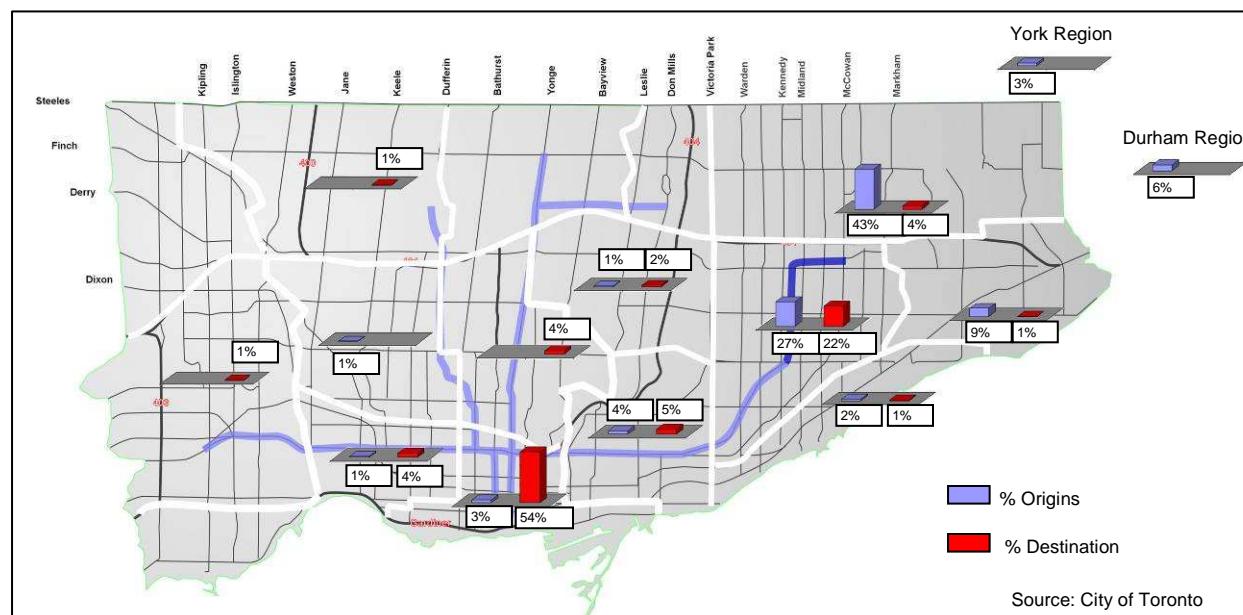


Exhibit 1-8: Forecast Travel Origin and Destination (2031)



In addition to origin and destination trends for transit ridership in the area, the Strategic Plan provided initial conclusions concerning the magnitude of future demand and resulting capacity requirements. The 2006 estimates predicted demands for the year 2031 between 7,500 and 8,000 passengers per hour per direction and that the final demands will be influenced by the alternative network and technology selected.

Based on the current and future transit trends in the area, the Strategic Plan undertook an initial assessment of alternative network arrangements and technologies. The following potential alternatives were reviewed in the 2006 study:

- 1) Acquisition of replacement SRT vehicles,
- 2) Conversion of the existing route to a bus rapid service (BRT),
- 3) Conversion of the existing route to a Light Rail service (LRT),
- 4) Conversion of the existing route to an extension of the Bloor-Danforth subway,
- 5) BRT service on surrounding streets,
- 6) LRT service on surrounding streets, and
- 7) Extension of the Bloor-Danforth subway on a completely separate alignment.

1.5.2.2 Preliminary Screening of Technologies /corridors from the 2006 Strategic Plan

For purposes of developing a shorter list of SRT upgrade alternatives for more detailed evaluation, capacity and level of service (quality) criteria were used as the basis of preliminary screening.

Exhibit 1-9 compares capacities for alternative SRT technology / corridor alternatives in relation to the estimated demand requirement of about 8,000 pphpd. "Existing" capacity assumes the current maximum frequency of service (17 trains per hour).

Exhibit 1-9: Potential Capacities for SRT Alternatives

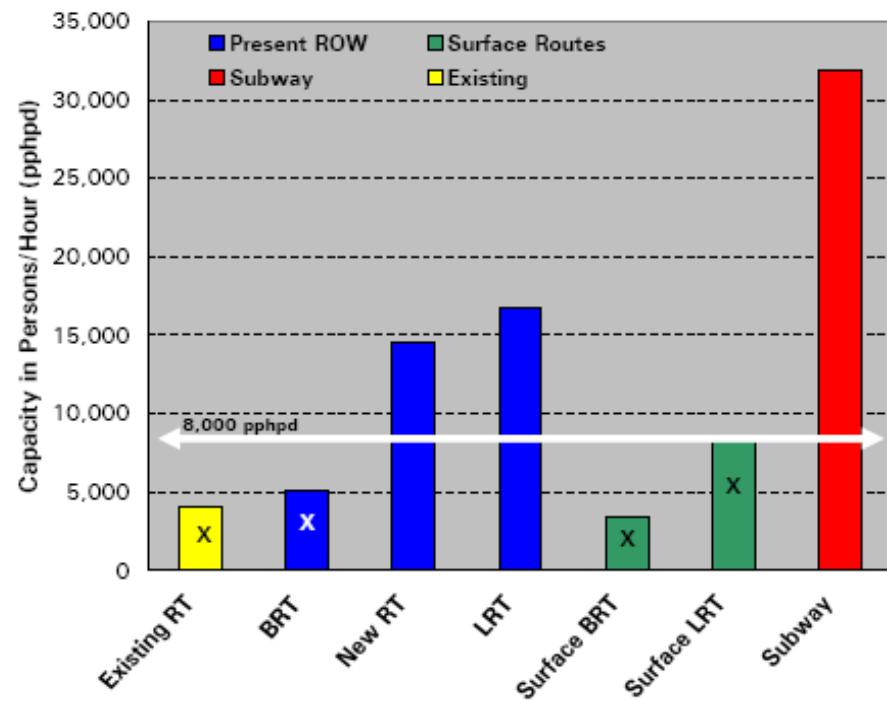


Table 1-1: Summary Evaluation of SRT Corridor Alternatives

Measure	Current RT	LRT	Subway
Stations	No change	No change	Eliminates: McCowan, Midland and Ellesmere
Support for Scarborough Centre	Good	Good	Superior (depending upon impact on Sheppard Corridor)
Capital Cost	\$360M	\$490M	\$1,220M
Resources available for other transit initiatives	Significant	Significant	None
Service Disruption	8 months	36 months	Uncertain
Early Capacity Increase	Yes	No	No
Implementation Risk	Low	High	Very high
Long Term Capacity	Meets needs	Meets needs	Exceeds needs
Transfer at Kennedy Station	Can be improved	Can be improved	Not required
Expansion Potential	Limited	Most Opportunities	Constrained by Resources
Stated Public Preferences	Low	Low	High

Note: Cost are Order of Magnitude 2006 Estimates

These comparisons suggest that neither surface BRT nor conversion of the current SRT guideway to BRT is likely to provide adequate capacity. Maintaining the existing infrastructure and only increasing the size of the vehicle fleet also does not pass the capacity screen. With respect to quality of service, the operative word in SRT is "rapid". Thus, the second "screen" utilized in the 2006 Strategic Plan was that the alternative must be at least as rapid (and reliable) as the current service. That screen, more or less, ruled out any serious consideration of surface BRT or LRT on surrounding streets as an alternative to the level of service now provided by the SRT.

As a result, three main alternatives were retained for further analysis, namely:

- The acquisition of new current technology vehicles,
- Conversion of the SRT guideway to LRT, and
- Replacement of the current service by an extension of the Bloor-Danforth subway.

1.5.2.3 Evaluation of short listed technologies / corridors from the 2006 Strategic Plan

The Strategic Plan contained a detailed discussion on the trade-offs and benefits of each of the short listed alternatives, as summarized in Table 1-1. The conclusion of this analysis was that for either the RT or LRT alternatives, significant lengths of additional, higher order transit could be provided well below the capital cost of the Scarborough subway alternative alone.

Other key conclusions contained within this previous report included:

1. Treated in isolation of system wide implications, infrastructure modification in combination with the acquisition of an expanded fleet of new, longer, more modern RT vehicles similar to those used in Vancouver, represents the most cost effective solution for meeting transit needs within the existing SRT corridor, with minimum service disruption and with the greatest flexibility to provide near term capacity increases.
2. For RT technology, minimum total cost and minimum disruption to service due to construction can be achieved by the acquisition of these Mark II vehicles and construction of a new Kennedy Station in a location that eliminates the present curvature problem.
3. Although a change in technology to LRT will have a higher capital investment and a considerably longer disruption of service due to construction, conversion of the existing SRT to a multiple unit LRT technology offers greater potential for overall system expansion, consistent with the transit priority goals reflected in the City of Toronto's *Official Plan* and the TTC's *Ridership Growth Strategy*.
4. For either the RT or LRT technologies, the inconvenient multi-level transfer between the subway and the SRT (at Kennedy Station) can likely be improved through relocation of the elevated SRT Kennedy Station to a new surface or (below grade) location.

5. There is a need for further analysis of the specific network opportunities and their capital requirements that could be combined with either an RT or LRT technology in the SRT corridor as a single integrated project. This is the focus of this Transit Project Assessment.
6. On the basis of ridership forecasts and preliminary cost estimates, replacement of the existing SRT by a new subway is not a cost effective solution that can be justified on technical grounds.

The initial findings of the Strategic Plan report were presented in a public forum on November 10, 2005 and the final results were discussed at the August 30, 2006 Commission meeting.

1.5.3 Evaluation of Vehicle Technologies

In the fall of 2009, the Toronto Transit Commission undertook a detailed life-cycle cost analysis in order to determine the most cost effective replacement fleet for the aging Mark I vehicles. As illustrated in Exhibit 1-10, the assessment considered:

- Mark II Vehicles – larger and longer than the current Mark I vehicles, the Mark II vehicles in four-car consists are able to accommodate the future demands. Similar to the Mark I vehicles, power is provided by a third rail at track level and have a floor height approximately 0.7m above the top of rail.
- Light Rail Vehicles – in three-car consists, these vehicles can accommodate future demands on the SRT but are also interchangeable with other Transit City lines. The Light Rail Vehicles have a low floor that is approximately 0.35m above top of rail and receive power from an overhead catenary system.

Notwithstanding the greater up front cost associated with the major modifications required to the existing line for conversion to Light Rail Vehicles, the overall cost to the system is less for Light Rail Vehicles (LRV) on the SRT because:

- Fewer cars per consist are required for LRV which reduces fleet cost
- Commonality with all Transit City lines provides opportunities for common maintenance and storage facilities which reduces both capital and maintenance costs
- Standardized equipment allows for greater bulk purchasing and reduced inventory needs

Therefore, TTC decided to finalize all planning of the SRT based on the use of a Light Rail Vehicle as the preferred technology.

Exhibit 1-10 shows the preferred vehicle technology for the SRT.

Exhibit 1-10: Preferred Technology – Light Rail Transit Vehicles



Mark II Vehicles (Vancouver)



Preferred Light Rail Transit Vehicles (Los Angeles)

1.6 Transit Interface Considerations

As of March 2010, the TTC / City of Toronto has completed or is undertaking transit studies to improve the transit services adjacent to the SRT area as shown in Table 1-2.

Table 1-2: Transit Studies Related to SRT Extension Study

Study	Status	Relevance
Sheppard East LRT	EA Study – Completed Construction – Ongoing	A connection between the Sheppard East LRT and SRT Extension is located at Progress Avenue / Sheppard Avenue East area. This will permit inter-connection between the lines for transit riders and provide access to vehicle maintenance facilities (between the two lines).
Eglinton-Crosstown LRT	EA Study – Completed	This route will link Kennedy subway station in the east with Pearson Airport and the Mississauga Transitway and will operate underground for an approximate distance of 10km from Laird Drive in the east to Keele Street in the west. Customers will be able to connect with the Bloor-Danforth subway, SRT and the Scarborough Malvern LRT at the integrated transit hub at Kennedy station.
Scarborough-Malvern LRT	EA Study – Completed	This route connects to the Sheppard East LRT at Morningside to Kennedy station and provides service to the University of Toronto Scarborough campus.
Sheppard East Maintenance and Storage Facility	EA Study – Ongoing	Plan a new Light Rail Vehicle Maintenance and Storage Facility in support of the Sheppard East LRT and other transit lines in northeast Toronto.

SCARBOROUGH RAPID TRANSIT ENVIRONMENTAL PROJECT REPORT

CHAPTER 1 - INTRODUCTION

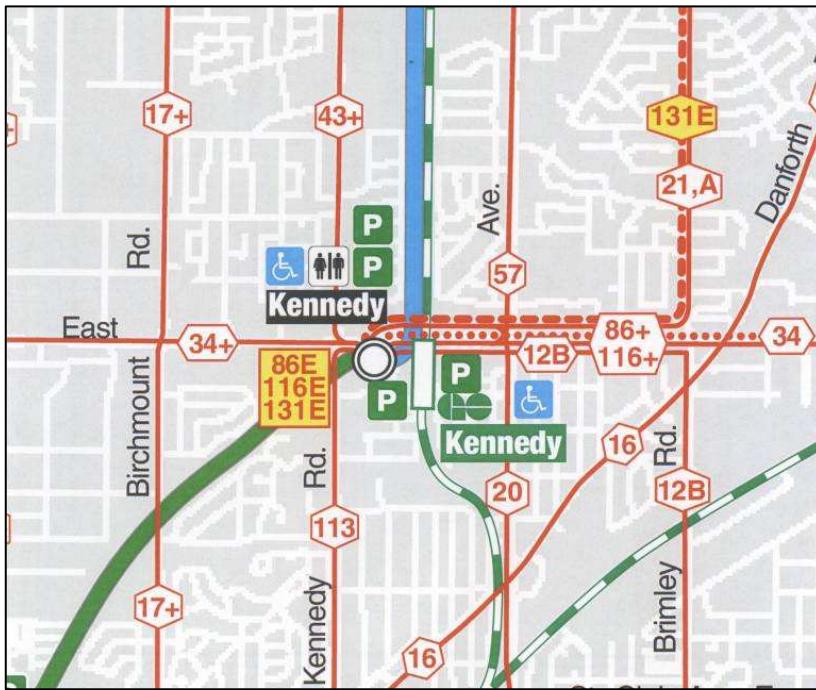
An important consideration in the planning of the SRT is an understanding of other current and planned transit service in the area.

1.6.1 Kennedy Subway Station

Kennedy Station is the eastern terminus of the Bloor Danforth Subway line and the southern terminus of the SRT. As such, it provides a significant connection between Scarborough and areas further south and west, including downtown Toronto. Kennedy Station is the third busiest station in the system and serves over 115,000 people daily.

In addition to Bloor-Danforth Subway and the SRT Extension, Kennedy Station serves a number of bus routes including:

12 Kingston Rd
20 Cliffside
21 Brimley
34 Eglinton East
43 Kennedy
57 Midland
86 Scarborough
113 Danforth
116 Morningside
131 Nugget
305 Eglinton East (All Night – Board On Street)



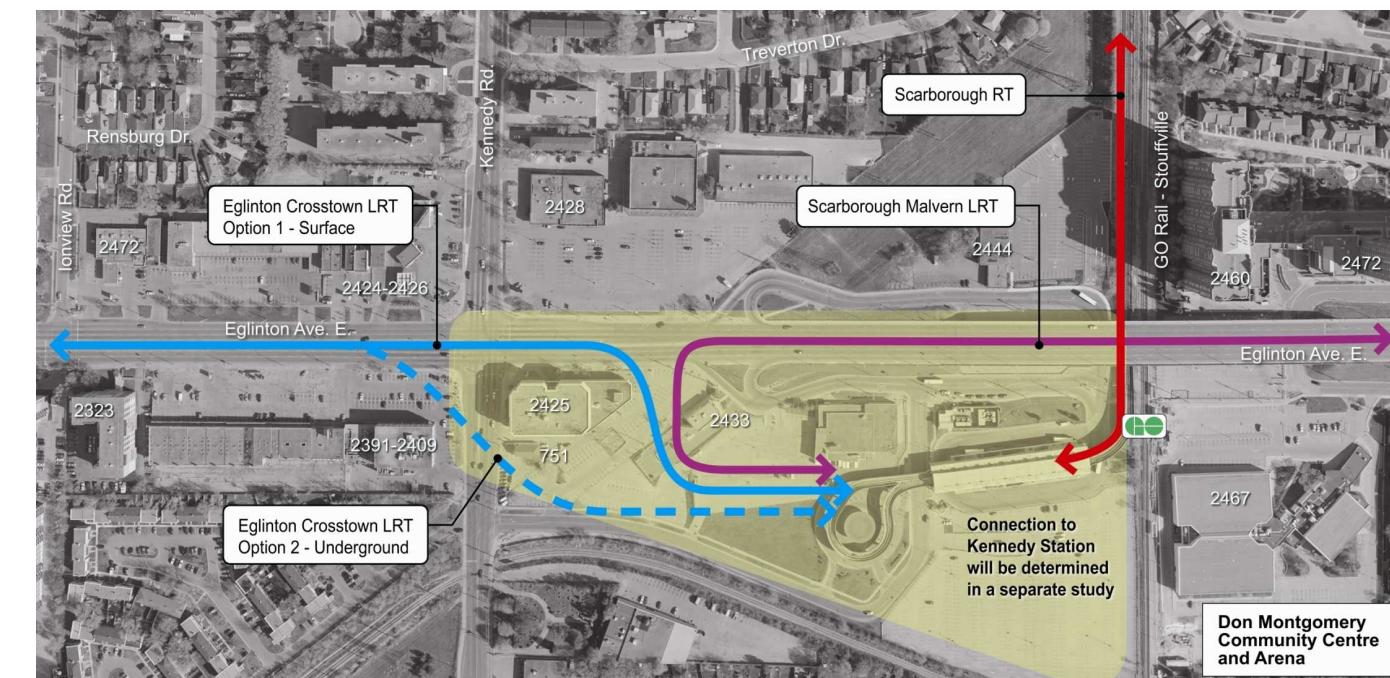
In addition, the Stouffville GO Train stops at Kennedy Station during morning and afternoon rush hours. GO Train passengers access the station via an existing tunnel from the GO platform area on the east side of the track.

As part of the Transit City system, TTC has studied reconstruction of the existing Kennedy Station in order to provide better connections between existing and future transit services including the Eglinton Crosstown LRT and the Scarborough-Malvern LRT. This transit project assessment will define the preferred strategy to effectively integrate all of the services into the station.

Both the Eglinton Crosstown LRT and Scarborough-Malvern LRT Transit Project Assessments included connections to Kennedy Station. Because the Kennedy Station lands would be affected by three different projects, during preliminary planning for the Eglinton Crosstown LRT, Scarborough-Malvern LRT and the Scarborough RT, TTC and the City decided to address the three projects through a single Transit Project Assessment. Accordingly, the following boundaries were established for the Transit Project Assessments:

- The Eglinton Crosstown LRT Transit Project Assessment addressed the project from the western terminus at Pearson International Airport to Kennedy Road.
- The Scarborough-Malvern LRT Transit Project Assessment included the alignment from the GO-Agincourt Rail Line (which runs immediately east of the Scarborough RT north-south corridor).
- The Scarborough RT Transit Project Assessment was to address the area between Kennedy Station and the GO-Agincourt Rail Line for all three projects.

Exhibit 1-11: Kennedy Station



As shown in the following typical cross-section, both the Eglinton Crosstown and Scarborough-Malvern LRT lines will operate at surface in a segregated right-of-way in the centre of Eglinton Avenue.

Exhibit 1-12: Typical Cross Section

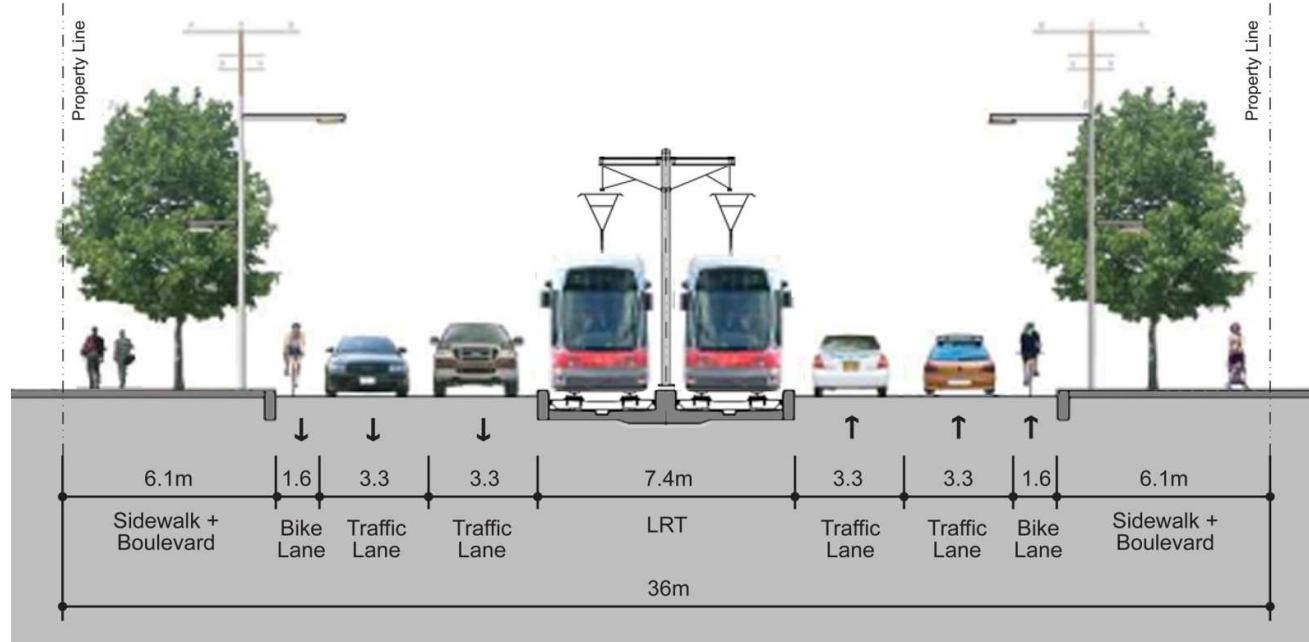


Exhibit 1-13: Typical Plan – Far Side Platform Stop

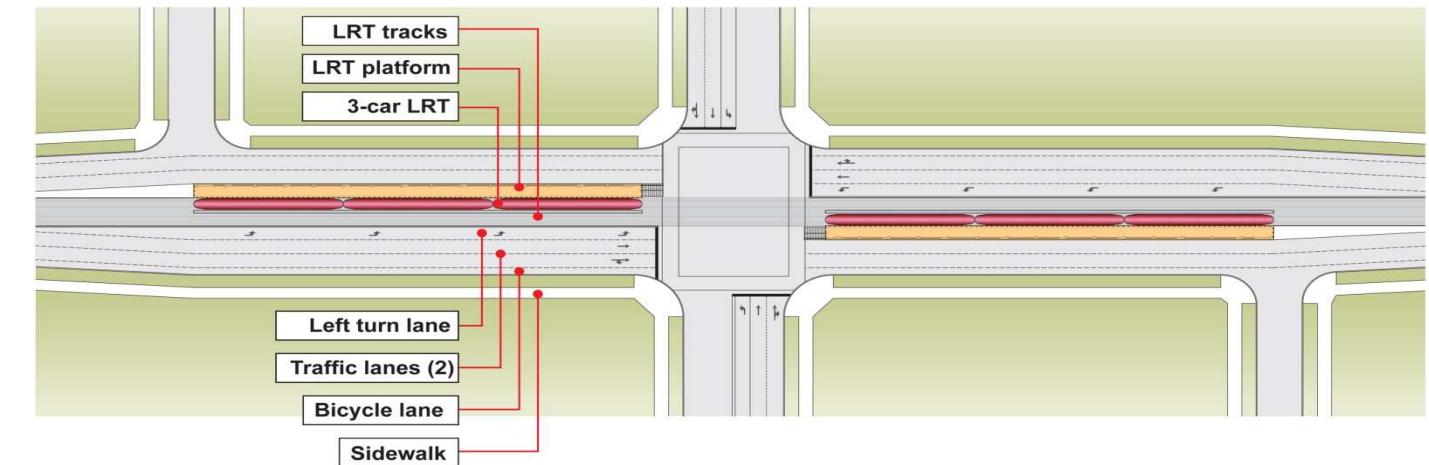


Exhibit 1-14: Eglinton Crosstown LRT Environmental Project Report – Ionview Stop – Part 1

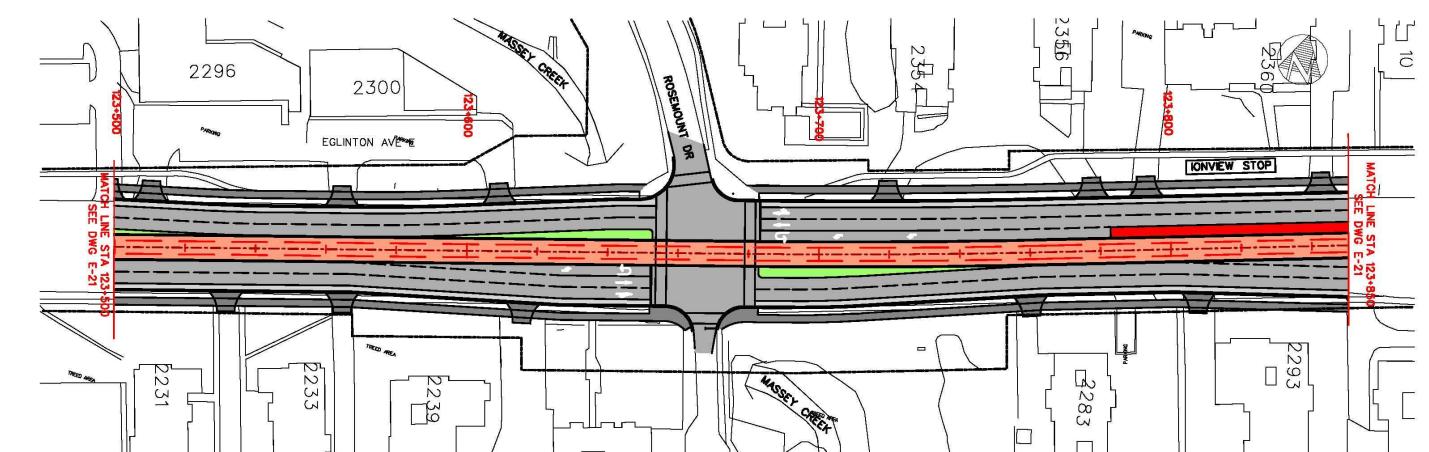


Exhibit 1-15: Eglinton Crosstown LRT Environmental Project Report – Ionview Stop – Part 2

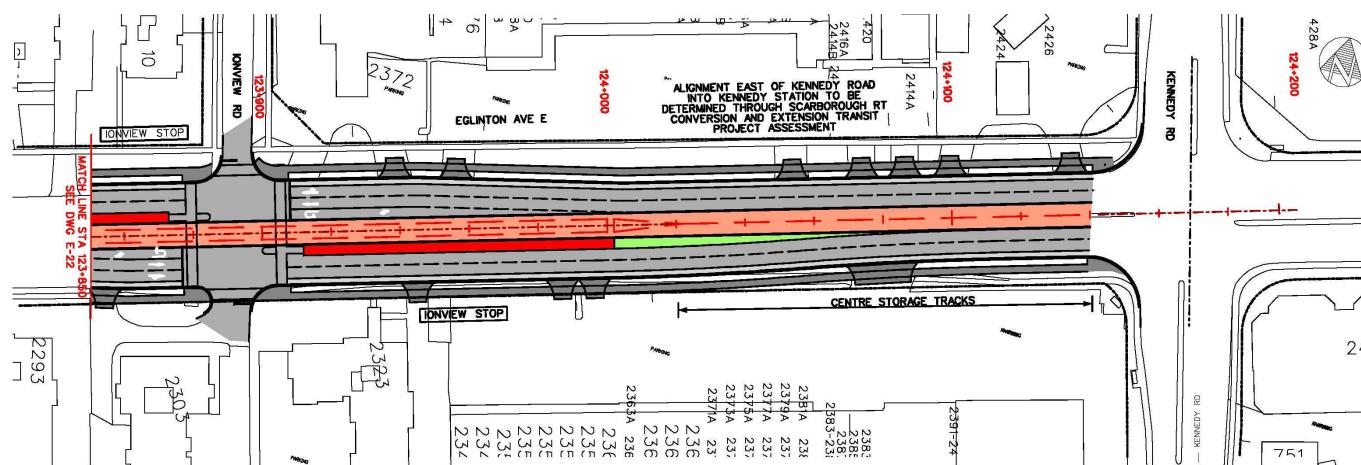
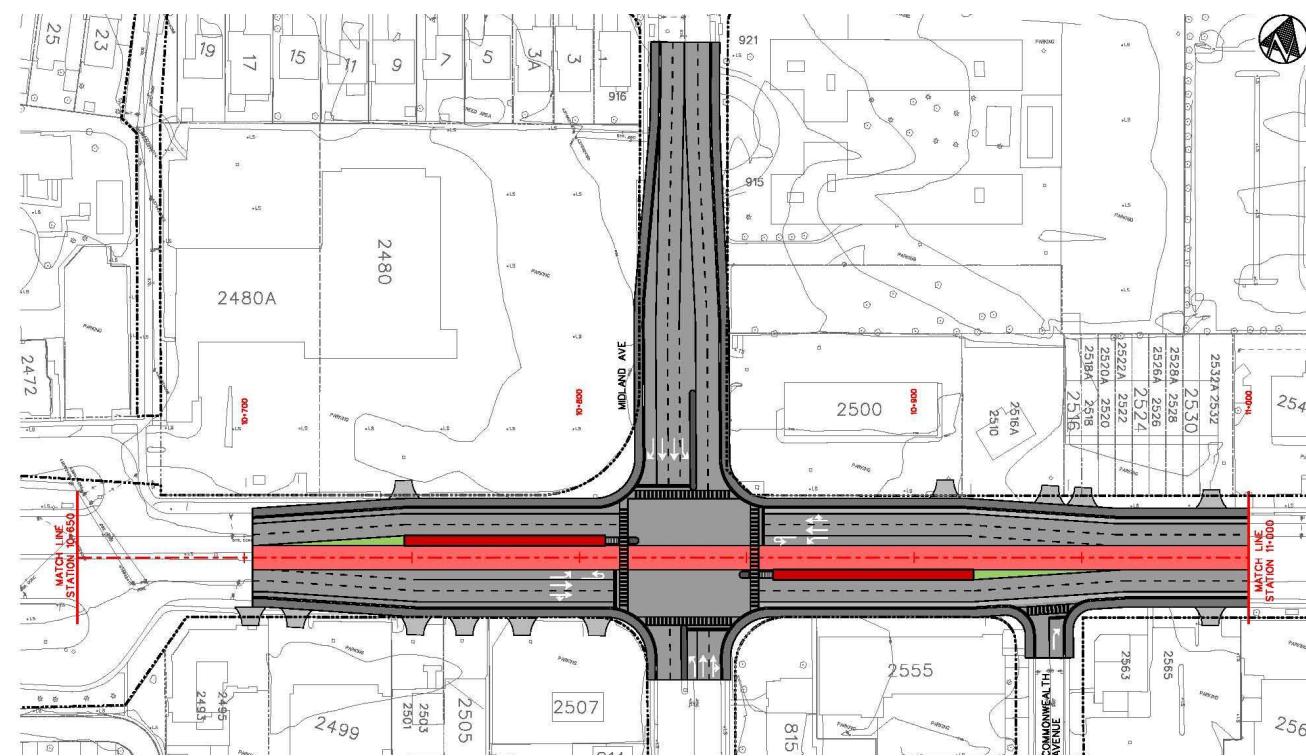


Exhibit 1-16: Scarborough-Malvern Environmental Project Report – Midland Stop



1.6.2 Sheppard East LRT

The Sheppard East LRT (SELRT) will operate along Sheppard Avenue East from Don Mills Subway Station to Meadowvale Road. The transfer point between the SELRT and the SRT Extension Line is the subject of planning contained as part of this Transit Project Assessment. The volume of passengers transferring between the SRT and the SELRT is estimated to be 2,500 passengers per hour during the peak periods in 2031. To accommodate this, a special platform equipped with an escalator, stairs and elevator must be provided. Construction of Sheppard East Station will be coordinated with the Sheppard East LRT, which is currently being designed and is scheduled to be completed in 2014.