Transit City
Eglinton Crosstown Light Rail Transit

Transit Project Assessment Study

Eglinton Crosstown

EGLINTON CROSSTOWN LRT

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ENVIRONMENTAL PROJECT REPORT

March 2010

Toronto Transit Commission/City of Toronto

EGLINTON CROSSTOWN LIGHT RAIL TRANSIT
TRANSIT PROJECT ASSESSMENT
ENVIRONMENTAL PROJECT REPORT

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MARCH 2010

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ABBREVIATIONS

AM	Morning
ANSI	Areas of Natural and Scientific Interest
BHL	Built Heritage Landscape
BRT	Bus Rapid Transit
CEAA	Canadian Environmental Assessment Act
CHL	Cultural Heritage Landscape
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
dbA	Decibels (A-weighed)
DFO	Department of Fisheries and Oceans, Canada
EEB	Emergency Exit Building
ELC	Ecological Land Classification
EMI	Electromagnetic Interference
EMS	Emergency Medical Service
FWCA	Fish and Wildlife Conservation Act
GTAA	Greater Toronto Airports Authority
GTHA	Greater Toronto and Hamilton Area
HADD	Harmful Alteration, Disruption or Destruction (of fish habitat)
HOV	High-Occupancy-Vehicle (lane)
LOS	Level of Service
LRT	Light Rail Transit
LRV	Light Rail Vehicle
MBCA	Migratory Birds Convention Act
MNR	Ontario Ministry of Natural Resources
MOE	Ontario Ministry of the Environment
MTO	Ontario Ministry of Transportation
NHIC	Natural Heritage Information Centre
NWPA	Navigable Waters Protection Act
OPSS	Ontario Provincial Standard Specification
PM	Afternoon
PTTW	Permit to Take Water
ROW	Right-of-way
SRT	Subway and Rapid Transit
TBM	Tunnel Boring Machine

TPSS	Traction Power Substations
TRCA	Toronto and Region Conservation Authority
TTC	Toronto Transit Commission
V/C	Ratio of Traffic Demand to Available Capacity

EXECUTIVE SUMMARY

E.1. INTRODUCTION

The Toronto Transit Commission (TTC) and City of Toronto have undertaken a Transit Project Assessment for the 33 kilometre long Eglinton Crosstown Light Rail Transit (Eglinton Crosstown LRT) corridor that would link the Pearson International Airport with the Kennedy Station. The Eglinton Crosstown LRT will connect with the Spadina Subway Line, the Yonge Subway Line, the Scarborough RT and the planned Jane Street LRT, Don Mills Road LRT, Scarborough-Malvern LRT, and Mississauga BRT. This study recommends that bus services along Eglinton Avenue be replaced by Light Rail Transit (LRT) with electrically powered light rail vehicles operating in a designated right-of-way located primarily in the centre of the street.

This change in transit service along Eglinton Avenue is recommended as part of the TTC Transit City Plan for a widely-spaced network of electric light-rail lines throughout the city, with seamless interconnections to existing and future transit services. The Eglinton Crosstown LRT is one of seven new lines being planned as part of Transit City to provide a new high quality transit service along several busy existing transit routes.

Study Area

The west limits of the study area consists of a broad area bounded by Dixon Road to the north, the Pearson International Airport lands to the est, Eglinton Avenue to the south and Martin Grove Raod to the east. Then the study area consists of a 500 metre band to the north and to the south of Eglinton Avenue from Renforth Drive in the west to Kennedy Road in the east of the study area. See **Exhibit 1**.

Several related studies and studies outside the scope of this Transit Project Assessment are being carried out concurrent with this Eglinton Crosstown LRT Transit Project Assessment to investigate:

- The connection of the Eglinton Crosstown LRT within Pearson International Airport lands (TTC, Metrolinx and Greater Toronto Airports Authority, to be initiated);
- The proposed Mississauga/ GO Transit BRT terminal at Commerce Boulevard (City of Mississauga);
- The proposed Mississauga/ GO Transit BRT extension from Commerce Boulevard to 0Kipling Station (via Eglinton Avenue and Highway 427) (Metrolinx, to be initiated);
- The proposed TTC Maintenance and Storage Facility located north of Eglinton Avenue west of Black Creek Drive (TTC);
- The Jane Street LRT, the Don Mills Road LRT and the Scarborough-Malvern LRT (TTC);
- Improvements to the Highway 427/Highway 401 interchange (MTO);
- Georgetown Corridor Rail Expansion (Metrolinx); and
- The connection of the Eglinton Crosstown LRT to Kennedy Station east of Kennedy Road (TTC).

The connection of the Eglinton Crosstown LRT with the Kennedy Station is being investigated as part of a separate Scarborough Rapid Transit (SRT) Project. The design is addressing improved integration between the existing subway, the SRT, the Eglinton Crosstown LRT and Scarborough-Malvern LRT lines and buses. The connection of the Eglinton Crosstown LRT to Kennedy Station will be the subject of an EA amendment.

The connection of the Eglinton Crosstown LRT with the Airport Terminal lands will be determined following completion of Metrolinx's Airport Precinct Study and the Greater Toronto Airports Authority Transportation Master Plan. Subsequently, TTC and the City will comply with applicable environmental assessment regulations for the finalization of the alignment on the federally-owned airport lands.

The preferred connection of the Eglinton Crosstown LRT with the TTC Maintenance and Storage Facility at Black Creek Drive is reflected in this Transit Project Assessment, although the TTC Maintenance and Storage Facility itself is undergoing a separate environmental assessment.

Study Process – Transit Project Assessment

This study was conducted following Ontario's Transit Project Assessment process in accordance with Ontario Regulation 231/08 for Transit Projects and Greater Toronto Transportation Authority Undertakings (Transit Projects Regulation). The Transit Projects Regulation exempts proponents of all public transit projects from the requirements under Part II of the *Environmental Assessment Act* and creates a process that certain projects must follow in order to be exempt. The Transit Project Assessment process is a proponent-driven, self-assessment of potential impacts of a transit project on the environment that provides framework for an accelerated consultation process. While the Ministry of the Environment does not approve the project, the Minister does provide a notice to proceed and can request additional consideration if the Minister deems that the project has negative impacts on matters of provincial importance.

Policies

<u>Toronto Official Plan</u>

The Toronto Official Plan (OP) presents a vision for a more liveable City and directs growth to specific areas within the City. Generally, potential growth areas are well served by transit, the existing road network and existing infrastructure. The 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.

Avenues are important corridors along major streets where redevelopment and growth is encouraged. Reurbanization and growth on the Avenues is intended to create new housing and job opportunities as well as improvements to the pedestrian environment, making the area attractive to residents, workers, and visitors alike. Growth and redevelopment of the Avenues should be supported by high quality transit services combined with urban design and traffic engineering practices that promote a street that is safe, comfortable and attractive. The east and west portions of Eglinton Avenue are identified as Avenues in the OP.

Toronto Transit City Light Rail Transit Plan

In 2007, the TTC developed a plan that built upon the transit concepts in several studies, including the Toronto Official Plan, the TTC Ridership Growth Strategy, Building a Transit City and the Mayor's "Transit City" Platform (2006), and recommended a network of electric light-rail lines throughout the City, each with its own right-of-way. There are seven new lines proposed, with a total length of 120 kilometres, all connecting with the City's existing and planned rapid transit routes. By 2031, it is estimated that the new lines would carry 175 million riders per year.

City of Mississauga Official Plan

The west portion of the study area for the Eglinton Crosstown LRT is located within the City of Mississauga. The following section describes the policies of the City of Mississauga Official plan that apply to the study area.

Mississauga's Official Plan (2009), referred to as "Mississauga Plan", aims to achieve the establishment of an urban form which is compact, efficient, comfortable, and supportive of transit within a time horizon of 20 years. Mississauga Plan sets out the City's long range plans for the road system, parks, environmental policies and lands to be protected.

An amendment to the Mississauga Official Plan will be required to include a rapid transit corridor from Eglinton Avenue West and Commerce Boulevard to Pearson International Airport via Commerce Boulevard, Convair Drive and Silver Dart Drive.

Evaluation of Major Functional Design Alternatives

Airport Link

Two corridors and eight alternative routes were identified and evaluated for the west limits of the study area (Airport Link). The major constraints for each of the alternatives included highway crossings, geometric and right-of-way constraints, and connections with inter-regional transit. The final recommended route travels along Eglinton Avenue to Commerce Drive, across Highway 401, to Convair Drive, and north on Silver Dart Drive. This route was recommended based on two major factors:

- It offers the best benefit in terms of connection and transfer convenience to Mississauga/GO BRT and Pearson International Airport; and
- It has the least technical constraints including shortest guideway span across Highway 401 and with no impacts to existing on/off ramps.

Vertical Alignment Options from Jane Stop to Keele Station

The segment between Jane Street Road and Keele Street is important as it is the proposed location for the TTC Maintenance and Storage Facility, which is planned to serve three LRT lines. A study for this area was conducted to recommend an Eglinton Crosstown LRT alignment that provides a high quality transit service and flexible connection to the Maintenance and Storage Facility while minimizing property requirements and maintaining the opportunities for development and growth consistent with the City of Toronto's Official Plan. Key technical constraints included bridge structures, area topography, traffic operations, railroads, and the Black Creek Valley. As stated in Section 1.2. of this document, the proposed Maintenance and Storage Facility was not within the scope of this study.

Eight alternatives were identified and evaluated. The recommended alignment is a surface alternative, which incurs the lowest cost, and allows for a secondary (emergency) connection to the proposed Maintenance and Storage Facility. In addition, the traffic analyses performed for the surface alternative demonstrated that a high quality connection can be provided to the proposed Maintenance and Storage Facility (including sufficient Light Rail Vehicle loading and unloading capacity).

Don Mills LRT Interface

A separate study for Eglinton Avenue and Don Mills Road intersection was conducted. This intersection is proposed to be the point of interface for two LRT lines, the Eglinton Crosstown LRT and the Don Mills LRT. The objective of this study was to develop and evaluate transportation alternatives, conduct traffic analyses for the alternatives and make recommendations for the area surrounding the intersection.

Sixteen alternatives were identified and evaluated. The recommended alternative places the Eglinton Crosstown LRT underground and Don Mills LRT at surface with a bus terminal on the northeast quadrant of Eglinton Avenue/Don Mills Road intersection. This alternative provides the highest quality of Eglinton Crosstown LRT performance incurring little delay at the Eglinton Avenue and Don Mills Road intersection since it will operate underground without any type of signal delay due to general traffic and the Don Mills LRT. It allows for safer passenger transfers as passengers will transfer directly from Don Mills LRT platform down the stairs to the Eglinton Crosstown LRT platform and vice-versa without conflict with the general traffic. Also, passenger transfers between the Eglinton Crosstown LRT and the bus terminal will be underground with no conflict with the general traffic. In addition, there is less potential for delay to feeder buses entering the bus terminal located in the northeast quadrant of the intersection.

E.2. PROJECT DESCRIPTION

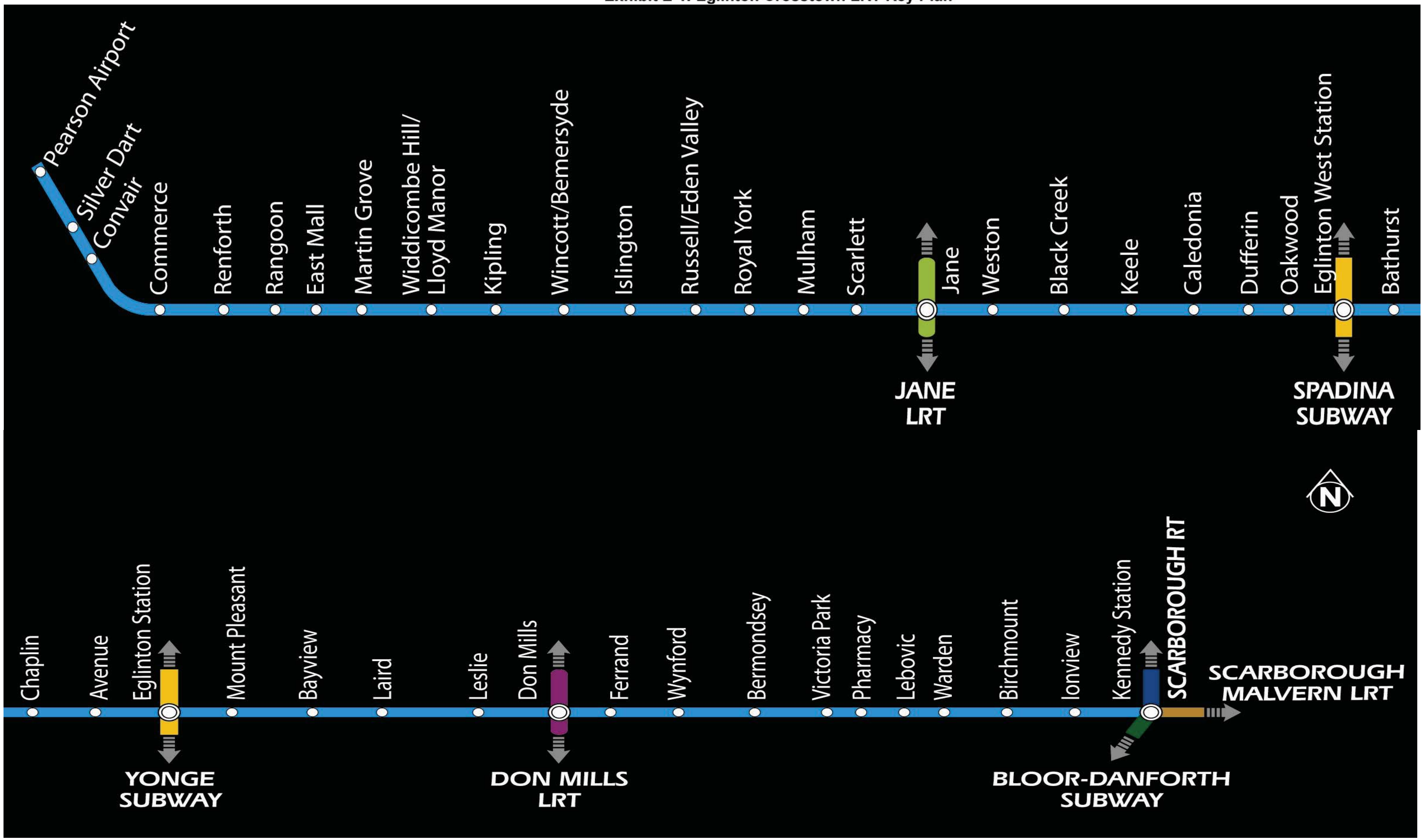
The Eglinton Crosstown LRT includes the following key design components:

LRT at surface from Pearson International Airport to east of Black Creek Drive, underground from east of Black Creek Drive to east of Brentcliffe Road, then at surface from east of Brentcliffe Road to Kennedy Road including a short underground section at Don Mills Road;

- 28 surface stops and 13 underground stations;
- Left turn prohibitions crossing the surface LRT right-of-way, except for signalized intersections;
- Left turn prohibitions from Eglinton Avenue to Martin Grove Road, Kipling Avenue, Islington Avenue, Royal York Road, Scarlett Road, Jane Street, Victoria Park Avenue, Pharmacy Avenue and Birchmount Road.
- Left turn prohibitions from Jane Street and Pharmacy Avenue to Eglinton Avenue.
- New bridge over Highway 401 to connect Convair Drive to Commerce Boulevard;
- Widening of the bridges over Mimico Creek, Black Creek, West Don River, East Don River, and a culvert extension at Wilson Brook. A new bridge structure over Highway 401;
- Traction power substations;
- Provision of special track work, emergency exit buildings and ventilation shafts in underground sections; and
- Landscaping, streetscaping and associated amenities.

Exhibit E-1 presents a key plan of the Eglinton Crosstown LRT.

Exhibit E-1: Eglinton Crosstown LRT Key Plan



Runningway

The Eglinton Crosstown LRT runningway includes dedicated light rail tracks travelling in both directions along the centerline of Eglinton Avenue, Commerce Boulevard, Convair Drive and Silver Dart Drive between Pearson International Airport and Kennedy Road. The runningway will be located at surface from Pearson International Airport to Keele Street and from Brentcliffe Road to Kennedy Road, except at Don Mills Road where it will be underground. The runningway will be underground from Keele Street to Brentcliffe Road.

Typically, the LRT alignment will be located at the centre of the roadway on a raised median to separate the LRT traffic and the general traffic between traffic signals. At intersections, the tracks will be constructed at the same level as the road.

To provide operational flexibility and allow LRVs to change travel directions from one track to another, crossover and storage (pocket) tracks will be provided at a number of locations.

Stops

Stops are located at surface and at major intersections. A total of 28 stops are proposed including 25 stops along Eglinton Avenue, and one stop each along Commerce Boulevard, Convair Drive and Silver Dart Road. Average stop spacing is approximately 660 to 670 metres.

Most intersections will usually have farside platforms for the LRT with vehicular left turn lanes opposite to minimize space requirements. Some intersections will have nearside, parallel (platforms directly across from one another) or centre platforms, and with or without vehicular left turn lanes. Surface stop platforms are 90 metres long. **Exhibit E-2** presents a typical cross section and **Exhibit E-3** presents a typical plan of a surface stop.

Stations

A total of 13 underground stations are proposed at major intersections. The average station spacing is approximately 850 metres.

The typical underground station will generally include one main and two secondary entrances. The entrances will be connected to a station concourse level, which is an underground walkway. Stairs, elevator and escalator connections will be provided between each level of the station. Generally, four fire ventilation shafts will be incorporated into stations. **Exhibit E-4** presents a typical cross section of the station layout and **Exhibit E-5** presents a typical station plan.

Exhibit E-2: Typical Surface Stop - Cross Section

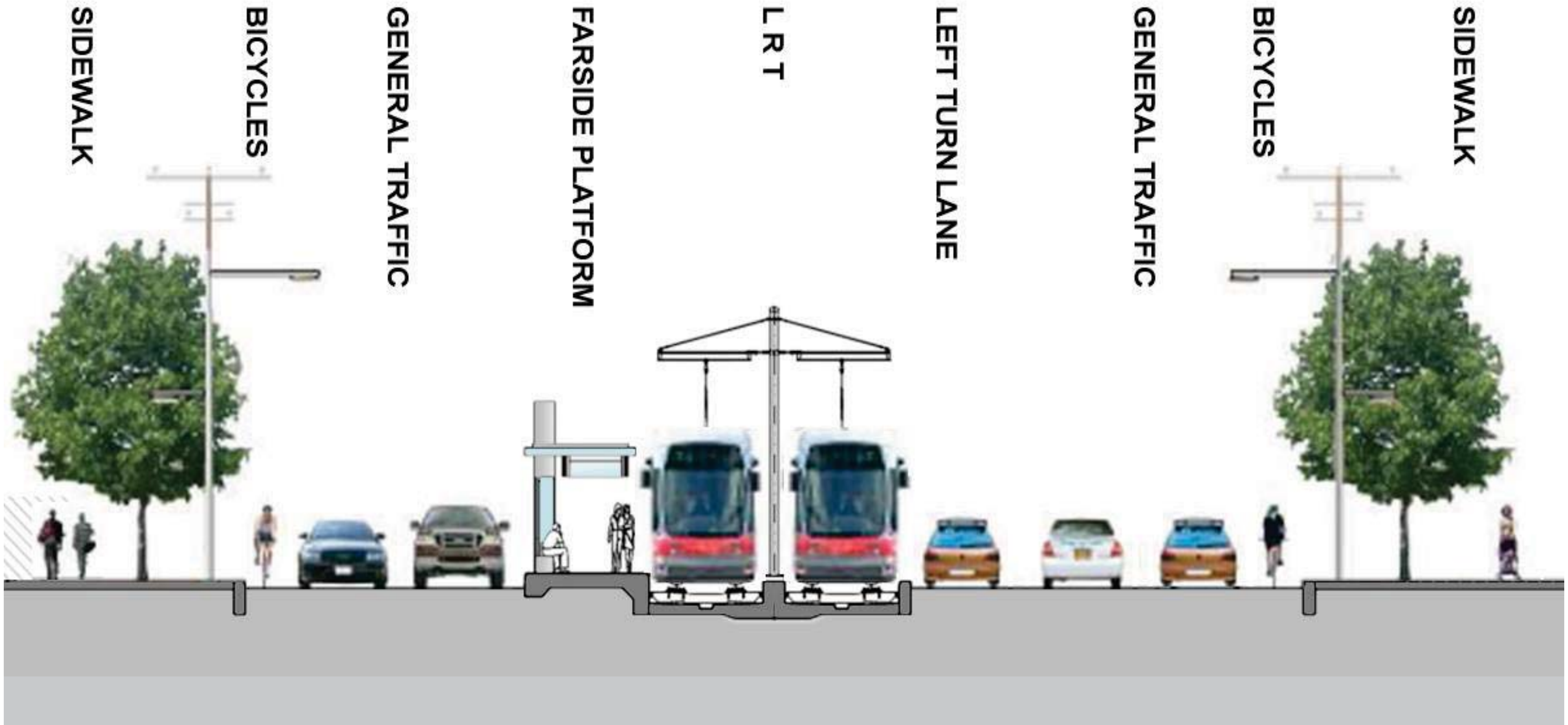


Exhibit E-3: Typical Surface Stop – Plan

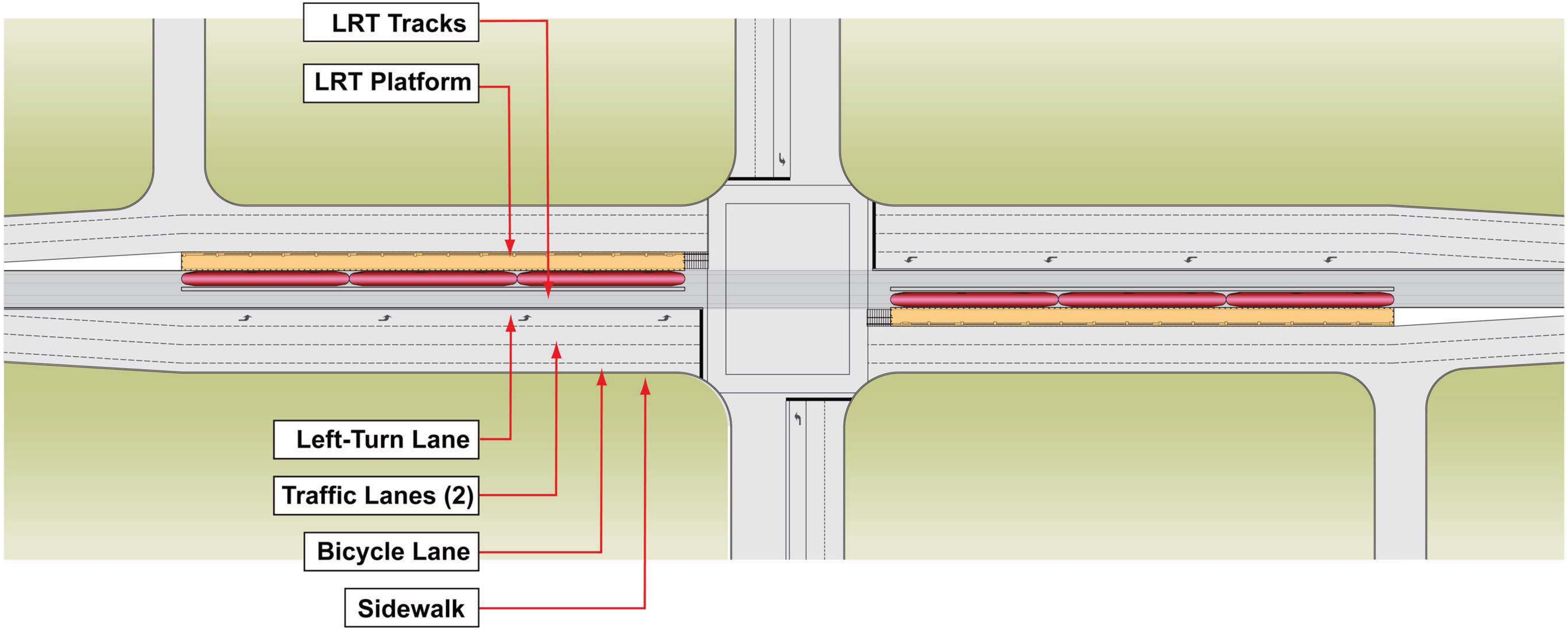


Exhibit E-4: Typical Underground Station - Cross Section

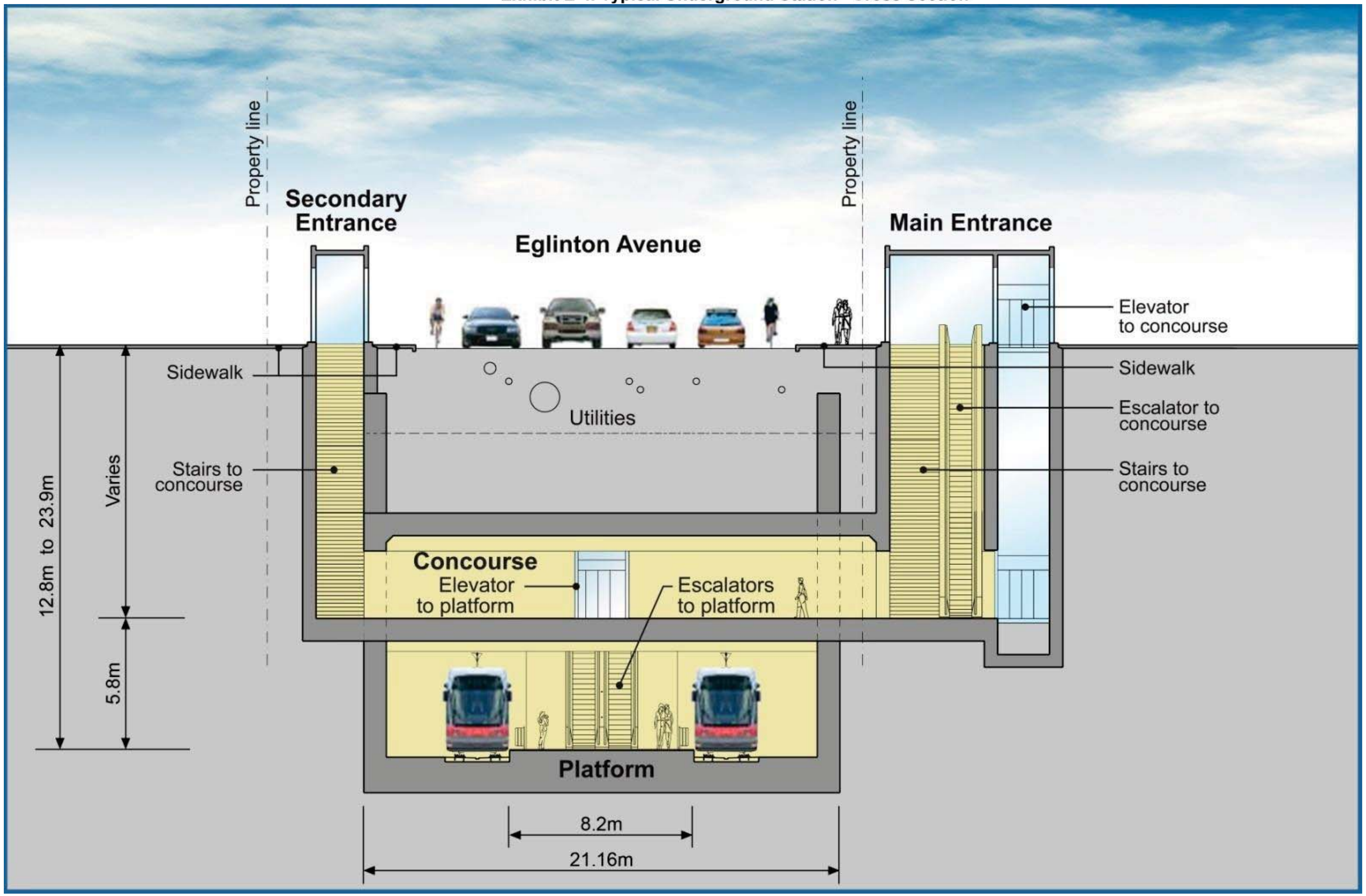
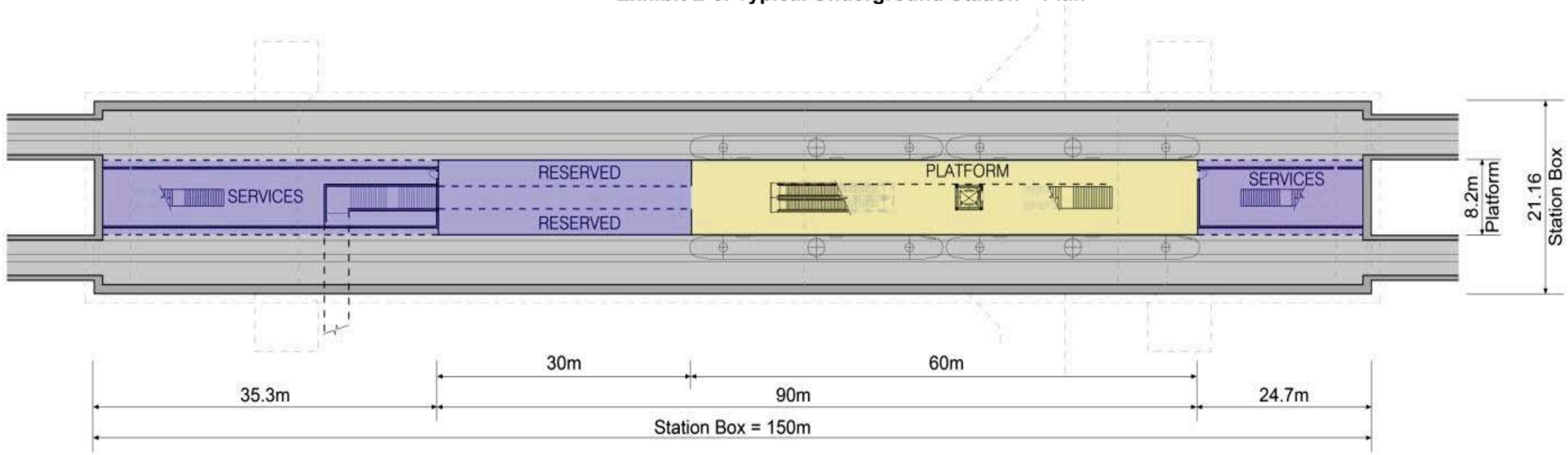
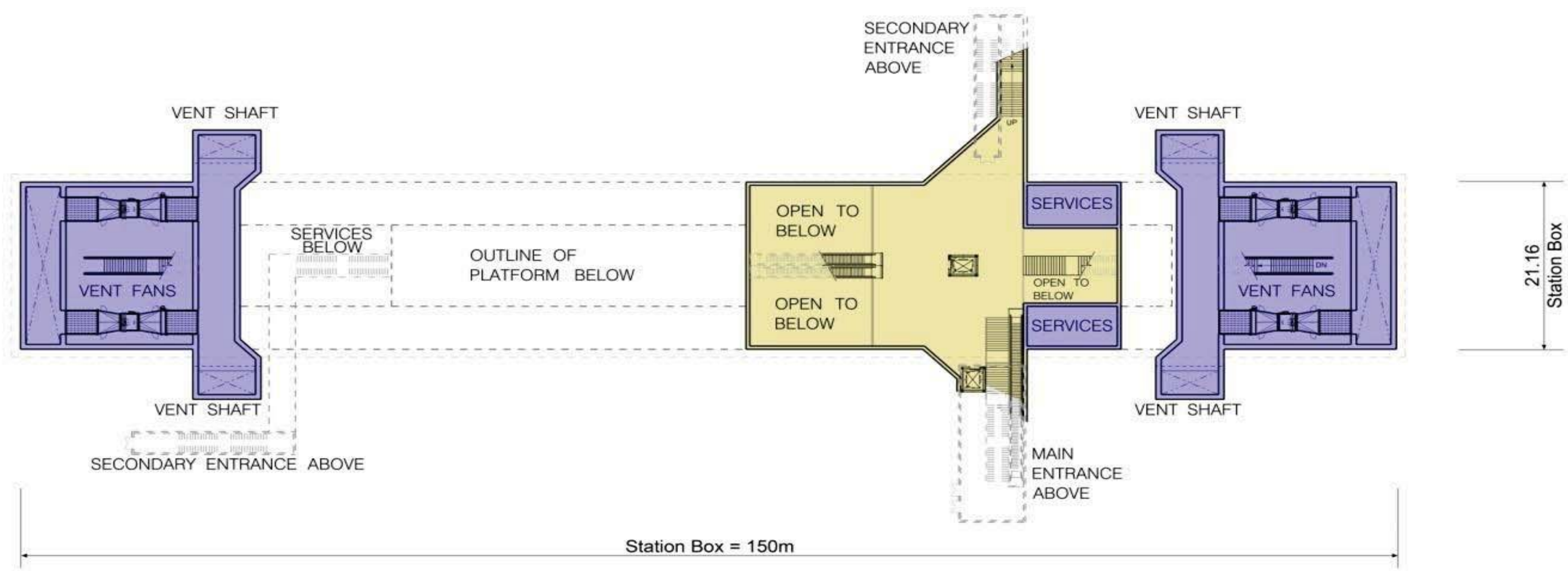


Exhibit E-5: Typical Underground Station – Plan



Station Platform



Station Concourse

Portals

Portals are the approach entrances where the LRT surface section transitions into the underground section. The west portal is currently planned west of Keele Street and the east portal is currently planned east of Brentcliffe Road. Additional portals are also located east and west of Don Mills Road to provide a grade separation with the Don Mills LRT and the Eglinton/Don Mills intersection.

Bus Terminals

Off-street bus facilities are proposed at Keele Station (4-bay bus terminal), Caledonia Station (bus loop) and Don Mills Station (7-bay bus terminal). **Exhibits E-6** and **E-7** present the layout of the two bus terminals.

Special Track Work, Emergency Exit Buildings, and Traction Power Sub-Stations

<u>Special Track Work</u>

Proposed locations for operational crossover tracks are: between Commerce Boulevard and Renforth Drive; east of Martin Grove Stop; between CNR/CPR rail line and TTC Maintenance and Storage yard; between TTC Maintenance and Storage yard and Black Creek Stop; east of Keele Station; east of Eglinton West Station; east of Eglinton Station; west of Laird Station; west of Don Mills Station; and east of Pharmacy Stop. Proposed locations for tail tracks or storage (pocket) tracks are: north of Silver Dart Stop, north of Commerce Boulevard, west of Islington Stop; east of Jane Stop; west of Keele Station; west of Eglinton West Station; west of Eglinton Station; east of Laird Station; east of Don Mills Station; and east of Ionview Stop.

<u>Emergency Exit Buildings</u>

A total of six Emergency Exit Buildings (EEBs) are proposed along the underground segment. Exhibit 8 presents the location of the EEBs. The EEBs are located between the following roads:

- Caledonia Road and Dufferin Street (EEB 1 at Little Boulevard);
- Allen Road and Bathurst Street (EEB 2 at Glen Cedar Road);
- Avenue Road and Yonge Street(EEB 3 at Eglinton Park/North Toronto Community Memorial Centre);
- Yonge Street and Mount Pleasant Road (EEB 4 at Dunfield Avenue);
- Mount Pleasant Road and Bayview Avenue (EEB 5 at Banff Road); and,
- Bayview Avenue and Laird Drive (EEB 6 at Rumsey Road).

Exhibit E-6: Don Mills Bus Terminal

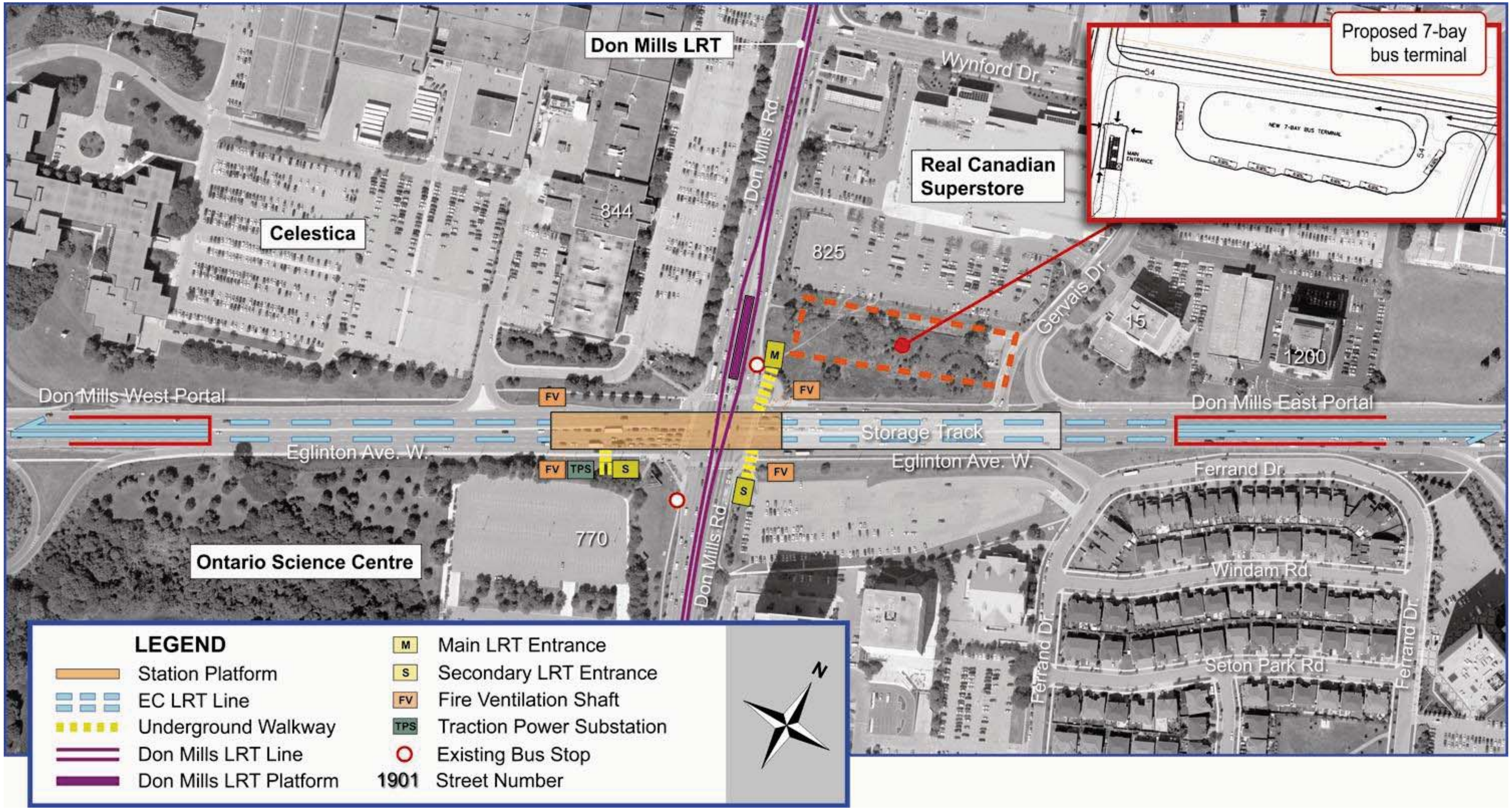


Exhibit E-7: Keele Bus Terminal

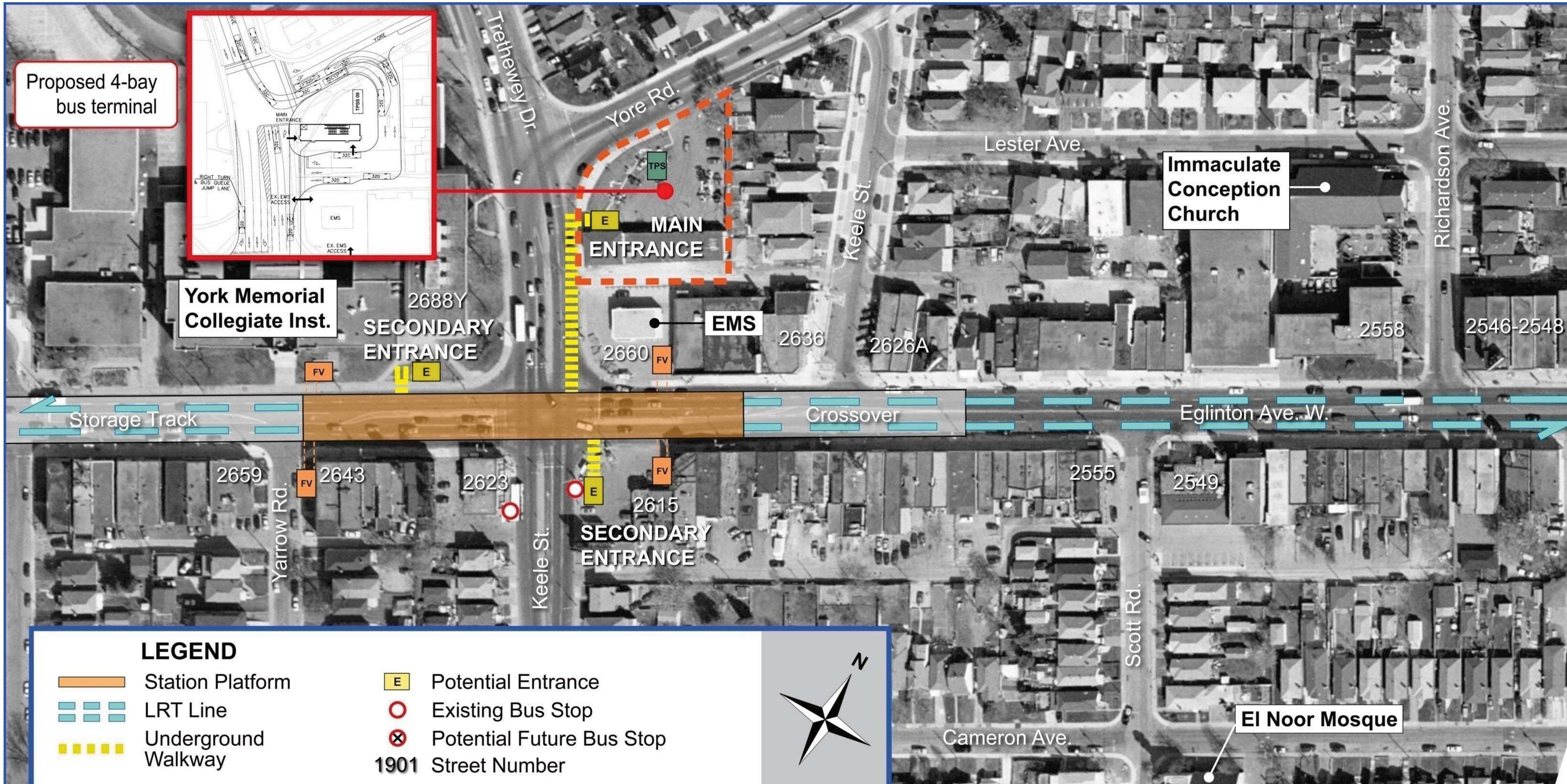


Exhibit E-8: Location of Emergency Exit Buildings (EBBs)

Traction Power Substations

Seventeen traction power substations are proposed along the Eglinton Crosstown LRT with an average of 1.5 kilometre spacing for the surface sections and 2.0 kilometre spacing for the underground sections. Requirements for traction power substations at Pearson International Airport and Kennedy Station are not included in the scope of the Environmental Project Report. **Exhibit E-9** presents the location of the traction power substations (TPSS). The proposed TPSS locations are close to the following:

- TPSS #1 - Silver Dart Stop;
- TPSS #2 - Renforth Stop;
- TPSS #3 - East Mall Stop;
- TPSS #4 - Widdicombe Hill/Lloyd Manor Stop;
- TPSS #5 - Islington Stop;
- TPSS #6 - Mulham Place Stop;
- TPSS #7- Jane Stop;
- TPSS #8 - Keele Station;
- TPSS #9 - Dufferin Station;
- TPSS #10 - Bathurst Station;
- TPSS #11 - Eglinton Station;
- TPSS #12 - Bayview Station;
- TPSS #13 - the East Portal;
- TPSS #14 - Don Mills Station;
- TPSS #15 – Wynford Stop;
- TPSS #16 – Victoria Park Stop; and,
- TPSS #17 – Warden Stop.

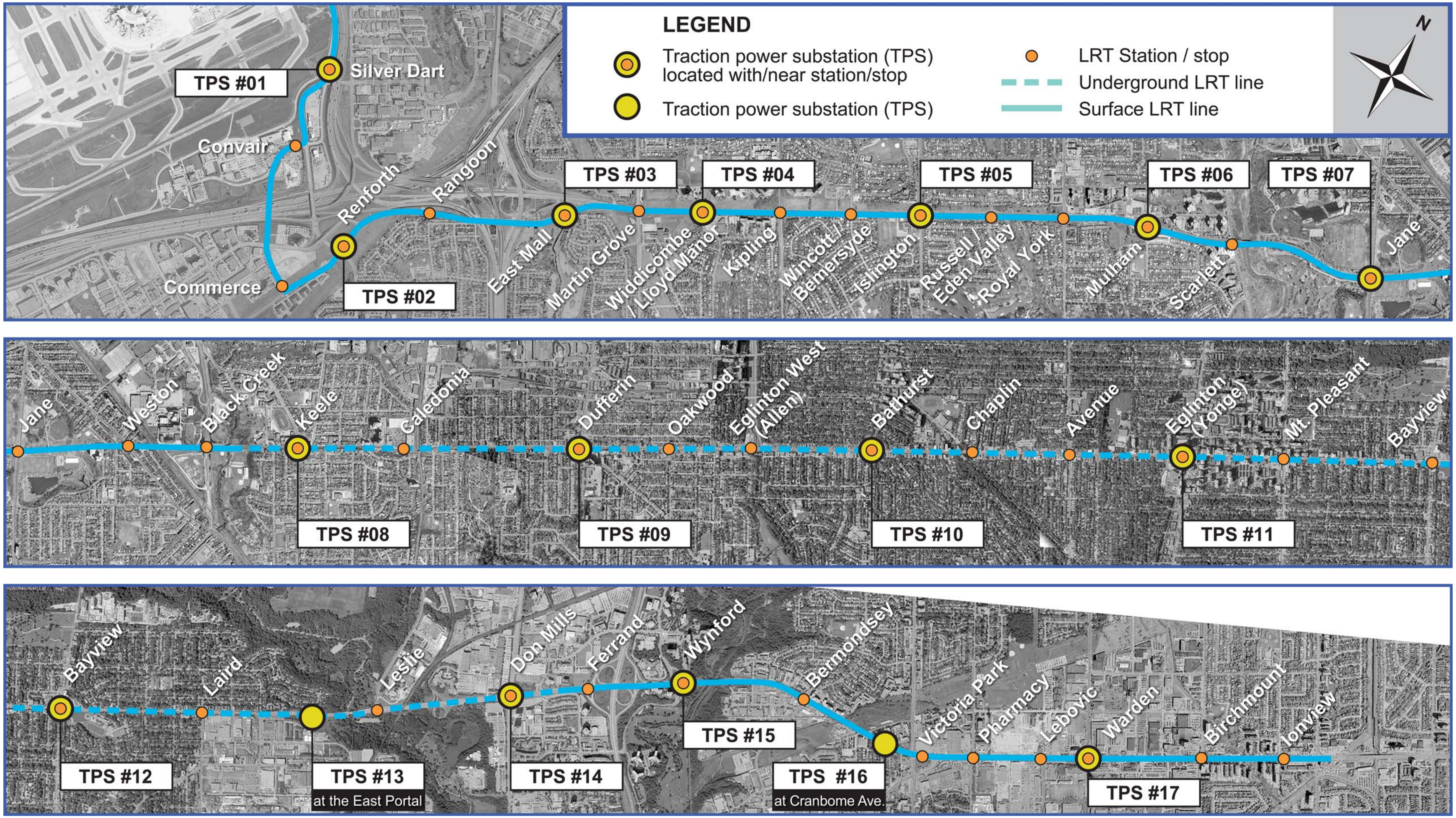
Roadway, Intersection and Bridge Modifications

Roadway Modifications

Two lanes of traffic will be maintained in each direction along Eglinton Avenue. Where two lanes of traffic in each direction currently exist from Martin Grove Road to Weston Road and from Black Creek Drive to the west portal, Eglinton Avenue will be widened by one lane in each direction to accommodate the LRT. Where three lanes of traffic currently exist from Weston Road to Black Creek Drive and Brentcliffe Road to Kennedy Road, one lane of traffic in each direction will be removed to accommodate the LRT. A second southbound lane along Commerce Boulevard from Matheson Boulevard to Eglinton Avenue will be constructed for bus only use to facilitate bus movements in the vicinity of the City of Mississauga BRT/GO Terminus at Eglinton Avenue/Commerce Boulevard intersection.

The area of Eglinton Avenue crossing under the eight bridges at Highways 427 and 27 will require further widening, since the eastbound and westbound LRT tracks will be separated to accommodate the bridge support piers between the tracks.

Exhibit E-9: Location of Traction Power Substations (TPSS)



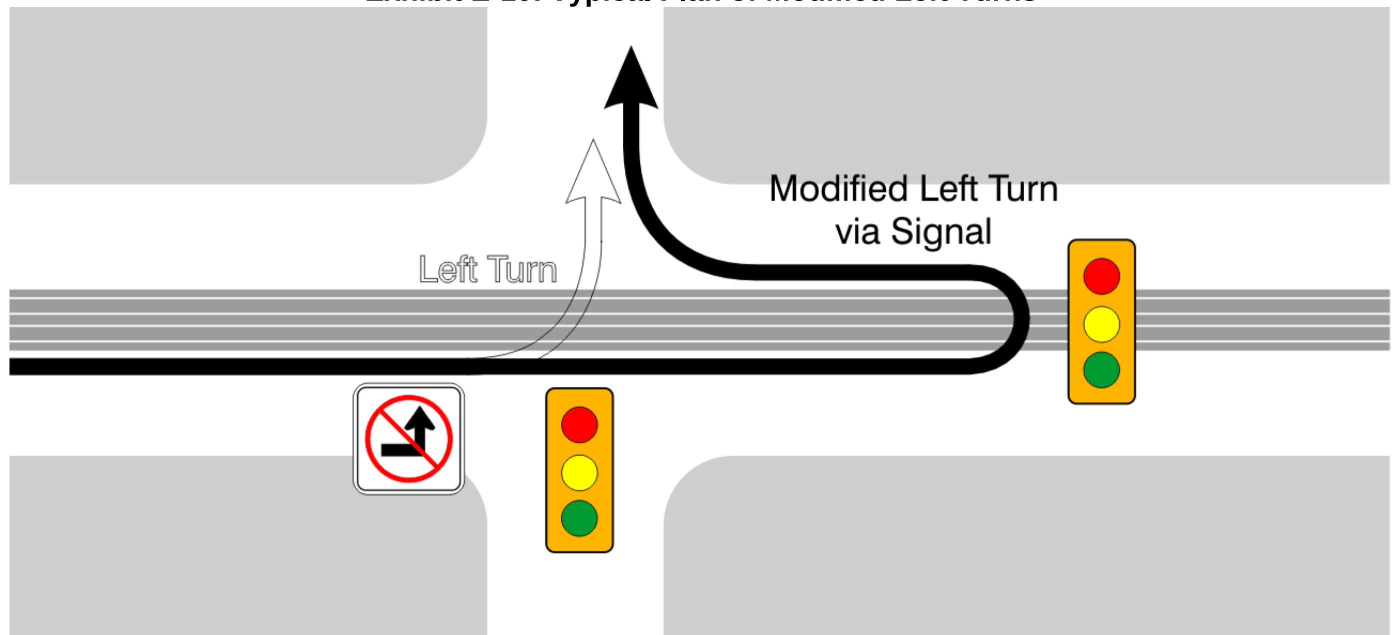
Intersection Modifications

Left turns across the LRT tracks will only be permitted at designated signalized intersections. At several other high volume signalized intersections, left turns will be prohibited and motorists will be required to travel through the intersection to the next signalized intersection to perform a "U" turn and then make a right turn on their return to the intersection Left turn access to driveways/streets located between traffic signals will be provided at a closest signalized intersection where "U" turns will be permitted to allow motorists to return to their final destination. Intersections where left turns will be prohibited are listed in **Table 1**. **Exhibit E-10** presents a typical plan describing the modified left-turns.

Table 1: Intersections with Prohibited Vehicular Left Turns

Intersecting Street	Left Turns From Eglinton to N/S Street	Left Turns From N/S Street to Eglinton
Martin Grove Road	Prohibited (Re-routed via new roads)	Permitted
Kipling Avenue	Prohibited (Re-routed via U-turn/right turn)	Permitted
Islington Avenue	Prohibited (Re-routed via U-turn/right turn)	Permitted
Royal York Road	Prohibited (Re-routed via U-turn/right turn)	Permitted
Scarlett Road	Prohibited (Re-routed via U-turn/right turn)	Permitted
Jane Street	Prohibited (Re-routed via U-turn/right turn)	Prohibited (Re-routed via U-turn/right turn)
Victoria Park Avenue	Prohibited (Re-routed via Eglinton Square)	Currently prohibited
Pharmacy Avenue	Prohibited (Re-routed via U-turn/right turn)	Prohibited (Re-routed via U-turn/right turn)
Birchmount Road	Prohibited (Re-routed via U-turn/right turn)	Permitted

Exhibit E-10: Typical Plan of Modified Left Turns



Bridge Modifications

In order to accommodate Eglinton Crosstown LRT, four bridge overpasses will require widening, varying from one to six metres on each side. One underpass, the pedestrian bridge west of Scarlett Road will be removed and replaced with a new traffic signal for surface level pedestrian crossings. The new LRT overpass over Highway 401 will be designed to accommodate double LRT tracks and maintenance access only.

Construction Methods

The Eglinton Crosstown LRT will be constructed using several methods to build the surface (at grade) and underground (underground) segments.

Surface Construction

The surface construction will follow construction methods similar to road construction. The surface section of the LRT will be constructed in stages to minimize traffic impacts during construction. A typical construction sequence for the staged construction of the LRT in the centre of the existing road entails three steps:

Step 1: Relocate street lighting and utilities, install temporary traffic signals, remove centre islands and install temporary pavement.

Step 2: Construct road widening and boulevard modifications, relocate utilities from LRT right-of-way where necessary while maintaining traffic in each direction and maintaining access to side streets and entrances.

Step 3: Construct LRT right-of-way while maintaining traffic in each direction.

Further staging may be required to relocate existing services and utilities out of the LRT right-of-way wherever affected by construction.

<u>Underground Construction</u>

Tunneling

Twin 6 metre diameter tunnels will be constructed using a tunnel boring machine (TBM) for the underground segment between Keele Street and Brentcliffe Road. Powerful circular cutting machines will drill deep below the surface with minimal disruption to traffic and business activities. Excavated material is removed by truck at the temporary staging areas in the vicinity of the portals.

Two temporary work sites to facilitate the tunnel boring operations will be required during the construction phase. One temporary work site will be located near the west portal, west of Keele Road on the south side of Eglinton Avenue. The second temporary work site will be located near the east portal, east of Brentcliffe Road, on the south side of Eglinton Avenue. These areas will be used to store and maintain heavy equipment, stockpile construction materials, store the tunnel liners, launch the tunnel boring machines, and remove and temporarily store tunneling spoils.

Cut and Cover

The cut and cover method will be used to construct stations, portals, and special track work. This method entails four steps:

Step 1: Street lighting and utility poles are relocated. Excavation is initiated. Excavation support systems are installed to shore the excavation site. Underground utilities that are in conflict are either relocated or temporarily suspended. As soon as sufficient excavation has been made, decking, either of wood or pre-cast concrete, is installed so surface activities such as roads can be temporarily reinstalled. When half of the street has been excavated and temporarily decked, the process is then conducted on the other half of the street.

Steps 2 and 3: Excavation and new construction are completed under the decking. Surface activities continue to operate on the decking.

Step 4: The station box is constructed, and the area above the tunnel is backfilled. When the finished construction is close to the surface, the temporary decking is removed and all surface amenities (e.g. roads and sidewalks) are reinstated.

The construction of at surface structures to be located immediately south or north of Eglinton Avenue, such as main and secondary entrances to underground stations; emergency exit buildings; emergency ventilation shafts; and traction power substations, will involve excavation activities outside the cut and cover construction area.

E.4. EXISTING CONDITIONS, IMPACTS ASSESSMENT AND PROPOSED MITIGATION MEASURES

This section outlines the existing natural, cultural and transportation conditions within the Eglinton Crosstown LRT corridor and identifies potential impacts and mitigation measures. **Exhibit E-11** to **Exhibit E-14** presents the existing conditions of the natural and cultural environment within the LRT corridor and **Exhibit E-15** presents the existing land uses within the corridor.

Existing Natural Environment

On a regional scale, the topography of the Eglinton Crosstown LRT study area slopes southward towards Lake Ontario. The topography of the study area varies significantly from west to east due to the incision of rivers and streams. The bedrock beneath the study area consists predominantly of blue-grey shale with some limestone, dolostone and siltstone layers or interbeds. Bedrock is expected to be deeper than the maximum depth of excavation/ tunnelling that is proposed.

The general direction of drainage and shallow groundwater flow on a local scale is expected to be towards the closest watercourse. Groundwater flow may also be influenced by utility trenches and other subsurface structures that intersect the water table and can only be confirmed by long-term groundwater monitoring data in the study area. There are several suspected former stream channels that are no longer apparent along the LRT corridor. These buried or channelized features may also be areas requiring further attention from a dewatering perspective.

Natural heritage features located in the study area include natural remnant woodlots, major valleylands, wetland pockets and cultural woodlots and meadows. There are no areas of natural and scientific interest (ANSIs), environmentally sensitive areas (ESAs) or provincially significant wetlands (PSWs) located in the study area. The most significant natural heritage features are associated with the valleylands of the Humber River, West Don River and East Don River. Additional valleyland features are associated with Mimico Creek, Black Creek, Wilson Brook and Massey Creek. The Humber River, Black Creek, West Don River, East Don River and Massey Creek directly support warmwater fish communities in the vicinity of Eglinton Avenue. Wildlife in the study area is typical of urban settings and comprises species that are tolerant of human activity.

A detailed emissions inventory for criteria air contaminants and greenhouse gas emissions based on 2004 data was prepared for the City of Toronto. These data show that mobile traffic related sources are a major component in the inventory. Mobile sources, road vehicles, account for 35% of the greenhouse gas emissions in 2004 with 74% of the emissions arising from passenger and other light vehicles. Overall, compared to other communities in southern Ontario, the Toronto area has less frequent poor air quality than Windsor, London or Waterloo; but with its higher population, Toronto has more people potentially affected by poor air quality.

Exhibit E-11: Natural and Cultural Environment – Existing Conditions

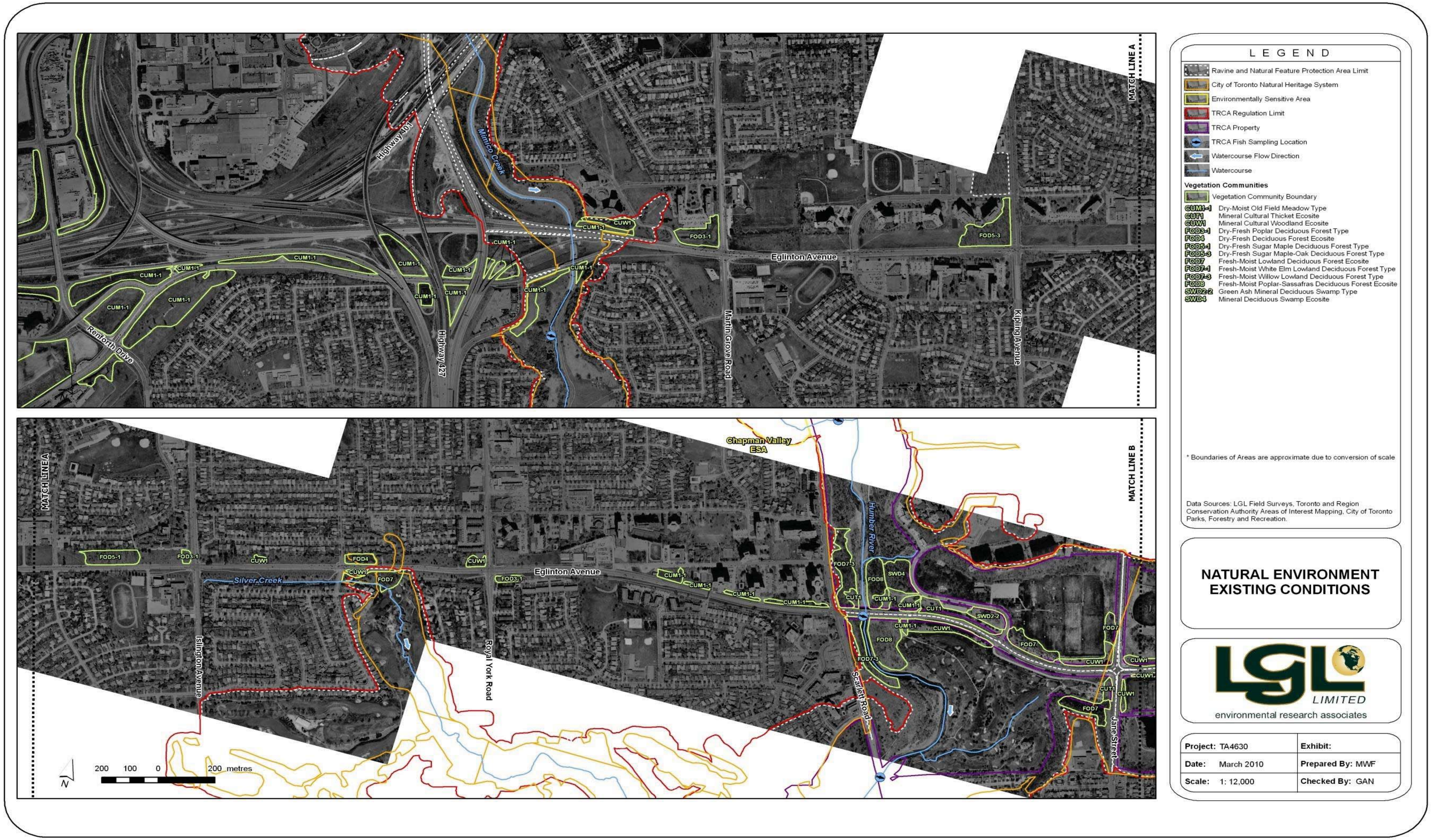


Exhibit E-12: Natural and Cultural Environment – Existing Conditions

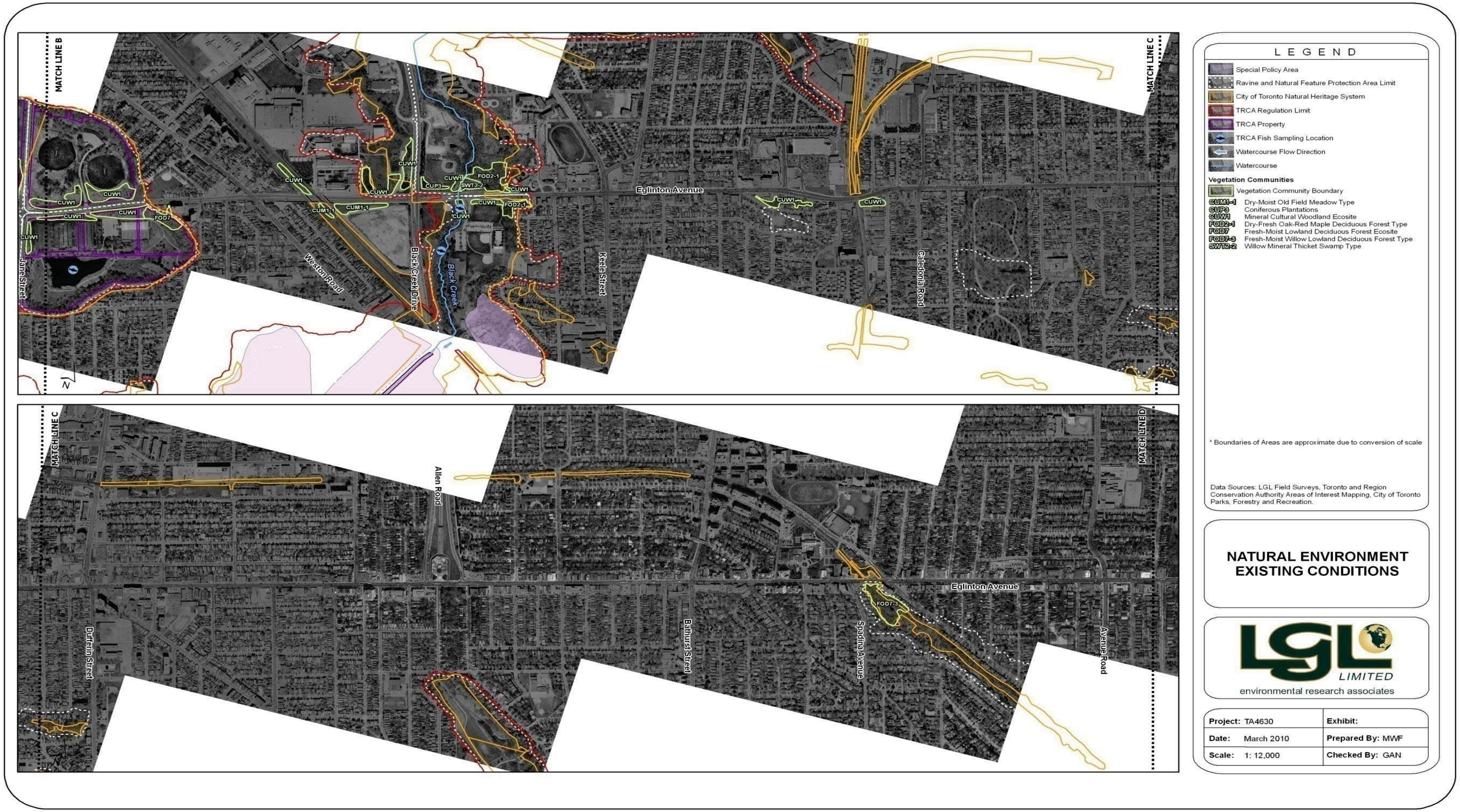


Exhibit E-13: Natural and Cultural Environment – Existing Conditions

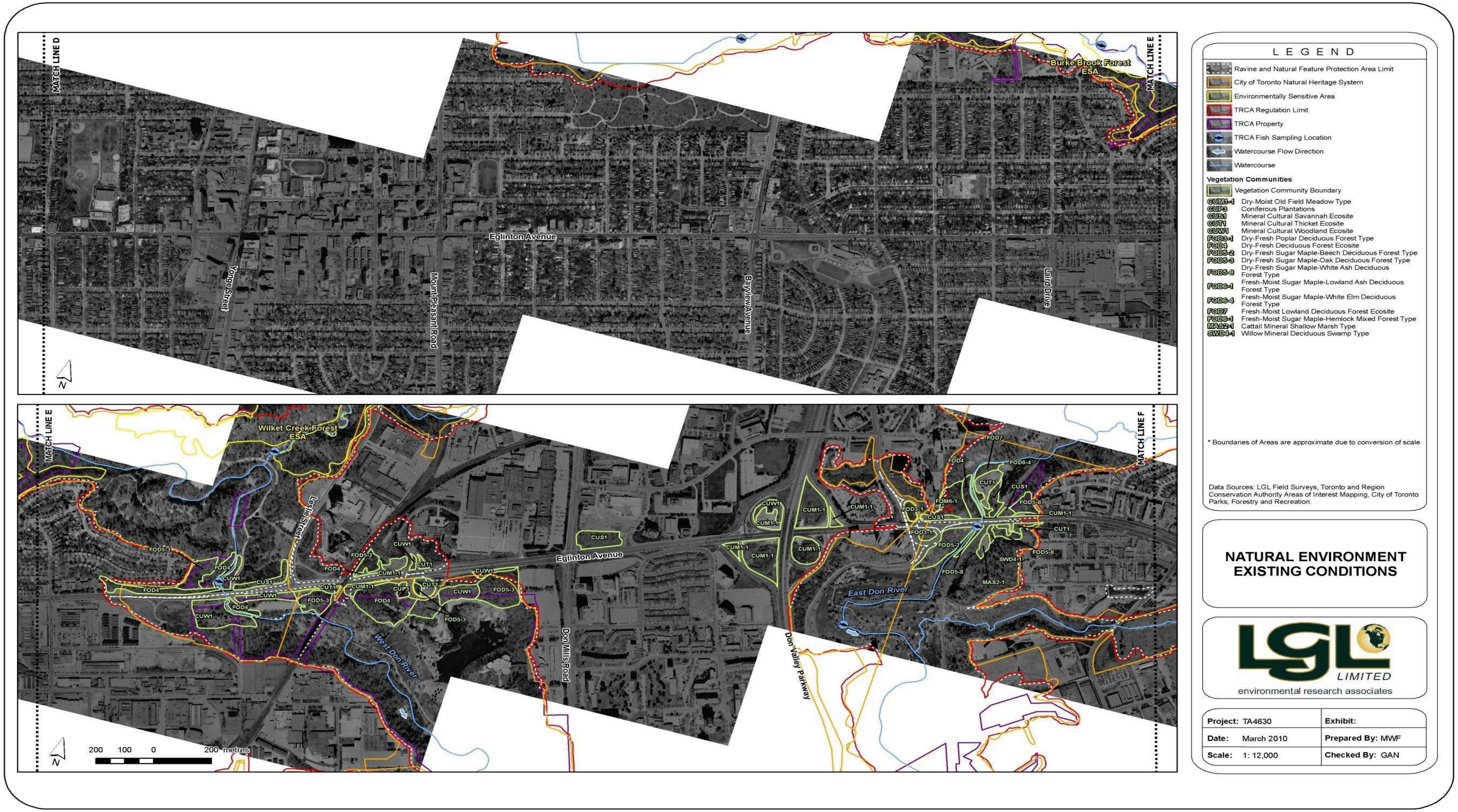
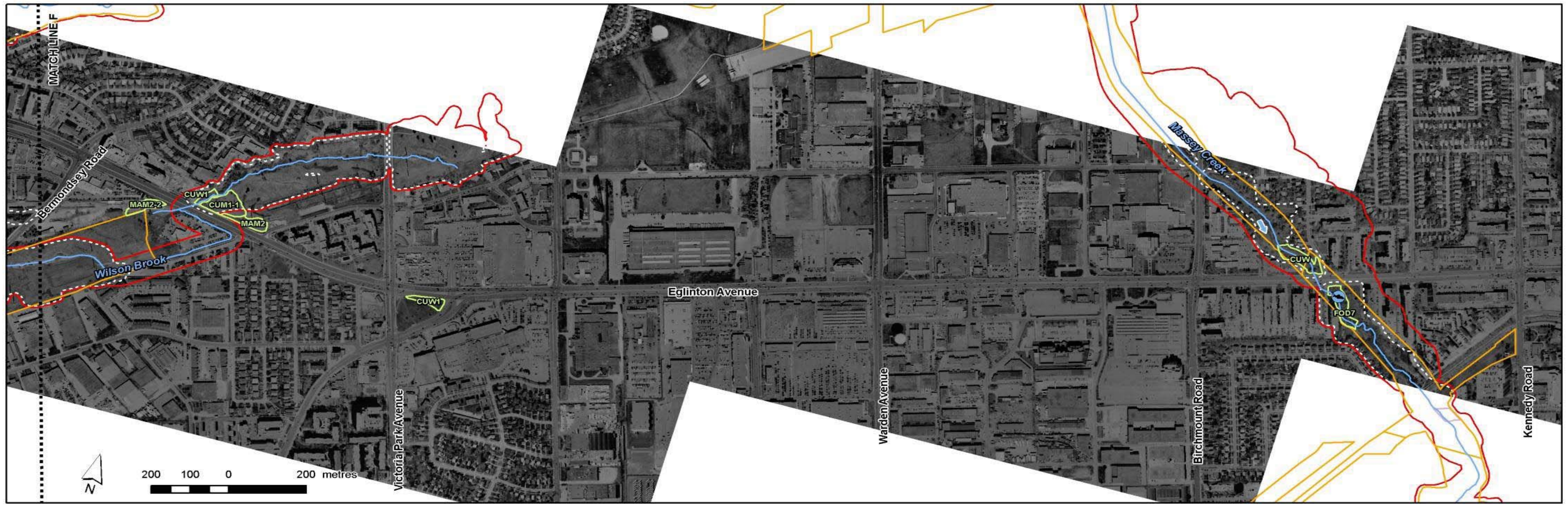


Exhibit E-14: Natural and Cultural Environment – Existing Conditions



L E G E N D

- Ravine and Natural Feature Protection Area Limit
- City of Toronto Natural Heritage System
- TRCA Regulation Limit
- TRCA Fish Sampling Location
- Watercourse Flow Direction
- Watercourse

Vegetation Communities

- Vegetation Community Boundary

CUM1-1	Dry-Moist Old Field Meadow Type
CUW	Cultural Woodland
CUW1	Mineral Cultural Woodland Ecosite
FOD7	Fresh-Moist Lowland Deciduous Forest Ecosite
MAM2	Mineral Meadow Marsh Ecosite
MAM2-2	Reed-canary Grass Mineral Meadow Marsh Type

* Boundaries of Areas are approximate due to conversion of scale

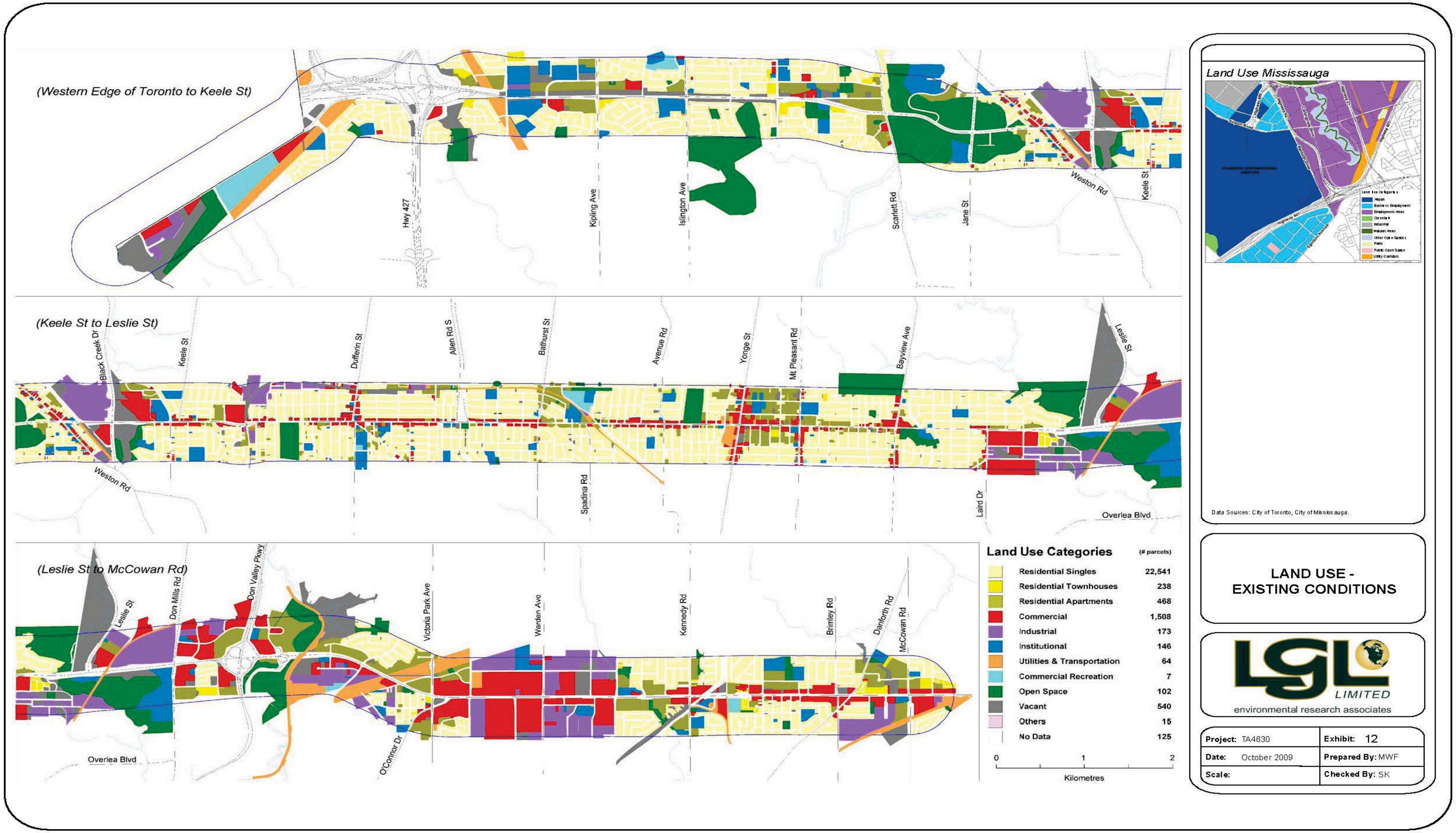
Data Sources: LGL Field Surveys, Toronto and Region Conservation Authority Areas of Interest Mapping, City of Toronto Parks, Forestry and Recreation.

NATURAL ENVIRONMENT EXISTING CONDITIONS

LGL LIMITED
environmental research associates

Project: TA4630	**Exhibit:**
Date: March 2010	**Prepared By:** MWF
Scale: 1: 12,000	**Checked By:** GAN

Exhibit E-15: Existing Land Uses



The average daytime measured sound levels along Eglinton Avenue range from 69 to 73 dBA at a distance of 14 to 20 metres from centreline. At the same setbacks, the average night time sound levels range from 63 to 67 dBA. One vibration sensitive operator has been identified to date, Celestica, located at Don Mills Road and Eglinton Avenue. This business uses electron beam microscopes and other potentially vibration-sensitive equipment.

Existing Socio-Economic Environment

The predominant land uses along the Eglinton Crosstown LRT corridor are high-rise residential and commercial with greater concentration of: office and industrial use on the west; low-rise residential between Bayview Avenue and Laird Drive; commercial and industrial between Victoria Park Avenue and Birchmount Road. Institutional uses (e.g. schools and libraries) and Open Space uses (e.g. parks and recreation centres) are found distributed throughout the corridor.

Areas of archaeological potential were identified during Stage 1 Archaeological Assessment. However, no significant archaeological artifacts were discovered during the Stage 2 Archaeological Assessment. One cultural heritage landscape, the Richview Cemetery, is located on the south side of Eglinton Avenue between the lanes of Highway 427. Several other built heritage features and cultural heritage landscapes were found along the LRT corridor.

A review of historical records identified several areas to have known soil or groundwater impacts from previous and current operations:

- Eglinton Avenue and Black Creek Drive, Former Kodak Manufacturing Plant (now vacant);
- Eglinton Avenue and Gabian Way (east of Keele Street);
- Eglinton Avenue, east of Allen Road;
- Eglinton Avenue and Yonge Street; and
- TTC Yard, Bus Terminal and Subway Station.

Two intersections have or had a high concentration of gas stations and are consequently regarded as having high potential for environmental impact:

- Eglinton Avenue and Avenue Road; and
- Eglinton Avenue and Oriole Parkway, west of Yonge Street.

There are a number of large diameter utilities and pipelines within the road rights-of-way throughout the extent of the LRT corridor. There are also numerous large chambers throughout, with the majority located at the major intersections. In addition, there is an extensive system of minor storm sewers and combination storm/sanitary sewers within the LRT corridor. Similarly, there are watermains located along Eglinton Avenue from 150 mm diameter up to 600 mm diameter.

Along the north and south sides of Eglinton Avenue, there are Hydro towers west of Martin Grove Road and west of the Highway 427 overpass. Toronto Hydro has poles located along the roads within the LRT corridor and has an extensive system of buried conduit throughout, with large underground chambers at numerous major intersections. Hydro One Networks Inc (Ontario Hydro) has a 115 kV transmission line crossing Eglinton Avenue just east of Yonge Street. Rogers and Telus utility plants are located in shared buried conduit and Enbridge Gas has 100 millimetres and 150 millimetres gas main throughout the LRT corridor. There are also gas mains crossing Eglinton Avenue at various intersections. Bell Canada has an extensive conduit system along Eglinton Avenue, with double conduit systems at a number of locations as well as crossing ducts at intersections.

Existing Transportation System

A number of TTC bus routes and Mississauga Transit bus routes serve along and intersect the Eglinton Crosstown LRT corridor. Also, two TTC subway lines cross Eglinton Avenue with subway stations located on Eglinton Avenue. Three GO rail services, GO Georgetown, GO Barrie and GO Richmond Hill also cross Eglinton Avenue with no existing stations on Eglinton Avenue.

Most Eglinton Avenue intersections along the LRT corridor operate over their overall respective capacities during the weekday AM peak hour and PM peak hour. The Don Valley Parkway east ramp terminal intersection operates near to its capacity with a high delay during the weekday AM peak hour and operates over capacity during the weekday PM peak hour.

The Humber River, West Don River and East Don River are considered navigable, while the navigability of Mimico Creek, Black Creek, Wilson Brook and Massey Creek are being confirmed with Transport Canada.

Impact Assessment and Mitigation

The environmental effects for the Eglinton Crosstown LRT are classified as follows:

- Displacement of Existing Features by the Eglinton Crosstown LRT Facilities – Permanent impacts to existing features located within the footprint of the Eglinton Crosstown LRT as they are physically altered to accommodate the Eglinton Crosstown LRT facility.
- Construction Impacts – Temporary impacts, occurring only during construction activities.
- Operations and Maintenance Impacts – Ongoing and long-term impacts occurring during operations and maintenance activities.

These impacts and proposed measures to mitigate any negative effects are summarized below.

<u>Displacement of Existing Features by the Eglinton Crosstown LRT Facilities</u>

The Eglinton Crosstown LRT will result in impacts on private property, including businesses and residences. A total of 88 permanent takings (43 full, 45 partial) are required to accommodate road widening, station entrances, emergency exit buildings and other surface buildings.

The City of Toronto (on behalf of TTC) would acquire these properties and provide compensation through either a negotiated settlement or, in the event that expropriation is required, in accordance with the *Ontario Expropriation Act*.

TTC and the City of Toronto are committed to the following process/principles for these impacted properties:

- Early notification to property owners;
- Ongoing meetings and discussions with property owners concerning property impacts to minimize property takings and identify mitigation measures;
- Further investigations of alternative site locations and configurations for surface facilities; and
- Uniform and equitable treatment, in accordance with the *Ontario Expropriation Act*.

TTC and the City of Toronto will conduct a Property Protection Study during the design of the Eglinton Crosstown LRT, which will determine detailed property requirements, including temporary construction easements. The acquisition of these properties will follow the same principles described above in this section.

Other features located within the footprint of the Eglinton Crosstown LRT that may be affected include:

- Five parks/parkettes including St. Hilda's parkette, Ben Nobleman Park, Chaplin parkette, North Toronto Community Centre (located within Eglinton Park) and Howard Talbot Park will be affected by fire ventilation shafts, station entrances, emergency exit buildings or traction power substations. The preferred location, configuration and design of these LRT facilities will be determined in consultation with City of Toronto Parks, Forestry and Recreation division.
- Approximately 1.357 hectares of vegetation communities will be displaced by road and bridge improvements. The impacts on vegetation will be mitigated to the extent possible through avoidance, minimizing the extent of vegetation removals, protecting vegetation to remain and restoring vegetation that is removed.
- Built heritage features (including buildings over 40 years of age) and cultural landscapes will be displaced or altered at Weston Road, Keele Street, Oakwood Avenue, Mount Pleasant Road and Bayview Avenue. Sympathetic alterations of buildings and landscapes, or documentation prior to removal, will be conducted in accordance with Ministry of Culture, City of Toronto Heritage Preservation Services, and City of Mississauga Local Municipal Heritage Committee requirements.
- TRCA regulated areas, including Mimico Creek, Humber River, Black Creek, Silver Creek, West Don River, East Don River, Wilson Brook and Massey Creek will be affected by Eglinton Crosstown LRT facilities. Eglinton Crosstown LRT facilities will be designed and located, where feasible, to minimize effects on flooding. A permit under the Ontario Regulation 166/06 – Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses will be secured from the Toronto and Region Conservation Authority.
- Six properties have known soil or groundwater contamination and three properties have suspected soil or groundwater contamination. A Phase 1 and 2 Environmental Site Assessment will be conducted for these properties if acquisition is required. Contaminated soils and groundwater will be managed in accordance with provincial legislation and regulations.
- A number of large diameter utilities and pipelines conflict with the Eglinton Crosstown LRT. These utilities will be relocated prior to construction, where necessary. The location of all plant, potential conflicts and the relocation strategy will be confirmed with service providers.
- No known archaeological sites will be displaced by Eglinton Crosstown LRT facilities.
- No harmful alteration of fish habitat is anticipated from the Eglinton Crosstown LRT facilities.

<u>Construction Impacts</u>

The runningway will be tunnelled through underground sections. As a result, impacts are predicted to be negligible. Stations and special track work areas will be constructed by cut-and-cover method. Station entrances, emergency exit buildings, emergency ventilation shafts, and traction power substations will be constructed following standard at surface construction methods with excavation activities for connection to the underground sections. Bridge modifications will not involve in-water construction work.

Measures will be implemented during construction to avoid, minimize or mitigate adverse environmental impacts including:

- Erosion and sedimentation control measures will be implemented to prevent the potential migration of sediments off site;
- Best management practices will be implemented to prevent the potential release of dust and other airborne pollutants off site;
- Good housekeeping practices will be implemented to prevent the potential migration of mud and litter off site;
- The temporary work site located at the west portal will be flood-proofed to prevent the potential release of any deleterious substance to Black Creek during a regional storm event;
- Underpinning will be implemented to minimize the potential for building settlement/structural stress due to tunnelling, piling and dewatering, where necessary;
- The soccer field and surrounding portions of Keelesdale Park that will be used as a temporary work site will be re-instated following construction;
- Traffic management will be implemented to reduce the potential for disruption of existing vehicle circulation patterns due to road and lane closures and temporary traffic detours and diversions;
- Bike and pedestrian management will be implemented to reduce the potential for disruption of existing pedestrian circulation and safety due to road diversions and detours;
- Decking will be installed at cut-and-cover excavations to minimize the duration of disturbance;
- Truck haul of construction materials, equipment and tunnelling spoils will be limited to major access roads to avoid neighbourhoods;
- Noise and vibration control measures will be implemented to prevent the potential disturbance from construction equipment and activities to nearby receptors; and
- Impacts to local business operations due to:
- modified vehicle and pedestrian circulation patterns;
- reduced visibility of store fronts and signs; reduction in on-street parking;
- less convenient access to off-street parking; and,
- customer inconvenience due to temporary construction debris, noise and dust; will be managed as required.
- Measures will be implemented during construction to maintain navigation clearances and safety for vessels.

Mitigation methods will include detailed engineering studies and ongoing management and monitoring of construction activities.

<u>Operations and Maintenance Impacts</u>

Measures will be implemented during operations and maintenance to avoid, minimize or mitigate adverse effects including:

- Stormwater run-off from Eglinton Crosstown LRT facilities will be treated using stormwater management practices;

- Noise generated by LRT vehicles and by bus terminal operations will be attenuated, if required, to meet MOE standards;
- Vibration generated by LRT vehicles and by bus terminal operations will be attenuated, if required, to meet MOE standards;
- Air emissions generated by bus terminal operations will be attenuated, if required, to meet MOE standards;
- Traction power stray current will be controlled using isolated and insulated power supplies; and,
- Traffic safety and operations will be maintained through the use of right in-right out entrances, road diversion at Martin Grove Road, left hand turns at minor intersections and provision for U-turns in the vicinity of major intersections where left hand turns will be removed.

E.5. CONSULTATION PROCESS

A consultation program was conducted under the Transit Project Assessment process as specified under Ontario Regulation 231/08. Key components of the consultation program included consultation with agencies, the public and the aboriginal community, and public review of the Environmental Project Report.

Consultation with Agencies

The following stakeholder agencies were actively engaged (through meetings and/or email and letter correspondence) during the Transit Project Assessment process:

- City of Toronto (City Planning, Emergency Medical Services, Fire Services, Heritage Preservation Services, Parks Forestry and Recreation, Police Services, Transportation)
- Greater Toronto Airports Authority
- Hydro One
- Metrolinx
- Ministry of the Environment (Environmental Assessment Approvals Branch, Noise and Vibration Section; Central Region, Air Quality, Water Resources and Technical Support Sections, Toronto District Office, Halton-Peel Regional Office)
- Ministry of Transportation
- City of Mississauga
- Toronto District School Board
- Toronto Parking Authority
- Toronto and Region Conservation Authority
- GO Transit

Additional consultation with external agencies included notification of Public Open Houses #1, #2, #2A and 3 through e-mail messages. Each external agency was also sent a Notice of Commencement via e-mail message. Furthermore, a stakeholder agency workshop was held on January 8th, 2010 to solicit comments from government review and technical agencies in advance of the issuance of the draft Environmental Project Report. Table 2 shows the Federal and Provincial agencies that were notified.

Table 2: Contact with External Agencies

Federal Agency	**Provincial Agency**
Canadian Environmental Assessment Agency Canadian Transportation Agency Indian and Northern Affairs Canada Department of Canadian Heritage Environment Canada Department of Fisheries and Oceans Infrastructure Canada Industry Canada Health Canada Transport Canada Transport Canada - Ontario Region	Ministry of Aboriginal Affairs Ministry of Agriculture, Food and Rural Affairs Ministry of Citizenship and Immigration Ministry of Culture Ministry of Municipal Affairs and Housing Ministry of Natural Resources Ministry of Public Infrastructure Renewal Ministry of the Attorney General Ministry of Tourism and Recreation Ontario Realty Corporation Ministry of Government and Consumer Services Ministry of Education Ministry of Community and Social Services
Utilities	**Transportation Stakeholders**
Bell Canada Enbridge Gas Distribution Enbridge Pipelines Rogers Cable Sarnia Products Pipeline Company, Inc. Sun-Canadian Pipeline Company, Inc. Toronto Hydro Trans-Northern Pipeline	Canadian National Railway Canadian Pacific Railway VIA Rail Toronto Cycling Committee Toronto Pedestrian Committee **Other Stakeholder** Conseil Scolaire de district Catholique Centre-Sud

Consultation with the Public

The public consultation process included:

- three rounds of public open houses;
- formal notices in the Toronto Star, City Centre Mirror, North York Mirror, East York Mirror, Etobicoke Guardian and Scarborough Mirror;
- bulk mailings to local residents to announce the open houses;
- mailings to BIAs and ratepayers groups;
- a project website;
- dedicated 24/7 phone line (416-392-6900);
- dedicated fax line (416-392-2971);
- dedicated TTY line (416-397-0831);
- dedicated e-mail address (eglintontransit@toronto.ca);
- dedicated postal address through the City’s Public Consultation Unit; and

- Notice of Commencement.

Public open house #1 was held in six locations on August 14, 19, 25, 27 and September 4 and 22, 2008. Public open house #2 was held in six locations on June 15, 17, 18, 23, 24 and July 29, 2009. Another public open house (#2A) was held on September 2, 2009 at the Etobicoke Olympium specific to the extension of the Eglinton Crosstown LRT to Pearson International Airport. A total of approximately 1,700 persons have attended public open houses held to date. The third round of public open houses was held on November 23, 24, 25, 26 and December 2, 8 and 10, 2009.

A total of 691 persons attended public open house #1. A total of 904 persons attended public open house #2. A total of 139 persons attended public open house #2A and a total of 860 persons attended public open house #3.

Public notices were mailed to 73,000 properties across the study area via Canada Post bulk mail delivery on July 22nd, 2008 to inform residents of public open house #1. A similar number of notices were distributed by bulk mail the week of May 25, 2009 to inform area residents of public open house #2 and the week of November 11, 1009 to inform area residents of public open house #3.

Address mail was sent to local Business Improvement Area (BIA) and ratepayers group representatives prior to each public open house. Address mail was also sent to all members of the public who signed up for the project mailing list prior to public open house #2. Address mail was also sent to all landowners for whom potential property impacts were identified prior to public open house #2.

The specific Eglinton Crosstown LRT webpage was created on July 15, 2008 at: http://www.toronto.ca/involved/projects/eglinton_crosstown_lrt/index.htm. Major links to the page were provided from both www.toronto.ca/involved and www.toronto.ca/transitcity.
Notice of Commencement under Ontario Regulation 231/08 was issued on November 16, 2009 and appeared in the Toronto Star, City Centre Mirror, North York Mirror, East York Mirror, Etobicoke Guardian and Scarborough Mirror.

Consultation with Aboriginal Communities

As per the City of Toronto and Indian and Northern Affairs Canada (INAC) protocol for First Nations consultation for EAs, INAC Specific Claims, Litigation Management and Resolution, and Comprehensive Claims are required to be notified of all of EAs conducted by the City of Toronto and no written response is expected unless there are issues with the project as proposed (Note: none have be identified to date).

The aboriginal consultation process included notifying the following of public open houses #1, #2, #2A and #3 and the Notice of Commencement:

- INAC Specific Claims;
- INAC Litigation Management and Resolution;
- INAC Comprehensive Claims;
- Ontario Ministry of Aboriginal Affairs; and
- Mississaugas of the New Credit First Nation.

Following recent guidance received from the Ministry of Environment, Aboriginal Consultation process, the bands involved in the Williams Treaty were notified of public open house #3 and the Notice of Commencement individually.

E.6. COMMITMENTS TO FUTURE WORK

During the Transit Project Assessment, the TTC and the City of Toronto have worked closely with key stakeholders to address and resolve all issues or concerns identified. However, not all issues can be addressed within the context of a Transit Project Assessment since the design of the Eglinton Crosstown LRT has been prepared at a conceptual level and further details are required to finalize property requirements, planning initiatives, construction issues and permits/approvals. The following sections present the TTC's and City of Toronto's commitments to future action during preliminary and detail design.

Consultations

The TTC will consult with the public, property owners and stakeholder agencies (including emergency service providers) during the design of the Eglinton Crosstown LRT alignment, stops/stations, bus terminals and ancillary facilities. Specifically, the TTC will:

a) Develop a public consultation plan, which will include a strategy for public participation during design and addressing community issues/concerns during construction of design; and

b) Consult with City of Toronto emergency service providers (including fire, police and emergency medical services) on the design of the surface LRT stops and runningway.

Property Acquisition

The City of Toronto and the TTC will proceed with property acquisition (including permanent property requirements and temporary construction easements) as follows:

a) The TTC will conduct a Property Protection Study during the early stages of the design;

b) The City of Toronto and the TTC will continue property negotiations with the Greater Toronto Airports Authority (Pearson International Airport lands), Canadian National Railways, the Ministry of Transportation, Hydro One Networks Inc., Ontario Realty Corporation, the Toronto and Region Conservation Authority, the City of Mississauga, the Toronto District School and the Toronto Catholic District School Board for publicly-owned property;

c) For privately-owned properties within the City of Toronto, the City of Toronto will acquire property by negotiation or expropriation, as required; and

d) For privately-owned properties located within the City of Mississauga (west of Renforth Drive), the City of Toronto will secure the required property interests by negotiation or expropriation as required and will coordinate the property acquistion activities with the City of Mississauga.

Planning and Design Initiatives

The TTC, City of Toronto and the City of Mississauga will undertake tthe following planning and design initiatives:

a) The TTC will work with the City of Toronto to ensure that selected locations for station entrances, vent shafts, traction power substations (and Emergency Exit Buildings) meet established urban design and community planning policies and guidelines, limit impact, and provide opportunities for enhancements of the sites and pedestrian access;

b) The TTC will work with the City of Toronto and the City of Mississauga to ensure that short- and long-term cycling amenities are incorporated into the Eglinton Crosstown LRT facility designs, in accordance with prevailing City policies and design standards;

c) The TTC and the City will "conduct an early planning review of the Eglinton/Oakwood station node, where the Toronto Parking Authority is currently exploring a joint venture development" (refer to Section 1.8);

d) The TTC wil incorporate City of Toronto and City of Mississauga urban design criteria into the design of Eglinton Crosstown LRT facilities. Specifically, the TTC and the City of Toronto will undertake an Urban Design Study to identify characteristics of the existing and planned context along the corridor;

e) The TTC will work with the City of Toronto and the City of Mississauga to ensure that the pedestrian environment at surface stops and underground stations meets established urban design and community planning policies and guidelines;

f) The City of Toronto and the TTC will work with the Greater Toronto Airports Authority (GTAA) to select a preferred alignment and stop(s) at Pearson International Airport as part of a special study;

g) The TTC will complete a separate Transit Project Assessment, under the Scarborough RT Conversion and Extension Project, to confirm the alignment of the Eglinton Crosstown LRT from the intersection of Kennedy Road into Kennedy Station;

h) The TTC will work with Metrolinx to ensure that appropriate interface opportunities with GO Transit rail lines are protected for in the vicinity of Black Creek Drive/Weston Road, Caledonia Road and Leslie Street;

i) The TTC and the City of Toronto will conduct further traffic analyses for nine key intersections where left turn prohbitions are to be implemented (Martin Grove Road, Kipling Avenue, Islington Avenue, Royal York Road, Scarlett Road, Jane Street, Victoria Park Avenue, Pharmacy Avenue and Birchmount Road) to support fast and reliable LRT service and to encourage transit-oriented development in the Eglinton Avenue corridor;

j) The TTC will implement public art in accordance with prevailing TTC Corporate Policy; and

k) An amendment to the Mississauga Official Plan will be required to include a rapid transit corridor from Eglinton Avenue West and Commerce Boulevard to Pearson International Airport via Commerce Boulevard, Convair Drive and Silver Dart Drive.

l) The TTC will explore opportunities to provide coniferous vegetation along the property line between the Keele Street Bus Terminal and residential properties to minimize potential off-site air quality impacts.

Construction Issues

The TTC will conduct further research and analysis for the construction of the Eglinton Crosstown LRT, including, but not limited to the following activities:

a) Prepare a monitoring plan in accordance with subsection 9.2.8 of Ontario Regulation 231/08 to verify the effectiveness of mitigation measures;

b) Include noise, vibration and air quality monitoring and mitigation measures and construction site maintenance/upkeep requirements in construction contract documents;

c) Develop traffic, parking, transit, cycling and pedestrian management strategies to be included in construction contract documents;

d) Analyse cut and cover construction sites further with the objective to minimize impacts including: reducing width of station box construction by refinement of station platform width and tunnel diameter; alternate methods of excavation support for cut and cover locations; use of mining methods at critical locations; and development of comprehensive pedestrian and traffic management plans;

e) Develop utility, pipeline and municipal servicing relocation plans with service providers (including but not limited to Bell Canada, Enbridge Gas Distribution, Trans-Northern Pipelines, Rogers Cable, Sun-Canadian Pipelines, Toronto Hydro, Toronto Water, Enersource and the Region of Peel;

f) Develop emergency response plans with emergency service providers to maintain fire, police and emergency medical services during construction;

g) Prepare and implement arborist reports, tree protection plans, edge management and streetscape plans;

h) In consultation with TRCA, City of Toronto and City of Mississauga, determine areas where compensation for vegetation loss will be required; determine quantity and type of species to be used; and, identify sites where restoration efforts would be maximized;

i) Undertake Designated Substances Surveys for any buildings or structures which require demolition and to reflect the findings in construction contract documents;

j) Develop procedures for disposal of excavated materials, including excess soils, in accordance with Ministry of the Environment requirements;

k) Prepare and implement a Soil and Groundwater Management Strategy, including water treatment methods, which results in discharge water quality complying with prevailing TRCA and City of Toronto water guidelines and requirements; and contaminated soils management, in accordance with environmental legislation, regulations and guidelines;

l) Prepare an erosion and sedimentation control plan, which complies with prevailing TRCA, City of Toronto and City of Mississauga water guidelines and requirements;

m) Undertake buildings, structures, and railway protection and monitoring;

n) Prepare Cultural Heritage Evaluation Reports and/or undertake Heritage Impact Assessments at select sites to address Ministry of Culture, City of Toronto Heritage Preservation Services and City of Mississauga Local Municipal Heritage Committee requirements. In the City of Toronto, cultural heritage resources of "heritage interest" but not on the Municipal Register, will be screened to assess local significance and whter to proceed through to the Heritage Impact Assessment process.;

o) Undertake stray current protection (if applicable) and monitoring for pipelines and other utilities;

p) Manage brownfield sites in accordance with Ontario Regulation 153/04 and Ontario Regulation 511/09 as it may be amended from time to time;

q) Conduct a Phase 1 and 2 Environmental Site Assessment for any areas of existing contamination prior to property acquisition for the Eglinton Crosstown LRT and consult with MOE as appropriate;

r) Conduct a Stage 2 archaeological assessment for properties with archaeological potential that could not be assessed during the Transit Project Assessment; and

s) For lands under TRCA ownership, conduct archaeological investigations in accordance with TRCA and Ministry of Culture requirements.

Permits and Approvals

The TTC will secure necessary permits and approvals for the implementation of the Eglinton Crosstown LRT, including, but not limited to:

a) Planning approvals (including Site Plan Approval) for all above-grade structures and facilities (through the City of Toronto or the City of Mississauga);

b) Park access permits (through the City of Toronto) for access to parks for construction and staging activities;

c) Building permits for the stations, emergency exit buildings and traction power substations (through the City of Toronto or the City of Mississauga);

d) Navigable Waters Protection Act approval (through Transport Canada) at the Humber River, West Don River and East Don River;

e) Permit(s) to Take Water (from the Ministry of the Environment) (for locations where dewatering exceeds 50,000 litres per day);

f) Ontario Regulation 166/06 (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) permits (through TRCA) for work within regulated areas including Mimico Creek, Silver Creek, Lower Main Humber River, Black Creek, West Don River, East Don River, Wilson Brook and Massey Creek;

g) Stormwater management, in accordance with City of Toronto, City of Mississauga, TRCA and MOE requirements;

h) Sewer discharge approvals, in accordance with Region of Peel, City of Mississauga, City of Toronto and TRCA requirements;

i) Railway Crossing Agreements at the Weston Subdivision, Mactier Subdivision, Newmarket Subdivision, Belleville Subdivision and Bala Subdivision (through CN Rail, CP Rail or Metrolinx);

j) Pipeline Crossing Agreements,as required;

k) Permits and/or approvals for a new bridge crossing Highway 401 and modifications to the Highway 401/427 interchange and the Highway 427 ramps (through the Ministry of Transportation Corridor Management Office);

l) Certificate of Approval for Air Quality in accordance with the Environmental Protection Act (through MOE);

m) Permits for construction within the existing road allowances (through the City of Toronto and City of Mississauga); and

n) Highway Alteration By-law approval for alterations to Eglinton Avenue (through the City of Toronto).

o) Permits and approvals for tree protection and removal/injury (through TRCA, the City of Mississauga and the City of Toronto as applicable);

p) Assure that applicable Ontario Energy Board approvals are obtained for utility relocations; and

q) Comply with City of Toronto Ravine and Natural Feature Protection By-law, as applicable.

Noise and Vibration Protocols

The TTC will conduct additional noise and vibration studies as required, in accordance with existing MOE/TTC protocols.

Canadian Environmental Assessment Act Determination

TTC submitted a CEAA Project Description to the Canadian Environmental Assessment Agency (CEA Agency). The CEA Agency has circulated the Project Description to relevant federal agencies to determine if there is a need for an environmental assessment and which federal agencies may have a responsibility or interest. Most of the federal agencies have not identified a trigger; however, Transport Canada, Department of Fisheries and Oceans and Canadian Transportation Agency may still identify a trigger under the *Navigable Waters Protection Act*, *Fisheries Act or Canada Transportation Act*, once project design has advanced. If required, TTC will conduct an environmental screening to secure a determination under the *Canadian Environmental Assessment Act*.

Municipal Approvals

<u>Toronto City Council</u>

At its meeting of November 30, 2009, Toronto City Council approved a report from the Toronto City Manager which included the following recommendations:

In addition to amendments to Section 0, City Council approved the following motions:

a) "Local Councillor(s) be consulted during the prepartation of property protection sutdies, and as part of the property acquisition process for termporay construction easements.

b) No specific discussion on the deferral of the construction of "any stops" will occur with Metrolinx without first consulting the local Councillor(s) well in advance of that consideration.

c) The deferral of the construction of any stops shall not occur without the TTC seeking approval of City Council.

d) City Council request the TTC to have the Eglinton Crosstown LRT connection from Martin Grove Road to Pearson International Airport and the Etobicoke-Finch West LRT connection from Humber College to Pearson International Ariport evaluated together as the Transit City Light Rail Network, and that evaluations of options include maintenance and operating costs from a network perspective as evaluation criteria.

e) City Council requests the TTC to consider full property acquisitions for use as secondary station accesses, not soley for fire vents, where practical.

f) The City Manager and TTC staff report back on a truck operations plan including appropriate highway signage, in conjunction with the design for the Eglinton LRT.

g) The TTC be requested to provide detailed analysis on truck movements prior to completion of the final design.

h) City Council requests the TTTC to expedite the implementation of the Eglinton Crosstown LRT and that the City Manager be requested to report to the TTC on any impediments or specific issues that need to be resolved in order to eliminate delay."

These City Council-approved motions are included in this chapter of the Environmental Project Report as a commitment to future action.

<u>City of Mississauga General Committee</u>

At its meeting of December 3, 2009, the City of Mississauga General Committee (a Committee of City of Mississauga Council) endorsed the City of Toronto and the Toronto Transit Commission' (TTC) Eglinton Crosstown Light Rail Transit (LRT) Project from Kennedy Station to Pearson Airport, specifically the alignment in the City of Mississauga on Eglinton Avenue and Commerce Boulevard with a new crossing of Highway 401 as part of LRT connection to Toronto Pearson International Airport. In addition, the Committee approved the recommendations that staff:

a) "report back to General Committee at the appropriate time on the official plan amendment needed to support the Airport transit connection.

b) That staff be directed to facilitate information meetings with the landowners and the business community."

These Committee-approved recommendations are included in this chapter of the Environmental Project Report as a commitment to future action.

<u>Addendum Process</u>

The TTC will prepare an addendum if significant changes to the project occur after the Notice of Completion is issued in accordance with Section 15 of the Transit Projects Regulation, including:

- Preparation of an addendum to the Environmental Project Report;
- Preparation of a Notice of Addendum to the Environmental Project Report; and,
- Distribution of the Notice of Addendum to relevant stakeholders and the Ministry of the Environment.

Upon resolution of the alignment on the Airport Lands with the GTAA and Metrolinx, the TTC and the City of Toronto will proceed with amending the Environmental Project Report under the Provincial process if required.

E.7. ADDENDUM PROCESS

TTC will prepare an addendum, if changes to the project occur after the Notice of Completion is issued, in accordance with Section 15 of the Transit Projects Regulation, including:

- Preparation of an addendum to the Environmental Project Report;
- Preparation of a Notice of Addendum to the Environmental Project Report; and
- Distribution of the Notice of Addendum to relevant stakeholders and the Ministry of the Environment.

Upon resolution of the alignment on the Airport Lands with the GTAA and Metrolinx, TTC and the City of Toronto will proceed with amending the Environmental Project Report under the Provincial process if required.

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 seven new light rail transit lines shown on **Exhibit 7** on page 12, 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 Eglinton Crosstown LRT is a 33 kilometre long corridor that would link the Pearson International Airport with the Kennedy Subway Station. The Eglinton Crosstown LRT will connect with the Spadina Subway Line, the Yonge Subway Line, the Scarborough RT and the planned Jane Street LRT, Don Mills Road LRT, Scarborough-Malvern LRT, and Mississauga Bus Rapid Transit (BRT). This study recommends that bus services along Eglinton Avenue be replaced by LRT with electrically powered light rail vehicles operating in a designated right-of-way located in subway or on reserved lanes in the centre of the street.

This chapter introduces the Eglinton Crosstown LRT, 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 background studies and major functional design studies conducted to support the Eglinton Crosstown LRT. Chapter 3 describes the design criteria and preferred design for the Eglinton Crosstown LRT. Chapter 4 documents the existing and future conditions within the Eglinton Crosstown LRT corridor. Chapter 5 discusses potential impacts of the Eglinton Crosstown LRT, identifies mitigation measures, and recommends monitoring activities. Chapter 6 outlines the consultation process and activities carried out throughout the Transit Project Assessment process. Chapter 7 presents the TTC's and City of Toronto's commitments to future action during the design, construction and operational phases.

1.1 Study Purpose

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 for the Eglinton Crosstown LRT.

Prior to the Transit Project Assessment Process, the Eglinton Crosstown LRT underwent a Feasibility Study to identify problems and opportunities within the study corridor, identify and evaluate alternative transit solutions, and develop and evaluate alternative preliminary design concepts.

1.2 Study Scope

This study focuses on the Eglinton Crosstown LRT alignment outside Pearson International Airport lands in the west to Kennedy Road in the east. Although the connections to Pearson International Airport and Kennedy Station are part of the Eglinton Crosstown LRT infrastructure, these areas are outside of the scope of this study. The Eglinton Crosstown LRT westerly segment located within Pearson International Airport lands and the easterly segment connection to the Kennedy Subway Station will be under separate studies.

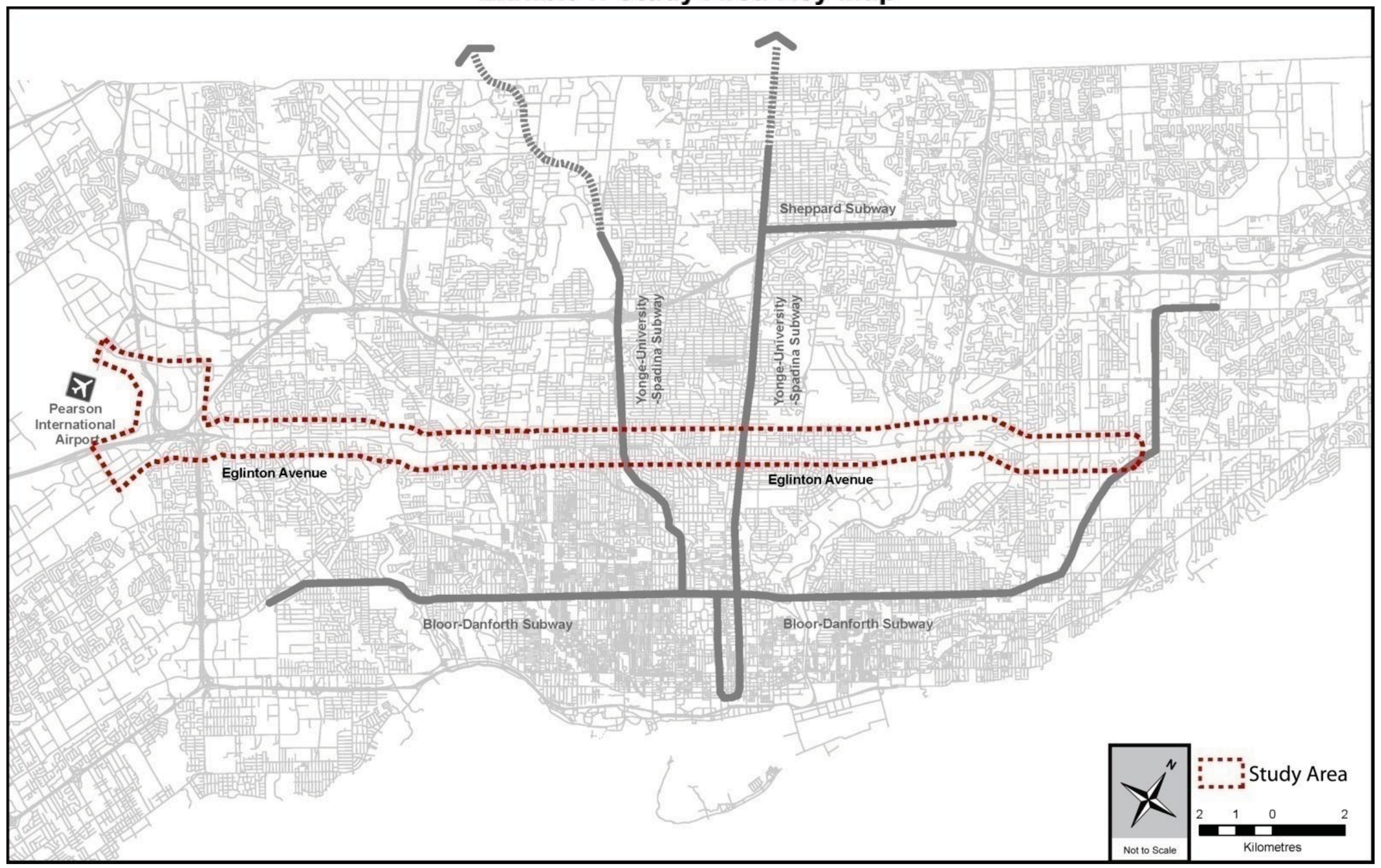
The connection of the Eglinton Crosstown LRT within Pearson International Airport lands will be determined following completion of Metrolinx's Airport Precinct Study and the Greater Toronto Airports Authority Transportation Master Plan. Subsequently, TTC and the City will comply with applicable environmental assessment regulations for the finalization of the alignment on the federally-owned airport lands. The connection of the Eglinton Crosstown LRT with Kennedy Station is being investigated as part of a separate Kennedy Station Project (TTC). The design is addressing improved integration between the existing Danforth Subway, the Scarborough Rapid Transit (SRT), the Eglinton Crosstown LRT and the Scarborough-Malvern LRT lines and buses. The connection of the Eglinton Crosstown LRT to Kennedy Station will be the subject of a Transit Project Assessment process for the SRT Conversion & Extension Project. The area of the connection in the SRT Conversion & Extension Project Transit Project Assessment will extend from Kennedy Road eastward to Kennedy Station.

Therefore, the scope of this study covers from Silver Dart Drive, 350 metres north of the intersection of Renforth Drive and Silver Dart Drive in the west to the intersection of Eglinton Avenue and Kennedy Road in the east.

1.3 Study Area

The west limits of the study area consists of a broad area bounded by Dixon Road to the north, the Pearson International Airport lands to the est, Eglinton Avenue to the south and Martin Grove Raod to the east. Then the study area consists of a 500 metre band to the north and to the south of Eglinton Avenue from Renforth Drive in the west to Kennedy Road in the east of the study area. See **Exhibit 1**.

Exhibit 1: Study Area Key Map



1.3.1 Related Studies

Several related transit studies are being carried out concurrent with this Eglinton Crosstown LRT Transit Project Assessment to investigate:

- The proposed Mississauga/ GO Transit BRT terminal at Commerce Boulevard (City of Mississauga). This terminal is part of the City of Mississauga's bus-only roadway in the Highway 403/Eastgate Parkway/Eglinton Avenue corridors running east-west across the city. It includes all-station stop and extensive express bus services;
- The proposed Mississauga/ GO Transit BRT extension from Commerce Boulevard to Kipling Station via Eglinton Avenue and Highway 427 (Metrolinx, to be initiated);
- The proposed TTC Maintenance and Storage Facility located north of Eglinton Avenue west of Black Creek Drive (TTC). The preferred connection of the Eglinton Crosstown LRT with the TTC Maintenance and Storage Facility at Black Creek Drive is reflected in this Transit Project Assessment, although the TTC Maintenance and Storage Facility itself is undergoing a separateTransit Project Assessment;
- The proposed Jane Street LRT, Don Mills Road LRT, Finch West LRT, Waterfront West LRT, Sheppard East LRT, Scarborough Rapid Transit and Scarborough-Malvern LRT lines (City of Toronto and TTC);
- Improvements to the Highway 427/Highway 401 interchange (MTO). Rehabilitation works are being proposed in this area; and
- Georgetown South Corridor Service Expansion and Airport Transportation Link (GO Transit, Metrolinx). This project consists of more frequent service on the Georgetown line and a new passenger rail service from Pearson International Airport to Union Station along the Georgetown line.

1.3.2 Studies Prepared in Support of the Eglinton Crosstown LRT Transit Project Assessment Process

The following is a list of studies that were conducted in support of this Transit Project Assessment Process for the Eglinton Crosstown LRT:

- Air Quality Assessment – The Air Quality Assessment examined the potential changes in both local and regional air quality that would result from the construction and operation of the Eglinton Crosstown LRT as a replacement for diesel bus services that currently use the LRT corridor between Kennedy Road in the east and Renforth Drive in the west. The assessment focused on the impacts of the common contaminants released from vehicular traffic and construction activities. The report identified that implementation of the LRT will result in a reduction of local emissions, but these will be offset to some extent by emissions associated with the production of the electricity used to power the LRT vehicles. No point-source emissions associated with the project will exceed federal or provincial air quality objective.
- Stage 1 and 2 Archaeological Assessments – The Stage 1 archaeological assessment consisted of a background research including a comprehensive review of registered archaeological sites and listed heritage properties within and adjacent to the study area. It identified areas of high potential for the recovery of both Aboriginal and historic, Euro-Canadian archaeological remains within undisturbed locations of the study area. The Stage 2 archaeological assessment conducted a test–pit survey in all undisturbed locations, except for segments north and south of Highway 401 along Commerce Drive and Convair Drive, as well as identification of disturbed locations within the study area. No archaeological resources were encountered during the test-pit survey. The assessments concluded that the Eglinton Crosstown LRT corridor is clear of further archaeological concern with the exception of the segments along Commerce Drive and Convair Drive. A Stage 2 archaeological assessment was recommended to be conducted during the design phase on the segments that a test-pit survey was not conducted due to private property concerns.
- Cultural Heritage Assessment – The Cultural Heritage Assessment involved historical research and review of topographical, historical mapping and of the municipal heritage inventories and registers. The assessment identified built heritage resources and cultural heritage landscapes within and adjacent to the study area in excess of 40 years of age. It concluded that the Eglinton Crosstown LRT will result in displacement and disruption impacts to cultural heritage resources that will need to be mitigated during the design phase.
- Drainage and Stormwater Management Assessment – The Drainage and Stormwater Management Assessment investigated of the existing drainage and stormwater systems. Also a hydraulic assessment was conducted to assess potential watercourse related impacts of proposed road and bridge widening. It concluded that at watercourses the proposed Eglinton Crosstown LRT will have no to little impacts to the water surface elevation. It recommended that LRT operation be suspended in the event of a regional storm near Black Creek as flooding

will occur. Conceptual stormwater management practices (SWMPs) and best management practices (BMPs) related to erosion and sedimentation control were also identified.

- Hydrogeological Assessment – The Hydrogeological Assessment provided an overview of the geology and hydrogeology within and adjacent to the study area and identify areas where dewatering may be required. It identified areas where the groundwater table is likely to be above the base of the tunnels excavations. Conceptual measures to control groundwater during cut-and-cover and tunnelling activities were identified.
- Natural Heritage Assessment – The Natural Heritage Assessment describes the existing natural heritage conditions such as vegetation, wildlife, fisheries and designated natural areas within the study area. It concluded that the Eglinton Crosstown LRT will displace vegetation communities and wildlife habitat in at surface sections, particularly in the west end where road widening is required. Since no in-water work is anticipated to construct the LRT, alteration of fish habitat is not expected.
- Geotechnical Assessments – Two geotechnical assessments were conducted, one for the area west of Martin Grove Road and a second for the Eglinton Avenue corridor from Martin Grove Road to Kennedy Road. They presented preliminary geotechnical informaton on the subsurface conditions along the LRT corridor. Borehole information was collected from various sources including previous geotechnical investigation conducted by the City of Toronto and TTC. The reports recommended that further investigation should be conducted to provide detailed test results to support design of excavations, foundations and embankment construction and widening.
- Noise and Vibration Assessment – The noise and vibration analysis compared future conditions with and without the LRT and identified areas where mitigation measures will be required due to the LRT operations. The focus of the construction noise and vibration impact assessment was to develop a generic guide to be further refined and expanded when more information becomes available during the design phase.
- Property Waste and Contamination Assessment – This study identified properties/areas with the potential for site contamination and discussed potential mitigation measures. A number of areas with known soil and groundwater contamination were also identified.
- Structures Report – The Structures Report reviewed existing bridge structures on the Eglinton Crosstown LRT corridor to confirm the feasibility of providing a LRT right-of-way on the structures. Underpass structures were also reviewed geometrically to confirm the feasibility and constraints on the provision of the right-of-way through the structure without reconstruction. It was concluded that widening at four bridge crossings and one culvert will be required.
- Feasibility Studies – Two conceptual design studies were conducted. The first feasibility study was conducted to address the feasibility of a surface LRT right-of-way along Eglinton Avenue between Renforth Drive and Kennedy Road. This study concluded that a LRT will be feasible. It recommended that a second feasibility study be conducted to investigate the feasibility for an underground LRT alignment from east of Black Creek Drive to just east of Brentcliffe Road. The second feasibility study was conducted to investigate alignment alternatives for the underground portion of the Eglinton Crosstown LRTand identify any major alignment constraints and any major alignment issues requiring further study. The study concluded that the final functional alignment will likely be a combination of the Deep (tunnelling) and Shallow (cut-and-cover) concepts.
- Underground Section -Construction Methodology – This study evaluated alternate construction methodologies for the underground section including tunnelling and cut and cover, identified a preferred method of construction and discussed potential impacts and possible refinements to the preferred methodology. The study recommended the tunnelling method since its construction staging and maintenance of traffic is more favourable, construction costs are less expensive and construction can be finished within the allotted time.
- Single vs. Twin Tunnelling – A Preliminary Study – This study presented a preliminary comparative analysis between Twin Bore and Single Bore tunnelling alternatives for the Eglinton Crosstown LRT. This study presented comparisons between the two alternatives including order of magnitude construction cost estimates, preliminary construction schedules, effects of geological conditions along the corridor, track alignments, station configurations, aspects of the fire/life system safety maintenance and protection of vehicular and pedestrian traffic among others.
- Airport Extension Feasibility Study - The purpose of this study was to identify the best way to provide high quality transit service from Martin Grove Road to Pearson International Airport. The study was to determine if there is a logical and feasible connection. Through a detailed evaluation process, a preferred alignment was recommended that follows Eglinton Avenue to Commerce Drive, Commerce Drive to Convair Drive with a new bridge over Highway 401 and Convair Drive to Silver Dart Drive to Pearson International Airport.
- Black Creek Maintenance and Storage Facility Connection - A study for this area was conducted to develop and assess concept alternatives for the LRT connection to the proposed Black Creek Maintenance and Storage Facility. The study recommended a surface alignment as opposed to an underground or elevated alignment.
- Don Mills LRT Special Study Area: Detailed Assessment – This study was conducted to develop and evaluate transportation alternatives, conduct traffic analyses for the alternatives and make recommendations for the area surrounding the Eglinton Avenue and Don Mills Road intersection. The study recommended that the Eglinton Crosstown LRT be underground at the Eglinton Avenue and Don Mills Road intersection while the Don Mills LRT be at surface. A bus terminal location at the northeast quadrant of the intersection was recommended.
- Transit Terminal at Keele Station Traffic Analysis – This study assessed the various Keele Station Bus Terminal alternatives available to efficiently progress buses quickly into and out of stop locations, and to select a preferred scenario to be used for the design phase.
- Jane Street to Keele Street: An Evaluation of Vertical Alignment Alternatives - The study considered the implications of interfacing the Eglinton Crosstown LRT with the Jane LRT at the intersection of Eglinton Avenue and Jane Street with both operating on a surface alignment. The study confirmed the feasibility of this interface.
- Consolidated Traffic – This study conducted a preliminary assessment of the future Light Rail Vehicle operation, and to determine impacts to traffic operations and land use. The study covered an overall traffic analysis along Eglinton Avenue, at Keele Station Bus Terminal, a feasibility study for the connection toPearson International Aiport, and U-Turn traffic analysis. The traffic analysis along Eglinton Avenue recommended the prohibition of left turns at some major intersections and to implement u-turns to re-route the prohibited left-turns. The traffic ananalysis at Keele Station Bus Terminal recommended an off-street bus terminal in the southeast quadrant of the intersection of Trethewey Drive and Yore Road. The feasibility study for the connection to the airport presented a preferred route from Eglinton Avenue northwards to the Airport via Commerce Boulevard, a new structure over Highway 401, Convair Drive, and Silver Dart Drive. Further refining of this segment of the LRT was recommended as a number of stakeholder's concerns remained to be addressed. The U-Turn traffic analysis consisted of a

detailed traffic-traveller analysis at ten intersections within the study area, comparing operation of traditional left turns to various left turn rerouting scenarious, with consideration to truck routing and high left turn volumes.

1.4 Transit Project Assessment Process (2008)

The Eglinton Crosstown Light Rail Transit Study is one of the TTC and City of Toronto 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 2**.

1.4.1 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 and aboriginal or treaty rights will be considered by the Minister through the objection process. The following items are considered to be of provincial importance:
  - 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 2.** 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.

1.4.2 Environmental Project Report

Documentation of the transit project assessment process is to 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.

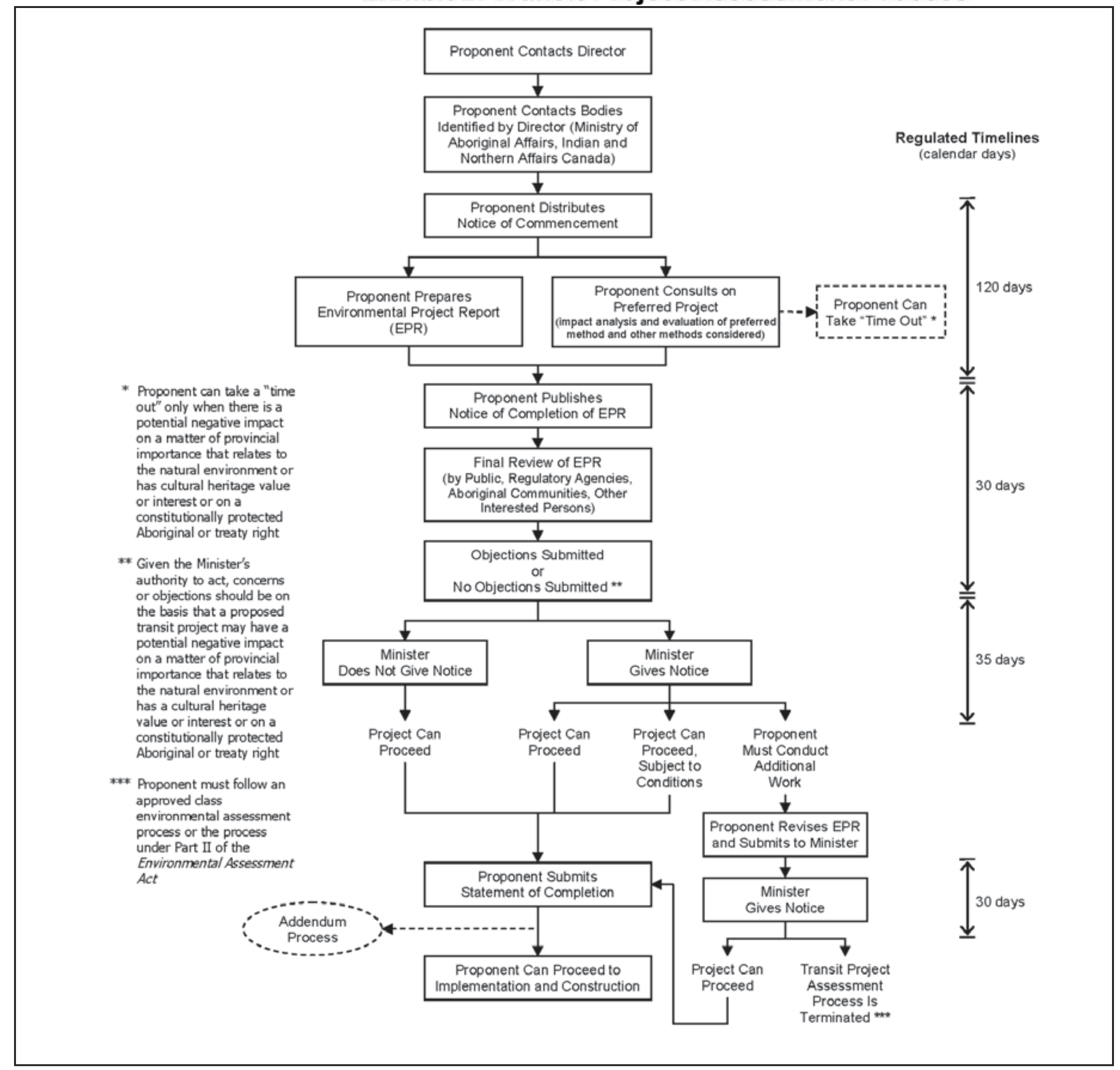
According to the MOE Ontario's Transit Project Assessment Process Guide, the Ministry expects that the Environmental Project Report will be adjusted throughout the 120 day period to reflect input from aboriginal communities, adjacent property owners, regulatory agencies and other interested persons.

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

1.4.3 Transit Project Assessment Approval Process

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 being distributed. 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.

Exhibit 2: Transit Project Assessment Process



Source: Ontario, Ministry of the Environment, 2009, Guide: Ontario's Transit Project Assessment Process

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:

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

If the Minister does not act within the 35 day period, the transit project may proceed as planned. The Minister may also terminate the proponent's transit project assessment process and require that either an individual environmental assessment or a class environmental assessment process be followed.

If the Minister gives notice requiring the proponent to take further steps, and within 30 days of receiving a revised EPR 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.

1.4.4 Eglinton Crosstown LRT Preliminary Planning Phase

To refine the project components, preliminary planning activities were carried out from April 2008 to December 2009, before the "Notice of Study Commencement" was issued. The activities undertaken included:

- Contacting the Ministry of the Environment to obtain initial input to this study;
- Undertaking feasibility studies for the project;
- Preparing a consultation plan to obtain public input;
- 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;
- Identifying potential federal environmental assessment and other federal regulatory requirements;
- Defining the project 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.

1.4.5 Study Organization

The study is undertaken under the direction of the Toronto Transit Commission (TTC) and the City of Toronto as co-proponents. Transit City Group, a consortium of consultants led by IBI Group and AECOM Limited 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. A project team was formed with the assistance from the following sub-consultants to provide the expertise required to complete the study:

- A.J. Chandler & Associates Ltd. – Air Quality;
- Archeoworks Inc. – Archaeology;
- Coffey Geotechnics – Geotechnical, Hydrogeology and Property Waste and Contamination;
- J.D. Barnes and Associates – Sruveying and Digital Mapping;
- J.E. Coulter Associates Ltd. – Noise and Vibration;
- LGL Limited – Environmental Planning and Natural Heritage;
- T. Mocryzki and Associates – Land Use Planning; and
- Unterman McPhail Associates - Cultural Heritage.

1.5 Background and Context

1.5.1 City of Toronto Planning Policies

1.5.1.1 Toronto Official Plan

The Toronto Official Plan Official Plan presents a vision for a more liveable City and directs growth to specific areas within the City. Generally, potential growth areas are well served by transit, the existing road network and existing infrastructure. The areas within the City that have the most potential to accommodate growth and redevelopment are Downtown Toronto, areas of high concentration of mixed land uses, the Avenues, and the areas with high concentration of offices and businesses. 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 east and west portions of Eglinton Avenue are identified as Avenues in the Official Plan. Avenues are important corridors along major streets where redevelopment and growth is encouraged. Reurbanization and growth on the Avenues is intended to create new housing and job opportunities as well as improvements to the pedestrian environment, making the areas attractive to residents, workers, and visitors alike. Growth and redevelopment of the Avenues should be supported by high quality transit services combined with urban design and traffic engineering practices that promote a street that is safe, comfortable and attractive.

Centres are places with excellent transit accessibility where jobs, housing and services are concentrated in dynamic mixed use settings with different levels of activity and intensity. These places are the focal point for transit services drawing people from across the City to jobs within the *Centre* to rapid transit connections to the North York *Centre* and the *Downtown.*

The *Yonge-Eglinton Centre* is located at the intersection of two key Avenues, with a more central location in Toronto's transit network than other *Centres*. The *Yonge-Eglinton Centre* continues to develop as both an office centre and a desirable place to live.

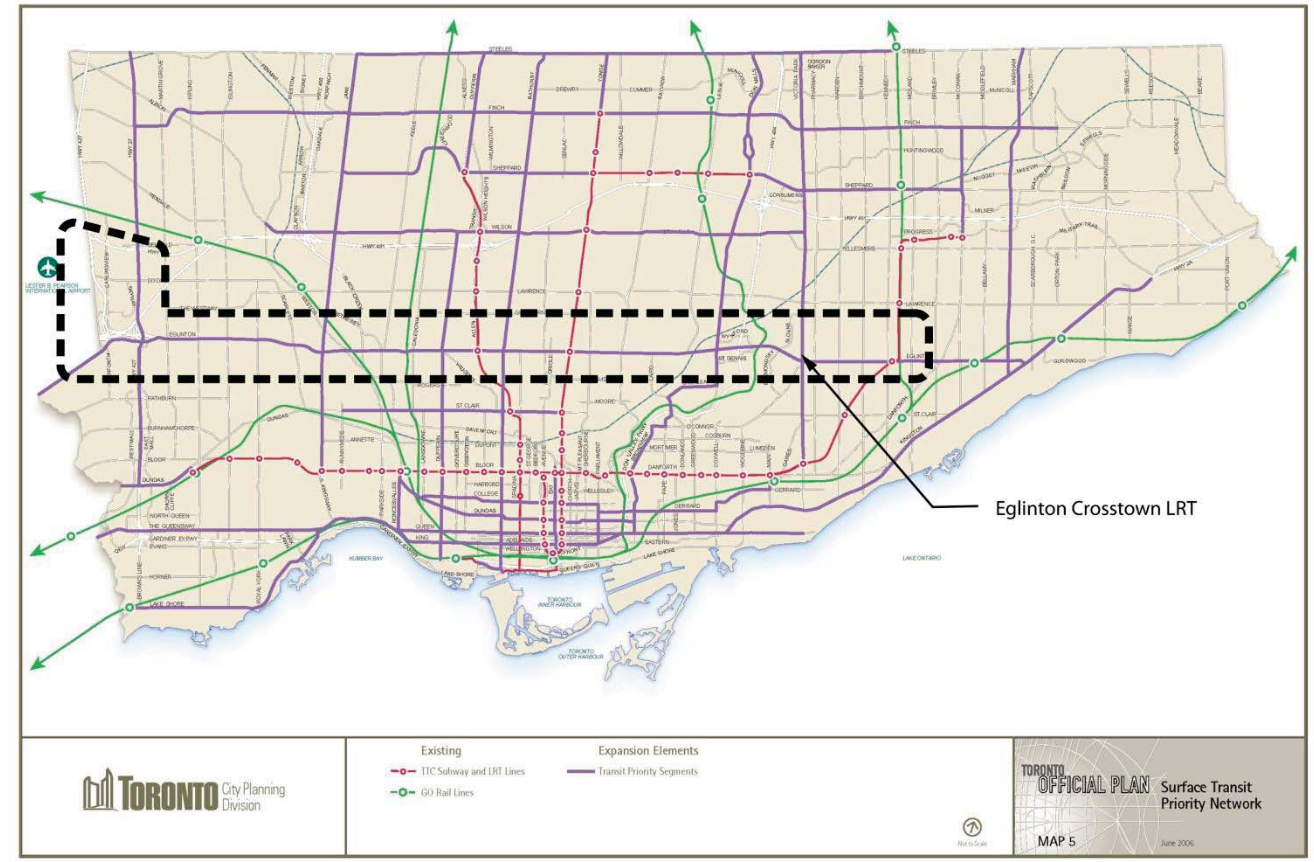
The Official Plan designates Higher Order Transit Corridors **(Exhibit 3)** and a Surface Transit Priority Network **(Exhibit 4)** to identify areas for future expansion of the transit system through higher order transit, which includes subways and LRT. Eglinton Avenue is designated both as a Higher Order Transit Corridor and as part of the Surface Transit Priority Network.

Developing the Eglinton Crosstown LRT line supports the Official Plan vision to create more liveable communities, by directing growth to areas well served by transit and which have a number of properties with redevelopment potential. The Eglinton Crosstown LRT line will improve transit service and access to the 'Avenues' designated in the Official Plan.

Exhibit 3: Higher Order Transit Corridors (Map 4 - Toronto Official Plan)

Source: Tyndorf, Ted. City of Toronto Official Plan. Toronto: City Planning Division, August 2007.

Exhibit 4: Surface Transit Priority Network (Map 5 - Toronto Official Plan)



Source: Tyndorf, Ted (August 2007). City of Toronto Official Plan. Toronto: City Planning Division.

Land Use Designations

Land Use Designations are one of the key implementation tools of the Official Plan for achieving the growth forecasts for the next 25 years. Each land use designation establishes the general uses that are provided for in the designation: where housing can be built, where stores, offices and industry can locate and where a mix of uses is desired. The land uses provided for in each designation are generalized, and the Zoning By-law can provide precise numerical figures and land use permissions that will reflect the tremendous variety of communities across the City. When development proposals, such as the Eglinton Crosstown LRT line, are evaluated, it is important to consider the development criteria set out for the various land use designations. Land Use Designations within the Eglinton Crosstown LRT study area are provided in **Exhibit 5**.

Neighbourhoods contain a full range of residential uses with lower scale buildings, as well as park, schools, local institutions and small- scale stores and shops serving the needs of area.

Apartment Neighbourhoods generally contain higher rise and greater scale of buildings than in *Neighbourhoods.* Sensitive infill and intensification in underutilized *Apartment Neighbourhood* areas is permitted.

Mixed Use Areas contain a broad array of residential, office, retail, service, institutional, entertainment, recreational, cultural, park and open space uses. These areas are intended to absorb most of the anticipated increase in retail, office and service employment, as well as population growth, in the coming decades.

Lands designated as mixed-use areas along the **Avenues** have the opportunity to perform a 'Main Street' function and become meeting places for neighbours and the wider community. By promoting alternative forms of travel, these areas become vibrant communities centred on the people and uses instead of automobiles. By directing growth to areas such as Avenues, the Official Plan provides greater certainty for land owners, businesses, and residents about what type of growth can be anticipated, and where growth will occur.

Employment Lands are places of business and economic activity and consist of uses such as offices and manufacturing, but also include small scale stores, restaurants and other businesses to serve the area's residents and businesses. Development is permitted in these areas and employment uses within these areas is protected by both City of Toronto and Provincial policies.

Parks and Other Open Space Areas contain the parks, open spaces, valleys, water courses, ravines, golf courses and cemeteries that comprise part of the green open space network in Toronto.

Natural Areas contain areas that are primarily in a natural state while allowing for compatible recreational, cultural and educational uses and facilities that minimize adverse impacts on natural features and functions.

Utility Corridors are corridors for the transmission of energy, communication and the movement of people and goods. Utility Corridors mainly consist of rail and hydro rights-of-way. These linear corridors are a defining element of the landscape fabric of the City and many of these corridors also serve important local functions as parkland, sport fields, pedestrian and cycling trails and transit facilities. These corridors should be protected for future public transit routes and linear parks and trails.

1.5.1.2 City of Toronto's Bike Plan

In July 2001, Toronto Council adopted, in principle, the recommendations of the Toronto Bike Plan – Shifting Gears. The Bike Plan is a 10-year strategy to guide the development of new policies, programs and infrastructure to create a bicycle friendly environment that encourages the future use of bicycles for everyday transportation and enjoyment. The Bike Plan promotes cycling activities within the City, as the primary goals of the Plan are to double the number of bicycle trips by 2011 and decrease the number of bicycle collisions and injuries.

The Bike Plan recommends advancing cycling in the City across six broad fronts:

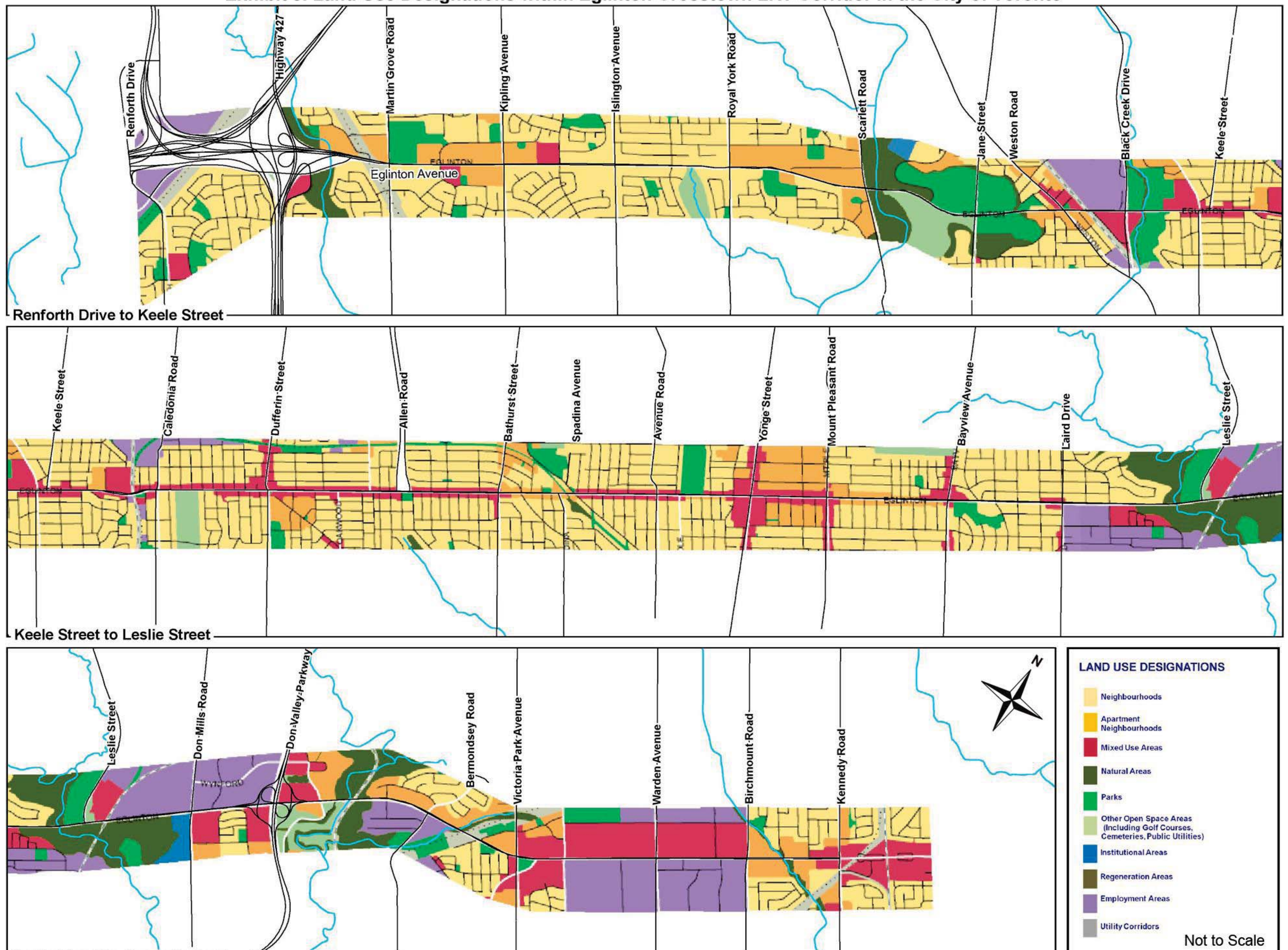
- Adopting bicycle friendly street policies that give bicycles the same consideration as vehicles on the City's street system;
- Developing a 1000 km bikeway network of off-road trails and on-road bicycle lanes and routes (Chapter 4 of the Bike Plan establishes priority routes with a formal bikeway facility);
- Implementing enhanced safety and education programs;
- More extensive promotion of cycling for both recreational and everyday transportation purposes;
- Better links with transit services to encourage "bike and ride" trips; and
- Ensuring the provision of adequate bicycle parking facilities.

To be effective in achieving the Bike Plan's goals, the six component points must be implemented together as part of a strategy. If implemented successfully, the Toronto Bike Plan will ensure that all Toronto residents are within a five-minute bicycle ride of the bikeway network.

Since 2001, there have been a number of new cycling-related developments in the City and new bicycle planning trends in North American Cities. In response to the past seven year experiences of the bike plan implementation and new trends, the City of Toronto is developing six new strategies to achieve the Bike Plan's goals for the period 2009-2011which include:

- Launching a Toronto Public Bicycle System by spring 2010;
- Expanding the downtown bicycle bikeways (including bicycle lanes, shared roadway routes and off-street trails), to support the Public Bicycle System;
- Accelerating construction of the existing bikeway network trails;
- Providing high-security bicycle parking facilities;
- Developing a comprehensive research and evaluation program; and,
- Developing a new promotion and communications strategy.

Exhibit 5: Land Use Designations within Eglinton Crosstown LRT Corridor in the City of Toronto



1.5.1.3 Cycling and Transit Strategy - Bicycle Parking and Access To The Toronto Transit Commission

The City's draft Cycling and Transit Strategy: Bicycle Parking and Access to the Toronto Transit Commission (2009) provides direction on a new bicycle program for bicycle parking and access to the TTC system. The key strategies are:

- Providing safe and convenient bicycle access to all TTC stations and major transit nodes;
- Providing secured bicycle storage (pocket) at station nodes;
- Establishing a program to encourage TTC customers to access the system by bicycle;
- Providing bicycle access to Transit City Light Rail Transit (LRT) lines; and,
- Providing a coordinated "bike-and-ride" promotion strategy.

During the design of the Eglinton Crosstown LRT, the Cycling and Transit Strategy will be considered.

1.5.1.4 Pedestrian Charter

The Pedestrian Charter (adopted by Council in 2002) briefly outlines the need for pedestrian-friendly design. It provides six principles to ensure that walking is a safe and convenient mode of urban travel and to create an urban environment in the city that encourages and supports walking. It emphasizes reducing the conflict between pedestrians and other users of the right-of-way, improving safety for pedestrians and allowing people to avoid reliance on cars and public transport. Therefore, in order to minimize the potential conflicts between pedestrians and bicycles, on-road bicycle lanes are proposed in all Transit City LRT routes.

1.5.2 City of Mississauga Planning Policies

1.5.2.1 City of Mississauga Official Plan

The west portion of the study area for the Eglinton Crosstown LRT is located within the City of Mississauga. The following section describes the policies of the City of Mississauga Official Plan that apply to the study area.

Mississauga's Official Plan (2009), referred to as "Mississauga Plan", aims to achieve the establishment of an urban form which is compact, efficient, comfortable, and supportive of transit within a time horizon of 20 years. Mississauga Plan sets out the City's long range plans for the road system, parks, environmental policies and lands to be protected. **Exhibit 6** presents City of Mississauga land use designations within the study area.

Airport Corporate District

Mississauga is divided into Planning Districts which consist of the City Centre, Residential Districts and Employment Districts. There are some instances where the general policies and schedules do not address all circumstances particular to each District. In these instances, District Policies and the Land Use Maps specific to each District provide clarification.

According to the Schedule 6 – Planning Districts of the Mississauga Plan, most of the study area within Mississauga is found within the Airport Corporate District. This District, which is an employment planning district, is home to head offices of Fortune 500 companies. It is located between Highway 401 and Eglinton Avenue, east of Etobicoke Creek and west of Renforth Drive; north of Highway 401 all lands in the study area are part of Pearson International Airport. In addition, the schedule presents Eglinton Avenue as a Major Transit Corridor. There is also a Transit Airport Connection corridor on the alignment of Renforth Drive from Eglinton Avenue in the south to Pearson International Airport in the north.

The Airport Corporate District is identified as a Node because of its existing high quality development and its visibility, access and location. According to the Mississauga Plan, this district is planned for development primarily for corporate head offices, manufacturing, research and development and accessory retail commercial.

Land Use Designations

These policies set out what land uses are allowed on properties. This affects what landowners can do with properties and what types of uses could be developed in an area. A summary of Mississauga's land use designations within the study area are presented below (see **Exhibit 6**).

Airport areas are lands directly associated with the operation of Pearson International Airport. Development within this area should be either complimentary or compatible with airport operations and allow the airport to function at maximum efficiency to achieve full economic potential. Integration with other transportation modes is promoted subject to adequate ground access facilities. Also, services to accommodate trips to and from the airport on provincial highways and inter-regional transit facilities are encouraged in this plan.

Business Employment areas contain an integrated mix of business activities that operate mainly within enclosed buildings. Outdoor storage (pocket) areas are located to limit their visibility from the City of Mississauga's boundaries, major roads, and park, greenbelt and residential lands.

An amendment to the Mississauga Official Plan will be required to include a rapid transit corridor from Eglinton Avenue West and Commerce Boulevard to Pearson International Airport via Commerce Boulevard, Convair Drive and Silver Dart Drive.

Exhibit 6: Land Use Designation within the Eglinton Crosstown LRT corridor in the City of Mississauga

1.5.3 TTC Planning Policies

1.5.3.1 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 throughout the City to meet future transit demand.

1.5.3.2 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); and
- Mayor Miller's "Transit City" Platform (2006).

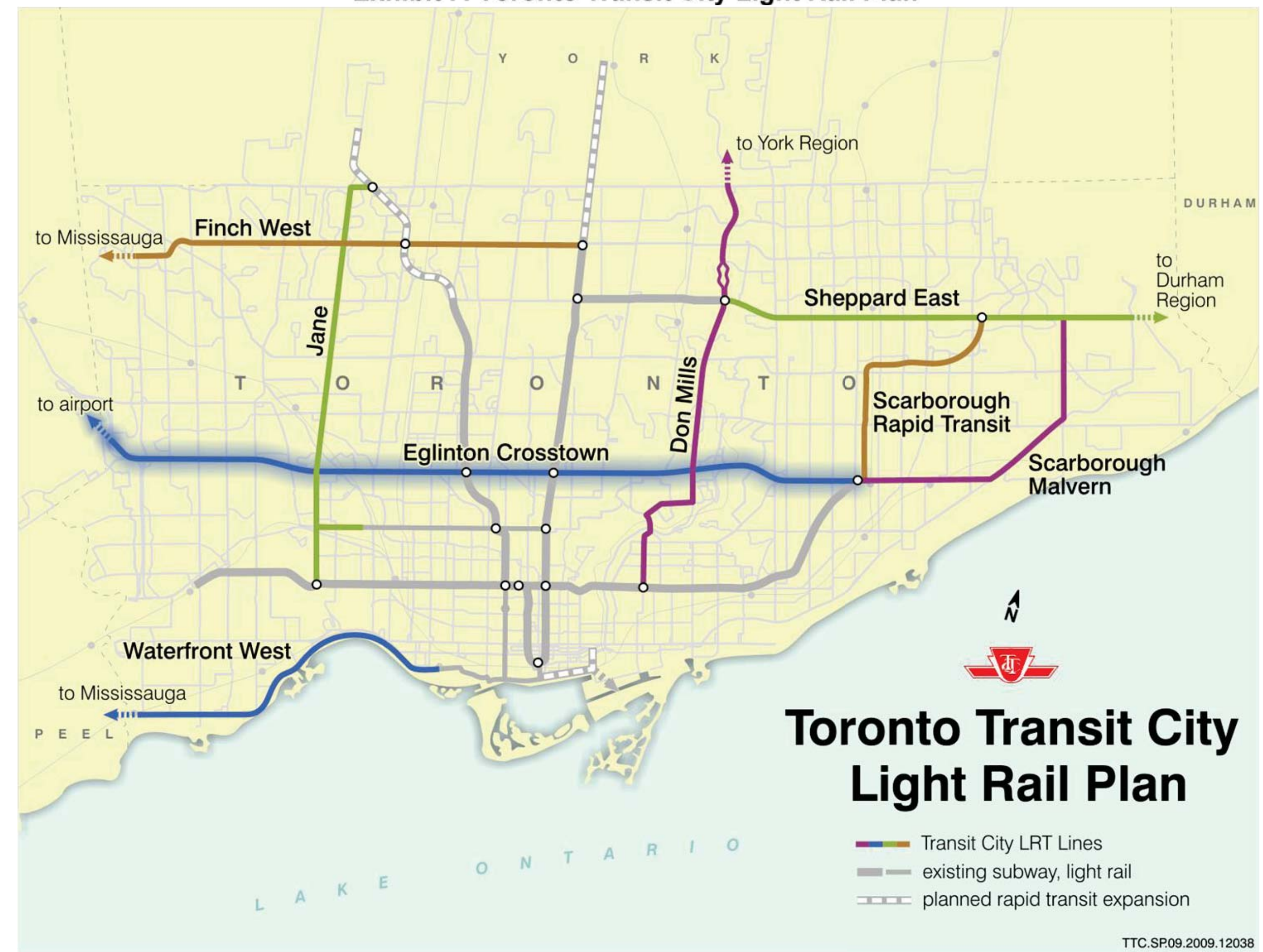
These various studies and initiatives have been consolidated into one high-level plan for a light rail transit network in Toronto, referred to as the Toronto Transit City – Light Rail Plan, as shown in **Exhibit 7**.

The plan calls for the implementation of seven 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 the City's rapid transit routes. The plan also provides the basis for the creation of a seamless Greater Toronto Area network of rail and bus rapid transit services.

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

- Competitive travel times and an environmentally sustainable alternative to private cars;
- Transitservice on reserved rights-of-way to eliminate 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 with the regional transit network, including the City of Mississauga, York Region, and Durham Region; and; and
- Interconnection opportunities with GO Transit rail and bus networks.

Exhibit 7: Toronto Transit City Light Rail Plan



The Transit City – Light Rail Plan was endorsed by the Toronto Transit 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.

1.5.4 Provincial Planning Policies

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

1.5.4.1 Provincial Policy Statement

The 2005 Provincial Policy Statement (PPS) is issued under section 3 of the *Ontario Planning Act*. The PPS provides policy direction on matters of provincial interest related to land use planning and development. This project is consistent with the objectives of the 2005 Provincial Policy Statement. The objectives are that transportation, transit and infrastructure facilities are to be planned to meet current and projected needs, providing for an efficient, cost-efficient and reliable multi-modal transportation system that supports long-term economic prosperity. The PPS also states that public transit and other alternative modes of transportation are to be supported to improve energy efficiency and air quality.

1.5.4.2 Growth Plan for Greater Golden Horseshoe

The Places to Grow: Growth Plan for the Greater Golden Horseshoe was prepared under the Ontario *Places to Grow Act*, 2005.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.

1.5.4.3 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 the Greater Toronto Area 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. The Eglinton Crosstown LRT was included as a MoveOntario 2020 project and was announced by the Government of Ontario in 2007.

1.5.4.4 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.

The Regional Transportation Plan includes the Eglinton Crosstown LRT as one of fifteen Priority Actions, and also shows eight mobility hubs along the line. In addition, bike lanes are proposed along the Eglinton Crosstown LRT, which is consistent with the RTP vision. The RTP schedules the Eglinton Crosstown LRT in the first 15 year time frame.

1.5.4.5 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 described, setting the context and eventual development of Ontario Regulation 231/08 the Transit Assessment Regulation (*Transit Projects and Greater Toronto Transportation Authority Undertakings*).

2. BACKGROUND STUDIES AND MAJOR FUNCTIONAL DESIGN OPTIONS

A number of studies were undertaken to resolve the selection of transit method (technology) for this line, and the major design elements. This chapter describes the studies undertaken, and the resultant recommendations. The studies include:

- Transit Methods: To determine the preferred method of providing a fast, reliable and safe transit service;
- Feasibility Studies – To confirm that an LRT system was feasible, and determine a feasible alignment for the central project;
- Single Bore vs. Twin Bore Tunnel Configuration: To address the constructability issues and benefits between a single bored tunnel, and twin bored tunnels;
- Changes in Traffic Operations: To address the changes in traffic operations as a result of the construction of the surface sections of the LRT line; and
- Area Specific Studies: There were a number of studies conducted to deal with issues in a specific geographic area of the corridor. They are presented in order, from west to east, along the corridor.

The results of the studies provided input to the preferred design, which is described in detail in Chapter 3.

2.1 Transit Technologies

A transit system will be considered successful if it can attract new transit riders by offering a fast, reliable and safe transit service. Investing in rapid transit facilities is an important tool available to governments to help shape urban growth and to create areas and corridors of compact, sustainable urban development. To achieve this transit must be an attractive enough mode of travel that the private automobile users will alter their location choices and travel habits. The existing bus service along Eglinton Crosstown LRT corridor is operating in mixed traffic and therefore does not provide enough incentive, from a travel time and reliability perspective, to become an attractive alternative.

The following sections will describe the objectives of the transit technology selction process and the transit technologies that are available available. A summary of the benefits of each technology is provided in a brief evaluation summary, contributing to the final recommendation provided.

2.1.1 Study Objectives

A study was conducted to determine the preferred method of providing a fast, reliable and safe transit service to provide a connection on Eglinton Avenue between Kennedy Subway Station and Pearson International Airport in a manner that:

- Makes transit a much more attractive travel option relative to the private auto so that more people will choose to use transit instead of their cars;
- Is affordable;
- Supports the City's growth objectives for a better variety and density of transit-oriented developments, particularly along the section of Eglinton Avenue that is designated in the Official Plan as 'Avenue'; and
- Gives appropriate consideration to other important City objectives such as good urban design, and an improved walking and cycling environment.

In addition, the recommended design must be developed in a manner that respects other road users, adjacent properties, and the natural environment.

2.1.2 Identification of Alternative Transit Technologies

The City of Toronto's Official Plan forecasts a 270,000(10%) increase in the population of the City by 2031 and explicitly indicates that the travel needs related to this growth will be accommodated through increased non-auto travel. The plan does not support the construction of any significant additional road capacity. Transit is expected to accommodate the largest proportion of the forecast growth in travel demand in the City and the Transit City Light Rail Plan, of which the Eglinton Crosstown LRT Line is a part, has been proposed to achieve this City objective.

Ridership forecasts indicate that the demand for transit services in the Eglinton corridor will significantly exceed the capacity of surface transit services operating in mixed traffic. As illustrated in **Exhibit 8**, surface transit vehicles in mixed traffic operating through a normal grid of road traffic signals, have a practical capacity of approximately 2000 passengers per hour per direction. The transit ridership forecast for the Eglinton corridor is expected to be two to three times this level during peak operating conditions.

Various potential transit methods were identified and evaluated in previous TTC studies, including Do Nothing – with or without Transit Priority Improvements, Travel Demand Management/Transportation System Management, High Occupancy Vehicle (HOV) or reserved curb bus lanes, Bus Rapid Transit, Light Rail Transit etc.

The previous studies concluded that, in order to attract more people to use public transit, the new transit system must be significantly faster and more reliable than the existing bus service transit system, and provide a quality of service comparable to that of private automobiles. Hence, the 'Do Nothing' option with buses operating in mixed traffic represents a continuation of current trends with no significant infrastructure or operational improvements, and does not satisfy the principal objectives of the City's program.

Travel Demand Management (TDM) / Transportation System Management provide measures to reduce the number of vehicles, primarily single-occupant travel operating on the roadway especially during peak periods. Examples include increasing transit usage and encouraging carpooling. The travel forecasting and modeling shows that TDM alone cannot fully address the projected future demand, existing traffic operation concerns, and safety issues. However, TDM should still be used in conjunction with the preferred transit methods for this study.

To achieve the study objective, transit service must have a much greater degree of "protection" from the delays associated with mixed traffic operation. HOV lanes in tandem with bus transit may improve the reliability of bus service, but examples from existing Eglinton Avenue or other locations in Toronto have shown that HOV lanes are extremely difficult to enforce because of the lack of physical separation between the transit lane and general traffic lanes. Also, transit reliability would remain poor during off-peak periods and weekends, when the HOV lanes would not be effect.

For these reasons, the "Do Nothing" alternative, and the option of curb bus lanes, as used in other parts of the city, were not carried forward for further consideration.

There are two key elements when designing transit facilities that operate in reserved lanes:

1. The lanes must be reserved for transit only and not shared with other traffic; and
2. There must be some form of physical separation to ensure that motorists do not travel in the travel lanes illegally.

Given the above criteria, three alternative transit methods were considered for the Eglinton Crosstown LRT corridor:

1. Fully Exclusive Right-of-way: Subway/Rapid Transit or LRT Technology – Electrically powered rail vehicles that operate on a fully exclusive right-of-way – such as a subway, the elevated Scarborough Rapid Transit (SRT) line or LRT vehicles coupled into trains. With no surface operation across any roadways, there is no influence from other traffic. These systems are capable of carrying high volumes of people, quickly and reliably.
2. Light Rail Transit (LRT) – Electrically powered vehicles that operate on a partially exclusive right-of-way (reserved lanes) with traffic crossings at signalized intersections. These systems are capable of carrying medium to high volumes of people with some reduction in speed and reliability compared to fully exclusive right of way operation, but with significantly improved speed and reliability over mixed traffic operation.
3. Bus Rapid Transit (BRT) – Diesel or hybrid powered buses that operate on a partially exclusive right-of-way (reserved lanes) with traffic crossings at signalized intersections. These systems are capable of carrying medium volumes of people with some reduction in speed and significantly reduced reliability compared to fully exclusive right of way operation.

2.1.3 Evaluation of Transit Technologies

2.1.3.1 Elimination of Subway/SRT Technologies

Based on the City's population and employment forecasts for the Eglinton Crosstown LRT corridor, the City and the TTC have projected that the transit demand in the corridor will increase to 5,400 passengers per hour in the peak direction at the busiest point on the line by 2031. The choice of transit technologies is one of matching the technology to the expected level of passenger demand on the corridor in the most cost-effective way. At very high ridership volumes (greater than 10,000 passengers per hour) a fully exclusive right-of-way is required; however in the 2,000 to 10,000 passenger per hour range a partially exclusive right of way can accommodate the demand. Passengers can be provided with a higher speed service on a fully exclusive right of way however increased speeds, alone, would result in only modest increases in transit ridership (access to the transit service, and service reliability are more important factors in attracting passengers).

Typically, the capital cost to construct fully grade separated facilities is four to five times greater than the cost of a surface partially exclusive right of way; depending on circumstances, partially exclusive right of ways therefore can be significantly more cost-effective than fully exclusive right of ways.

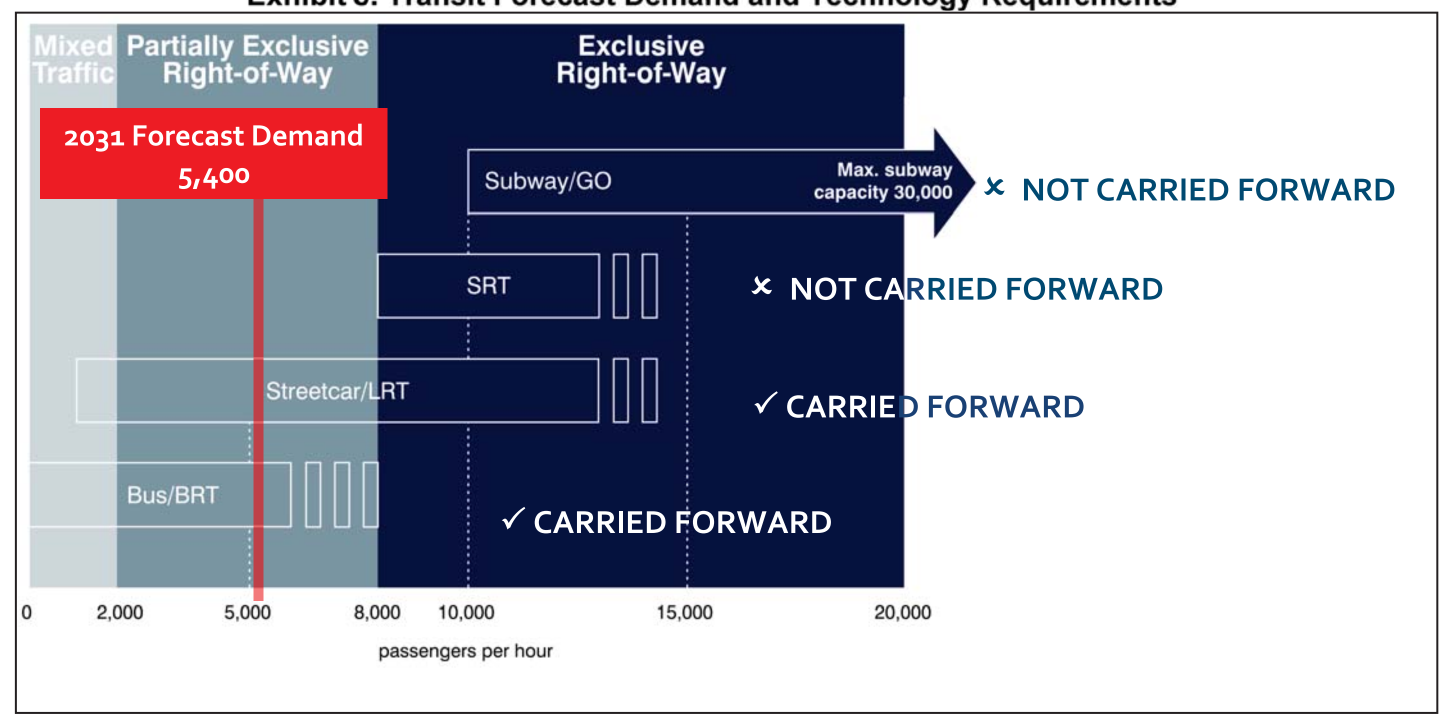
Subway and Rapid Transit (SRT) technology require a fully-exclusive right of way as a result of the vehicle design, whereas BRT and LRT technologies can operate in both a partially-exclusive right of way arrangement, and in a fully exclusive right of way arrangement. The fully exclusive right of way required for SRT technology is not justified if the peak hour demands are not approaching the range of 10,000 people per hour during peak hour in the busiest direction.

As shown in **Exhibit 8**, Transit Forecast Demand and Technology Requirements, the expected future travel demand on Eglinton Crosstown LRT corridor is well below what would be required to justify the high costs of subway or elevated transit-ways. As such, subway or elevated rapid transit (i.e. SRT) were screened out and not carried forward as alternative transit solutions.

The remaining options, LRT and BRT, were evaluated based on four factors:

- Air Quality – Must utilize sustainable technologies – Air quality impacts must be minimized in order to achieve the City's design objectives of a walkable, distinctive, and beautiful community;
- Capacity/Reliability – Capable of accommodating forecast travel demand – In order to invest in infrastructure that supports the City's Official Plan policies and designated growth areas, the proposed transit systems must be able to satisfy the anticipated transit demand resulting from the forecasted development;
- Land Use – Must meet City's Official Plan Policies – This project builds on considerable planning and policy decisions that have already been made for the area and therefore a solution that is in conflict with one or more of these previous decisions are not considered reasonable; and,
- Costs - Reduce operational and maintenance costs while simultaneously improving ridership.

Exhibit 8: Transit Forecast Demand and Technology Requirements



2.1.3.2 Bus Rapid Transit (BRT)

Air Quality

BRT would result in less reduction in emissions at point source locations than LRT, as it is normally provided by bus vehicles powered by diesel or hybrid systems.

Capacity/Reliability

Buses are smaller than rail vehicles and cannot be "coupled" together to operate in pairs or three car trains. As such, a local BRT service – one that services all stops - has less carrying capacity than LRT. High BRT capacities would only be feasible with by-pass lanes to allow some buses to operate express and pass one another at stops, and there is not sufficient space for a 3.5 metres by-pass lane in the Eglinton Crosstown LRT corridor right-of-way while providing a "comfortable" walking environment, bicycle lanes, four through lanes and left turn lanes for traffic.

Moreover, a standard 12 metres bus typically has an average capacity of 50 people per vehicle over the peak period. Given that transit forecast demand is in the order of 5,400 passengers; approximately 108 buses would be required, per hour, to service the demand. Even if articulated buses were purchased, it would only reduce the minimum number of buses to 72 per hour. In a partially grade-separated operating environment, transit service reliability is closely tied to traffic signal operation. As the frequency of service increases to be close to the normal traffic signal cycle length (40 cycles per hour) it becomes increasingly difficult to prevent bunching and gaps between vehicles, resulting in unreliable service.

Land Use

As described in Chapter 1, the Official Plan for the City of Toronto identifies Eglinton Avenue as an Avenue, where redevelopment and growth is encouraged. To achieve the desired redevelopment and growth, high quality, reliable transit is essential.

As stated earlier, BRT service would suffer from capacity and reliability issues in the Eglinton Crosstown LTR Corridor. Unreliable service would serve as a deterrent toward promoting redevelopment and growth, and development interest would move to other locations where transit service is more reliable. Therefore, since BRT could not provide high quality, reliable transit service in the Eglinton Avenue corridor, BRT was judged to be unab le to meet the goals of the Official Plan regarding land use.

Cost

BRT costs less than LRT to implement – roughly $10 million per kilometre.

2.1.3.3 Light Rail Transit (LRT)

Air Quality

Since LRT vehicles are electrically powered, no emissions would be produced on the street.

Capacity/Reliability

The new Light Rail Vehicles that will be designed for the TTC have a much higher carrying capacity than BRT. A 30 metres LRT vehicle can comfortably carry an average of 130 people. A peak point demand of 5,400 passengers per hour would require a vehicle about every 1 minute, 30 seconds. This frequency would likely be difficult to operate and may result in vehicle 'bunching'. Therefore, when approaching this demand, the Light Rail Vehicles would be 'coupled' or 'tripled' in two or three car trainsets and operated (i.e. 60 metres or 90 metres), so that the time between vehicles would be about 3 to 4 minutes, which makes for a more-manageable operation.

Land Use

LRT technology was found to meet the travel demand needs of the Eglinton Avenue corridor as stated earlier. Further, as described in Chapter 2, the traffic signal system, with modifications to the turning movements at nine key intersections, is able to accommodate LRT service reliably. Because the LRT mode can provide reliable service that meets projected demand, LRT was judged to be able to meet the goals of the Official Plan regarding land use.

Cost

While it costs more to construct than BRT – roughly with a total cost of over $30 million per kilometre on the surface, LRT can be more efficient than BRT in operational costs.

LRT outperforms BRT in lifespan of vehicles as well. Buses generally have an operating life of approximately around 15 years, after which they either require major improvements or complete replacement. LRT vehicles have records of operating smoothly for up to 35 to 40 years thereby being nearly 50% more efficient in the long run.

2.1.4 Recommended Transit

LRT was recommended as the preferred transit method over Subway/SRT and Bus Rapid Transit mainly due to its passenger carrying capacity. The City forecast peak point demand for the Eglinton Crosstown LRT corridor as shown in **Exhibit 8** is 5,400 passengers per hour which is below the threshold of 10,000 passengers per hour that is normally required to justify the very high cost of constructing Subway/SRT facilities. BRT would not adequately accommodate the forecast peak hour demand of 5,400 people and address other City objectives (i.e. attractive walking and cycling environment).

LRT makes transit a more attractive travel alternative to the private auto, particularly in the future with increased travel demand and congestion. It also supports the City's objectives, for development in the corridor related to urban design and providing a more attractive walking and cycling environment.

Therefore LRT is the recommended Transit Solution as it fulfills passenger requirements, integrates with the physical environment, and provides flexibility for future growth. Also, it supports the City's official plan policies to create a better integrated transit system, reduce car dependency on roads (thereby lowering emissions) and increased ridership along this corridor.

LRT vehicles will be of modern European-style design with a length of approximately 30 metres. Trainsets will consist of two cars initially, with opportunity to expand to three cars when ridership levels warrant. The capacity of the LRT for planning purposes is 260 passengers for two car trainsets and 390 passengers for three car trainsets. Maximum operating speed is 60 km/hr; though vehicles will not be permitted to operate above the posted speed limit along Eglinton Avenue. The vehicle's average speed including stops is projected to be 28-31 km/hr in the west surface section, 22-25 km/hr in the east surface section and 32 km/hr underground.

Trains will be powered by electricity from overhead catenary wires. Train operations on the surface sections of the LRT corridor, both train control and opening/closing of doors, will be controlled by on-board staff. In the underground section of the LRT corridor, vehicles may be controlled by automatic train operation (ATO).

The LRT vehicles will be fully accessible to all riders, with low floor vehicles with level boarding from platforms. Boarding will occur on all doors to reduce time spent serving stops/stations. Doors will be located on both sides of the vehicle to accommodate centre and parallel platforms. Operator cabs will be located on both ends of the trainsets to permit operation in either direction without the requirement for turn around loops.

The track technology to be used is a combination of a continuously welded rail with a rubber sleeve that isolates the rail from the concrete. This elimination of rail joints combined with the isolating sleeve provides a smooth operation with limited noise and vibration that is no different than the noise levels of a busy street.

Exhibit 9: Examples of LRT Vehicles

Proposed Toronto Streetcar Vehicle **Minneapolis, USA**

2.2 Feasibility Studies

During the preliminary planning phase, feasibility studies were conducted to determine the feasibility of the surface sections, feasibility of the underground sections, and stop and station locations. The studies confirmed, in general, the ability to construct the surface sections in the corridor, and the limits of the underground section.

2.2.1 Renforth to Kennedy Station

Following the endorsement of Transit City in March 2007, the Toronto Transit Commission conducted a study to investigate the feasibility of a surface LRT right-of-way along Eglinton Avenue. The limits of the project were from Renforth Avenue in the west and Kennedy Road in the east. The study was carried out to identify preliminary LRT surface right of way requirements as well as other major physical constraints that may impede the construction of a LRT line along Eglinton Avenue. Various conceptual subsurface configurations and station layouts were developed for the interfaces with the Yonge Subway line at Yonge Street and the Spadina Subway line at Allen Road. The study concluded that an LRT was feasible with engineered solutions required to overcome constraints.

The analysis revealed that there were three portions to the Eglinton Avenue corridor:

- West segment (7.7 kilometres, Renforth Drive to Jane Street), predominant right of way width equal to or greater than 35 metres. Surface LRT can be designed through the section.
- Centre segment (12.6 kilometres, Jane Street to Leslie Avenue), predominant right of way width between 20 and 25 metres. The standard surface design LRT cannot be provided through this section; therefore an underground alignment is required.
- East segment (6.9 kilometres, Leslie Avenue to Kennedy Road), predominant right of way width equal to or greater than 35 metres. Surface LRT can be supported through this section.

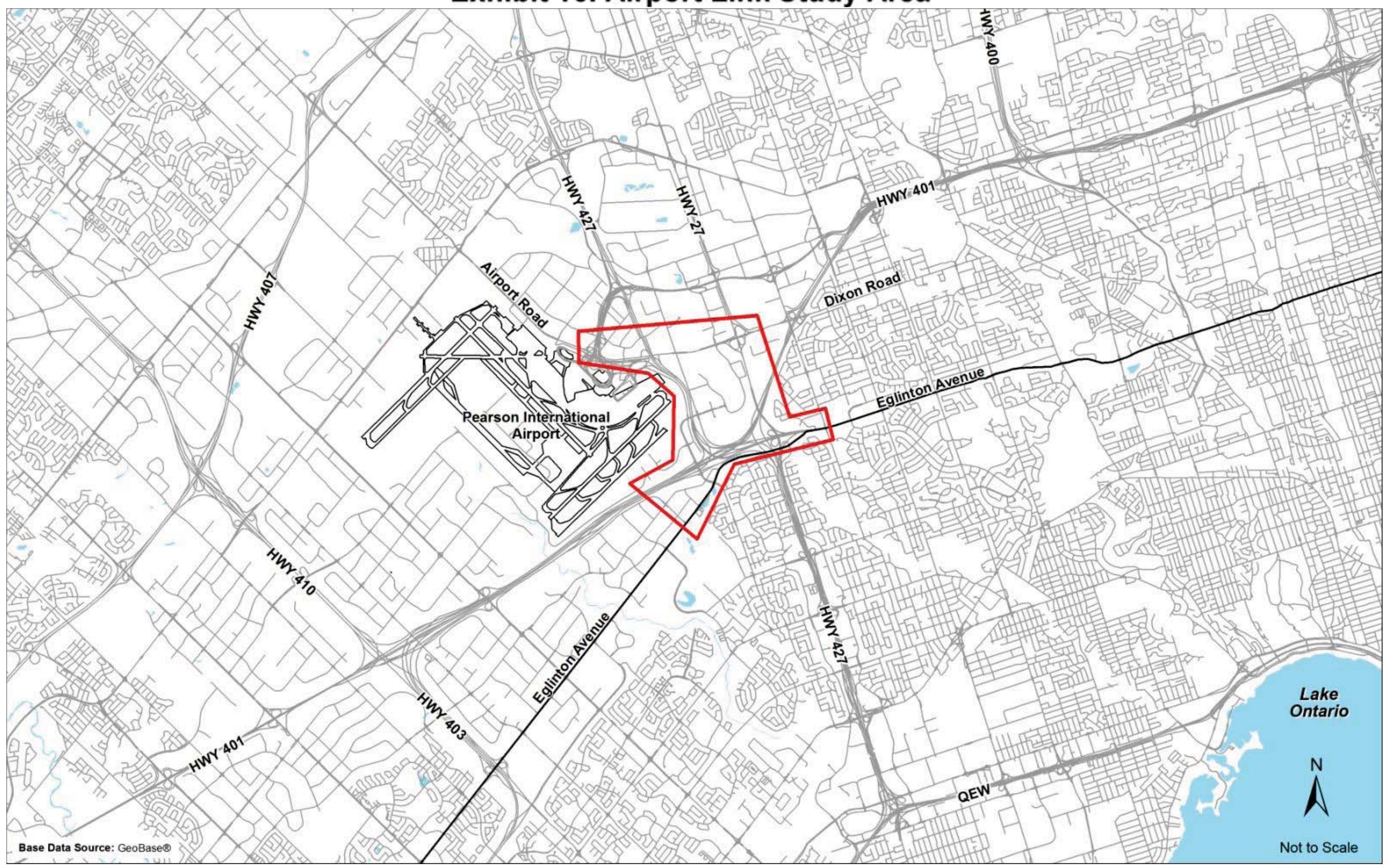
The report recommended that the minimum underground section extend from east of Black Creek Drive to east of Brentcliffe Road.

As part of the Transit Project Assessment, the limits of the underground alignment were studied further to evaluate whether further extensions of the underground section were warranted. A study, “Jane Street to Keele Street – An Evaluation of Vertical Alignment” which evaluates the west limit of the underground section is summarized in **Section 2.2.10** and is included in **Appendix K** of this report.

2.2.2 Airport Link Pearson International Airport to Martin Grove

A feasibility study for the Airport Link area was conducted to determine if there was a logical and feasible connection to Pearson International Airport from Eglinton Avenue for the Eglinton Crosstown LRT and, if so, to identify a preferred alignment. Limits of this evaluation are Eglinton Avenue to the south, Martin Grove Road to the east, Pearson International Airport/Orbitor Drive to the west and Dixon Road to the north as shown in **Exhibit 10.**

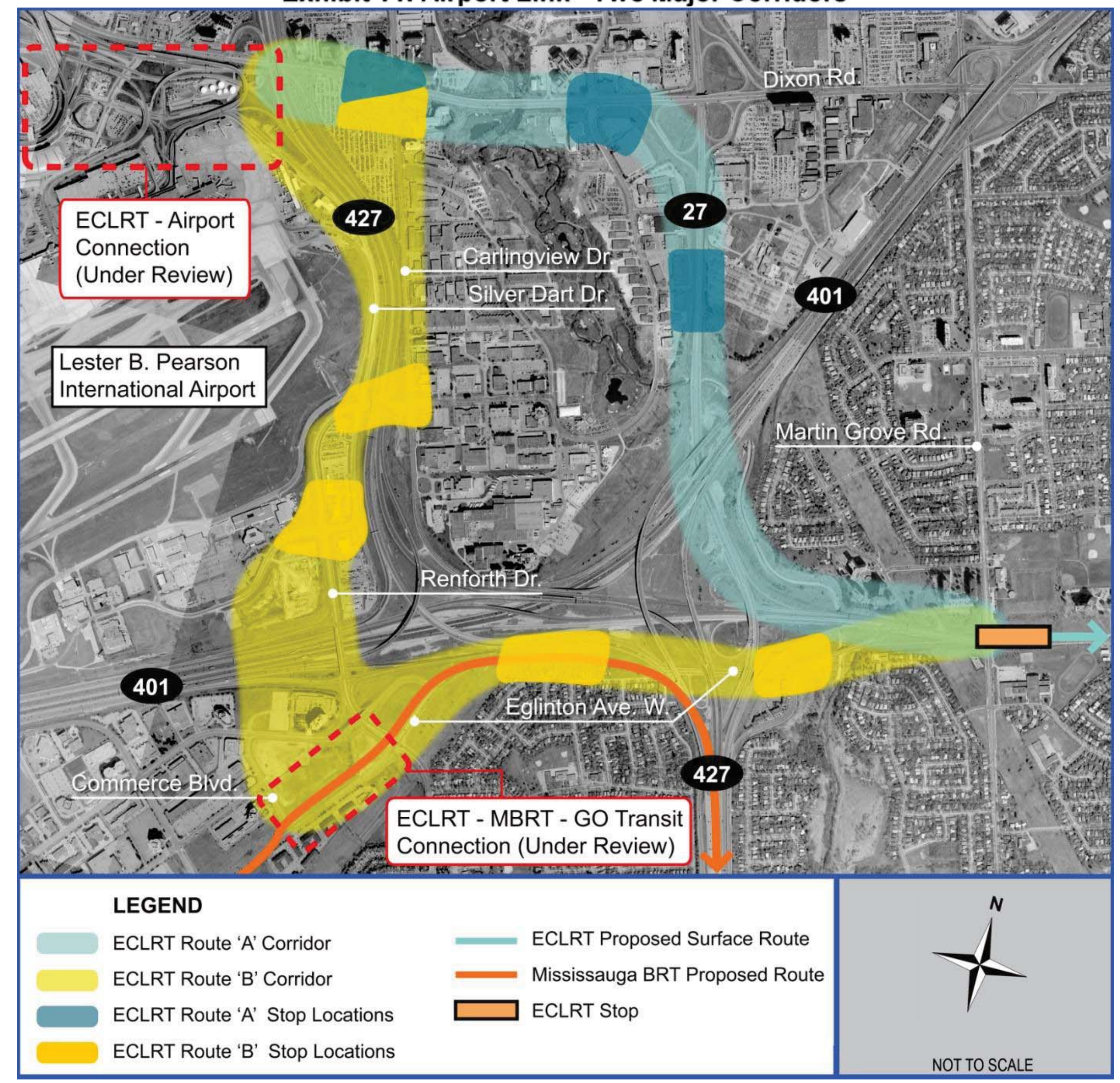
Exhibit 10: Airport Link Study Area



The study area contains an unusually complex system of major highways: Highways 427, 27 and 401 all traverse the area, and are interconnected by a number of bridges, ramps, collector and express lanes.

Two main corridors were considered for the connection between the intersection of Eglinton Avenue and Martin Grove Road and the Pearson International Airport as shown in **Exhibit 11,** with multiple alternative routes within each.

Exhibit 11: Airport Link - Two Major Corridors



2.2.3 Key Challenges and Constraints

Key challenges and constraints were identified and researched in the process of developing route options. The overall challenge was to determine the best route for providing an LRT link from Martin Grove Road to Pearson International Airport. The main challenge was to ensure the technical feasibility of constructing the LRT through the complex highway system with the following objectives:

- Minimizing the cost and logistical problems associated with relocating or avoiding major utilities;
- Keeping the LRT tracks, traffic lanes and sidewalks within existing rights-of-way with minimum impact to adjacent properties;
- Avoiding costly alterations and additions to existing bridge structures;

- Minimizing impacts on the built and natural environments;
- Providing a route with the greatest potential for promoting and supporting future development;
- Providing a route with the least travel time while maintaining convenient public accessibility.
- Providing a route that would meet forecasted travel demands including the proposed Mississauga BRT and GO Transit BRT facilities; and
- Providing efficient interfaces with all transportation modes.

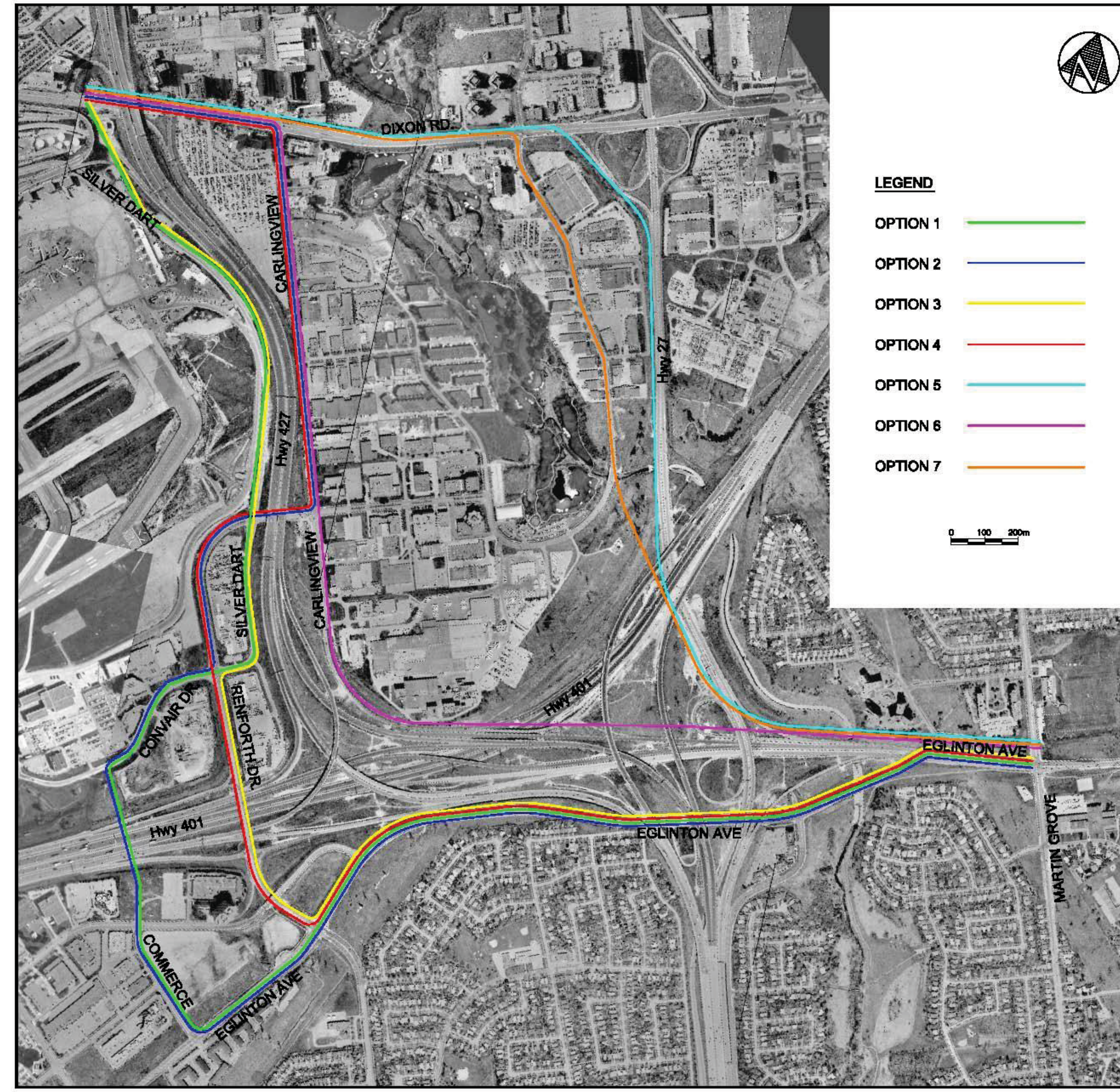
2.2.4 Options

Two major corridors, one located along Renforth/Commerce and one located along Highway 27, and eight alignment options located within the two corridors, were identified including:

- Option 1 - Eglinton/Commerce/Convair/Silver Dart;
- Option 2 - Eglinton/Commerce/Renforth/Carlingview/Dixon;
- Option 3 - Eglinton/Renforth/Convair/Silver Dart;
- Option 4 - Eglinton/Renforth/Carlingview/Dixon;
- Option 5 – Highway 27 Underground then to Dixon;
- Option 6 - Martin Grove/Hwy 427 (underground)/Carlingview/Dixon;
- Option 7– Highway 27 at Surface; and
- Option 8 – Highway 27 Spur Line. This option includes a combination of the options to Renforth Drive and the options up the Highway 27 corridor. A “spur” line is provided from Martin Grove Road to Renforth Drive, and the connection to the airport is provided via the Highway 27 corridor.

The two major corridors and eight alignment options are presented in **Exhibit 12**.

Exhibit 12: Airport Link - Eight Alignment Options



2.2.5 Evaluation

2.2.5.1 Renforth/Commerce Corridor

Routes along this corridor would follow Eglinton Avenue and would pass under the eight bridges west of The East Mall carrying Highways 427/27 and ramps. Initial studies of the horizontal and vertical clearances with the addition of the LRT tracks showed that there is adequate clearance for the LRT tracks and traffic lanes through the underpasses. No major impacts are anticipated with the addition of the LRT tracks.

However, the following structural work would be required if the route were to fall within the Renforth/Commerce corridor:

- A retaining wall would be required on the south side of Eglinton Avenue due to the introduction of a sidewalk in the existing side slope under the Highway 427 underpass;
- At Mimico Creek, the Eglinton Avenue bridge would require widening;
- At Renforth Drive over Highway 401, a bridge structure carrying the LRT over Highway 401 will be required;
- At Renforth Drive under Highway 427, studies showed that there is insufficient clearance between structure abutments to accommodate LRT and required traffic lanes/sidewalks; and
- At Highway 427 over Dixon /Airport Road, it was determined that it would not be feasible to implement an elevated guideway for the LRT due to the extreme height required to clear Highway 427. A surface option with the LRT on Dixon/Airport Road would be feasible, with the LRT on centre road alignment.

2.2.5.2 Highway 27 Corridor

Study results indicated that the most significant challenge is the crossing of Highway 27/Highway 427. There is no available space to accommodate the LRT under the existing bridges. Any route crossing at this location would require rebuilding the overpasses, or accommodation of the LRT in a tunnel.

In addition, Mimico Creek falls within a regional flood plain, and the implementation of the LRT would impact the flood plain. These impacts presented challenges in relation to the location of the LRT above the regional 500 year flood elevation, and to other potential environmental impacts.

Relocation of major utilities is a lengthy and expensive process that should be avoided or minimized, where possible. Research of available existing utility plans shows that several major utilities are located within the study area. These have the potential to impose technical constraints in locating the LRT: Sun Canadian oil and gas pipelines, Toronto Hydro corridors, and a 54” sanitary sewer all traverse the area. Storm water, sanitary sewer and water mains, as well as telecommunications and electrical distribution systems, will impact each alternative route. Accommodation of these utilities, with relocations where necessary, will be addressed at the preliminary engineering design stage.

For the Commerce/Renforth corridor, no major storm or sanitary drainage impacts were identified.

2.2.5.3 Screening

The development and evaluation of alternative alignment concepts was conducted in five stages: Information gathering, route development, initial screening, refinement, and evaluation of options.

After initial screening, three routes were eliminated due to significant issues which disqualified them for further consideration:

- Option 5 - Martin Grove/Hwy 427 (underground)/Carlingview/Dixon Option
  - This route failed to meet the criterion for ease of implementation, due to the major tunnelling operation that would be required to traverse from Martin Grove Road to the junction with Carlingview Drive. The east tunnel portal would lie in the 500 year flood plain of Mimico Creek
  - There would be a relative lack of opportunity to serve a significant number of transit users: The eastern half of the route would have no feasible place to locate a stop, and the line would be inaccessible to any potential users south of Eglinton Avenue
  - There are high costs associated with the complex tunnelling operation, with relatively little benefit
  - Poor inter-regional connectivity would result from this route’s remoteness from the Mississauga BRT hub at the Renforth gateway.
- Option 6 – Highway 27 at Surface
  - This route failed to meet criteria for ease of implementation, because there is insufficient clearance through the Highway 401 overpasses to allow surface construction. This would necessitate tunnelling, with construction difficulties,
  - As in the previous alternative, there would be a relative lack of opportunities to serve a significant number of transit users, again with the eastern portion having no user access,
  - If this route were to be implemented, there would be high costs associated with the tunneling, and
  - Poor inter-regional connectivity would result from this route’s remoteness from the Mississauga BRT hub at the Renforth gateway.
- Option 8 – Highway 27 Spur Line.
  - This route’s primary drawback was the high additional cost of constructing a special LRT spur line to make the connection for passengers to the Mississauga BRT station at Renforth gateway,
  - There would be high operational costs associated with this option, resulting from the inability to easily maintain headways, and
  - The inter-regional connectivity would be poor and only available for those passengers who selected the LRT service travelling the spur line.

The remaining route alignments were carried forward for further evaluation.

2.2.5.4 Interface with Mississauga BRT/GO Transit

Three alternatives were proposed for the interfae with the future Mississauga/GO Trans BRT facility. The City of Mississauge is planning the facility on the north-east quadrant of Eglinton Avenue and Commerce Blvd. **Exhibit 13, 14 and 15** show three alternatives 1, 2, and 3 for the LRT station.

Exhibit 13: Alternative 1 – Eglinton Avenue Single Centre Platform

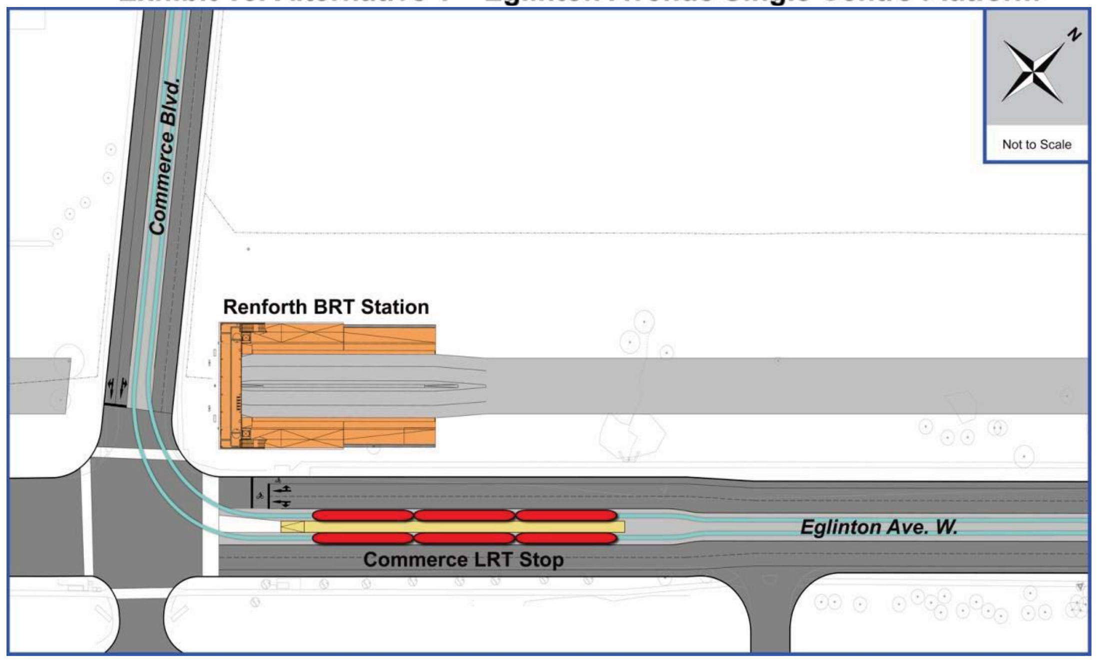


Exhibit 14: Alternative 2 – Commerce Boulevard Single Centre Platform

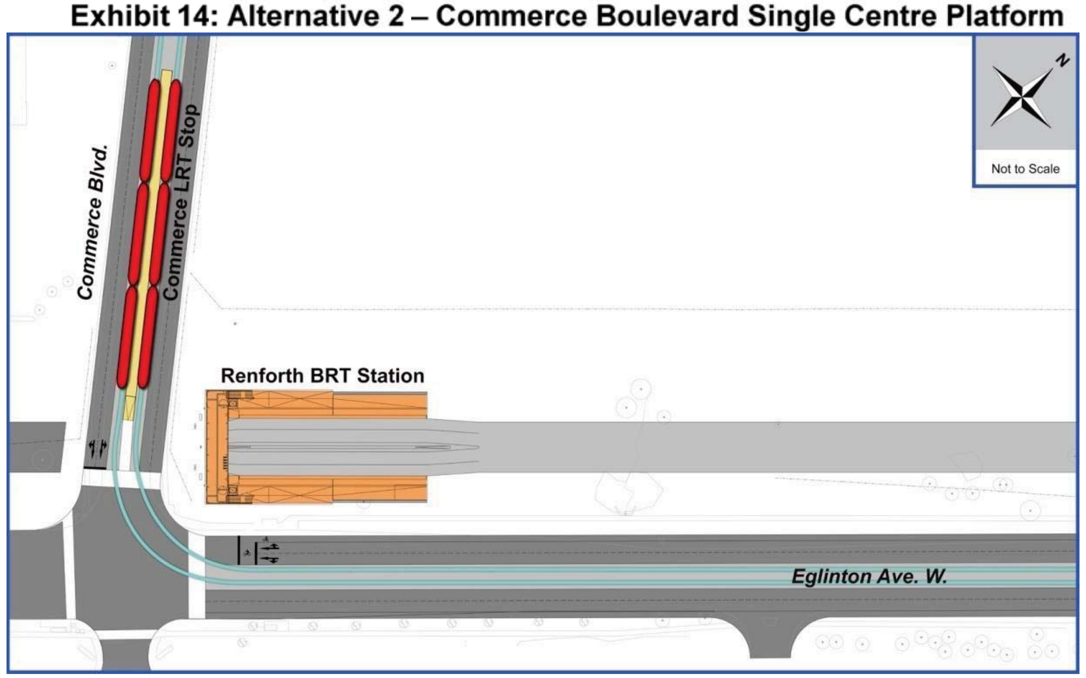
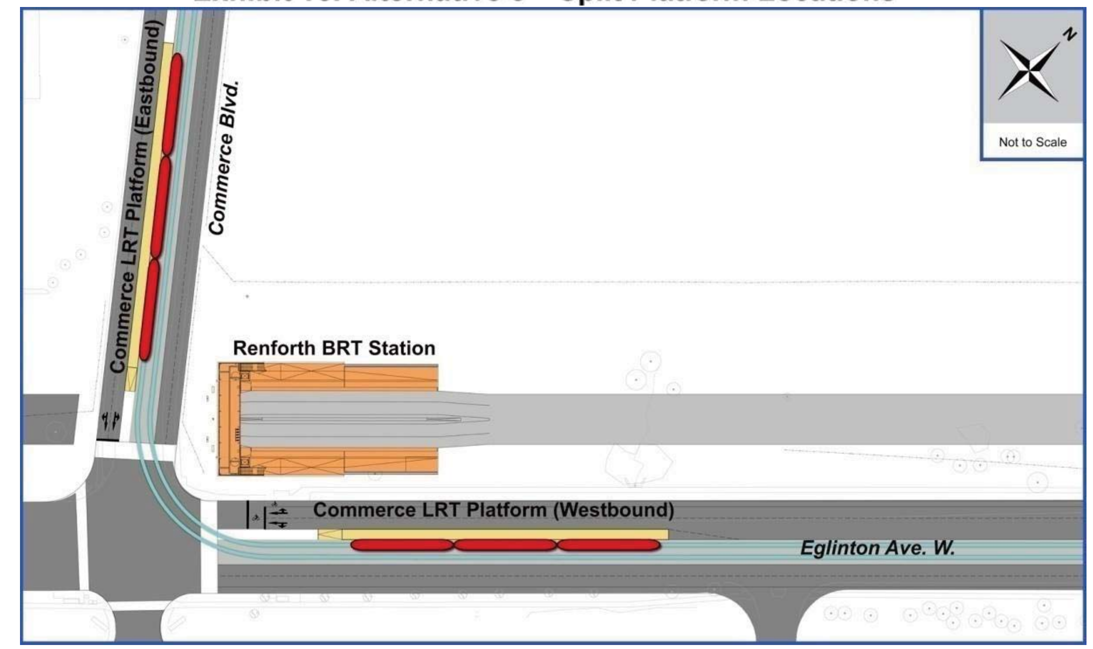


Exhibit 15: Alternative 3 – Split Platform Locations



The selection of a preferred scenario became the subject of a special traffic study to determine the impacts on traffic and pedestrian movements, signalization design, and the quality of interface with Mississauga BRT. The traffic study concluded that Alternative 2, with the LRT stop located on Commerce Boulevard, with centre platform, was the preferred option.

2.2.5.5 Summary

The five remaining route options to the airport were carried forward for further study. The core criteria that were used for final evaluation were:

- Technical Feasibility: The engineering issues, including physical fit (potential conflicts with roadways and major underground utilities, and resultant need for bridges and/or tunnels), property impacts, and traffic operations impacts.
- Travel Time: The predicted travel time for the LRT service from Martin Grove Road to the airport “gateway” immediately west of Highway 427.
- Estimated Capital Cost: The engineering and construction costs.
- Development Opportunity: The potential to serve planned development with 500 metres of the proposed stop locations for each alternative.
- Ridership Forecast (2031): The ability of each alternative to attract ridership, based on 2031 population and employment forecasts for the area.
- Inter-Regional Connectivity: The ability of each alternative to provide a convenient connection with the Mississauga BRT facility.

For each alternative, a score between 1 to 5 is given for each criteria where 1 is least preferred, and 5 is most preferred. The score is not a rank, i.e. more than one alternative may be given the same score under the same criteria. At the conclusion of the evaluation process, the alternative with the ***highest total score*** was determined the ***most preferred***.

The evaluation scoring summary is shown in **Exhibit 16.**

Exhibit 16: Airport Link - Route Evaluation Scoring Summary

CRITERIA	ROUTE OPTIONS				
	RENFORTH/COMMERCE				HIGHWAY 27
	Option 1	Option 2	Option 3	Option 4	Option 5
EASE OF IMPLEMENTATION	4	2	3	2	1
TRAVEL TIME	3	1	4	3	5
ESTIMATED CAPITAL COST	4	1	5	3	2
DEVELOPMENT OPPORTUNITY (2031)	4	5	3	5	4
RIDERSHIP FORECAST (2031)	3	3	3	3	3
INTER-REGIONAL CONNECTIVITY (Mississauga BRT and GO Transit)	5	5	3	3	1
Note: Scores above are 1 (least preferred) through 5 (most preferred).					
TOTAL SCORE	23	17	21	19	16
OVERALL RANKING	First	Fourth	Second	Third	Fifth

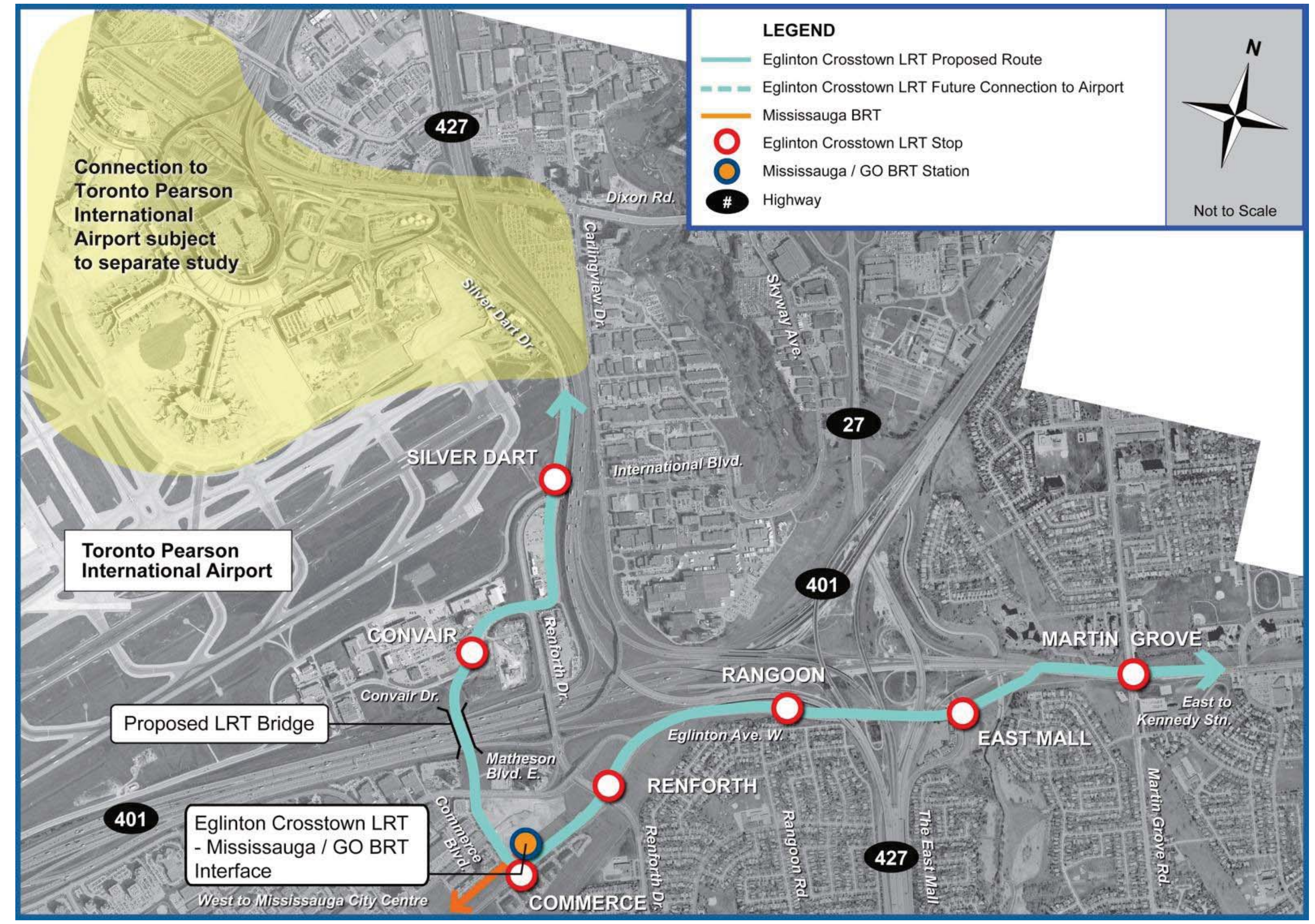
2.2.6 Recommendation

The preferred alignment was Option 1 – Eglinton/Commerce/Convair/Silver Dart as shown in **Exhibit 17** because it scored the highest. This alignment includes a proposed bridge located over Highway 401 to connect Commerce Boulevard with Convair Drive.

This alignment was selected based on two major factors:

- It offers the least cost for the greatest benefit in terms of connection and transfer convenience to the Mississauga/GO BRT; and
- It has the least technical constraints, including shortest guideway span across Highway 401 and with no impacts to existing on/off ramps.

Exhibit 17: Preferred Alignment Option 1 – Eglinton/Commerce/Convair/Silver Dart



2.3 Single Bore vs. Twin Bore Tunnel Configuration

A comparative study, "*Eglinton Crosstown LRT: Single vs. Twin Tunnelling – A Preliminary Study",* between Single Bore and Twin Bore tunnelling options for the Eglinton Crosstown LRT was conducted to investigate benefits that single and twin tunnels offer. This study investigated the advantages of single bore technology reducing the impacts of the station construction process. The primary feature of a Single Bore tunnel configuration is that station platforms, crossovers and tail tracks are all accommodated within the tunnel cross section. Therefore, the location of each of these major elements can be adjusted along the entire corridor to maximize design efficiency and minimize construction impacts. Another key feature is that station structures can be located on either side of of the road. This allows such structures, which are constructed using cut-and-cover, to be built with minimal impact on traffic. However, on the other hand, the single bore tunnel must be significantly deeper underground, which means that more stairs and escalators are required at the stations.

Under a Twin Bore tunnel configuration, two tunnels are bored, one to accommodate each direction of LRT rail track. The station platforms, crossovers, and tail tracks are constructed using cut and cover construction. An approximate 6 metres diameter tunnel for the Twin Bore option and an approximate 13 metres diameter tunnel for the Single Bore option were assumed. Single and twin bore tunnel cross sections are presented in **Exhibit 18** and **Exhibit 19**.

2.3.1 Key Challenges and Constraints

2.3.1.1 Stations

The following criteria and/or assumptions are common to both Single Bore and Twin Bore station types:

- All stations will have at least two entrances (main and secondary) and one emergency exit;
- Main entrance is fully accessible with one elevator;
- Automatic entrances (second entry) occur only at Allen and Yonge Stations; and
- All other stations include standard second entrances with stairs only.

Exhibit 18: Single Bore Station Cross Section

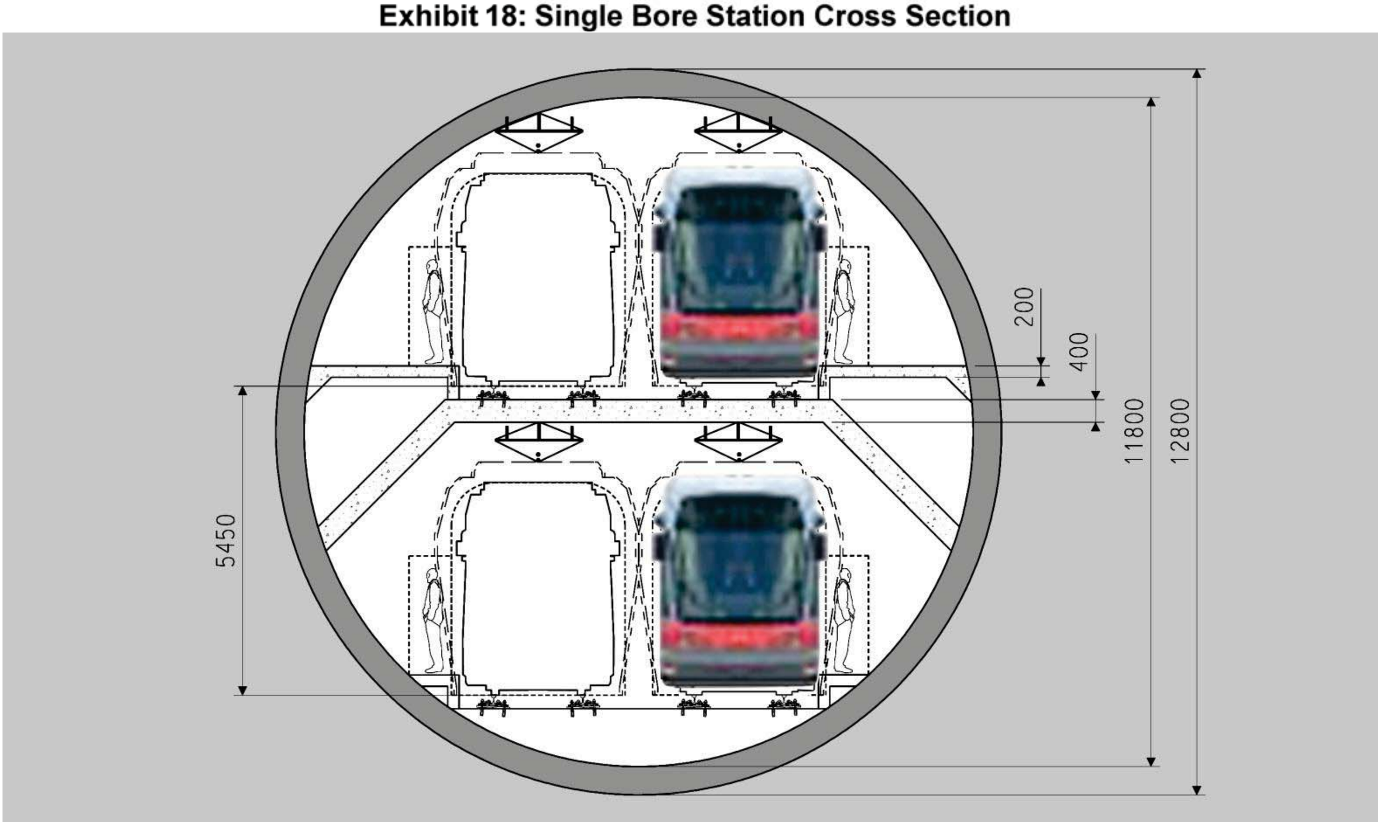
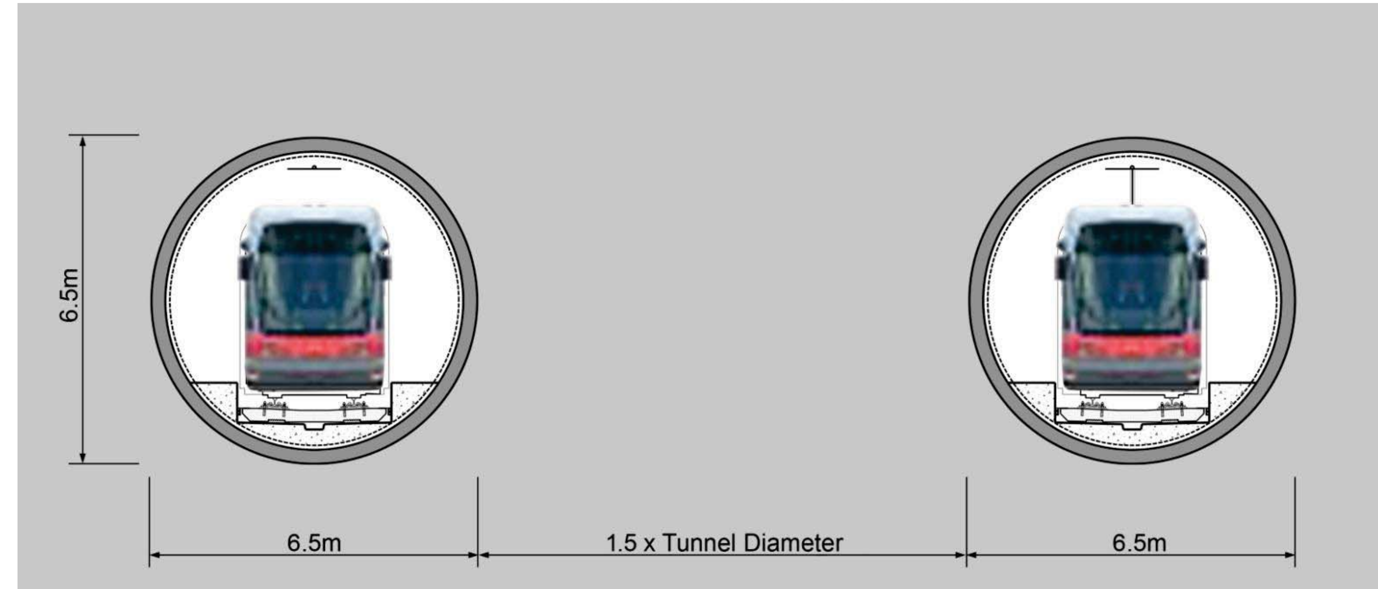


Exhibit 19: Twin Bore Station Cross Section



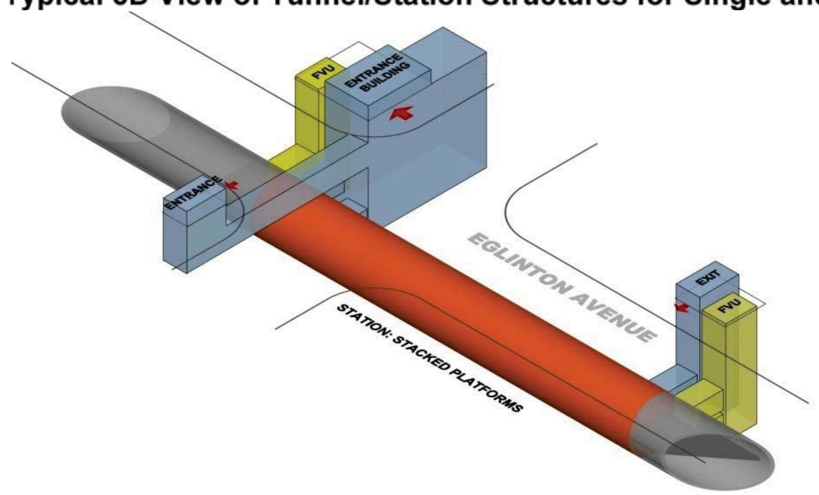
2.3.1.2 Design Approach

Stations constructed with a Single Bore tunnel include platforms located within the tunnel itself, one at each level and to one side of the runningway.Therefore, a single point of entry/egress to/from both platforms could be located anywhere along the length of the platform(s). In addition, the stacked side platforms can be located to either side of the runningway within the tunnel depending on the preferred location of the main entrance building. The upper platform is located at a depth of approximately 18 metres and the lower platform would be at a depth of approximately 23.5 metres. Structures would include a main entrance building and at least one emergency exit building located at either end of the station. These structures would be separate entities connected to the Single Bore tunnel and platforms via separate pedestrian tunnels and shafts approximately 7 metres in length when located within the typical 26 metres right-of-way. The main vertical circulation would include two sets of escalators. Due to the depth of the station platforms, an additional escalator could be required to facilitate faster passenger access between the platforms and the street. The size of the entrance building and underground structure would depend on the type of vertical circulation and its organization.

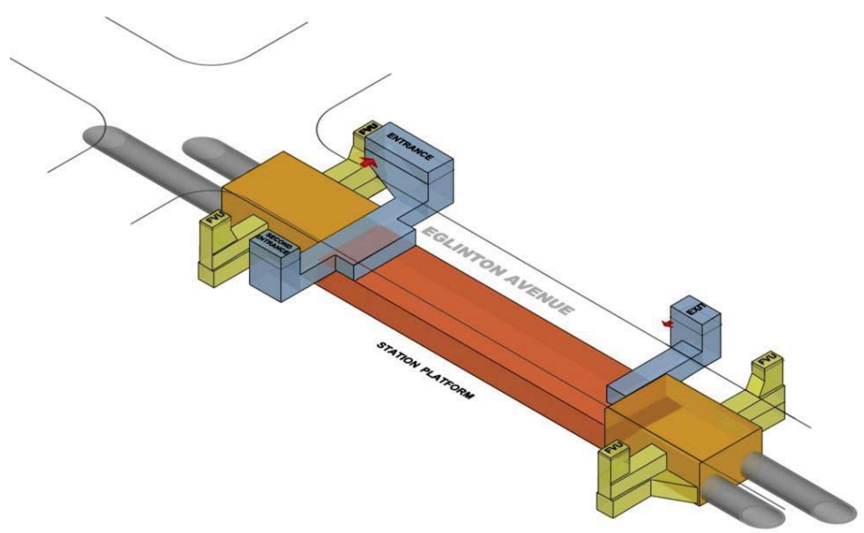
Stations constructed with a Twin Bore tunnel are generally independent box structures based on standard subway design. These station boxes consist of a 90 metres centre platform and 30 metres service areas at either end of the station box including a concourse above the platform. The centre platform is generally not as deep as a single tunnel and would be located approximately 13 to 16 metres below street level depending on site conditions but can also be deeper (over 20 metres) due to topography, existing utilities or subway alignments. The concourse would occupy a smaller footprint above the platform and can be a separate box structure above the platform box structure or it can be an architectural element within a larger 2-storey station box structure allowing passengers to see the platform below. Entrances would connect directly to the concourse from either side of the roadway whereas emergency exits would have direct connection to the centre platform. Entrances can be smaller in size compared to those provided to and from an underground station constructed with a Single Bore tunnel, due to lesser requirements for escalators.

Exhibit 20 presents a three dimensional view of the tunnel and station structures constructed with single and twin bore tunnels.

Exhibit 20: Typical 3D View of Tunnel/Station Structures for Single and Twin Bore



Single Bore



Twin Bore

2.3.1.3 Construction Methodology

For cost and schedule estimate purposes, the study was carried out under the assumption that four, approximately 6 metres diameter TBMs would be needed for the Twin Bore or two, approximately 13 metres diameter TBMs would be needed for the Single Bore. Under either option, the TBMs will be launched from each end of the underground alignment, around Black Creek Drive in the west and Brentcliffe Road in the east. They would be retrieved (taken out of the ground) around the midpoint of the tunnel near Chaplin Station.

Construction of the platforms occurs within the Single Bore tunnel and would have no impact on adjacent properties or surface activities. In addition, the continuity and independence of the tunnel from the vertical structures allows for increased capacity with ability to lengthen the platforms without additional impacts. The platforms will be 96 metres long to accommodate a three-car train without requiring additional construction or structural work outside the tunnel. Additionally, should demand warrant, these platforms can be extended even further, limited only by the vertical alignment constraints and special trackwork

The stations along a twin tunnel alignment would be constructed using a cut and cover method affecting street level activities, causing business interruption and necessitating utility relocation during the construction phase of the station. To avoid major impacts at intersections, it is preferable to locate the station box outside the intersection where possible. This increases the passenger travel distance between the platform and connecting surface stops. If passenger movement is provided underground, this results in longer tunnels. From a planning and passenger perspective platforms are preferred to be located as close to the intersection as possible to reduce the transfer time between connecting surface transit routes.

Exhibit 21 and **Exhibit 22** show typical construction impact for single bore and twin bore tunnels.

Exhibit 21: Construction Impact Assuming Both Stations are Located at the Centre of the Intersection

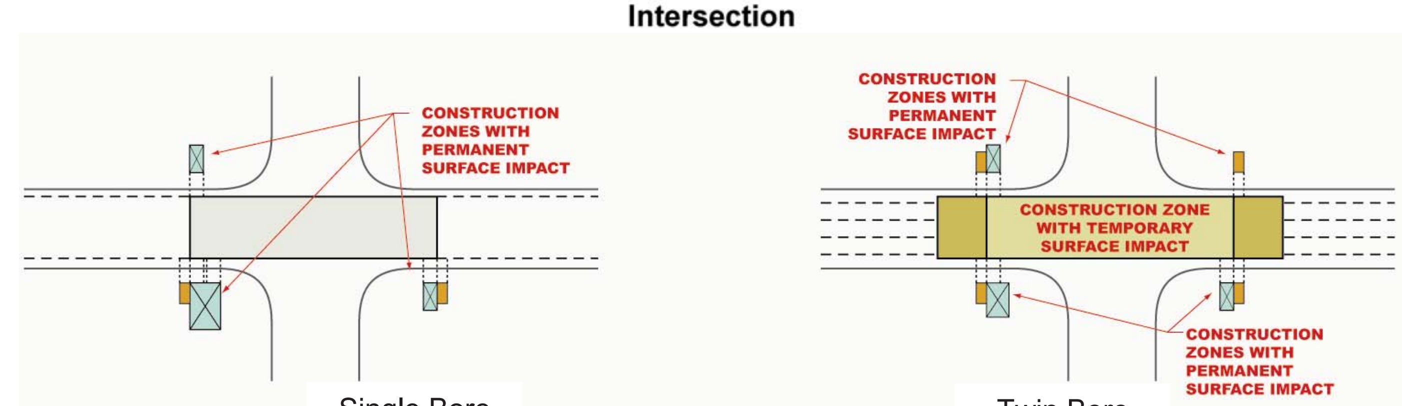
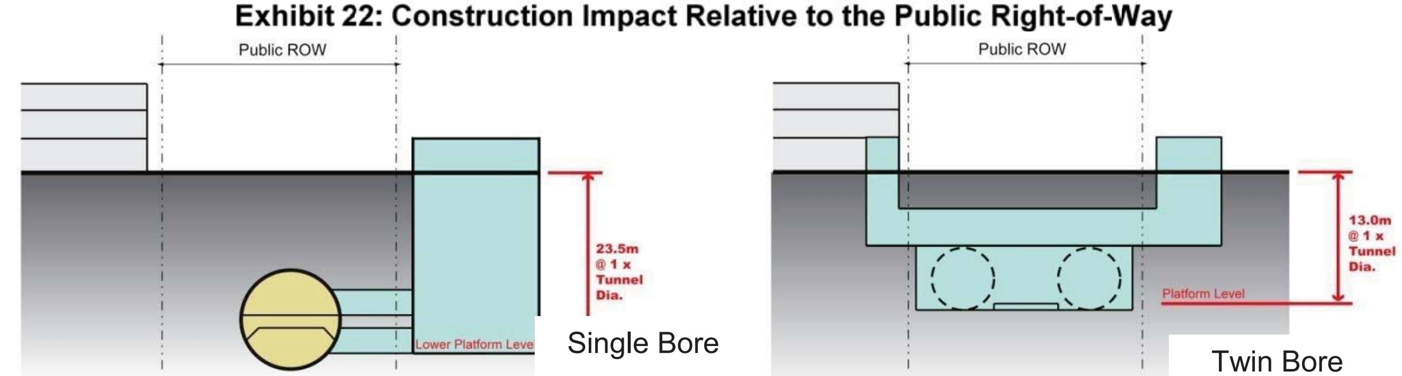


Exhibit 22: Construction Impact Relative to the Public Right-of-Way



2.3.2 Options

The two options considered were:

- Single Bore tunnel configuration; and
- Twin bore tunnel configuration.

2.3.3 Evaluation

The criteria used to evaluate the single bore vs. the twin bore tunnel options included:

- Order of magnitude construction cost estimates;
- Preliminary construction schedules;
- Effects of geological conditions along the corridor;
- Track alignments;
- Station configurations;
- Aspects of the fire/life safety systems;
- Construction staging;
- Environmental concerns such as surface disruptions, maintenance and protection of vehicular and pedestrian traffic; and
- The potential for secondary project concerns such as Transit Oriented Development and LEED certification.

Single bore was considered potentially less disruptive at the surface in the vicinity of stations. However, this option was less desirable due to the following:

- A single bore tunnel would be in excess of 13 metres in diameter and would be the largest bore ever attempted in North America.
- Soil conditions within the existing geological strata would make it difficult to control settlements at the surface and to adjacent buildings during the boring operations.
- There are a limited number of contractors locally/nationally that have experience with boring large diameter tunnels which would limit competition.
- The time required to manufacture a tunnel boring machine of that diameter would be longer than the time necessary to manufacture the small tunnel boring machines and thus may have a negative impact on the construction schedule.
- The lower station platform of the single bore tunnel scheme would have been at a depth that would cause a significant cost increase in achieving the fire and life safety criteria as established by TTC as well as adding distance to pedestrian travel between the surface and platform levels.
- The station areas would require more private property.

2.3.4 Recommendation

Based on the foregoing evaluation, twin bore tunnel was selected as the preferred tunnel configuration.

2.4 Change in Traffic Operations

The implementation of the Eglinton Crosstown LRT in reserved lanes on Eglinton is projected to change the way traffic operates along Eglinton Avenue. The anticipated changes to traffic operation and their associated impact on traffic operation are shown in **Exhibit 23.**

Exhibit 23: Operational Traffic Changes and Impacts

Change	Impact
Left-turn will be prohibited at existing unsignalized side-streets and entrances (i.e. to become right-in and right-out accesses)	Will redirect left-turning traffic to nearby signalized intersections.
East-west left turns at signalized intersections will operate as protected only (i.e. will operate only under a dedicated left-turn phase) to prevent collisions with LRV.	Will reduce the east-west left turn capacity of signalized intersections on Eglinton Avenue.
Reduced roadway capacity due to the removal of one travel lane in each direction along Eglinton Avenue East.	Will reduce the east-west through capacity of traffic signals on Eglinton Avenue East.

With the LRT operating in its own right-of-way in the centre of the road, there are two types of changes to traffic operations: at unsignalized driveways and intersections, and at signalized intersections.

At driveways and unsignalized intersections, under existing conditions drivers can make left turns, as shown in **Exhibit 24**. However, with the construction of the LRT right-of-way in the middle of the road, left turns will no longer be permitted. Instead, drivers will be required to make right turns, and then make u-turns at the next downstream signalized intersection, as shown in **Exhibit 25**.

At signalized intersections, left turns and U-turns will be permitted. However, with the number of left turns and U-turns projected at some major intersections, there may be constraints to transit and traffic operations.

Exhibit 24: Existing Left Turn

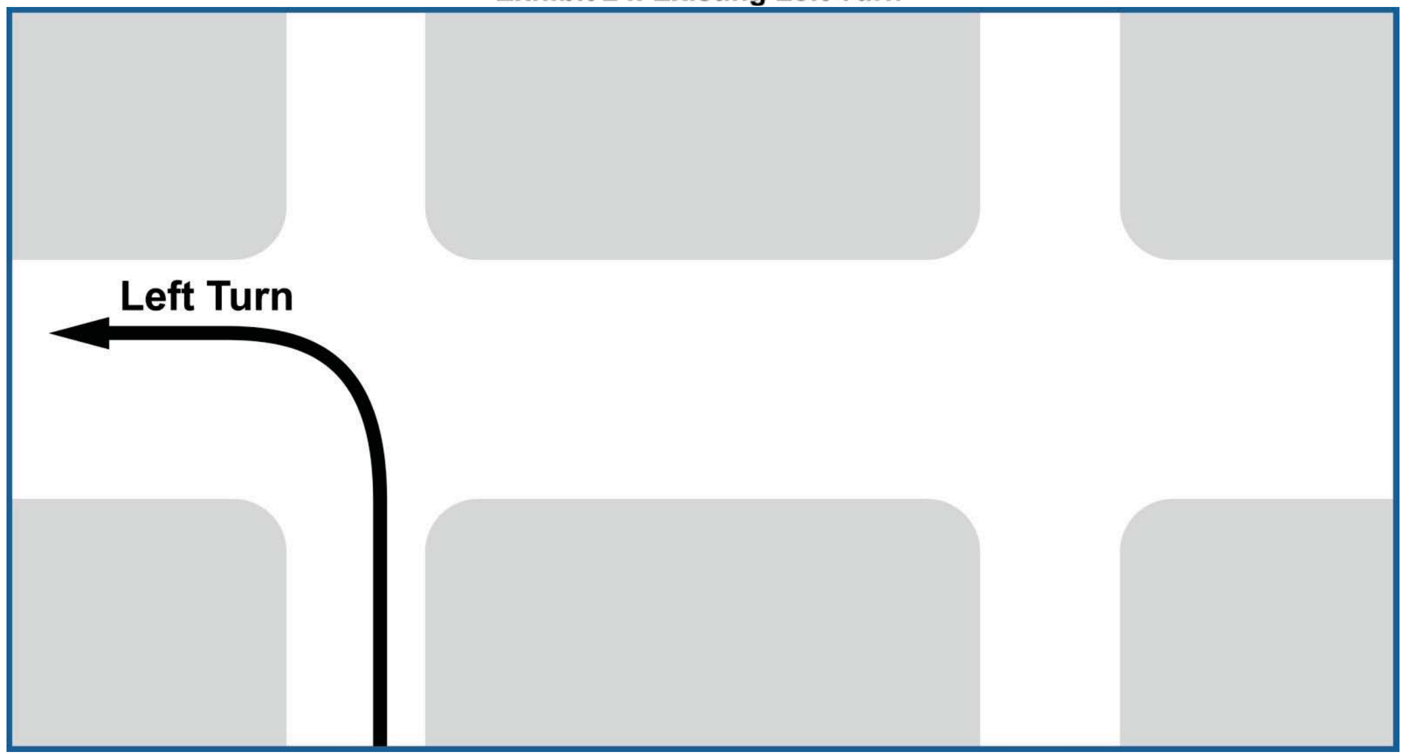
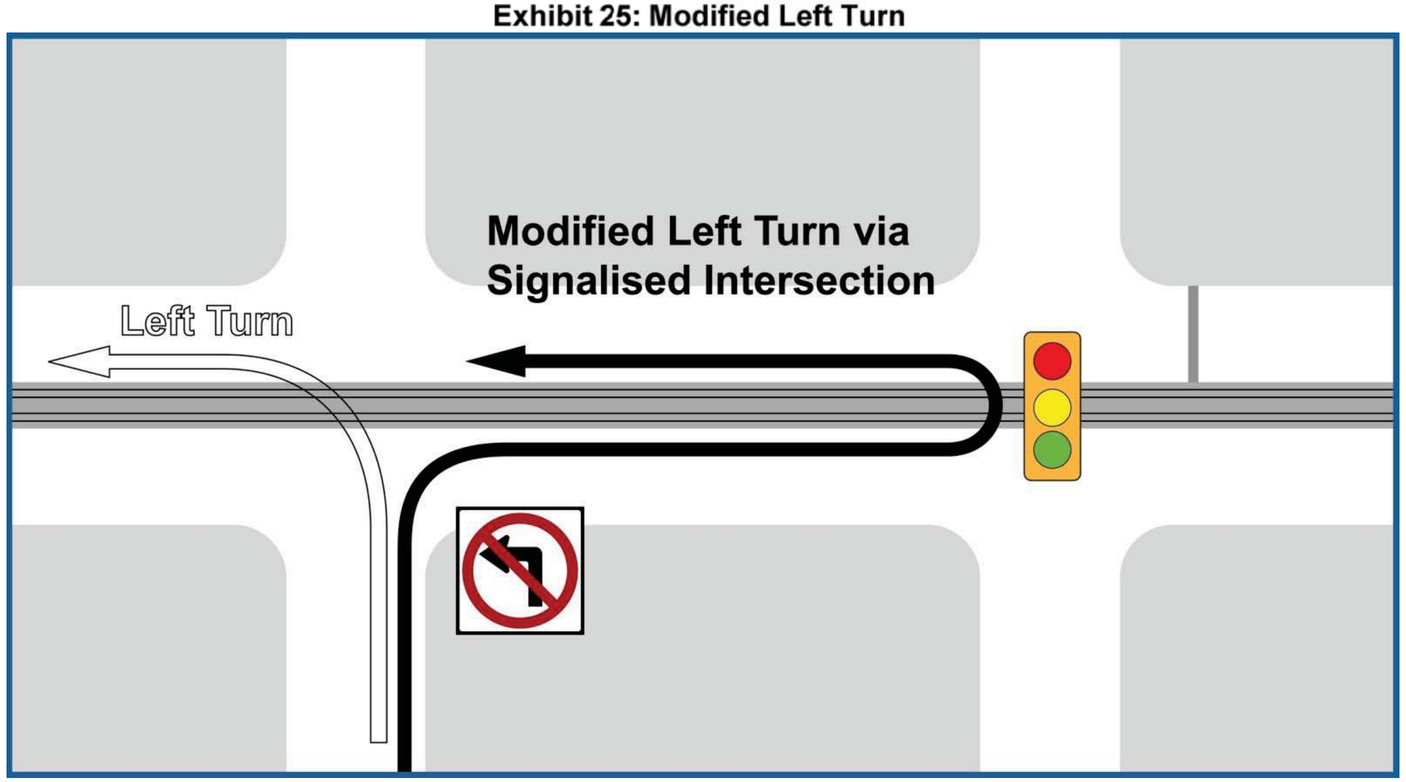


Exhibit 25: Modified Left Turn



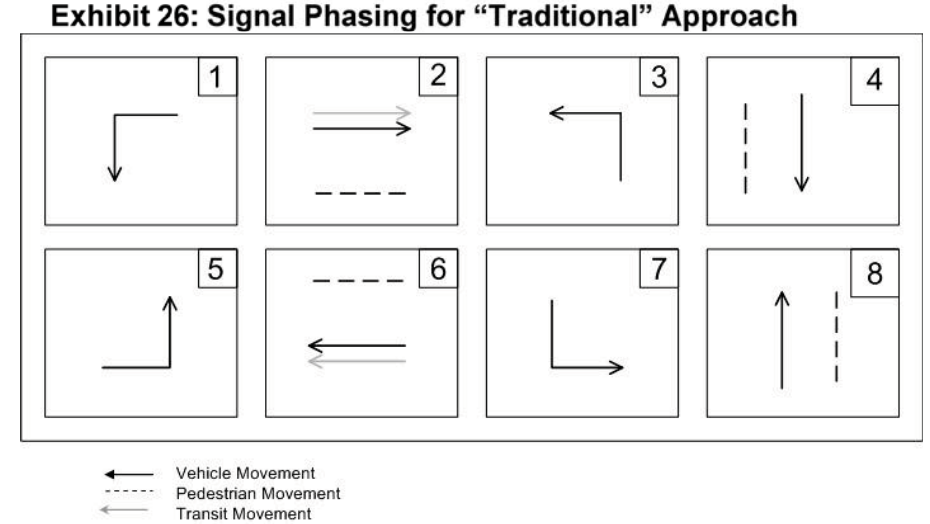
2.4.1 Key Challenges and Constraints

Currently, traffic is permitted to make left turns at most major intersections where major north-south roads cross Eglinton Avenue. Motorists can make left turns during a special phase for left-turning vehicles (left turn green arrow), and also during the green phases. However, the traffic signal timings must be changed with the addition of an LRT operating in the middle of the road on the surface. Left turning vehicles on Eglinton Avenue cannot be permitted to cross the transit right-of-way when LRT vehicles could potentially be traveling through the intersection. The implications on traffic and LRT operations are discussed herein.

The corridor was initially assessed under the assumption that transit, traffic and pedestrian movements would be managed at signalized intersections using the "traditional" approach, as shown in **Exhibit 26**, as follows:

- East-west left turns and U-turn traffic movements would operate at the same time (boxes 1 and 5 on **Exhibit 26**);
- East-west LRV, general traffic, and pedestrian movements would operate at the same time (boxes 2 and 6);
- North-south left turn traffic movements would operate at the same time (boxes 3 and 7); and
- North-south general traffic and pedestrian movements would operate at the same time (boxes 4 and 8).

Exhibit 26: Signal Phasing for "Traditional" Approach



Based on this approach to operations, the implementation of the Eglinton Crosstown LRT is projected to result in the following traffic impacts:

- Increased delays for vehicular traffic, particularly for left-turn movements, due to the introduction of separate left-turn and U-turn traffic signal phases in order to accommodate Eglinton Crosstown LRT service through the intersection; and
- Increased delays for pedestrians wishing to cross Eglinton, due to the need to operate high traffic signal cycle lengths to accommodate the distinct traffic, transit and pedestrian movements.

It should be noted that the assumptions used to generate these findings are conservative, since there were no adjustments made to the future traffic volumes based on an anticipated change in transportation modal split (shift from travelling by car to travelling on the Eglinton CLRT).

2.4.2 Options

The options to be considered were:

- Operate intersections using the "traditional" approach; or
- Operate some key intersections with re-routed left turns to downstream U-turn signals.

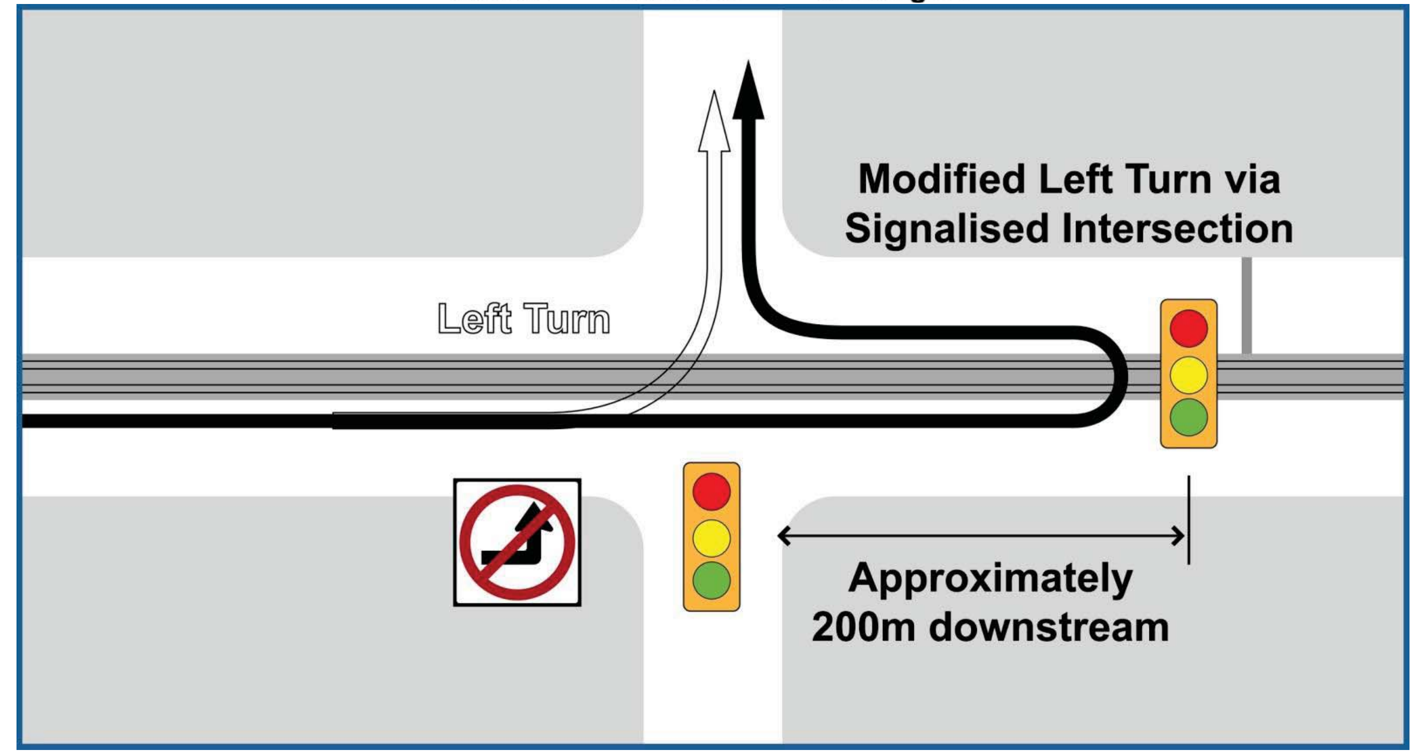
Ten signalized intersections were identified where traffic movements could cause potential Eglinton Crosstown LRT operational challenges (i.e. reduction in the speed and reliability for movement of transit vehicles, pedestrians, and vehicular traffic). These were locations where mitigating measures could potentially improve travel of the Eglinton Crosstown LRT, cross-transit vehicles, pedestrians, and vehicular traffic. The ten locations indentified for potential improvement were the intersections of Eglinton Avenue at:

- Martin Grove Rd.
- Kipling Ave.
- Islington Ave.
- Royal York Rd.
- Scarlett Rd.
- Jane St.
- Victoria Park Ave.
- Pharmacy Ave.
- Warden Ave.
- Birchmount Rd.

An alternative approach to the traffic operations was identified whereby the east-west and north-south left turn movements would be removed from the signalized intersections, and relocated to downstream "U-turn" signals. As shown in **Exhibit 27**, the operation is as follows:

- Drivers wanting to turn left from Eglinton Avenue onto an intersecting cross street must first travel through the intersection;
- Drivers will then make a U-turn at the traffic signals downstream of the intersection. The vehicles are stored in a separate turning lane. The drivers complete the U-turn when the traffic signals change to stop the traffic in the opposing direction;
- Drivers then turn right at the major intersecting street, using an exclusive right turn lane; and
- Through traffic in the same direction is not stopped by the U-turn traffic signal, and pedestrian crossings are not permitted at the U-turn traffic signal.

Exhibit 27: Left Turn at U-Turn Signal



2.4.3 Evaluation

A detailed traffic-traveller analysis was conducted at the ten locations comparing operations with traditional left turns to the left turn rerouting scenarios, with consideration for truck routing. The scenarios were compared based on the delays that would be experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to the spectrum of travellers.

To evaluate the traffic impacts of Light Rail Vehicle (LRV) operation in reserved right-of-ways within arterial roads, a priority scheme was developed and employed for traffic operations at signalized intersections. The priority scheme ensures that a safe transportation system is in place for all roadway users including pedestrians, cyclists, transit (bus and LRV) and traffic. The priority program consists of the following measures:

- Ensures high quality LRT operations (i.e. speed, reliability);
- Facilitates the movement of pedestrians;
- Facilitates bus operation and passenger transfer between bus and LRV, and
- Facilitates the movement of vehicles at the signalized intersections.

Increased Transit Reliability

Modifying left turns will greatly increase the chances of the LRV passing through a green signal – this will reduce the occurrence of bunching (when two or more transit vehicles arrive in quick succession.)

Other Successful Applications

This model has been implemented in other Canadian cities: Calgary, Vancouver and Edmonton. In the U.S. it is being used in Florida, Michigan, Maryland and New Jersey.

Existing intersection capacity analyses were undertaken using the Highway Capacity Manual (HCM) methodology, and specifically the Synchro 6.0 Traffic Signal Coordination Software package by Trafficware. The Synchro analysis consisted of two steps, namely:

- An analysis of existing and future conditions to identify problematic locations, or "Hot Spots" (the 10 locations); and
- A detailed analysis of Hot Spot locations to develop an effective LRT operation for the Hot Spot areas that will be refined during design.

From this evaluation, it was determined that implementing U-turns along Eglinton Avenue would provide significant benefits at most of the intersections and would result in:

- Reduced Travel Time;
- Shorter wait times for pedestrians (10 seconds less per location);
- Shorter wait times for left turning vehicles (10 seconds less per location);
- Faster, more reliable service for the LRT (3-5 minute reduction in schedule variability);
- Reduced delay and better progression for through traffic on the major arterial; and
- Shorter traffic cycle length (90 seconds instead of 120 seconds).

Based on the transit-traffic analysis conducted, specific design recommendations were made to ensure efficient and safe Eglinton Crosstown LRT operations. This resulted in the design recommendation to prohibit left-turns and re-route the movements at the identified intersections.

2.4.4 Recommendation

The analysis revealed that by restricting left turns at the majority of the intersections analyzed, more traffic signal green-time could be allotted to the Eglinton Crosstown LRT, cross-street transit, pedestrian, and vehicular traffic travelling through the intersections. Consequently, the majority of travellers, whether travelling on LRVs, on buses, as pedestrians, or in vehicles, experienced less delay when left turns were restricted at the intersections and rerouted.

This analysis resulted in the design recommendation to prohibit left-turns and re-route the movements at nine of the ten identified intersections. These are identified in **Section 3.4.5**.

2.5 Emmett Avenue Stop

In order to provide a surface stop every 400-600 metres, a LRT stop at Emmett Avenue between Scarlet Road was initially considered. The distance from Scarlett Road (next stop to the west) and Jane Street (next stop to the east) is approximately 1 kilometre. If the Emmett Stop were included, the distance between Scarlett Road and Emmett Avenue stops would be approximately 575 metres and the distance from Emmett Avenue to Jane Street approximately 450 metres.

2.5.1 Key Challenges and Constraints

The issue associated with designing for a stop platform at this location pertains to the curvilinear alignment of Eglinton Avenue between Scarlett Road and Jane Street. The horizontal alignment of the existing Eglinton Avenue in this location consists of back to back 300 metres radius curves with only a short tangent section between. In order to accommodate the TTC's design criteria for the platforms to be on a horizontal tangent, significant modifications of the existing alignment would be required to develop a minimum 100 metres of tangent section needed for the platform. However, the opportunities for modifying the alignment at this location are constrained by the Jane Street intersection located approximately 500 metres to the east and the existing Humber River bridge, with the east end located approximately 300 metres to the west. Due to the proximity of the west side platform at Jane Street, the desired location for a stop at Emmett Ave would be on the west side of the intersection. However, it is not possible to create the necessary 100 metres minimum tangent on the west side of the Emmett Ave intersection without deviating substantially from the existing Eglinton Avenue centreline.

2.5.2 Options

The two options considered were:

- Providing a stop at Emmett Avenue; or
- Do not provide a stop at Emmett Avenue.

2.5.3 Evaluation

2.5.3.1 Property Impacts

The existing alignment off of the east end of the Humber River bridge dictates that the alignment shift required to create a tangent section would be developed to the south side of Eglinton Avenue. The realignment needed will result in a centreline shift of approximately 35 metres to the south. Accounting for the differential elevation between Eglinton Avenue and the adjacent Scarlett Woods Golf course, significant impacts to the golf course would be expected.

2.5.3.2 Environmental Impacts

A centreline shift of approximately 35 metres to the south would result in the loss of two cultural vegetation communities (a meadow and a woodlot) and encroachment on a natural vegetation community (a fresh-moist poplar-sassafras deciduous forest). The cultural meadow and cultural woodlot are considered of low to moderate ecological value. The deciduous forest is considered of high ecological value due to its association with the Humber River valley lands. The loss of, or encroachment on these vegetation communities would require habitat restoration and enhancement measures to achieve TRCA's target of net gain for vegetation communities impacted.

In addition, this area lies within a flood plain. Work within this area would likely require flood plain mitigation.

2.5.3.3 Ridership

The ridership capture area consists of minimal residential or commercial development. North and south of Eglinton Avenue are an existing golf course, park and recreational areas. Further north, beyond the recreational area, lies the only residential area within a 500 metres radius of the potential Emmett Stop. It is important to note that the path from the residential buildings to the Emmett Stop would be a total travel distance of over 700 metres. This residential area is currently served by the TTC 32D bus, which routes back to the Eglinton and Jane intersection.

2.5.4 Recommendation

Due to the area conditions and constraints described above, it was determined that a stop at Emmett Avenue was not practical. However, to serve riders in this area, an existing pedestrian route at the east end of the Humber River Bridge will be improved. As discussed later in this report, it is also expected that the 32E bus route which serves Emmett Avenue would be maintained.

2.6 Jane LRT Interface

Jane Street and Eglinton Avenue will be an important transit interface with high pedestrian transfers. As cuch, a preliminary study was completed for the intersection of Eglinton Avenue and Jane Street. The study considered the implications of interfacing the Eglinton Crosstown LRT with the future Jane LRT at this intersection with both operating in a surface alignment, and the associated pedestrian volume increases of 750 % to as many as 1,462 pedestrians/hour as forecasted.

The preliminary study included a traffic impact analysis which was completed for the Eglinton Avenue and Jane Street signalized intersection and surrounding road network, to assess the future LRV operation and to determine the best alternative for transit operations and pedestrians while minimizing impacts to traffic operation.

Under future conditions, it is proposed that the unsignalized intersection of Eglinton Avenue and Emmett Avenue is to be signalized to facilitate left turning traffic at the intersection, and avoid migration of this traffic to the already constrained Eglinton Avenue and Jane Street intersection, which is the only alternative access route.

The study area is shown in **Exhibit 28**.

Exhibit 28 Study Area for Jane Street LRT Interface

2.6.1 Key Challenges and Constraints

The challenges at this intersection are to provide a high quality connection between the two LRT lines that allows for the safe and efficient transfer of passengers while maintaining traffic flow at the intersection.

The projected transfers between the LRT lines as well as the major bus routes at this intersection will make it one of the highest transfer locations on the Eglinton corridor.

The Eglinton Crosstown LRT and Jane LRT will replace the majority of bus services within the study area, including the four existing bus routes on Jane Street (35A, 35B, 35C, 35D) and three of the four existing bus routes on Eglinton Street (32, 32A, 32B). The existing Route 32D bus service does not travel exclusively on Eglinton Avenue and so is assumed to remain operational travelling to Keele Station under future conditions with the LRT. Route 32D was the only bus route included in the analysis.

With the implementation of the LRT network, the Eglinton Avenue and Jane Street intersection is expected to experience a pedestrian volume increase of 750%. This translates to an increase from 166 to 1250 pedestrians in the AM peak period, and an increase from 195 to 1462 pedestrians in the PM peak period. These expected pedestrian transfer figures are based on the Transit City 2031 Ridership Forecast Presentation from the Transit City Forecasting Workshop (August 2008).

2.6.2 Options

A total of five options were considered as follows:

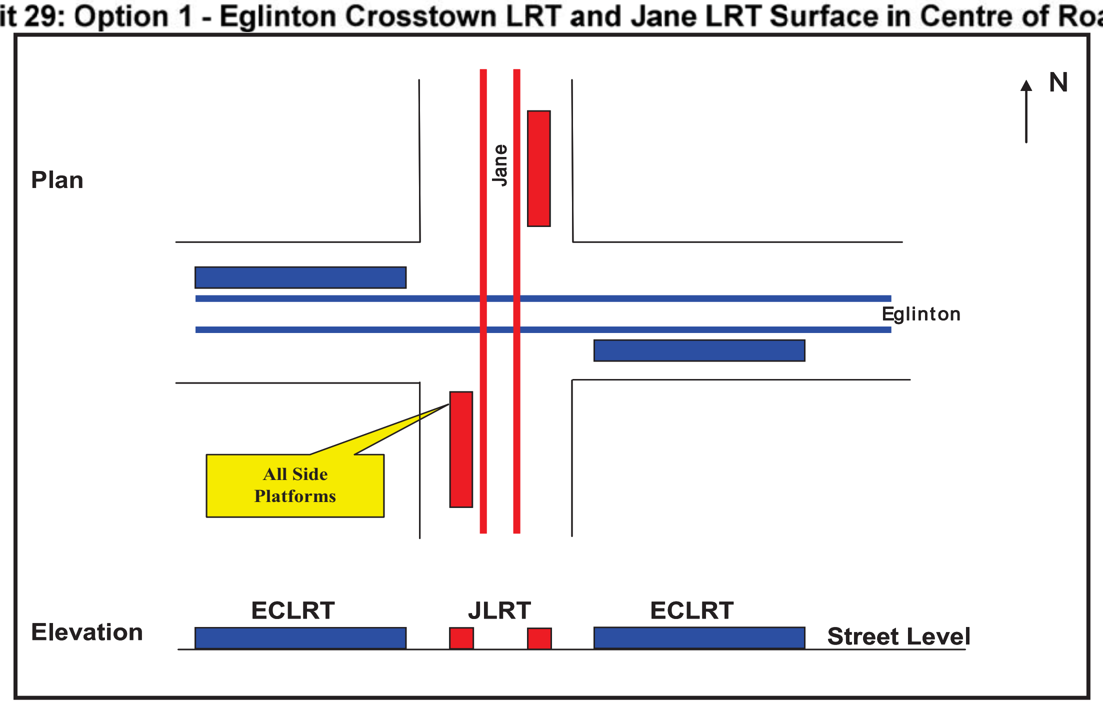
- Option 1 – Eglinton Crosstown and Jane LRT surface in centre of roadway with all left turns protected **(Exhibit 29)**.
- Option 2 – Eglinton Crosstown LRT surface north of roadway and Jane LRT surface in centre of roadway with restricted left turns redistributed to u-turns on Eglinton Avenue **(Exhibit 30).**
- Option 3 – Eglinton Crosstown LRT surface north of roadway and Jane LRT surface west of roadway with restricted left turns redistributed to u-turns on Eglinton Avenue **(Exhibit 31)**.
- Option 4 – Eglinton Crosstown LRT surface and Jane LRT elevated in center of roadway with north and south left turns protected and permitted; east/west left turns protected **(Exhibit 32)**.
- Option 5 – Eglinton Crosstown LRT elevated in center of roadway and Jane LRT surface with north and south left turns protected; east and west left turns protected and permitted **(Exhibit 33)**.

2.6.2.1 Option 1 – Eglinton Crosstown LRT and Jane LRT Surface in Centre of Roadway

Under this traditional operation, all left turns in all directions at the intersection of Eglinton Avenue and Jane Street will operate exclusively during protected left-turn only phases.

Under Option 1, all passenger transfers will occur at the Eglinton Avenue at Jane Street intersection. Transferring passengers will have to cross one leg of Eglinton Avenue and one leg of Jane Street to make their transfer.

Exhibit 29: Option 1 - Eglinton Crosstown LRT and Jane LRT Surface in Centre of Roadway



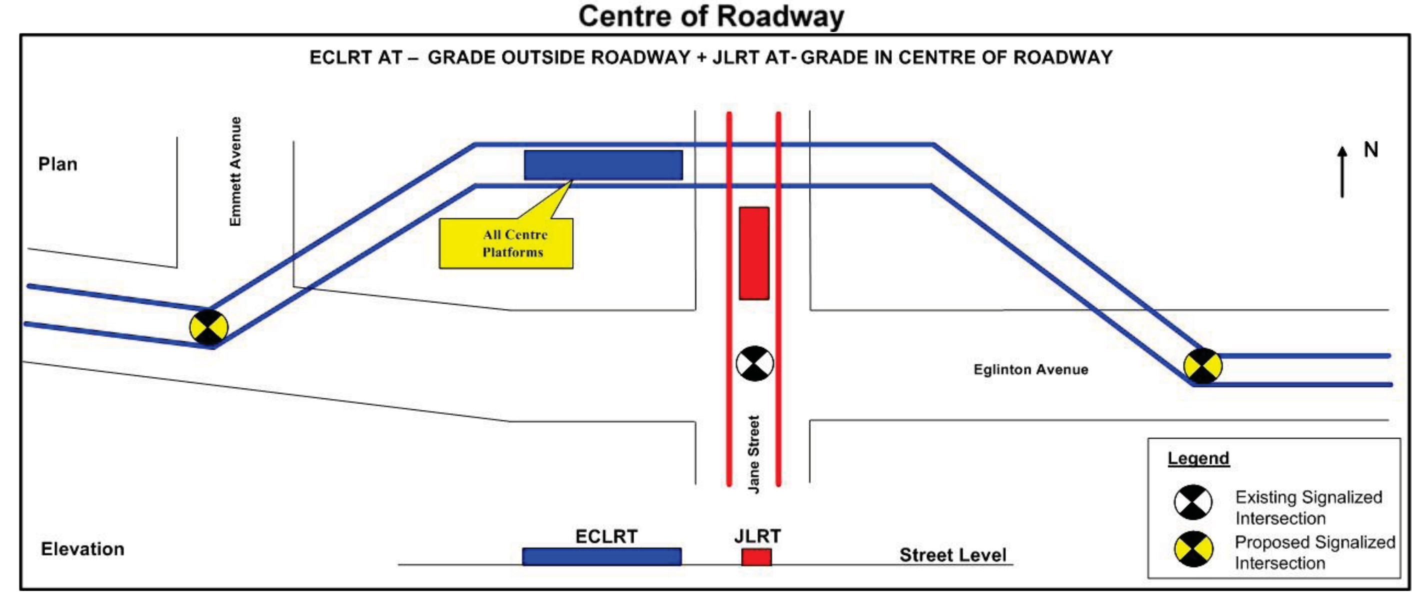
2.6.2.2 Option 2 – Eglinton Crosstown LRT Surface North of Roadway and Jane LRT Surface in Centre of Roadway

For this option, additional signalized intersections are required on Jane Street north of Eglinton Avenue and on Eglinton Avenue east of Jane Street to allow the Eglinton Crosstown LRT to enter and exit the Eglinton Avenue right-of-way. These are shown in **Exhibit 30.**

Under Option 2, left turns are prohibited at the Eglinton Avenue and Jane Street intersection, and left-turn volumes are redistributed to u-turns at downstream intersections along Eglinton Avenue.

A passenger transfer station is proposed in the northwest corner of the Eglinton Avenue and Jane Street intersection. Passengers would have to cross the northern leg of Jane Street to transfer between LRTs. With the Eglinton Crosstown LRT no longer in the centre of the roadway, the north and south pedestrian clearance time requirements will be reduced. This will allow for more green time for Eglinton Avenue. Lastly, under this option, an additional signalized intersection north of Eglinton Avenue is required for the LRT to cross Jane Street. This intersection needs to be at least 60 metres from the Eglinton Avenue and Jane Street intersection so that the Jane LRT can stop on this segment of roadway if required, without blocking Eglinton Avenue. Coordination between the two intersections is important for the progression of the Jane LRT.

Exhibit 30: Option 2 - Eglinton Crosstown LRT Surface Outside Roadway and Jane LRT Surface in Centre of Roadway



2.6.2.3 Option 3 – Eglinton Crosstown LRT Surface North of Roadway and Jane LRT Surface West of Roadway

Similar to Option 2, additional signalized intersections are required on Eglinton Avenue east of Jane Street for the Eglinton Crosstown LRT operation and on Jane Street north of Eglinton Avenue for the Jane LRT operation under Option 3. These are shown on **Exhibit 31**.

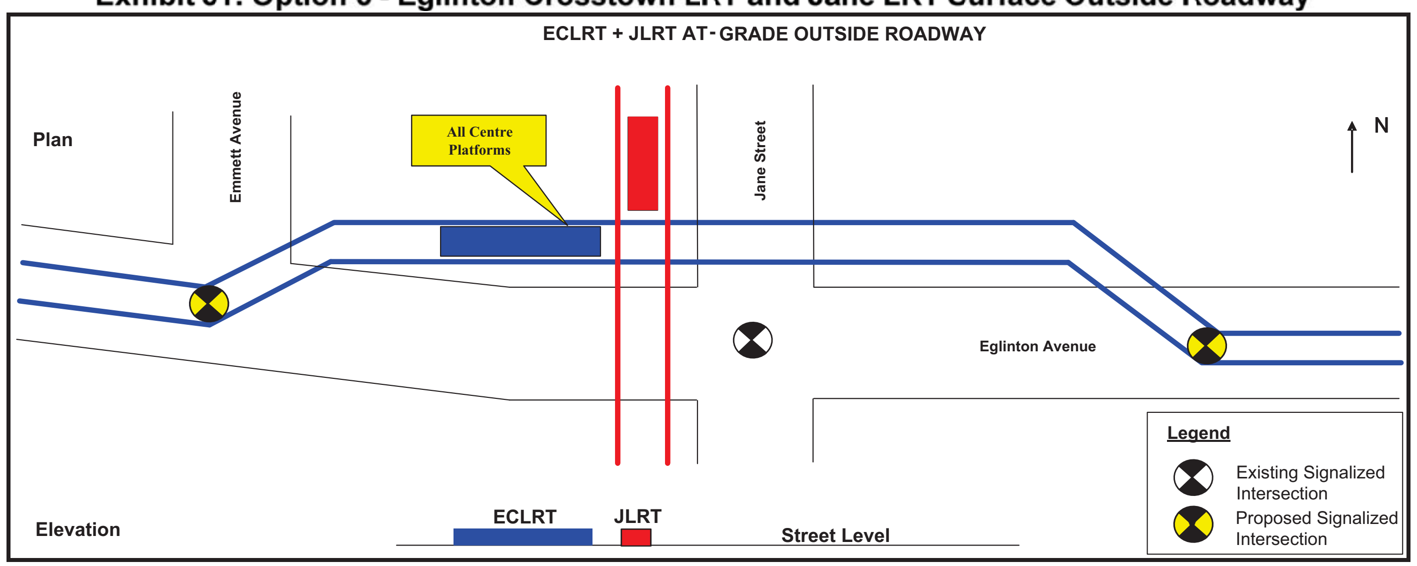
Under Option 3, similarly to Option 2, left turns would be prohibited at the Eglinton Avenue and Jane Street intersection and redistributed to u-turn movements at downstream intersections along Eglinton Avenue.

With the prohibition of left turn movements it is expected that more green time can be allocated to the through phases, thereby providing the LRTs with more green time and reducing their delay. It is assumed that proposed signalized intersection on Eglinton Avenue east of Jane Street can accommodate u-turns in addition to accommodating the LRT moving in and out of the running way.

Under Option 3, passengers will transfer at the station and will not have to cross either Eglinton Avenue or Jane Street. In addition, as both LRTs are outside of the roadway in this option, pedestrian clearance time requirements are reduced at the Eglinton Avenue and Jane Street intersection.

In addition, a modified traffic signal is required at Eglinton Avenue and Jane Street to allow the Eglinton Crosstown LRT to cross Jane Street north of the intersection, and the Jane LRT to cross Eglinton Avenue west of the intersection. It is assumed that traffic signal will be able operate such that pedestrians can wait between the LRT right of way and the roadway. The southbound right and westbound right turn movements will be controlled by a protected phase to avoid conflicting with the LRT and pedestrian movements. During the north-south green phase, the southbound right turn will be restricted when an LRT or pedestrians are crossing, and during the east-west green phase the eastbound right turn will be restricted when an LRT or pedestrians are crossing.

Exhibit 31: Option 3 - Eglinton Crosstown LRT and Jane LRT Surface Outside Roadway

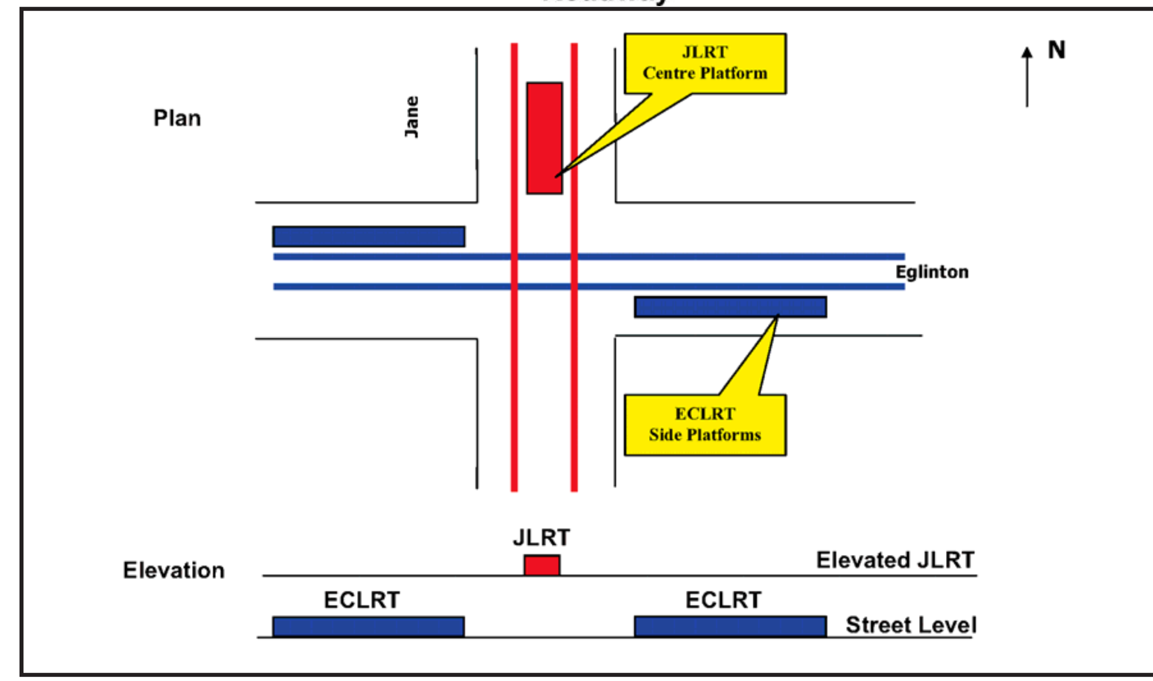


2.6.2.4 Option 4 – Eglinton Crosstown LRT Surface and Jane LRT Elevated in Center of Roadway

Under Option 4, since the Jane LRT is elevated, the northbound and southbound left turns at the Eglinton Avenue and Jane Street intersection can operate as protected and permitted. Eastbound and westbound left turns remain protected only.

Similar to Option 1, all passenger transfers would occur at the Eglinton Avenue at Jane Street intersection. Transferring passengers will have to vertically transfer and cross one leg of Eglinton Avenue and one leg of Jane Street to make their transfer.

Exhibit 32: Option 4 - Eglinton Crosstown LRT Surface and Jane LRT Elevated in Centre of Roadway

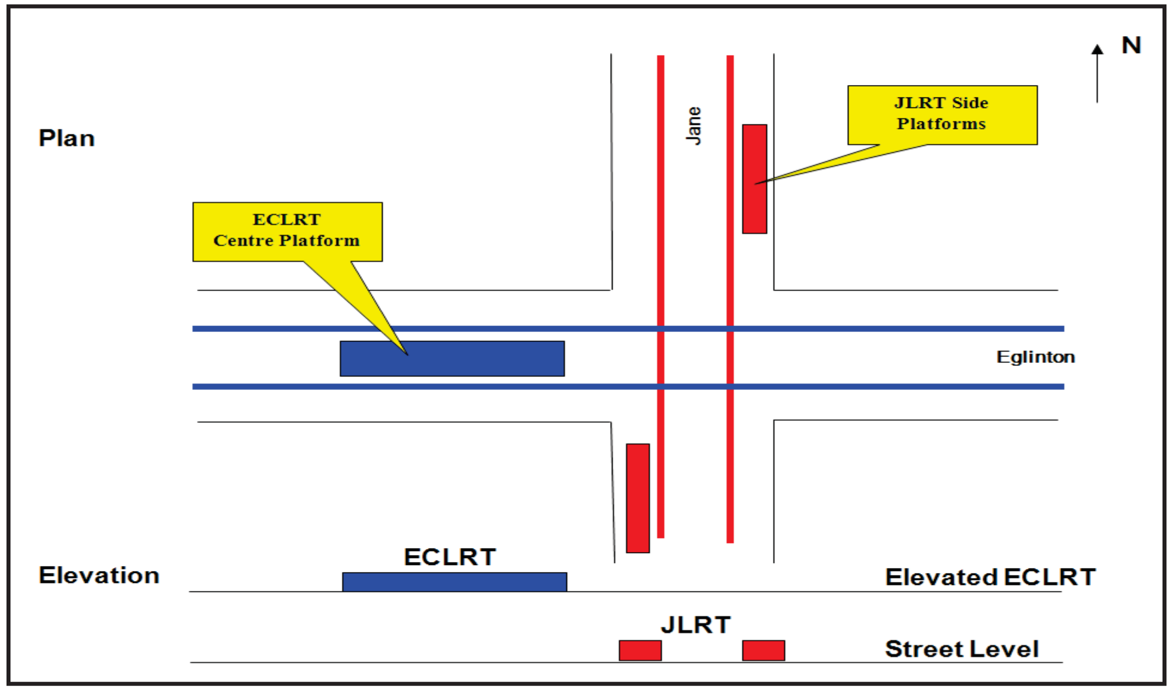


2.6.2.5 Option 5 – Eglinton Crosstown LRT Elevated in Center of Roadway and Jane LRT Surface

Under Option 5, shown on **Exhibit 33**, since the Eglinton Crosstown LRT is elevated, the eastbound and westbound left turns at the Eglinton Avenue and Jane Street intersection can operate as protected and permitted. Northbound and southbound left turns remain protected only.

Similar to Option 1, all passenger transfers will occur at the Eglinton Avenue at Jane Street intersection. Transferring passengers will have to vertically transfer and cross one leg of Eglinton Avenue and one leg of Jane Street to make their transfer.

Exhibit 33: Option 5 - Eglinton Crosstown LRT Elevated in Centre of Roadway and Jane LRT Surface



2.6.3 Evaluation

A traffic analysis (computerized traffic simulation) was performed for the above options to determine their effect on traffic operations at the intersection.

The Synchro traffic assessment indicated that traffic at the intersection of Eglinton Avenue and Jane Street operates best under options 2 and 3 due to the prohibition and re-rerouting of left turns, while operations at the intersection of Eglinton Avenue and Emmett are best under options 1, 4, and 5 since the intersection does not require a phase to transfer the Eglinton Crosstown LRT in and out of the right-of-way and accommodate rerouted left turns.

To obtain a measure of the overall traffic operation in the study area, the Total Intersection Delay was computed for each of the five interface options. The Total Intersection Delay was calculated as the total delay for all vehicles approaching the five intersections in the study area. A comparison of the Total Intersection Delay indicates that Option 2 has the best traffic operations. While Option 3 is the most accommodating to pedestrian transfers, it is has the worst traffic operation of the five interface options considered. Under options 4 and 5, traffic performance is better than under traditional operation, but is not improved as much as under Option 2.

Option 2 allows for the lowest cycle length, as there are no protected turn phases at the Eglinton Avenue and Jane Street intersection. Option 3 also allows for a low cycle length in the AM peak period, but has a higher cycle length in the PM peak period due to protected right turn phases. Options 1, 4, and 5, all require a high cycle length due to the protected left turn phases at the Eglinton Avenue and Jane Street intersection.

In terms of passenger transfer, Option 3 is the only interface option where the passengers do not have to cross the Eglinton Avenue and Jane Street intersection to transfer between LRT lines.

In terms of cost, the cost estimate of the interface options reveals that the surface interface options (Options 1, 2 and 3) have similar costs at approximately $70 million, while the above-grade options (Option 4 and 5) are approximately 60% or 70% higher at $110 million and $120 million respectively.

2.6.4 Recommendation

Based on the evaluation of traffic operations at and around the Eglinton Avenue/Jane Street intersection, Option 1 was selected as the preferred option for the following reasons:

- Adequate traffic operations;
- No property implications;
- Less travel time, less LRT delay; and
- Lower cost.

2.7 Vertical Alignment Options from Jane Stop to Keele Station

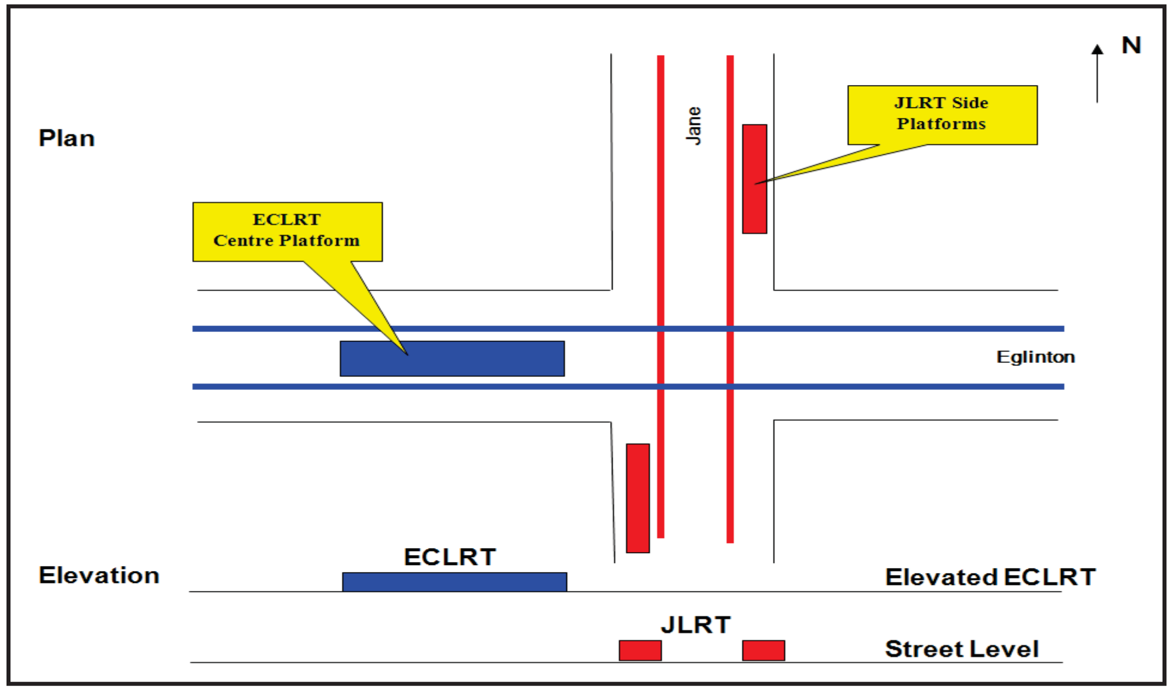
Feasibility studies conducted during preliminary planning recommended further review and analysis of vertical alignment options for the 2.4 km section of the alignment from Jane Street to Keele Street. This segment is of key importance, as it passes through an area that presents multiple technical constraints and includes the proposed location for the Maintenance and Storage (M&S) Facility, which is planned to serve three LRT lines. The Toronto Transit Commission (TTC) undertook this study to find a quality, cost effective solution to the constraints that minimizes property impacts. The report documenting this study is provided in **Appendix K**.

The purpose of this study is to develop and assess concept options for the vertical alignment from Jane Street to Keele Street. The objective is to recommend an alignment that provides a high quality transit service, a flexible yard connection and maintains the opportunities for development and growth consistent with the City of Toronto's Official Plan. This study is part of a Transit Project Assessment for the Eglinton Crosstown LRT line.

This report presents the development and evaluation of the following eight (8) options:

- Surface alignment;
- Elevated south side alignment;
- Elevated north side alignment;
- Underground alignment;
- Elevated north side option alignment; and
- Hybrid alignment (Mixed surface and elevated)
- Underground alignment, without Black Creek Station (Councillors option)

Exhibit 33: Option 5 - Eglinton Crosstown LRT Elevated in Centre of Roadway and Jane LRT Surface



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To obtain a measure of the overall traffic operation in the study area, the Total Intersection Delay was computed for each of the five interface options. The Total Intersection Delay was calculated as the total delay for all vehicles approaching the five intersections in the study area. A comparison of the Total Intersection Delay indicates that Option 2 has the best traffic operations. While Option 3 is the most accommodating to pedestrian transfers, it is has the worst traffic operation of the five interface options considered. Under options 4 and 5, traffic performance is better than under traditional operation, but is not improved as much as under Option 2.

Option 2 allows for the lowest cycle length, as there are no protected turn phases at the Eglinton Avenue and Jane Street intersection. Option 3 also allows for a low cycle length in the AM peak period, but has a higher cycle length in the PM peak period due to protected right turn phases. Options 1, 4, and 5, all require a high cycle length due to the protected left turn phases at the Eglinton Avenue and Jane Street intersection.

In terms of passenger transfer, Option 3 is the only interface option where the passengers do not have to cross the Eglinton Avenue and Jane Street intersection to transfer between LRT lines.

In terms of cost, the cost estimate of the interface options reveals that the surface interface options (Options 1, 2 and 3) have similar costs at approximately $70 million, while the above-grade options (Option 4 and 5) are approximately 60% or 70% higher at $110 million and $120 million respectively.

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Feasibility studies conducted during preliminary planning recommended further review and analysis of vertical alignment options for the 2.4 km section of the alignment from Jane Street to Keele Street. This segment is of key importance, as it passes through an area that presents multiple technical constraints and includes the proposed location for the Maintenance and Storage (M&S) Facility, which is planned to serve three LRT lines. The Toronto Transit Commission (TTC) undertook this study to find a quality, cost effective solution to the constraints that minimizes property impacts. The report documenting this study is provided in **Appendix K**.

The purpose of this study is to develop and assess concept options for the vertical alignment from Jane Street to Keele Street. The objective is to recommend an alignment that provides a high quality transit service, a flexible yard connection and maintains the opportunities for development and growth consistent with the City of Toronto's Official Plan. This study is part of a Transit Project Assessment for the Eglinton Crosstown LRT line.

This report presents the development and evaluation of the following eight (8) options:

- Surface alignment;
- Elevated south side alignment;
- Elevated north side alignment;
- Underground alignment;
- Elevated north side option alignment; and
- Hybrid alignment (Mixed surface and elevated)
- Underground alignment, without Black Creek Station (Councillors option)

- Hybrid alignment (Mixed surface and underground) (Community option)

This study of the vertical alignment was completed by the Transit City Group (TCG), the consultant, with direct input from the TTC ECLRT project team and the ECLRT Black Creek Working Group. The ECLRT Black Creek Working Group (the “Working Group”) consists of members of TTC Service planning, TTC Yard Operations, City Planning Urban Design, City Planning Transportation Planning, and GO Transit.

As a separate project, TTC is planning for a Maintenance and Storage Facility which is proposed to be located in the study area. This study included early coordination with the planning of that facility.

2.7.1 Study Area

This study evaluated the area from west of Jane Street to east of Keele Street, a total length of approximately 2.4 km. Generally, the Eglinton Crosstown LRT Transit Project Assessment includes the area within the Eglinton Avenue Right-of-Way. However, this study included the evaluation of property north and south of the existing right of way to evaluate all possible options. As a result, the study area for this report encompasses the Eglinton Avenue right-of-way as well as some properties north and south of the Right-Of-Way.

The proposed M&S Facility is not within the scope of this study, however it is necessary to take the planning of the facility into consideration to ensure a quality connection is provided.

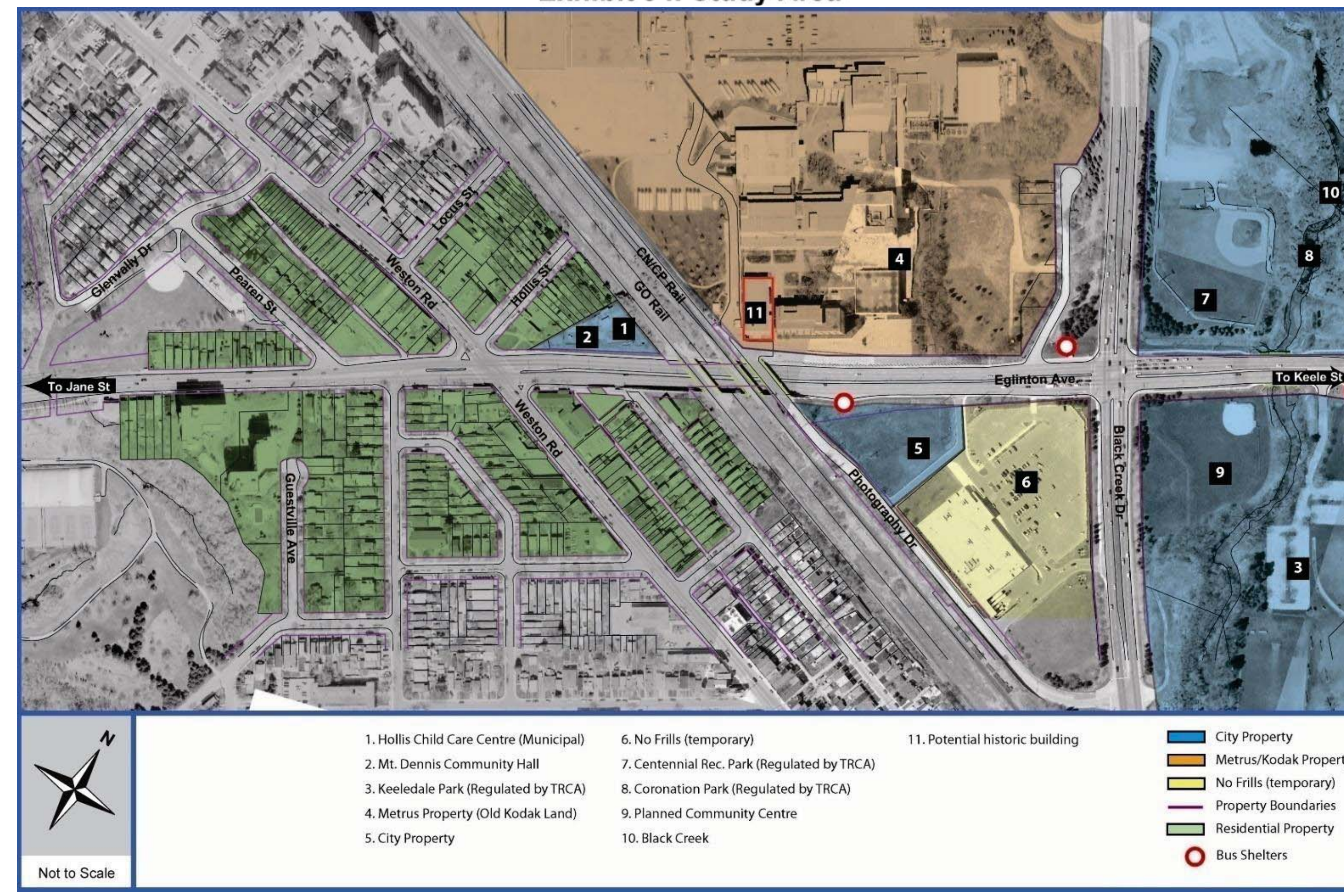
The existing lane configuration varies through the study area. From Jane Street to Weston Road and Black Creek Drive to Keele Street, Eglinton Avenue has 2 lanes in each direction. Between Weston Road and Black Creek Drive there are 3 lanes in each direction.

The roadway passes over Black Creek, and lies within the regional (500 yr) flood plain. Parks and open areas are located at the north-east and south-east quadrants of Black Creek Drive and Eglinton Avenue, and are regulated by the Toronto and Region Conservation Authority (TRCA).

The property along Eglinton Avenue has many uses. As shown in Exhibit 34, these uses include the M&S Facility (historically Kodak land), heavy rail corridors, commercial properties, potential for future high-density development, potential for future transit facilities, public recreational areas, a future planned community centre, and private residential land uses.

The study area is shown in **Exhibit 34**.

Exhibit 34: Study Area



2.7.2 Key Requirements

There are many important details about this study area that affect the planning of the LRT alignment along Eglinton Avenue. Outlined below are the LRT components that are required for this study area.

2.7.2.1 Station and Stop Locations

The stops and stations proposed within this study area are:

- Jane Street
- Weston Road
- Black Creek Drive; and
- Keele Street

Two of these locations are common between the options presented, the Jane Street surface stop and the Keele Street station.

2.7.2.2 Crossover and Storage Track Requirements

Special track work is a required operational component of the LRT system. Storage (pocket) tracks are used to turn back trains, temporarily store disabled trains, and they also protect for Automatic Train

Operation. Crossovers are also used to turn back trains and protect for Automatic Train Operation. To facilitate these functions, storage (pocket) tracks and crossovers are required at the last station of a grade separated section of the LRT. The length of the required storage (pocket) track is approximately 200 metres, and the length of the required crossover is approximately 90 metres. These tracks are placed in combination before and after a station.

2.7.2.3 Connection to Proposed Maintenance and Storage (M&S) Facility

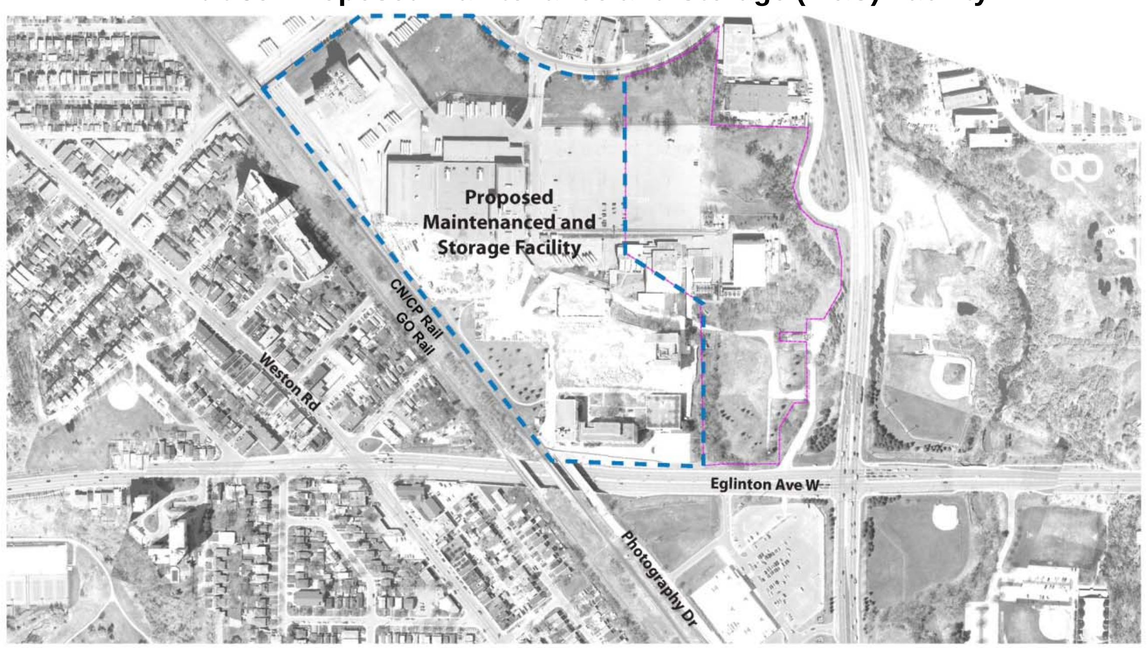
TTC has proposed that the Maintenance and Storage (M&S) Facility be located on the north side of Eglinton Avenue, west of Black Creek Drive. This facility is intended to serve three LRT lines: the Eglinton Crosstown LRT, St. Clair LRT and Jane LRT. The proposed facility will have a storage capacity of approximately 150 LRT vehicles, and will be used for loading and offloading Light Rail Vehicles (LRV) throughout the day.

The LRT connection between Eglinton Avenue and the proposed M&S Facility is an important consideration in the development and selection of the ECLRT alignment, as it will be important to provide a connection capable of handling the LRV traffic required to meet the service demand of the system.

The site proposed to hold the M&S Facility was, historically, the Kodak facility. The majority of buildings on the site have been demolished and removed. However, one building near Eglinton Avenue currently remains.

Exhibit 35 shows the approximate boundary of the proposed M&S Facility.

Exhibit 35: Proposed Maintenance and Storage (M&S) Facility



2.7.2.4 GO Transit

GO Transit owns and operates a rail service (Georgetown line) that intersects with, and passes above Eglinton Avenue. Currently there is no stop in the study area.

To meet the goals of interconnectivity, an interface between ECLRT and GO Transit is possible in the study area. GO Transit does not currently have a plan for a stop at this platform, therefore future coordination with GO Transit will be required to optimize this interface. Opportunities and quality of connection vary between options. This connection was considered in this study, but at a very high level.

Go Transit also operates a GO Bus service (King-Rutherford line) that passes through the study area on Black Creek Drive, but there is currently no stop location in the study area.

2.7.3 Technical Constraints

2.7.3.1 Narrow Right-of-Way

Over the 2.4 km section of Eglinton Avenue, 1.8 kilometres or 85% is at least 36 metres wide. Select sections (340 metres) are less than 35 metres wide.

The diagram and table below, **Exhibit 36** shows the existing width of roadway and the length of the roadway that it applies to. The lengths shown account for approximately 15% of the length of the study area. **Exhibit 37** shows the proximity of existing houses to the roadway

Exhibit 36: Existing Width Roadway

	Width of Road (north-south)	Distance
West of Pearen	22 metres	150 metres
Pearen to Weston	30 to 32 metres	90 metres
Railway Underpass	30 metres	100 metres
TOTAL		340 metres

Exhibit 37: Proposed Cross Section

Note: View looking west from the intersection of Eglinton Avenue and Pearen Street.

The standard cross section for the Transit City LRT lines is 36 metres. This cross section, as shown in **Exhibit 37**, includes two lanes of traffic in each direction, two LRT tracks, a bike path in each direction and a sidewalk and boulevard.

There are three locations within the study area that can not support the standard cross section.

2.7.3.2 Construction Method

Two basic alignment concepts are available for the segment west of the rail lines, which are surface or underground. The method of construction for the underground options is important to consider as part of this study. Two methods of construction are identified for the underground portions of the LRT which are tunnel boring or cut and cover construction. Tunnel boring machines work below the earth's surface with little impact to the area above the surface. Cut and cover construction requires open cut excavation from the surface. Cut and cover construction has significant impact to the surface area. This method is proposed for all stations and special track work areas of the Eglinton Crosstown LRT. For options that are fully grade separated from Keele Street to Weston Road, the total length of cut and cover construction for a station at Weston Road is 440 metres. This accommodates a 200 metres storage (pocket) track, a 150 metres station and a 90 metres crossover track.

Tunnel boring is not a cost effective means to construct a tunnel that is shorter than one kilometre because of high startup costs. Therefore, the options that are presented that include a short tunnel segment would be constructed by the cut and cover construction method.

2.7.3.3 Existing Bridges

There are three existing bridges crossing above Eglinton Avenue between Weston Road and Black Creek Drive, just west of the proposed M&S Facility. From west to east, they are:

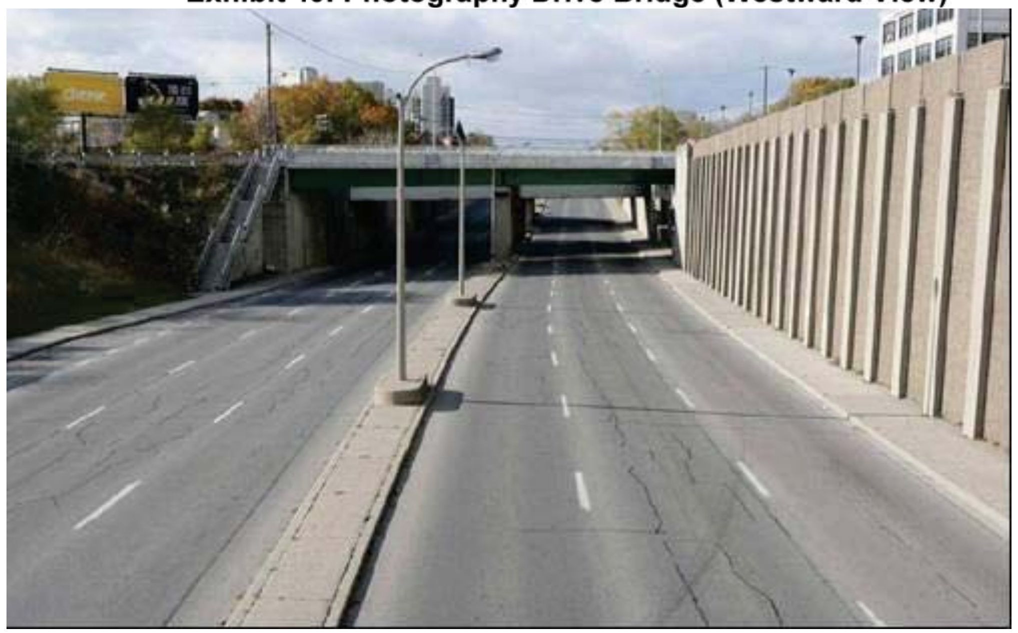
- GO Transit railway bridge;
- CN/CP railway bridge; and
- Photography Drive bridge.

The three bridges are shown in **Exhibit 38**, **Exhibit 39**, and **Exhibit 40**.

Exhibit 38: GO Rail Bridge (Westward View)

Exhibit 39: CN/CP Railway Bridge (Westward View)

Exhibit 40: Photography Drive Bridge (Westward View)



All three bridges have piers in the centre of the road, between the two directions of traffic. The existing cross section is approximately 30 metres wide and does provide sufficient horizontal and vertical clearance to accommodate the proposed cross section.

2.7.3.4 Elevation

There is a significant elevation difference between Eglinton Avenue and the surrounding area in the vicinity of the bridges. The elevation of the carhouse within the proposed M&S Facility is proposed to be approximately +/-123.5m. The low point of Eglinton Avenue in this section is +/-115m, resulting in an approximate elevation difference of +/-9m. The retaining wall shown in **Exhibit 40** provides some visual context of the elevation challenge that is faced. The proposed M&S Facility is proposed to be located on the right hand side in this picture.

2.7.3.5 Traffic

The intersections at Weston Road, the proposed M&S Facility access driveway and Black Creek Drive were carefully planned for the options that are surface through these intersections. LRV's travelling along Eglinton Ave and/or entering and exiting the proposed M&S Facility will require sufficient green time to cross each of these intersections. The acceleration and deceleration time of the LRV as well as the time required to operate track switches and turn LRV's was considered as part of this planning.

2.7.3.6 Railroads

Some of the elevated options considered are located north or south of Eglinton Avenue at the railway bridges. The presence of the rail lines restricts the ability for the ECLRT to be elevated one level in this area because surface rail intersections are not permitted. The location of connection in the elevated options is primarily dictated by this constraint.

Another important consideration is the number, type and use of the bridges. Replacing a bridge can typically offer many solutions. In this case however, there are three bridges, two of which are railway bridges. Reconstructing the bridges would be very costly and cumbersome, as such, bridge replacement is not considered feasible.

2.7.3.7 Black Creek River Valley

The Black Creek River Valley is located just east of Black Creek Drive. The regional (500 yr) floodplain in this area is above the existing bridge over Black Creek.

All concepts outside the right of way near the river valley would require new structures to carry the LRT over the river. This is a feasible concept, though it does have environmental impacts. For the underground option, the tunnel would pass beneath the river.

2.7.4 Options

A principle of the Transit City program is "surface first". This ensures that cost effective solutions are provided for the program. In this instance, the right of way constraints required further investigation into options, other than surface to minimize the impacts to private properties.

To begin this study, work was done to evaluate the surface option to determine if it could support the operation of the LRT. An initial traffic analysis for a proposed yard entrance on the north side of Eglinton Avenue, using a Light Rail Vehicle (LRV) loading plan provided by the TTC was completed. The analysis showed that the intersection could not be designed with enough capacity to load the LRT based upon the loading profile provided by TTC Service Planning. In general, the elevated and underground options provide more loading capacity and flexibility without the impact to normal traffic operations.

The results of the preliminary traffic analysis and the narrow right of way restrictions justified the investigation into option alignments.

High level concepts available for an LRT are surface, below-ground, and elevated. Further, these can be applied in the centre of the roadway or north and south of the roadway. The primary constraints to overcome technically in developing the options are the elevation difference, location of the rail lines, and right of way constraints.

Initially, a total of four (4) option alignments were considered: surface; underground; elevated north; and elevated south. A fifth alignment, elevated north-side option, was later added to provide a better transit connection. A sixth option, hybrid, was added to try to provide the benefits of an elevated alignment without incurring the cost of the underground option, since the elevated options require tunnelling due to the elevation difference.

The initial six options were presented to the public as part of a consultation round. Two additional options were developed through the public consultation.

The eight options differ in alignment configuration, elevation (surface, elevated or underground), platform location and type (stop or station).

To provide a basis for comparison, each option is considered to provide 2 LRT tracks entering and 2 tracks exiting the facility. Some options provide the additional access route by way of a bi-directional track and crossover, and not an additional track. The placement of the LRT entrance and exit will vary depending on the ECLRT alignment option. The justification for 2 inbound and 2 outbound tracks is to provide redundancy in the system. In the event that one track is out of service due to a disabled vehicle, accident, etc., LRT service can continue. This is an important consideration as the facility is intended to serve 3 LRT lines.

The following section presents a summary of the characteristics of each option.

The exhibits in this section are intended to be graphical representations of the options. Scaled drawings for each option are included as part of **Appendix K**.

2.7.4.1 Option 1: Surface

For the surface option, the ECLRT running way and stop platforms are located in an Eglinton Avenue centre median right of way at the surface. Within the study area, the LRT would replace the existing two lanes at the centre of Eglinton Avenue (one in each direction), and run beneath the three bridges (GO Rail, CN/CP Rail and Photography Drive overpasses), on both sides of the centre piers.

Two LRT stop locations lie within the study area, Weston Road and Black Creek Drive. For this option, a centre platform is located immediately west of Weston Road, and far-side platforms are planned for Black Creek Drive.

One north access driveway will be provided for the connection to the proposed M&S Facility surface, onto Eglinton Avenue. Two tracks entering and exiting the facility in each direction (westbound and eastbound) have been assessed for this option. These are intended for one-way LRV movement during normal operation, however they are capable of allowing bi-directional movement to provide redundancy within the system in case of emergency (e.g. if one or more tracks is out of service, or an LRV breakdown occurs on the track). The connection is dependant upon surrounding traffic, so LRV movement into and out of the M&S Facility will be coordinated with traffic signal timing at Weston Road, North Access Driveway and Black Creek Drive.

A challenge faced in the surface option that does not affect the other options is the narrow right of way west of the rail lines. West of the rail lines, property acquisition will be required for this option. Two options were analyzed in an effort to minimize property impact. The first option is to locate the LRT in the existing centre of Eglinton Avenue and expand the ROW on both sides of the roadway to accommodate the cross section. The second option is to hold the south curb line, and expand the ROW to the north side of Eglinton. Both options were assessed to determine which would provide the least property impact. Widening to the north minimizes the property required in this segment.

Another challenge with the surface option, as outlined earlier, is the significant elevation difference where Eglinton Avenue passes beneath the three bridges in front of the proposed M&S facility. The work performed in this study has been coordinated with the preliminary work of the proposed M&S Facility. The elevation challenge can be resolved by providing a long runout track within the yard that will provide the distance needed to make up the elevation difference.

Throughout the development and evaluation, meetings were held in order to present options and gather input from the Working Group. Following the presentation of the elevated and tunnelling options, the Working Group asked that a sensitivity analysis be performed.

As previously mentioned, an initial traffic analysis found that the surface option could not support the required operation of the LRT. The M&S Facility and transit city planning progressed in planning development in parallel with this study. A revised loading plan was provided by TTC.

The purpose of the sensitivity analysis was to ‘test’ some possible solutions to particular constraints for the surface option, and determine if the solutions could offer significant benefits that make the surface alignment operational. The sensitivity analysis used a revised LRV loading plan provided by the TTC in July 2009. An order of magnitude cost estimate had shown that there was a significant cost difference between the surface option and the preferred grade-separated option. TCG subsequently performed the sensitivity analysis using the revised LRV loading plan. The analysis showed that measures could be implemented to allow the surface connection to provide sufficient residual capacity during peak periods. This analysis is documented in a technical memorandum, included in Appendix C.

The traffic analyses performed for the surface option showed that it can provide an adequate capacity to load/unload LRV’s to the proposed M&S Facility (including sufficient LRV loading and unloading capacity) if measures are taken to increase the connection capacity. These measures include:

- Adjusting LRT operation by increasing AM loading period from 1 hour 40 minutes to 2 hours 30 minutes;
- Reducing signal cycle lengths, e.g. by re-routing left turns, removing left turn phase, introducing two-stage north-south pedestrian crossings, introduce pedestrian buttons and/or introduce pedestrian overpass; and
- Restricting access driveway for the south side property to be right-in/right-out only.

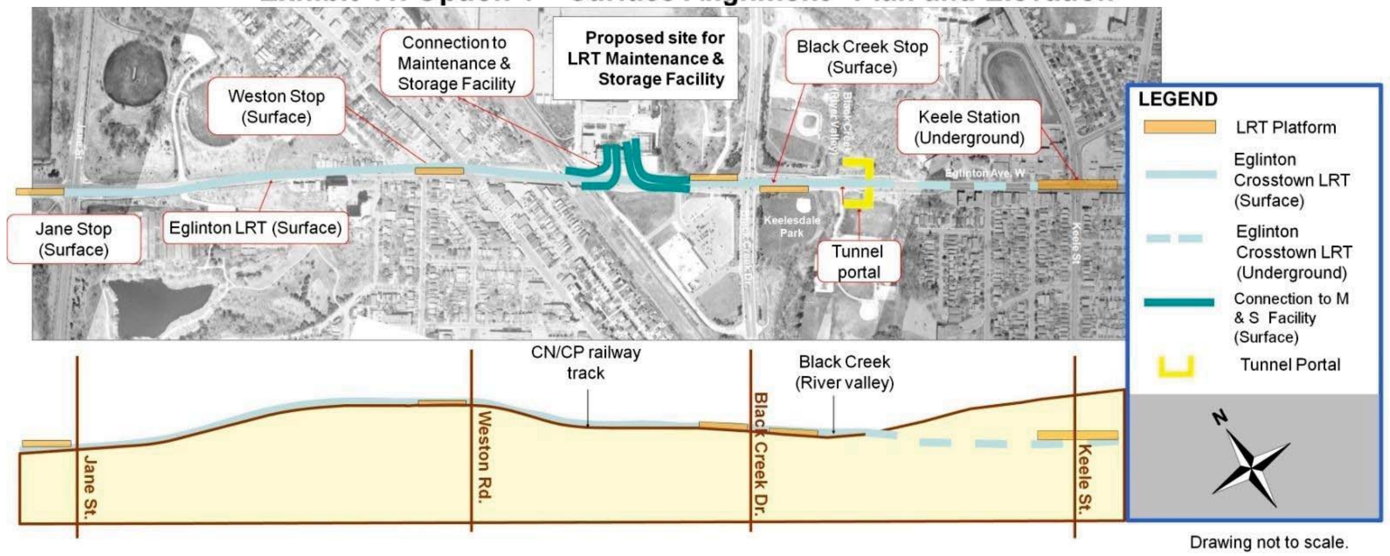
The additional traffic analysis, sensitivity analysis, and reduced capacity requirement for the M&S Facility allow the surface alignment to support the LRT operational requirements.

It was recommended by the working group that a traffic impact study be conducted to evaluate the order of magnitude of impact to development potential that would be incurred by the right-in right-out access for the development on the south-west corner of Black Creek Drive and Eglinton Avenue. The City of Toronto provided a traffic report for DRENA Development York City Centre that was completed in 1990. The traffic report considered the impacts of the proposed subway, changes to the Eglinton Avenue and changes to Black Creek Drive. The report included a full moves access onto Eglinton Avenue.

The traffic impact study conducted by TCG considered the land development proposal of the DRENA report, with an assumption of 35% LRT ridership with the inclusion of a right-in right-out access onto Eglinton Avenue, the analysis concluded that the development would face approximately a 5% reduction in trip capacity. The analysis is included as part of **Appendix K**.

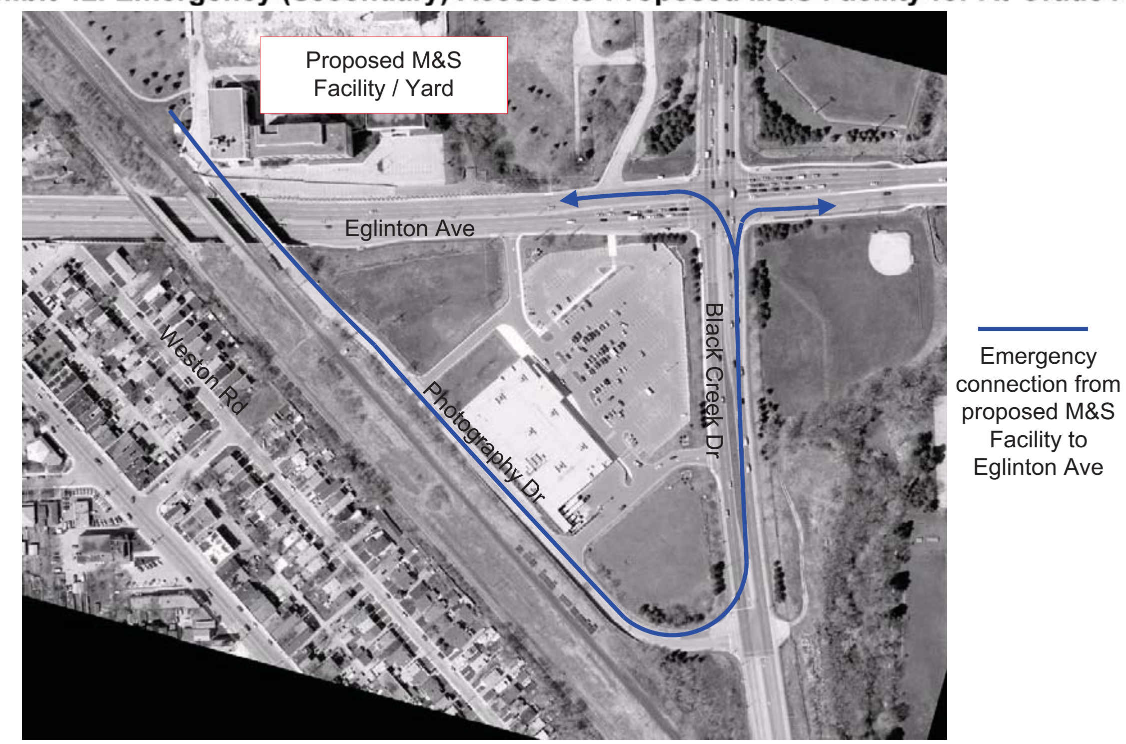
An overview showing the aerial plan and outline elevation is shown in **Exhibit 41**.

Exhibit 41: Option 1 – Surface Alignment - Plan and Elevation



For the surface option, a secondary (emergency) LRV access route is provided to/from the proposed M&S Facility via another surface track on Photography Drive, which, at the north end, connects to the M&S Facility and, at the south end, loops to Black Creek Drive, from there connecting to Eglinton Avenue. The secondary connection comprises a single track, capable of handling bi-directional LRV movement. It would operate in mixed traffic and would be used only in the event of a major incident that closed the Eglinton access to the yard for an extended period of time. This access will not be used as a regular entrance as it would be slower and inconvenient for regular operations.

Exhibit 42: Emergency (Secondary) Access to Proposed M&S Facility for At-Grade Alignment



2.7.4.2 Option 2 - Elevated South Side

For the elevated south side option, the ECLRT travels underground from east of Jane Street (on the west side of the study area) to east of the Photography Drive bridge overpass. The underground tunnel travels beneath Eglinton Avenue until Photography Drive, where it exits south of the ROW. The ECLRT is then elevated on a dedicated structure south of the Eglinton Avenue ROW until it enters the main tunnel portal east of the Black Creek river valley. The LRT then travels underground until east of Brentcliffe Road, which is consistent with all options.

For this option, one underground station is located west of Weston Road, and a second elevated centre platform is located near the Black Creek Drive intersection.

The connection to the proposed M&S Facility comprises four dedicated tracks leading to/from Eglinton Avenue. Three of the tracks are elevated, and the fourth is underground (i.e. tunnel). The three elevated tracks in this option would require structures to be built over Eglinton Avenue. The tracks are intended for one-way LRV movement into and out of the M&S Facility in each direction (eastbound and westbound), however they are capable of allowing bi-directional movement to provide redundancy in case of emergency (e.g. if one or more track is out of service, or an LRV breakdown occurs on the track). The proposed M&S Facility connection is not dependant upon surrounding traffic, since it uses grade-separated tracks.

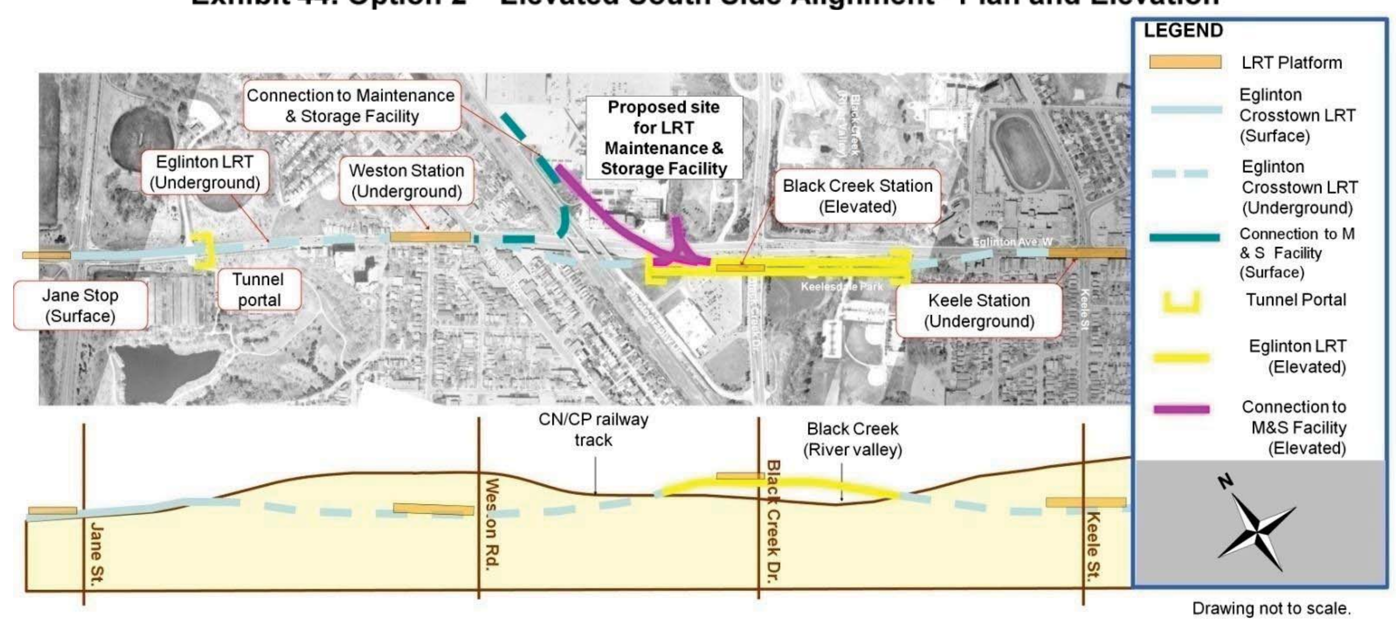
This option is fully grade separated from Weston Road to Keele Street. As previously discussed, the special trackwork would be located at Weston Station. Also, because of the short tunnel section, this would be constructed by cut and cover construction. The proposed station layout is shown in **Exhibit 43**.

A detailed layout drawing for this option is included as part of **Appendix K**.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 44.**

Exhibit 43: Proposed Weston Station Layout

Exhibit 44: Option 2 – Elevated South Side Alignment - Plan and Elevation



2.7.4.3 Option 3 - Elevated North Side

For the elevated north side option, the ECLRT travels underground from east of Jane Street (on the west side of the study area) to east of the Photography Drive bridge overpass. The underground tunnel travels beneath Eglinton Avenue until Photography Drive, where it surfaces north of the ROW. The ECLRT is then elevated on a dedicated structure north of the Eglinton Avenue ROW until it enters the main tunnel portal east of the Black Creek river valley. The LRT then travels underground until east of Brentcliffe Road, which is consistent with all options.

For this option, one underground station is located west of Weston Road. A second elevated centre platform is located near the Black Creek Drive intersection.

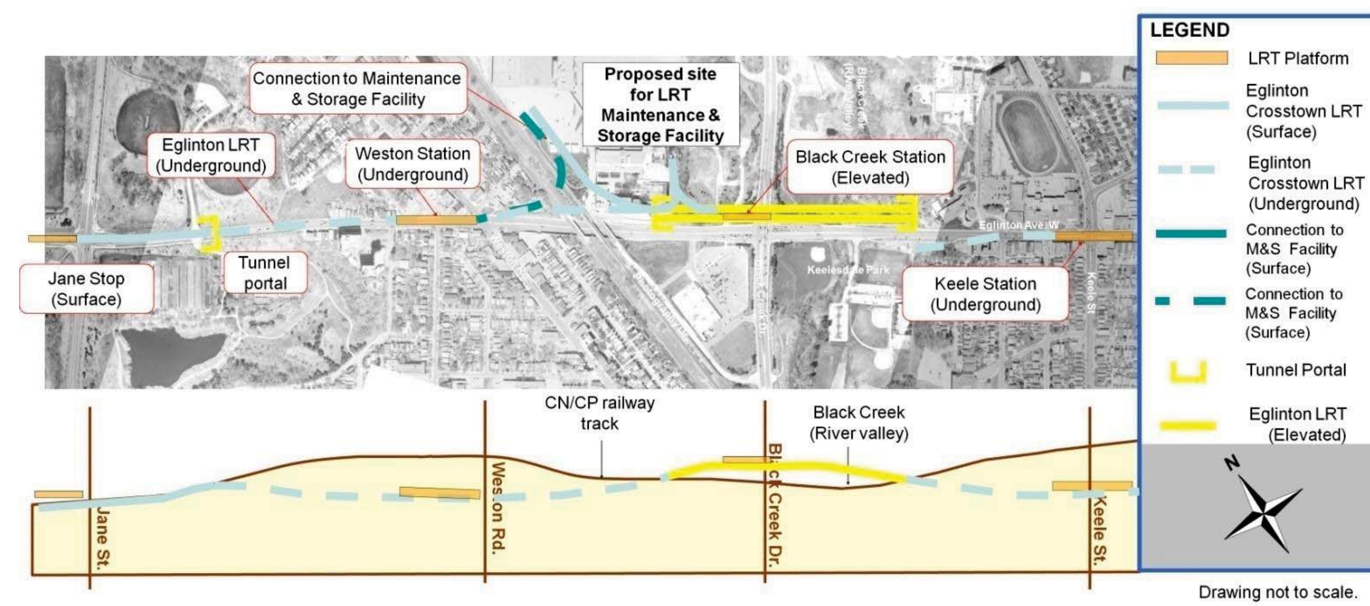
The connection to the proposed M&S Facility comprises four dedicated tracks leading to/from Eglinton Avenue. Three of the tracks are elevated with respect to Eglinton Avenue, and the fourth is underground (i.e. tunnel). The tracks are intended for one-way LRV movement into and out of the M&S Facility in each direction (eastbound and westbound), however they are capable of allowing bi-directional movement to provide redundancy in case of emergency (e.g. if one or more track is out of service, or an LRV breakdown occurs on the track). The proposed M&S Facility connection is not dependant upon surrounding traffic in this option, since it uses grade separated tracks.

This option is fully grade separated from Weston Road to Keele Street. As previously discussed, the special trackwork would be located at Weston Station. Also, because of the short tunnel section, this would be constructed by cut and cover construction. The proposed station layout is shown in **Exhibit 43**.

A detailed layout drawing for this option is included as part of **Appendix K**.

An overview showing the aerial plan and outline elevation of this option is shown in **Exhibit 45**.

Exhibit 45: Option 3 – Elevated North Side Alignment - Plan and Elevation



2.7.4.4 Option 4 - Underground

For the underground option, the ECLRT travels underground through the entire study area, from east of Jane street to east of Brentcliffe Drive. The underground tunnel travels beneath the Eglinton Avenue ROW through the entire study area.

For this option, one underground station is located west of Weston Road, and a second underground station is located west of Black Creek Drive.

The connection to the proposed M&S Facility comprises two dedicated underground tracks to/from the ECLRT alignment. The tracks are intended for bi-directional use. It is possible to build additional, redundant connections to the M&S Facility, however because these would need to be underground they would incur very high cost.

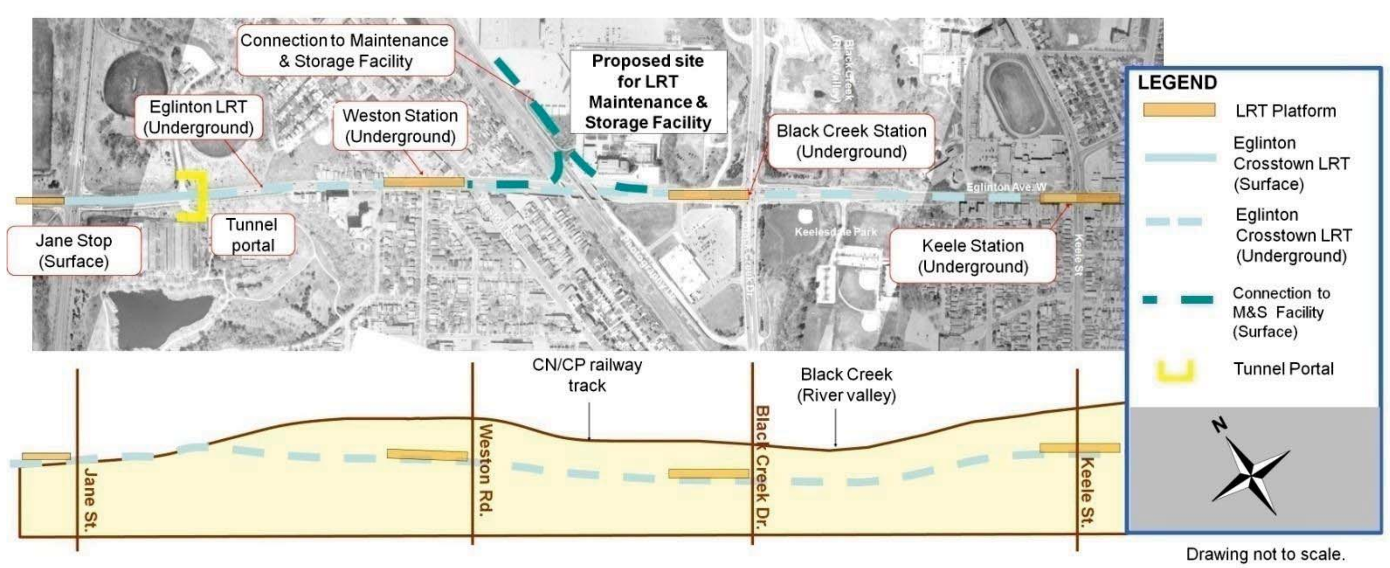
The underground option provides at least two fewer connection tracks than the other options, which means there is less redundancy in case of emergency (e.g. if one or both tracks are out of service, or an LRV breakdown occurs on the track).

This option is fully grade separated from Weston Road to Keele Street. As previously discussed, the special trackwork would be located at Weston Station. The construction method for this tunnel section would use tunnel boring machines. The station and special trackwork at Weston Station would be constructed by cut and cover. The proposed station layout is shown in **Exhibit 43**.

A detailed layout drawing for this option is included as part of **Appendix K**.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 46**.

Exhibit 46: Option 4 – Underground Alignment - Plan and Elevation



2.7.4.5 Option 5 - Elevated North Side Alternative

For the elevated north side option alignment, the ECLRT travels underground from east of Jane Street (on the west side of the study area) to midway between Photography Drive and Black Creek Drive. The underground tunnel travels beneath the Eglinton Avenue ROW until Photography Drive, where it curves northward and exits at a portal north of the ROW. The ECLRT is then elevated on a dedicated structure north of the Eglinton Avenue ROW until it enters the main tunnel portal east of the Black Creek river valley. The LRT then travels underground until east of Brentcliffe Road, which is consistent with all options.

For this option alignment, one underground station is located east of Weston Road. There is no second platform.

The connection to the proposed M&S Facility comprises four dedicated tracks leading to/from Eglinton Avenue. Two of the tracks are elevated, while another two are underground (i.e. tunnel). The tracks are intended for one-way LRV movement into and out of the M&S Facility in each direction (eastbound and westbound), however they are capable of allowing bi-directional movement to provide redundancy in case of emergency (e.g. if one or more track is out of service, or an LRV breakdown occurs on the track). The proposed M&S Facility connection is not dependant upon surrounding traffic, since it is uses grade separated tracks.

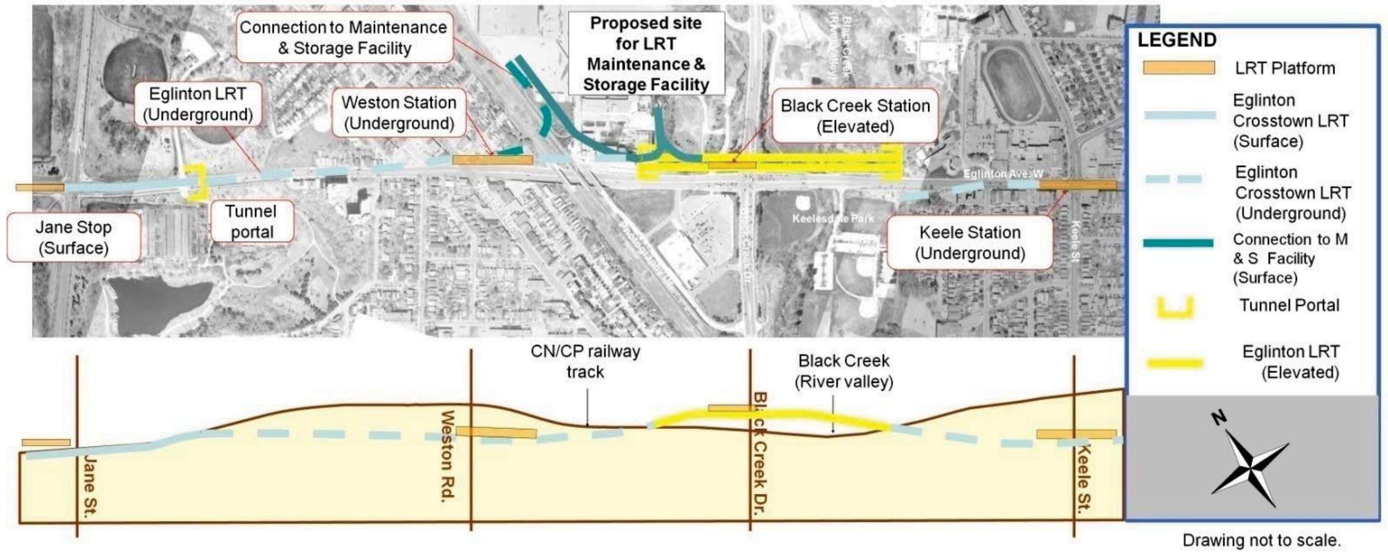
This option is fully grade separated from Weston Road to Keele Street. As previously discussed, the special trackwork would be located at Weston Station. Also, because of the short tunnel section, this would be constructed by cut and cover construction. The proposed station layout is shown in **Exhibit 47**.

A detailed layout drawing for this option is included as part of **Appendix K**.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 48**.

Exhibit 47: Westion Station Alternate Layout

Exhibit 48: Option 5 – Elevated North Side (Alternative) Alignment - Plan and Elevation



2.7.4.6 Option 6 - Hybrid Alignment

A hybrid option was created in an attempt to gain the connection benefits of an elevated alignment without the high cost of tunnelling required in the elevated options. The objectives for this option are:

- Provide an elevated connection to the maintenance and storage facility to eliminate any potential conflicts with general traffic;
- Avoid/minimize the property requirements on the north or south side of Eglinton Avenue associated with the other elevated options; and
- Provide a grade separated option with a lower cost than the other grade-separated options.

The hybrid option has the same ECLRT alignment and same primary surface connection to the proposed M&S Facility as the surface option (Section 4.1). The difference is that instead of a surface emergency access route to the M&S Facility on Photography Drive, the hybrid option has an elevated emergency or secondary connection to the M&S Facility on Eglinton Avenue.

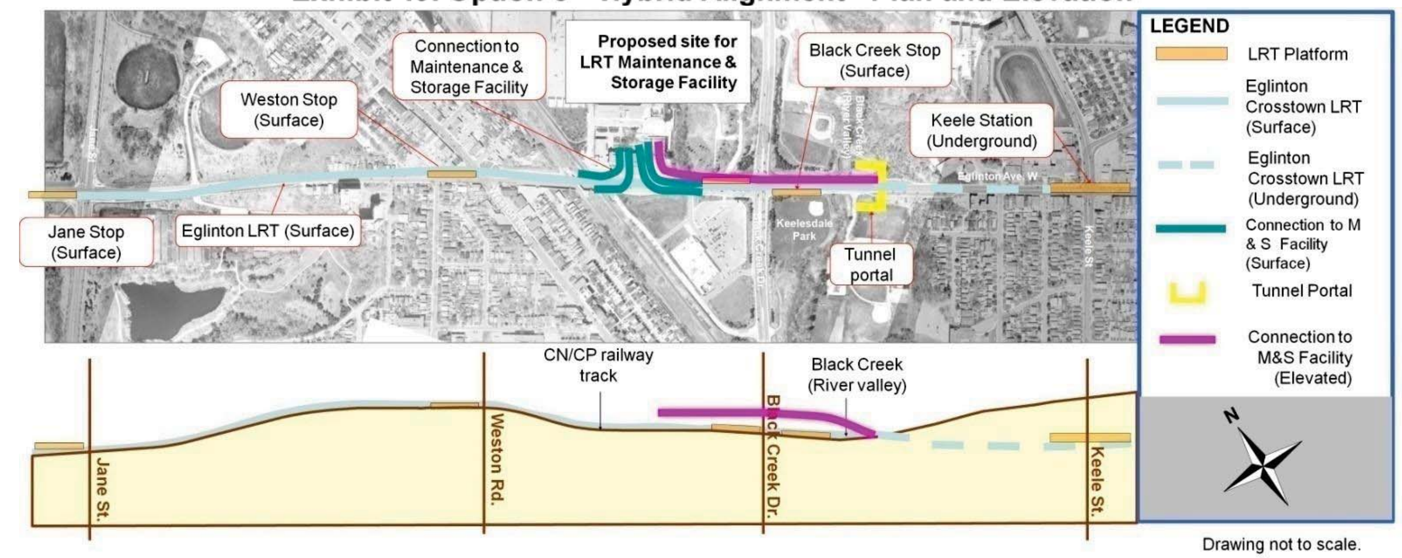
The other grade separated options require tunnelling under the three bridges over Eglinton Avenue, which greatly increases the cost. The hybrid option provides an elevated connection, but due to the presence of the three existing structures to the west of the M&S facility, it can only be provided to the east. Due to the close proximity of Black Creek Drive, the elevated structure cannot begin to return to grade until it crosses Black Creek Drive. Therefore the track reaches the existing grade approximately 500 metres east of the yard, after entering the main tunnel portal. From this point, any LRV destined to travel to the west would use the crossover, and begin to travel to the west another 500 metres before reaching the maintenance and storage facility interface point. This path results in a dead head round trip of approximately 1 kilometre, with a turnback required. Additionally, because the track cannot meet the existing grade until it is already into the tunnel, the special track work designated within that segment of the tunnel for operational purposes would likely need to be moved further to the east, which would have further implications on the location of Keele Station.

The hybrid option has many negative operational impacts, which are greater than the potential benefits.

A detailed layout drawing for this option is included as part of **Appendix K**.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 49**.

Exhibit 49: Option 6 – Hybrid Alignment - Plan and Elevation



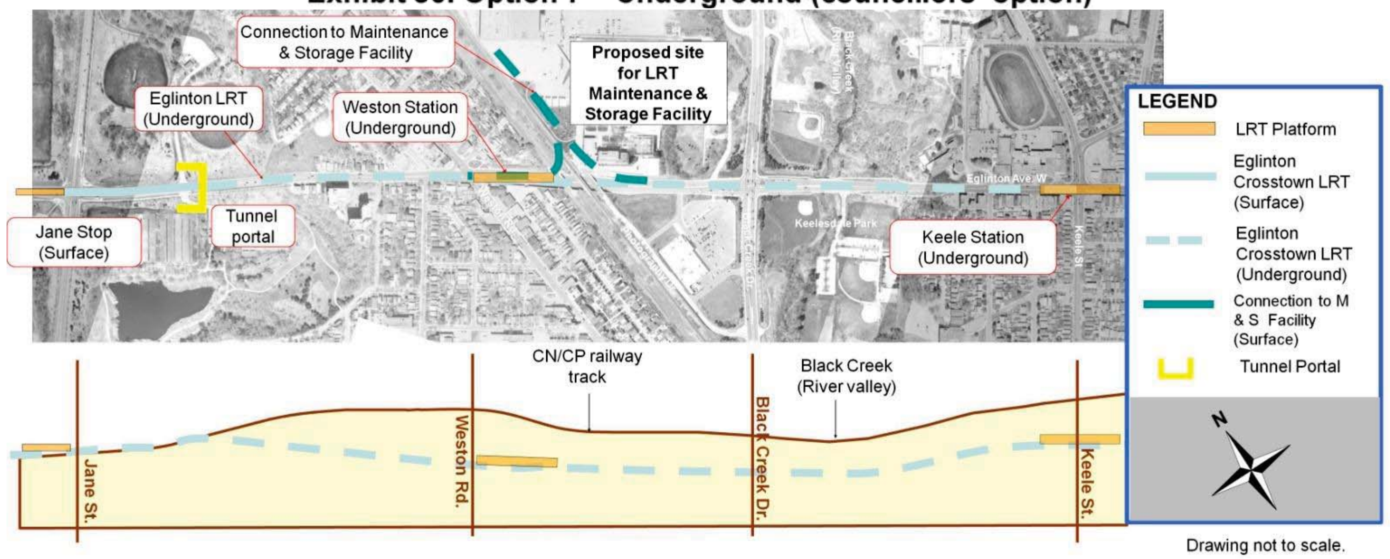
2.7.4.7 Option 7 – Underground (councillors' option)

Through public consultation, a modified underground option was created in an effort to reduce the cost for the underground option. This option is similar to the underground option, but does not include a station at Black Creek. The impacts of this option are similar to option 4, which have been identified in Section 3.5 of this report.

A detailed layout drawing for this option was not developed. The vertical and horizontal alignments are similar to the underground option, Option 4, without the station at Black Creek Drive.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 50**.

Exhibit 50: Option 7 – Underground (councillors' option)



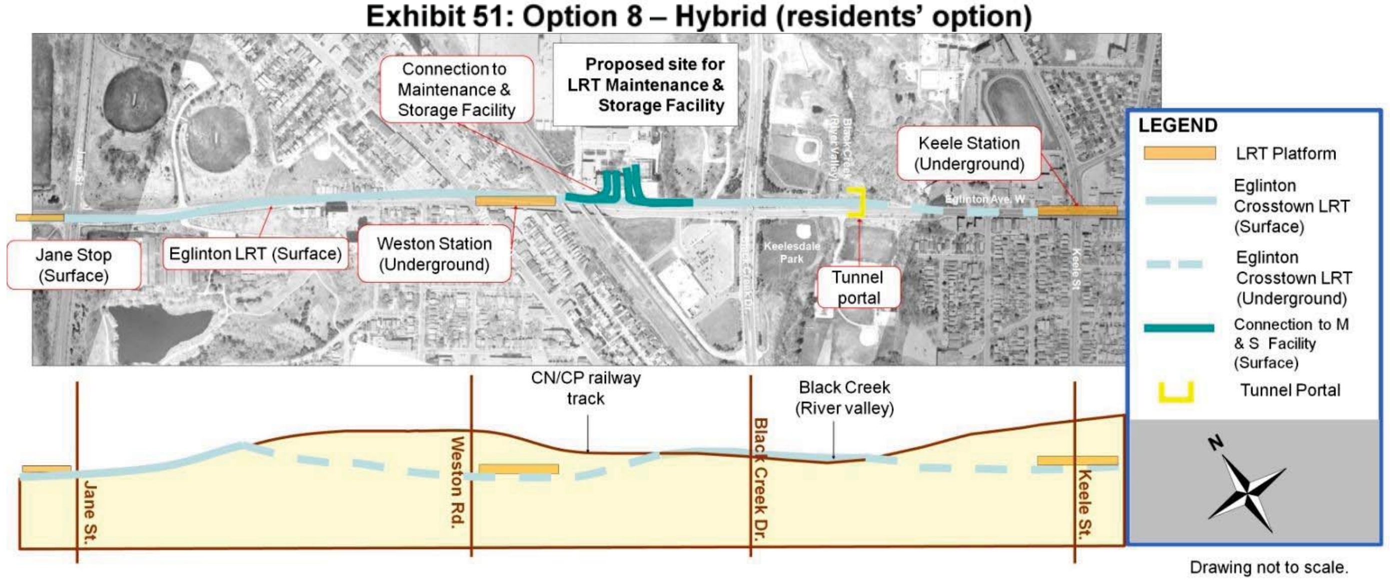
2.7.4.8 Option 8 – Hybrid (residents' option)

Through public consultation, an additional option was suggested for review by the residents of the Mt. Dennis community. This option suggests the use of the north side of the roadway for the location of the LRT east of the rail bridges. It then suggests that the LRT begin to go underground just west of the existing bridges. The residents' option was evaluated at a high level. The vertical alignment for this concept is feasible, though this option does not offer many other advantages.

A detailed layout drawing for this option is was not developed.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 51**.

Exhibit 51: Option 8 – Hybrid (residents' option)



2.7.5 Recommendation

The recommended alignment is Option 1, the surface alignment. The primary reasons for the recommendation are that the option:

- Adequately supports the traffic operation and LRT operation within the study area.
- Has significantly less cost than the other options (at least $200 million); and
- Results in similar property impacts as the other options. The underground option would reduce the number of full properties required from 26 to 18 (8 less than surface).

2.8 Keele Street Bus Terminal Configuration

Facilities are required at Keele Street to effectively accommodate transfers to and from buses on four surface transit routes. Two options were identified:

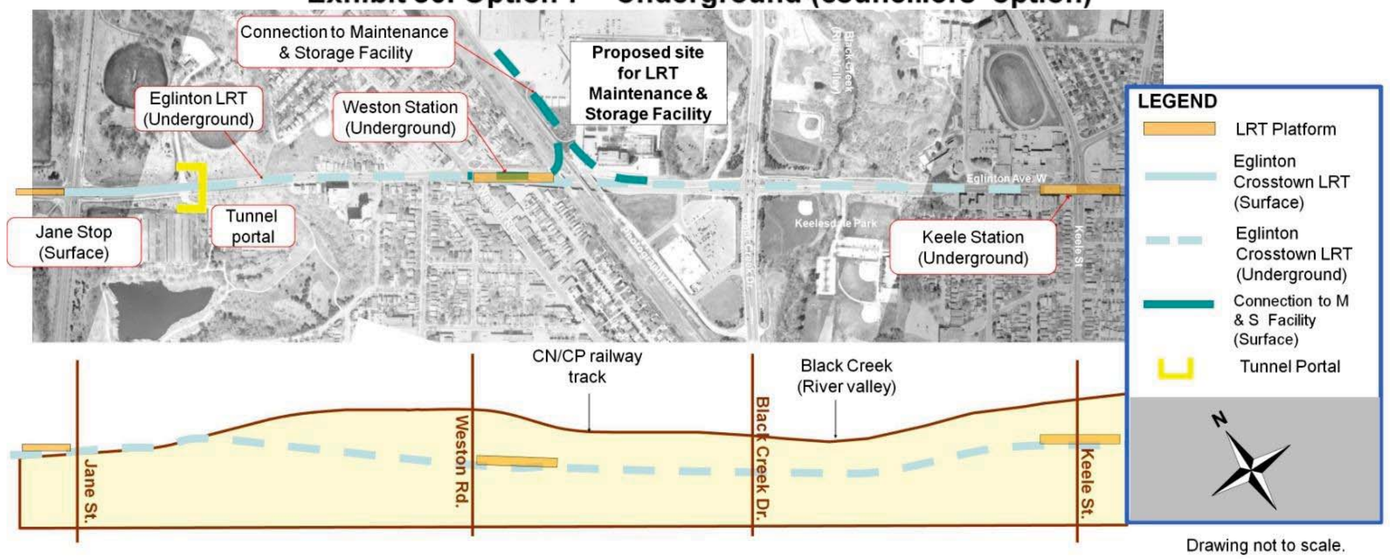
- On-street bus transit stops; and
- Off-street stops at a transit terminal.

On-street transit stops will likely include the implementation of bus bays, and transit vehicle routing which will optimize transit operations without the use of a transit terminal. An off-street transit terminal could possibly be a designed with queue jump lanes and transit signal phasing to quickly progress transit vehicles into and out of the terminal.

The following five intersections are included in the study area as shown in **Exhibit 52:**

- Eglinton Avenue and Trethewey Drive/ Keele Street (Signalized);
- Trethewey Drive and Yore Road (Signalized);
- Keele Street and Yore Road (Stop Controlled);
- Keele Street and Lester Avenue (Stop Controlled); and
- Eglinton Avenue and Keele Street (Stop Controlled).

Exhibit 50: Option 7 – Underground (councillors' option)



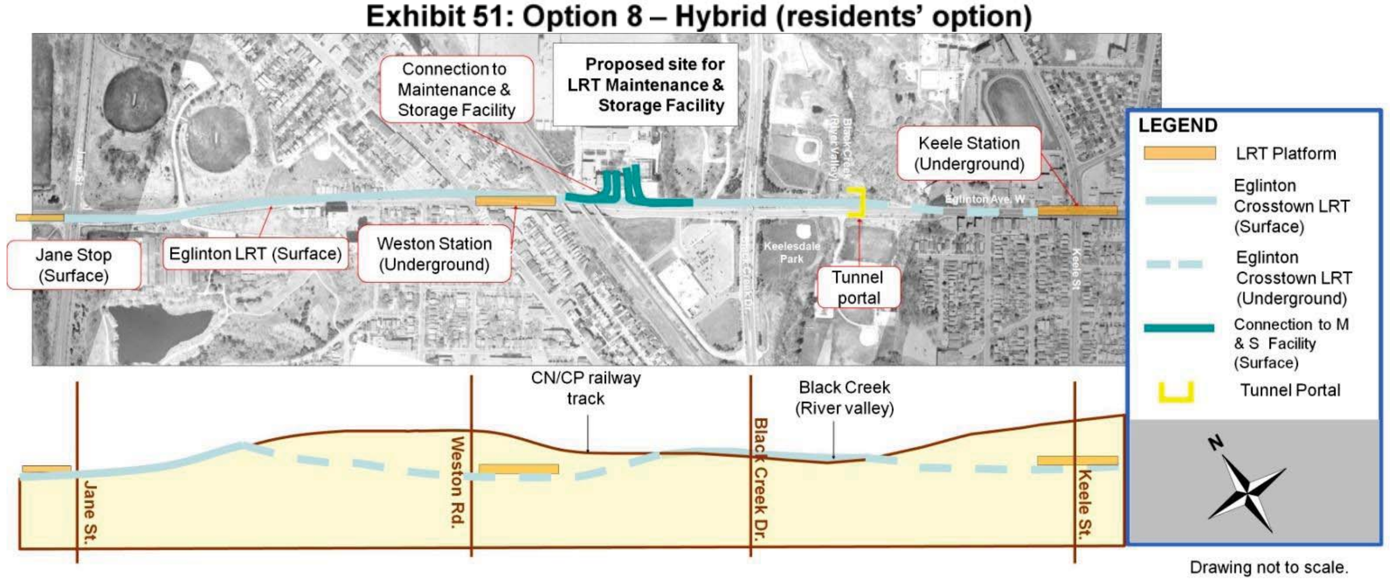
2.7.4.8 Option 8 – Hybrid (residents' option)

Through public consultation, an additional option was suggested for review by the residents of the Mt. Dennis community. This option suggests the use of the north side of the roadway for the location of the LRT east of the rail bridges. It then suggests that the LRT begin to go underground just west of the existing bridges. The residents' option was evaluated at a high level. The vertical alignment for this concept is feasible, though this option does not offer many other advantages.

A detailed layout drawing for this option is was not developed.

An overview showing the aerial plan and outline elevation is shown in **Exhibit 51**.

Exhibit 51: Option 8 – Hybrid (residents' option)



2.7.5 Recommendation

The recommended alignment is Option 1, the surface alignment. The primary reasons for the recommendation are that the option:

- Adequately supports the traffic operation and LRT operation within the study area.
- Has significantly less cost than the other options (at least $200 million); and
- Results in similar property impacts as the other options. The underground option would reduce the number of full properties required from 26 to 18 (8 less than surface).

2.8 Keele Street Bus Terminal Configuration

Facilities are required at Keele Street to effectively accommodate transfers to and from buses on four surface transit routes. Two options were identified:

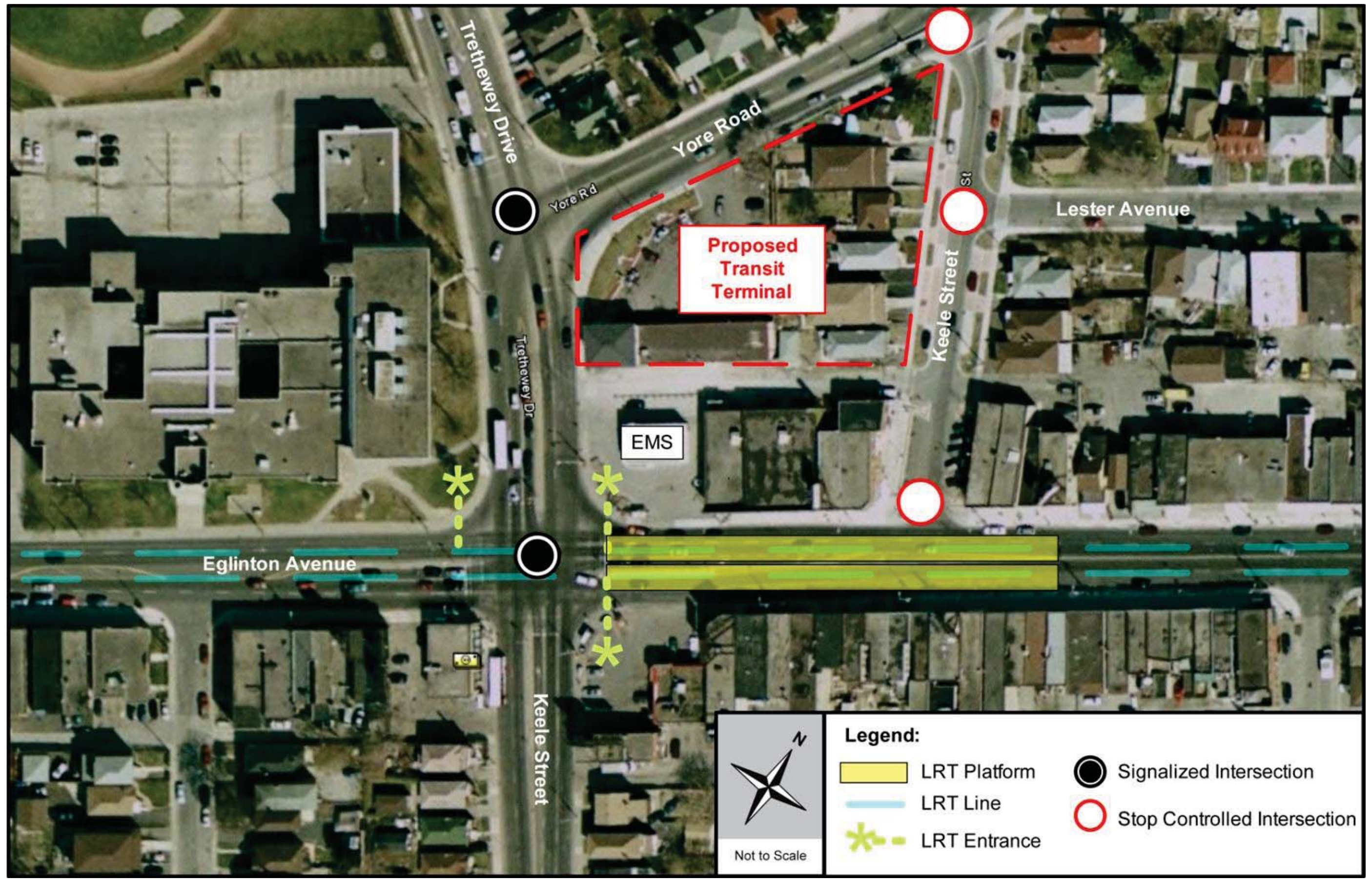
- On-street bus transit stops; and
- Off-street stops at a transit terminal.

On-street transit stops will likely include the implementation of bus bays, and transit vehicle routing which will optimize transit operations without the use of a transit terminal. An off-street transit terminal could possibly be a designed with queue jump lanes and transit signal phasing to quickly progress transit vehicles into and out of the terminal.

The following five intersections are included in the study area as shown in **Exhibit 52:**

- Eglinton Avenue and Trethewey Drive/ Keele Street (Signalized);
- Trethewey Drive and Yore Road (Signalized);
- Keele Street and Yore Road (Stop Controlled);
- Keele Street and Lester Avenue (Stop Controlled); and
- Eglinton Avenue and Keele Street (Stop Controlled).

Exhibit 52: Keele Street Bus Terminal Configuration – Study Area



The Eglinton Avenue Crosstown Light Rail Transit (Eglinton Crosstown LRT) will operate underground at the Eglinton Avenue at Trethewey Drive/ Keele Street signalized intersection. Therefore, this intersection and surrounding road network would not be impacted by the implementation of the LRT. Under future conditions, the implementation of the LRT does not alter the existing roadway lane configurations.

There is an Emergency Medical Service (EMS) station located on the northeast corner at the intersection of Eglinton Avenue and Trethewey Drive/ Keele Street. As the LRT will be underground, its operation will not interrupt EMS operations. However, the EMS operation may be complicated by on-street transit and vehicle operation.

The pedestrian accesses to the underground Keele Street LRT station are proposed to be located directly north of the EMS station (underground access) and at the northwest and southeast corners of Eglinton Avenue and Trethewey Drive/ Keele Street.

2.8.1 Key Challenges and Constraints

There are several branches of the 32 Eglinton West bus service which operate throughout the area today but only two will continue after construction of the LRT: 32C (Eglinton West – Trethewey), 32D (Eglinton West – Emmett). The Keele bus services will continue to operate through the area. Under existing operations routes 32C and 32D originate from the Yonge and Eglinton West Subway station. Under future conditions, these routes will originate at Keele. Route 32C will only service the segment Trethewey Drive West. The 32D line will serve the Emmet Avenue area originating at Keele Station. Route 41 Keele services will continue to pass through the area traveling north-south. All bus routes may operate using alternative routing and transit stops under future conditions.

The signalized intersection of Eglinton Avenue and Trethewey Drive/ Keele Street currently operates at a very poor level of service during both peak periods. There is limited northbound left turn capacity since there is high opposing traffic. The signalized intersection of Trethewey Drive and Yore Road operates at a poor level of service with the westbound left movement operating at close to capacity during the PM peak period. All other movements operate at a good level of service. All traffic movements at the unsignalized intersections are operating without capacity issues, with the exception of the northbound right turn movement at Keele Street and Yore Road.

2.8.2 Options

A total of five Keele Street Bus Terminal scenarios were considered including two on-street transit stop and three off-street transit terminal configurations. A traffic analysis was conducted to evaluate each option with respect to their expected impact on traffic movements and associated activities in the study area. The analysis used the projected transit vehicle routings within the study area.

The five scenarios analysed are as follows:

- Option 1 - On-Street Route 32C Left Turn (**Exhibit 53**);
- Option 2 - On-Street Route 32C Right Turn (**Exhibit 54**);
- Option 3 - Off-Street Bus Terminal A (**Exhibit 55**);
- Option 4 - Off-Street Bus Terminal B (**Exhibit 56**); and
- Option 5 - Off-Street Bus Terminal C (**Exhibit 57**).

2.8.2.1 Option 1 - On-Street Route 32C Left Turn

In this option, all future transit routes operate with on-street bus bays for passenger boarding and alighting. Route 32C and Route 41 southbound have lay-by transit bus bays located south of Yore Road on Trethewey Drive. The Route 32C routing will include a southbound left turn from Trethewey Drive onto Eglinton Avenue and then perform an eastbound left turn to travel north on Keele Street. Route 32C transit vehicles will then continue by entering Yore Road via a northbound right turn and use Irving Road to the north to return to Trethewey Drive. The on-street bus bay for Route 41 northbound is a northbound nearside stop at Trethewey Drive and Yore Road. Lastly, Route 32D will operate with a northbound on-street transit stop on Trethewey Drive between Eglinton Avenue and Yore Road.

Comments from TTC staff suggested that the routing plan for Option 1 is problematic since the routing is circuitous and would place buses on local residential streets (Irving Road) and through a school zone. TTC staff also advised that it would be very difficult for Route 32C southbound transit vehicles on Trethewey Drive to manoeuvre into the left turn lane from the southbound bus bay.

Under this scenario, the EMS station would remain at its current location.

Exhibit 53: Keele Street Bus Terminal – Option 1 On-Street Route 32C Left Turn

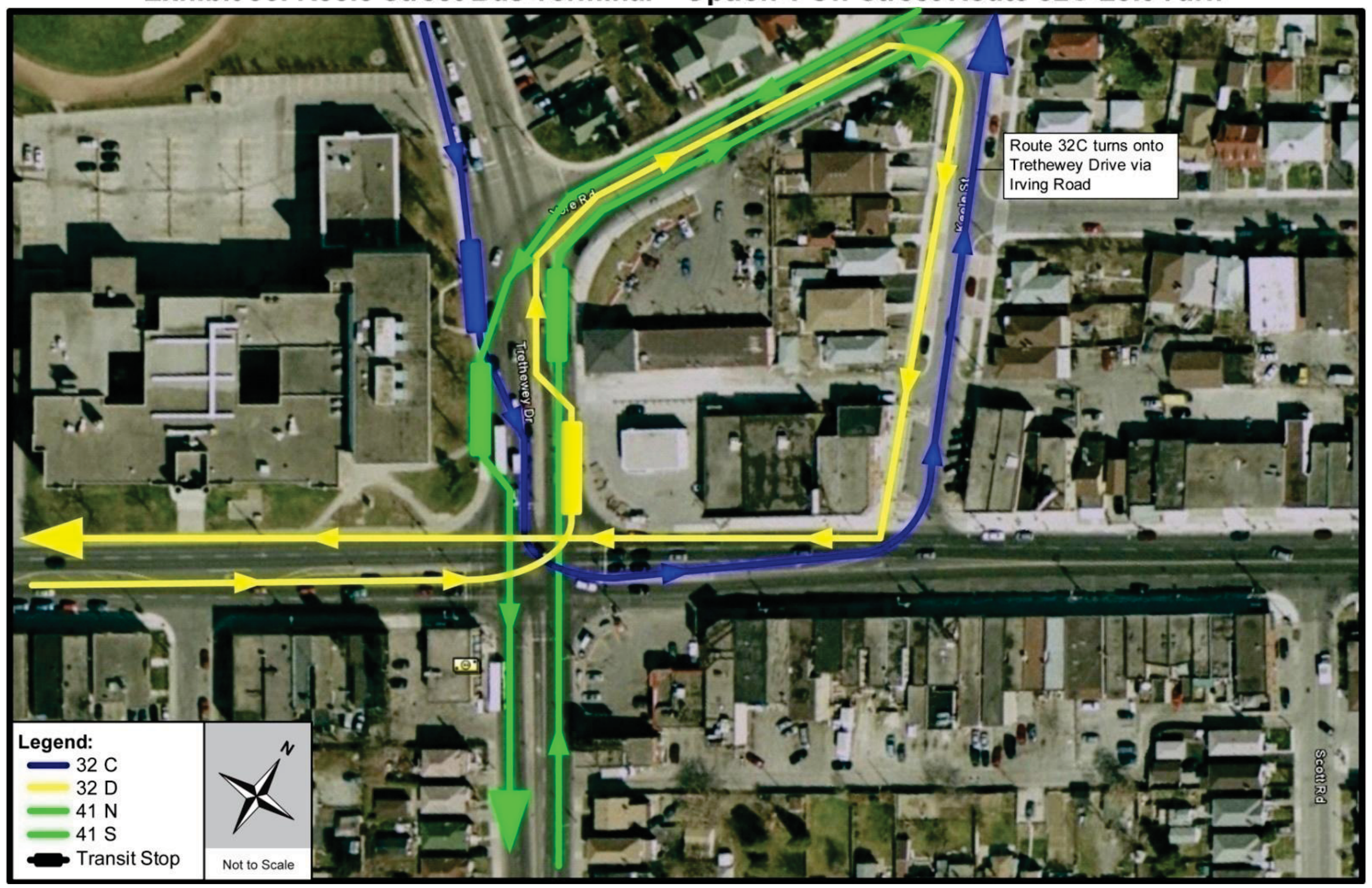
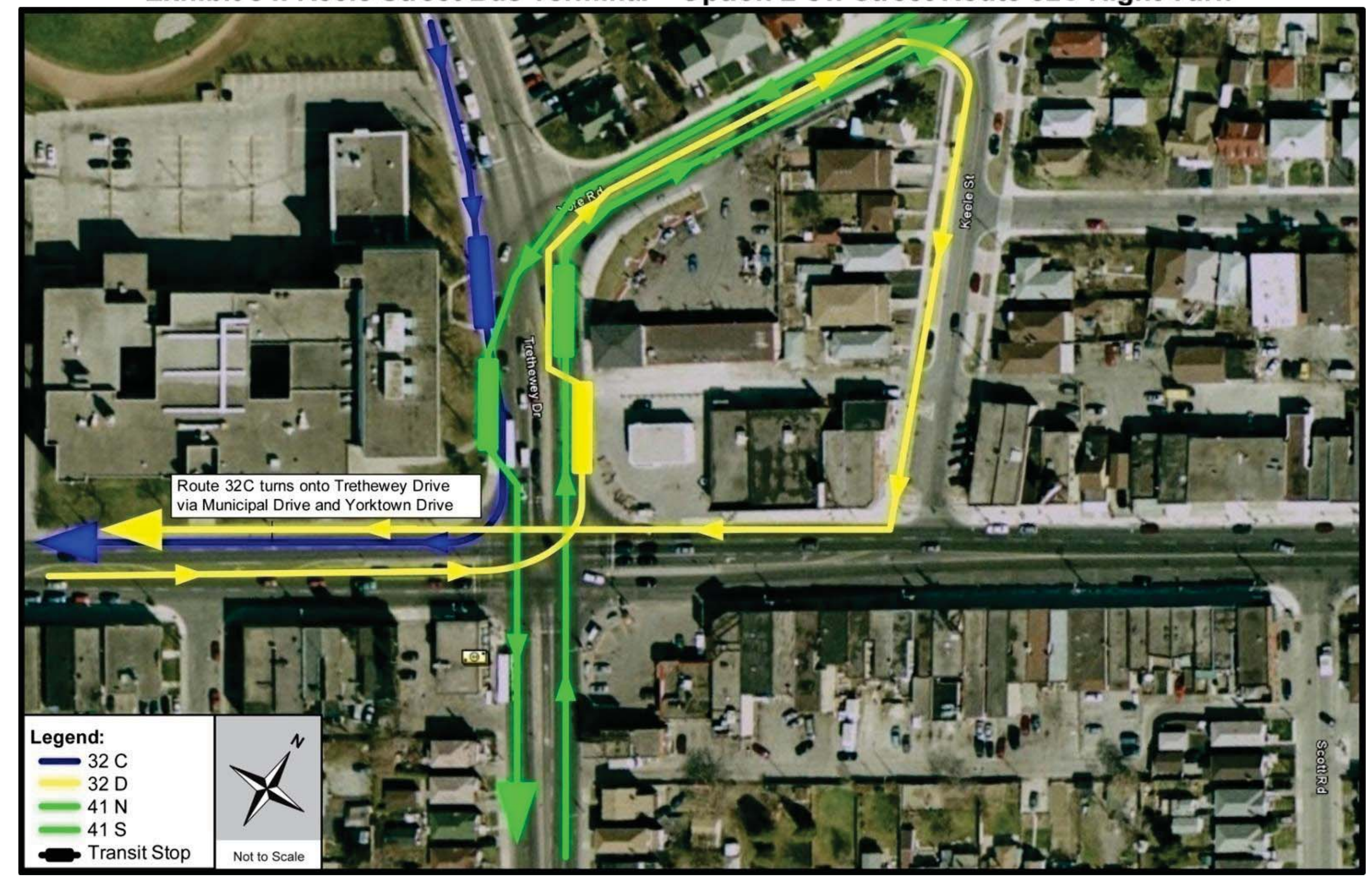


Exhibit 54: Keele Street Bus Terminal – Option 2 On-Street Route 32C Right Turn



2.8.2.2 Option 2 - On-Street Route 32C Right Turn

This scenario is very similar to Option 1 with respect to bus routing, with the exception of Route 32C. At the signalized intersection of Eglinton Avenue at Trethewey Drive/ Keele Street, Route 32C would perform a southbound right turn to travel westbound on Eglinton Avenue where it would return to Trethewey Drive via Municipal Drive and Yorktown Drive.

Route 32D and Route 41 northbound and southbound would remain the same as Option 1 with respect to routing and transit stop locations.

Comments from TTC staff suggested that the routing plan for Option 2 is also problematic because of the circuitous routing and would direct buses through a busy mixed traffic area that is subject to congestion and high delays.

The EMS station would remain at its current location.

2.8.2.3 Option 3 - Off-Street Bus Terminal A

Under this option, the transit terminal would operate with both clockwise and counter-clockwise transit operation. With bi-directional bus operations and two bus bays per direction, a bus passing lane is required for each direction. Hence, the transit terminal location to access the LRT is required to be north of the Trethewey Drive terminal access. The entrance/exits accesses of the terminal will be located on Trethewey Drive between Eglinton Avenue and Yore Road, and on Yore Road. The Trethewey Drive access will accommodate northbound Route 32D buses right turning inbound and westbound Route 32C buses right turning outbound. The Yore Road access will accommodate Route 32C buses right turning inbound and northbound Route 32D buses left turning outbound. To facilitate the movement of the Route 32D left turn vehicles out of the terminal, a westbound left turn reserved for buses only have to be provided for the Trethewey Drive and Yore Road intersection. A westbound left turn bus only phase will be used to progress the bus through the signalized intersection.

Based on existing traffic volumes on Yore Road, it would be difficult for a transit vehicle to exit the terminal at the unsignalized Yore Road terminal access by performing a northbound left turn movement to head westbound. The estimated queues on Yore Road are expected to extend beyond the Yore Road terminal access providing no gap for a bus to merge with traffic without blocking the eastbound lanes. This would result in high delays and is unfavourable from a transit operations perspective. As a result, the terminal access on Yore Road was analyzed with a signalized access and is coordinated with the Trethewey Drive and Yore Road intersection to safely merge transit vehicles onto Yore Road. For safety reasons, the northbound right turn on red at Trethewey Drive and Yore Road will be prohibited to limit the number of vehicles stopped on Yore Road when the Yore Road terminal access signal is activated. In addition, a westbound left turn transit only lane is feasible and proposed for the Trethewey Drive and Yore Road intersection with a priority phase to allow access to the right turn on Trethewey. The transit only lane is proposed to have sufficient storage length for at least two buses. Lastly, there is also an exclusive southbound right turn lane proposed for the Eglinton Avenue and Trethewey Drive/ Keele Street intersection to serve southbound right turning vehicles and to act as a transit queue jump lane.

Route 41N and Route 41S would remain the same as Options 1 and 2 with respect to routing and transit stop locations.

Exhibit 55: Keele Street Bus Terminal – Option 3 Off-Street Bus Terminal A (Preferred Option)

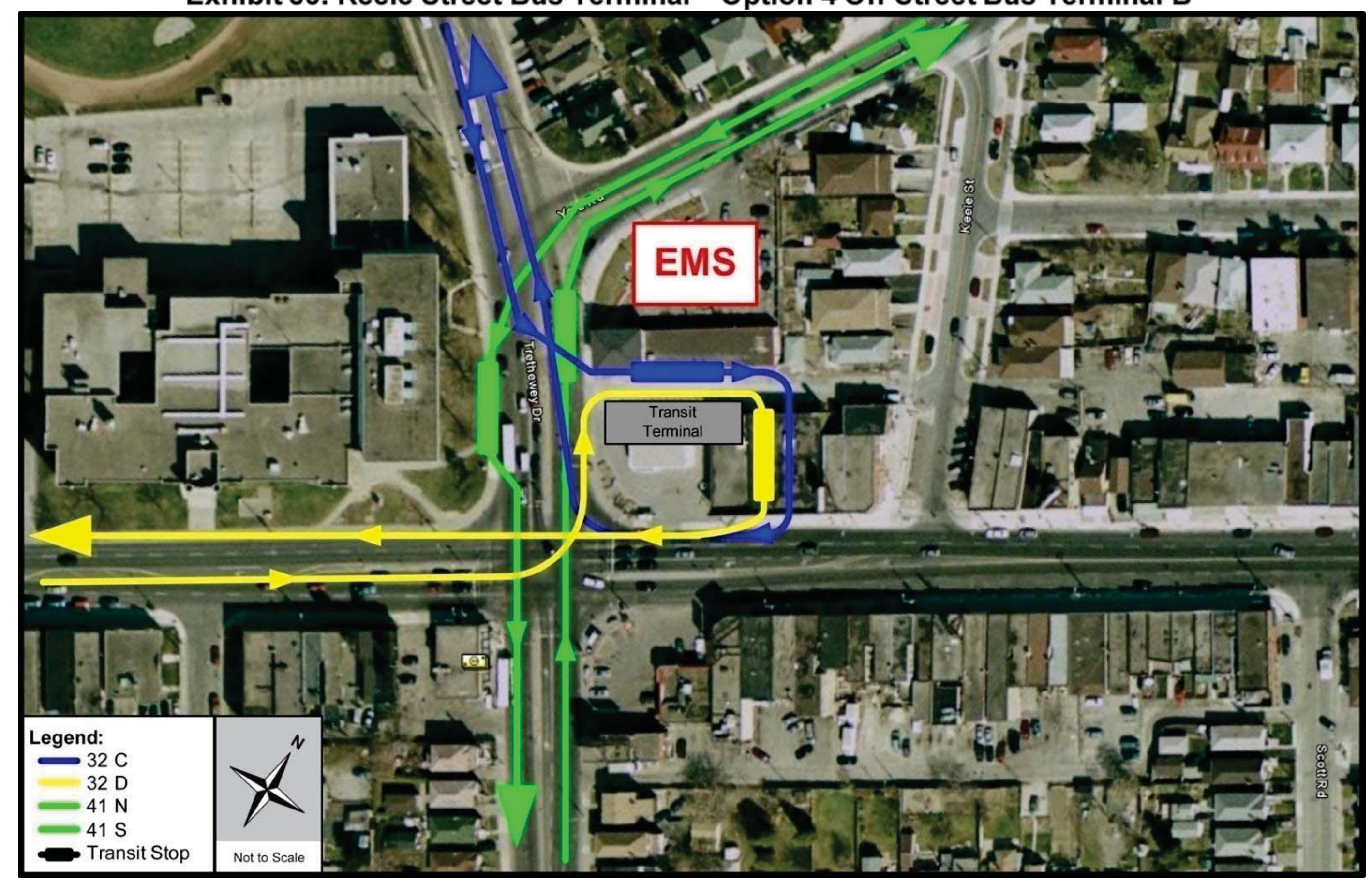
2.8.2.4 Option 4 - Off-Street Bus Terminal B

The transit terminal is proposed to be midway between Yore Road and Eglinton Avenue on Trethewey Drive. Route 41 buses would operate similar to the other options without using the transit terminal while Route 32C would be required to perform a southbound left turn into the transit terminal via the Trethewey Drive terminal access, then it would then enter Eglinton Avenue via a southbound right turn and then onto Trethewey Drive via a westbound right turn to continue on its normal route. Route 32D will also use the transit terminal proposed under this option circulating clockwise around the terminal.

According to the proposed transit routings, the current EMS station location is problematic since emergency vehicles will likely conflict with circulating transit vehicles exiting the terminal onto either Eglinton Avenue or on Trethewey Drive. For this scenario, the EMS station is recommended to be relocated to the southeast quadrant of Trethewey Drive and Yore Road.

It should be noted that this option has significant property impact to the buildings located on Eglinton Avenue.

Exhibit 56: Keele Street Bus Terminal – Option 4 Off-Street Bus Terminal B



2.8.2.5 Option 5 - Off-Street Bus Terminal C

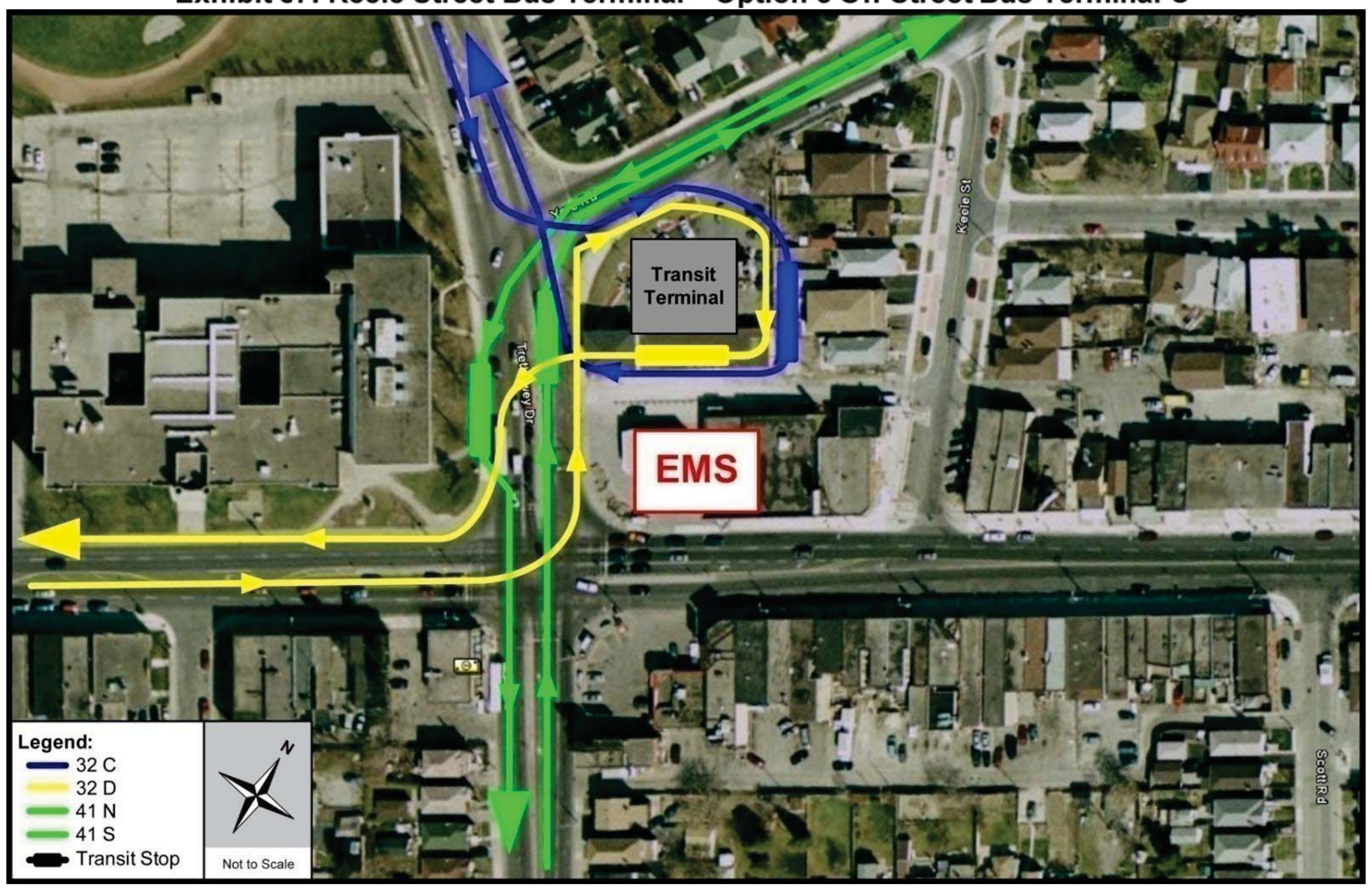
The Option 5 terminal location is similar to Option 3 but all buses would circulate in a clockwise direction in the transit terminal. The underground LRT passage would be extended to the transit terminal. The Route 32C transit vehicle would perform a southbound left turn at the Trethewey Drive and Yore Road intersection onto Yore Road, and then proceed into the terminal via an eastbound right turn from Yore Road.

Route 32D will circulate around the proposed transit terminal, use the proposed terminal stops, and exit the terminal via a westbound left turn onto Trethewey Drive. Based on the existing traffic volumes, it would be difficult for a transit vehicle to perform this left turn manoeuvre at an unsignalized access. The estimated southbound queue lengths are expected to extend to the upstream intersection and provide little to no gap for a bus to merge with southbound traffic without blocking the northbound lanes. This would result in significantly high delays and is problematic from a transit operations perspective. As a result, the Trethewey Drive terminal access is modelled as a signalized access, and coordinated with the Trethewey Drive and Eglinton Avenue intersection to safely merge transit vehicles onto Trethewey Drive. It should be noted that even with the signal access, merging of the transit vehicle into the far west lane to make a southbound right turn at Eglinton Avenue and Trethewey Drive/ Keele Street could still be problematic.

Route 41 buses will continue to use on-street transit stops similar to the other options.

The EMS station would remain at its existing location.

Exhibit 57: Keele Street Bus Terminal – Option 5 Off-Street Bus Terminal C



2.8.3 Evaluation

The criteria used to assess functional design options included:

- Intersection level of service and/or any critical turning movements;
- Transit vehicle study area delay;
- The possible need or requirement for a left turn lane and/or signalizing an access;
- Impact to the EMS station; and
- Bus and LRT passenger transfer.

To determine the overall traffic impact of each scenario, the Synchro traffic analysis software was used to review the overall intersection level of service and any critical turning movements during both peak periods. This analysis highlights any movements or changes in level of service to provide an overall understanding of how the intersections are affected with the rerouting of the transit vehicles.

It should be noted that the existing signal phasing was adjusted to improve the intersection operations. For all options, the signal timings at Eglinton Avenue and Trethewey Drive/Keele Street and at Trethewey Drive and Yore Road remained consistent for comparison sake and were not influenced by the rerouting of transit vehicles for each scenario.

A summary table of evaluation results for the five options is presented in **Exhibit 58.**

Exhibit 58: Keele Street Bus Terminal Configuration – Summary of Traffic Evaluation Results

Factor/ Scenario	Option 1	Option 2	Option 3	Option 4	Option 5
Bus Routing	Circuitous/ Unfavourable	Circuitous/ Unfavourable	Requires Northbound left turn out of terminal for one route Bi-directional terminal circulation	Requires Southbound left turn into terminal for one route One directional terminal circulation	Requires Westbound left turn out of terminal for one route One directional terminal circulation
Level of Service and Volume to Capacity Ratio	Slightly increased v/c ratios for a couple of movements and intersections	Almost identical to other scenarios	Both decreased and increased v/c ratios for a couple of movements and intersections	Almost identical to other scenarios	Almost identical to other scenarios
Transit Delay	Moderate transit delays	Moderate transit delays	Lowest Route 32D delay during AM peak Fairly low Route 32C delays for AM and PM peak periods.	Lowest Route 32D delay during PM peak	Lowest Route 32C delay during AM and PM peak periods

Factor/ Scenario	Option 1	Option 2	Option 3	Option 4	Option 5
Left Turn/ Signalization	No additional lanes or signalization required	No additional lanes or signalization required	Traffic signal at Yore Road terminal access recommended Westbound left turn transit only lane and phase recommended at Trethewey Drive and Yore Road Southbound right turn lane recommended at Eglinton Avenue and Trethewey Drive/ Keele Street	Southbound left turn lane recommended on Trethewey Drive	Traffic signal at Trethewey Drive terminal access recommended
Impact to EMS	No direct impact to EMS Station	No direct impact to EMS Station	No direct impact to EMS Station	EMS station recommended to be relocated	No direct impact to EMS Station
Bus/LRT Transfer	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner.	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner.	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner. Underground recommended to extend into terminal	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner. Underground recommended to extend into terminal

2.8.4 Recommendation

The preferred configuration is Option 3 - Off-street Bus Terminal A. This configuration resulted in a low transit delay and improved operations at the Eglinton Avenue/Trethewey Drive intersection compared to other options. This option allows the bus terminal to operate with both clockwise and counter-clockwise transit operation. The bus terminal will be located at the southeast corner of the Trethewey Drive/Yore Road intersection. The entrance/exits of the terminal will be located on Trethewey Drive between Eglinton Avenue and Yore Road, and on Yore Road.

The terminal access on Yore Road will be signalized and coordinated with the Trethewey Drive/Yore Road intersection to safely merge transit vehicles onto Yore Road. For safety reasons, the northbound right turn on red traffic light at the Trethewey Drive/Yore Road intersection will be prohibited to limit the number of vehicles stopped on Yore Road when the Yore Road terminal access signal is activated. In addition, a westbound left turn transit only lane is proposed for the Trethewey Drive/Yore Road intersection. The transit only lane is proposed to have sufficient storage length for at least two buses. There is also an exclusive southbound right turn lane proposed for the Eglinton Avenue/Trethewey Drive intersection to serve southbound right turning vehicles and to act as a transit queue jump lane. The passenger transfers between bus and LRT will occur with a combination of on-street level connection and underground pedestrian passage.

2.9 Brentcliffe/Laird Station

An investigation was conducted to identify the preferred location for the last station on the east end of the underground section at Laird Drive or Brentcliffe Road.

2.9.1 Key Challenges and Constraints

The key challenges and constraints were:

- The need to maintain equalized and consistent station/stop spacing to balance transit service speed with accessibility for the local community; and
- The need to provide special trackwork beyond the last underground station.

2.9.2 Options

The options were to locate the last station on the east end of the underground section at:

- Laird Drive; or
- Brentcliffe Road.

2.9.3 Evaluation

TTC staff investigated the population and employment surrounding the two possible stop locations. An estimate was prepared of the 2031 population and employment within 500 metres of the Laird and Brentcliffe alternative station locations.

The catchment areas are shown on **Exhibit 59.**

Factor/ Scenario	Option 1	Option 2	Option 3	Option 4	Option 5
Left Turn/ Signalization	No additional lanes or signalization required	No additional lanes or signalization required	Traffic signal at Yore Road terminal access recommended Westbound left turn transit only lane and phase recommended at Trethewey Drive and Yore Road Southbound right turn lane recommended at Eglinton Avenue and Trethewey Drive/ Keele Street	Southbound left turn lane recommended on Trethewey Drive	Traffic signal at Trethewey Drive terminal access recommended
Impact to EMS	No direct impact to EMS Station	No direct impact to EMS Station	No direct impact to EMS Station	EMS station recommended to be relocated	No direct impact to EMS Station
Bus/LRT Transfer	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner.	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner.	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner. Underground recommended to extend into terminal	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner	Passengers can enter a LRT access at any corner of Eglinton Avenue and Trethewey Drive/ Keele Street, except the southwest corner. Underground recommended to extend into terminal

2.8.4 Recommendation

The preferred configuration is Option 3 - Off-street Bus Terminal A. This configuration resulted in a low transit delay and improved operations at the Eglinton Avenue/Trethewey Drive intersection compared to other options. This option allows the bus terminal to operate with both clockwise and counter-clockwise transit operation. The bus terminal will be located at the southeast corner of the Trethewey Drive/Yore Road intersection. The entrance/exits of the terminal will be located on Trethewey Drive between Eglinton Avenue and Yore Road, and on Yore Road.

The terminal access on Yore Road will be signalized and coordinated with the Trethewey Drive/Yore Road intersection to safely merge transit vehicles onto Yore Road. For safety reasons, the northbound right turn on red traffic light at the Trethewey Drive/Yore Road intersection will be prohibited to limit the number of vehicles stopped on Yore Road when the Yore Road terminal access signal is activated. In addition, a westbound left turn transit only lane is proposed for the Trethewey Drive/Yore Road intersection. The transit only lane is proposed to have sufficient storage length for at least two buses. There is also an exclusive southbound right turn lane proposed for the Eglinton Avenue/Trethewey Drive intersection to serve southbound right turning vehicles and to act as a transit queue jump lane. The passenger transfers between bus and LRT will occur with a combination of on-street level connection and underground pedestrian passage.

2.9 Brentcliffe/Laird Station

An investigation was conducted to identify the preferred location for the last station on the east end of the underground section at Laird Drive or Brentcliffe Road.

2.9.1 Key Challenges and Constraints

The key challenges and constraints were:

- The need to maintain equalized and consistent station/stop spacing to balance transit service speed with accessibility for the local community; and
- The need to provide special trackwork beyond the last underground station.

2.9.2 Options

The options were to locate the last station on the east end of the underground section at:

- Laird Drive; or
- Brentcliffe Road.

2.9.3 Evaluation

TTC staff investigated the population and employment surrounding the two possible stop locations. An estimate was prepared of the 2031 population and employment within 500 metres of the Laird and Brentcliffe alternative station locations.

The catchment areas are shown on **Exhibit 59.**

Exhibit 59: Distances from Station Location Options

Exhibit 60: Population and Employment Within 500m of Station Location

2031 Total Population and Employment	
Laird	7984
Brentcliffe	7982

Source: TTC, 2009

For the year 2031, the total population and employment levels for the catchment areas are projected to be virtually identical.

2.9.3.1 Station Spacing

The comparative travel distance is summarized as follows:

Bayview Ave. to Laird Dr. – 1030 metres   Laird Dr. to Leslie St. – 1250 metres

Bayview Ave. to Brentcliffe Rd. – 1440 metres   Brentcliffe Rd. to Leslie St. – 840 metres

Therefore, the Laird Station alternative provides a more equalized spacing between adjacent stations and offers balanced accessibility for the local community.

2.9.3.2 Horizontal and Vertical Alignment

In terms of technical design considerations, both station locations can be accommodated as theyprovide sufficient distance between the end of the station box and the tunnel portal to enable the track profile to return to surface grade while maintaining full moves vehicular access to the development on the south side of Eglinton Avenue, east of Brentcliffe Road. However, the limitation to the Brentcliffe Station alternative is that it does not provide enough distance between the end of the station box and the development access road to accommodate special trackwork (storage tracks) within the tunnel, outside the station. For the Brentcliffe Station option, the storage (pocket) tracks will have to be located west of the station, thus reducing TTC's operational flexibility for the LRT. The Laird Station option does provide sufficient distance to locate the storage (pocket) tracks in TTC's preferred location to the east of the station box.

2.9.4 Recommendation

Laird Drive is the preferred location for the last underground station because it provides a more equalized travel distance between adjacent stations in the area from Bayview Avenue and Leslie Street, and also provides sufficient flexibility to locate the required special track work within the tunnel but outside the last station.

2.10 Don Mills Road LRT Interface and Bus Terminal Configuration

A study was conducted for the Eglinton Avenue and Don Mills Road intersection area to develop and evaluate transportation options, conduct traffic analyses for the options and make recommendations for the area surrounding the Eglinton Avenue and Don Mills Road intersection. The Eglinton Avenue/Don Mills Road intersection is the point of interface between the Eglinton Crosstown LRT and the Don Mills Road LRT (Don Mills LRT). The report documenting this study is provided in **Appendix L**.

This study was completed with direct input from key stakeholders including divisions of the TTC and the City of Toronto. Sixteen different alignment configuration options were assessed and evaluated.

The study area included the signalized intersection of Eglinton Avenue and Don Mills Road and the surrounding area. The area around the intersection is a major employment district, with neighbouring pockets of residential land use, and is located less than a kilometre away from a major north-south expressway that reaches the City of Toronto's downtown core, the Don Valley Parkway (DVP). This proximity to the DVP makes the intersection a gateway for traffic entering and exiting the expressway and a convenient relief route for north-south commuter traffic in the event of heavy congestion on the expressway. The mixture of commercial, residential and commuter traffic makes the Eglinton Avenue and Don Mills Road intersection one of the busiest areas in the City of Toronto.

The intersection and surrounding property ownership is illustrated in **Exhibit 58**. The exhibit shows that property owned by the City of Toronto is located at the northeast and southeast corners of the intersection.

Exhibit 61: Study Area for Don Mills Road LRT Interface

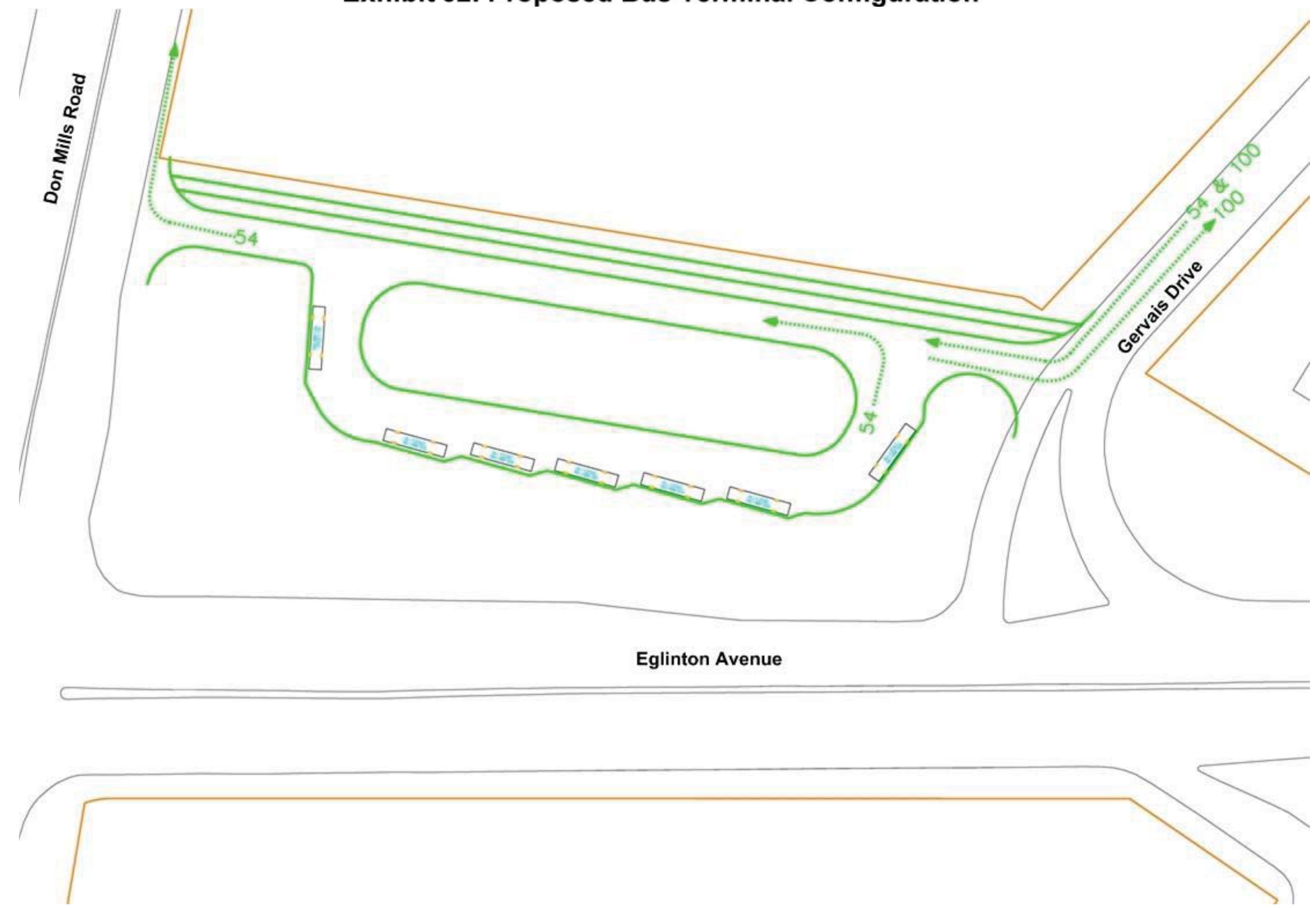
Given that the two Transit City LRT lines will intersect within a major employment district, there is potential for this to be a catalyst for development and urban design initiatives consistent with the City of Toronto's Official Plan and policies. Under future conditions, the vision of the City of Toronto Planning Division is for a transit and pedestrian friendly area with high density residential and commercial development so that the public could potentially work and live in the same area. This area will serve as a transit hub for passenger transfers.

2.10.1 Key Challenges and Constraints

The challenges at this intersection are to provide a high quality connection between the two LRT lines that allows for the safe and efficient transfer of passengers while maintaining traffic flow at this extremely busy intersection. The Eglinton Avenue and Don Mills Road intersection currently accommodates some of the heaviest traffic volumes in the City of Toronto. The intersection is very wide and must serve high traffic volumes while accommodating pedestrians. With proposed bike lanes along Eglinton Avenue, the intersection will also serve a high volume of cyclists.

The projected transfers between the LRT lines as well as the major bus routes connecting at this intersection will make it one of the highest transfer locations on the Eglinton corridor. A bus terminal is required at the Eglinton Avenue and Don Mills Road intersection to prevent on-street bus stopping from negatively affecting already constrained traffic flow. In addition, a dedicated area is required for passengers to board/alight, due to the high number of passenger transfers expected. TTC Service Planning determined that seven bus bays would be required with the implementation of only the Eglinton Crosstown LRT, prior to the full implementation of the Don Mills LRT, since the Route 25 Don Mills bus route would still be operating. With the full build out of the Eglinton Crosstown LRT and the Don Mills LRT, only five bus bays would be required as Route 25 would no longer be operating. Up to three feeder buses routes would continue to operate: Route 54 Lawrence East, Route 100 Flemingdon Park, and possibly an Eglinton Avenue local service route. The proposed bus terminal configuration is shown in **Exhibit 62**.

Exhibit 62: Proposed Bus Terminal Configuration



It should be noted that an existing underground snow melting system, located in the northwest corner of the Gervais and Eglinton intersection, was identified after this study. This system is used by the City of Toronto to dispose of snow which has been collected from major City of Toronto roads. The need to design around this facility will be investigated further in the design phase.

2.10.2 Options

Sixteen options were identified based on alignment configuration, platform location and type (far side, nearside, or centre platform), and type of passenger transfer (surface or underground). Each option was considered with the possible bus terminal location in the northeast or southeast quadrant. In all options, bike lanes on Eglinton Avenue were considered.

For the purpose of evaluating the options and organizing them, these sixteen options were categorized into five different classifications based on the configuration of the Eglinton Crosstown LRT and Don Mills LRT. The configuration categories were as follows:

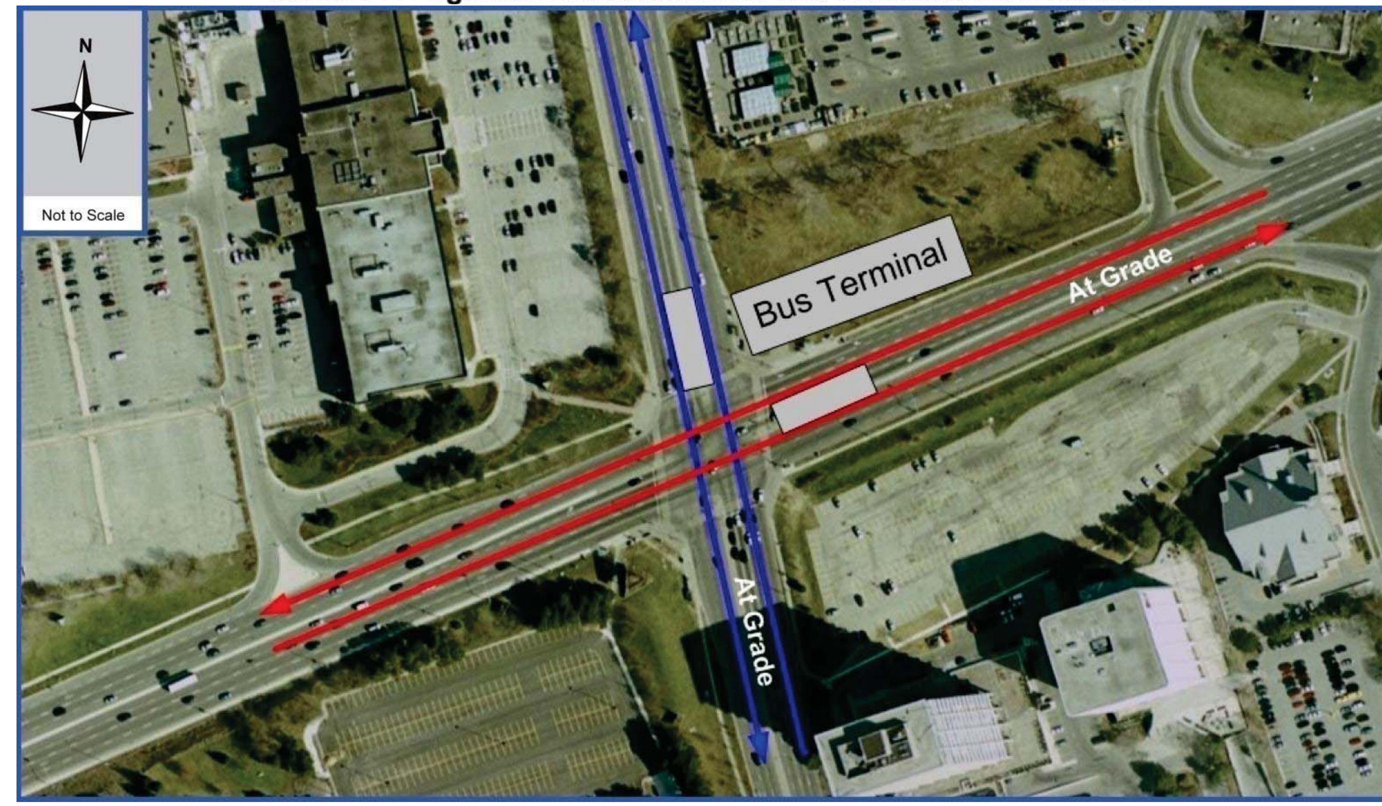
- Option 1 - Eglinton Crosstown LRT and Don Mills LRT surface (**Exhibit 63**);
- Option 2 - Eglinton Crosstown LRT underground and Don Mills LRT surface (**Exhibit 64**);
- Option 3 - Eglinton Crosstown LRT and Don Mills LRT underground without concourse level (**Exhibit 65**);
- Option 4 - Eglinton Crosstown LRT and Don Mills LRT underground with concourse level (**Exhibit 66**); and
- Option 5 - Eglinton Crosstown LRT and Don Mills LRT special options.(Exhibits provided in **Appendix L**)

In each of the options where the Eglinton Crosstown LRT is underground, there was an alternative where the Eglinton Crosstown LRT alignment is located to the south of the Eglinton Avenue roadway. This concept was considered so that traffic impacts during construction could be minimized. At the final workshop, where the recommended alternative was presented, it was decided that because traffic impacts would be temporary, the neighbouring properties would be much better served in the long run with the Eglinton Crosstown LRT in the centre of the alignment. Additionally, traffic management plans implemented during construction could route traffic south of the roadway temporarily and significantly reduce the impact to traffic.

2.10.2.1 Option 1 – Eglinton Crosstown LRT and Don Mills LRT Surface

In this option, both the Eglinton Crosstown LRT and Don Mills LRTs operate in the centre median transit right-of-way along with the current traffic movements. Both the Eglinton Crosstown and Don Mills LRTs operate with the east-west and north-south through phases, respectively. The alignment configuration is shown in **Exhibit 63**.

Exhibit 63: Eglinton Crosstown LRT and Don Mills LRT Surface



Four sub-options were considered in the surface category, as shown in **Exhibit 64**.

Exhibit 64: Summary of Surface Sub-Options

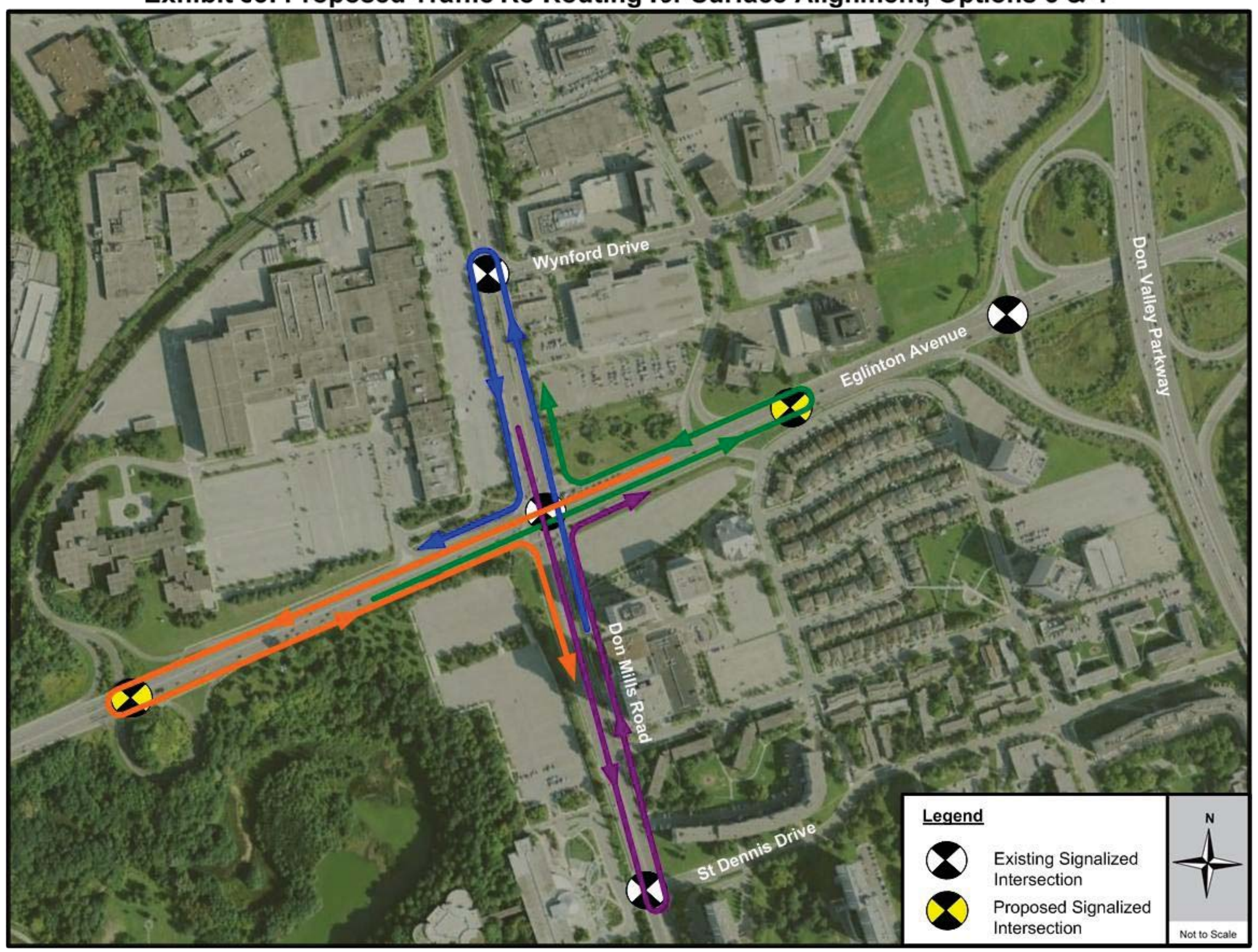
Sub-Option	Don Mills LRT Platform		Eglinton Crosstown LRT Platform		Location of Bus Terminal	Passenger Transfer	Traffic Scenarios
	Configuration	Platform Location	Configuration	Platform Location			
1	Surface	Far Side	Surface	Far Side	South-East Corner	Surface	Left Turn Protected Only
2	Surface	Far Side	Surface	Far Side	North-East Corner	Surface	Left Turn Protected Only
3	Surface	Centre (North)[1]	Surface	Centre (East)[1]	North-East Corner	Surface	Left Turn Prohibited
4	Surface	Centre (South)[1]	Surface	Centre (East)[1]	South-East Corner	Surface	Left Turn Prohibited

[1] Direction in relation to the Don Mills/Eglinton intersection.

Under Sub-options 1 and 2, the majority of the characteristics are the same with the exception of the bus terminal location. For both of these options, left turns are restricted to protected-only movements at the Eglinton Avenue and Don Mills Road intersection.

Under Sub-options 3 and 4, the platforms are centre platforms for bi-directional LRTs to share. The two options for bus terminal locations are also considered under these options. For these two options, left turns are prohibited in all directions at the Eglinton Avenue and Don Mills Road intersection. On Eglinton Avenue, two new u-turn intersections are considered, and east-west left turning traffic are reassigned to make u-turns at these new signals. In the north-south direction, left turning vehicles are rerouted to make U-turns on Don Mills Road at Wynford Drive to the north, and Don Mills Road at St. Dennis Drive to the south. **Exhibit 61** presents the proposed rerouting and new u-turn signals.

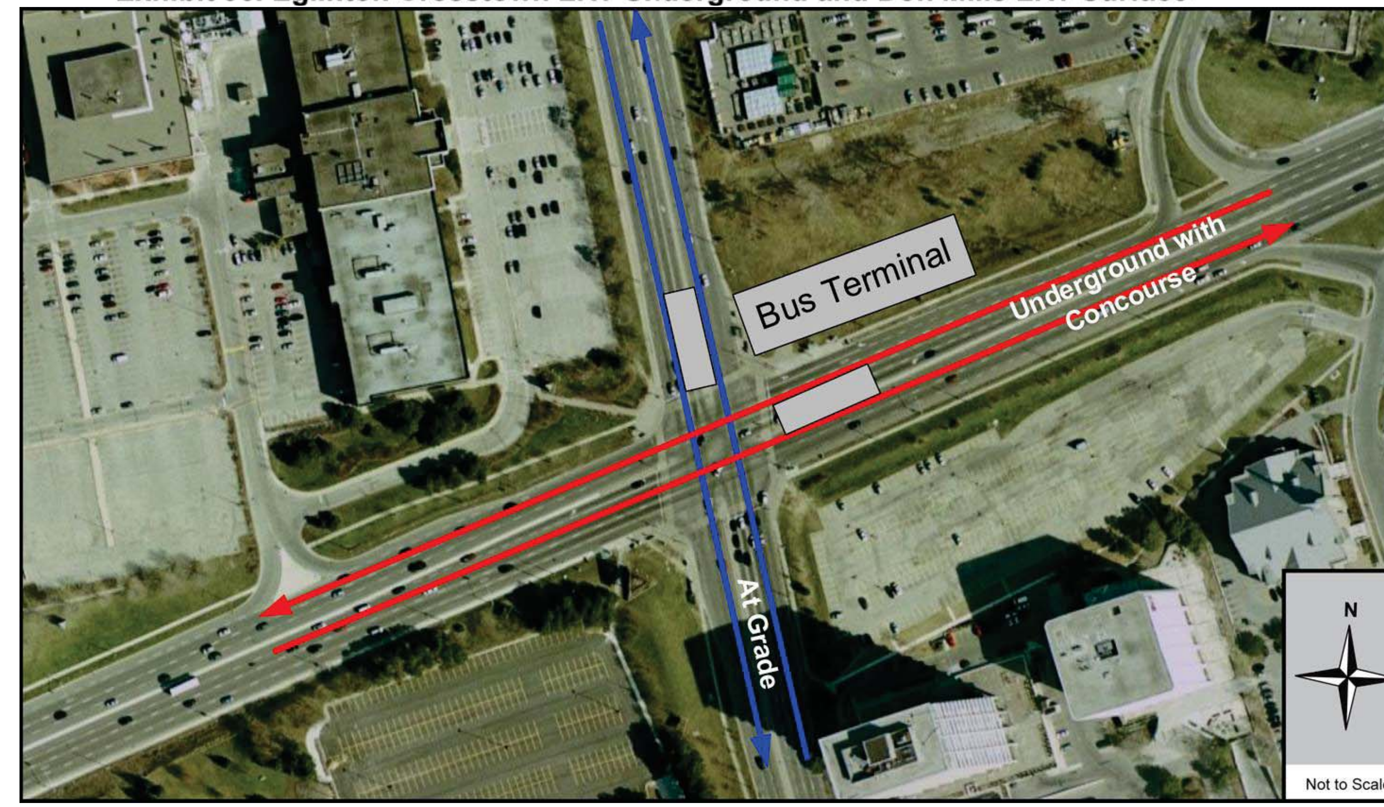
Exhibit 65: Proposed Traffic Re-Routing for Surface Alignment, Options 3 & 4



2.10.2.2 Option 2 - Eglinton Crosstown LRT Underground and Don Mills LRT Surface

Under this category of options, the Eglinton Crosstown LRT transit right-of-way is proposed to be depressed before reaching the Eglinton Avenue at Don Mills Road intersection and re-surface beyond the intersection. The Don Mills LRT will remain on the centre median transit right-of-way surface on Don Mills Road, as shown in **Exhibit 66**.

Exhibit 66: Eglinton Crosstown LRT Underground and Don Mills LRT Surface



Three sub-options were considered in the surface category, as shown in **Exhibit 67**.

Exhibit 67: Summary of Underground and Surface Sub-Options

Sub-Option	Don Mills LRT Platform		Eglinton Crosstown LRT Platform		Location of Bus Terminal	Passenger Transfer	Traffic Scenarios
	Configuration	Platform Location	Configuration	Platform Location			
5	Surface	Centre (South)[1]	Underground w/ Concourse (South of Road)	Centre (East)[1]	South-East Corner	Underground	North/S Left Turn Prot, E/W Left Turn Prot/Perm
6	Surface	Centre (North)[1]	Underground w/ Concourse	Centre (East)[1]	North-East Corner	Underground	N/S Left Turn Prot, E/W Left Turn Prot/Perm
7	Surface	Centre (South)[1]	Underground w/Concourse	Centre (East)[1]	South-East Corner	Underground	N/S Left Turn Prot, E/W Left Turn Prot/Perm

[1] Direction in relation to the Don Mills/Eglinton intersection.

The location of the Don Mills LRT centre platforms and the bus terminal location vary depending on the sub-options. The Eglinton Crosstown LRT centre platform is consistently located underground with a concourse level on the east side of the intersection. The Eglinton Crosstown LRT underground alignment for Sub-option 5 differs from Sub-options 6 and 7 since it is proposed to be south of the centre of the Eglinton Avenue alignment.

For all three sub-options, left turns are permitted at the Eglinton Avenue and Don Mills Road intersection. Left turns from Don Mills Road are restricted to protected-only movements and left turns from Eglinton Avenue can be protected-permissive movements.

2.10.2.3 Option 3 – Eglinton Crosstown LRT and Don Mills LRT Underground Without Concourse Level

For the underground option without a concourse level, both the Eglinton Crosstown and Don Mills LRTs transit right-of-ways are proposed to operate underground through the Eglinton Avenue and Don Mills Road intersection. With this operation, a underground transit signal operating is required. The alignment configuration is shown in **Exhibit 68**.

Exhibit 68: Eglinton Crosstown LRT and Don Mills LRT Underground without Concourse Level

Three sub-options were considered for this configuration with both LRT lines underground and with no concourse level between the surface and the platforms, as shown in **Exhibit 69**.

Exhibit 69: Summary of Underground Sub-Options, Without Concourse Level

Sub-Option	Don Mills LRT Platform		Eglinton Crosstown LRT Platform		Location of Bus Terminal	Passenger Transfer	Traffic Scenarios
	Configuration	Platform Location	Configuration	Platform Location			
8	Underground w/o Concourse	Far Side	Underground w/o Concourse (S of Road)	Near Side	South-East Corner	Underground / Surface	Left Turn Prot/Perm
9	Underground w/o Concourse	Near Side	Underground w/o Concourse	Far Side	South-East Corner	Underground / Surface	Left Turn Prot/Perm
10	Underground w/o Concourse	Near Side	Underground w/o Concourse	Far Side	North-East Corner	Underground / Surface	Left Turn Prot/Perm

[1] Direction in relation to the Don Mills / Eglinton intersection.

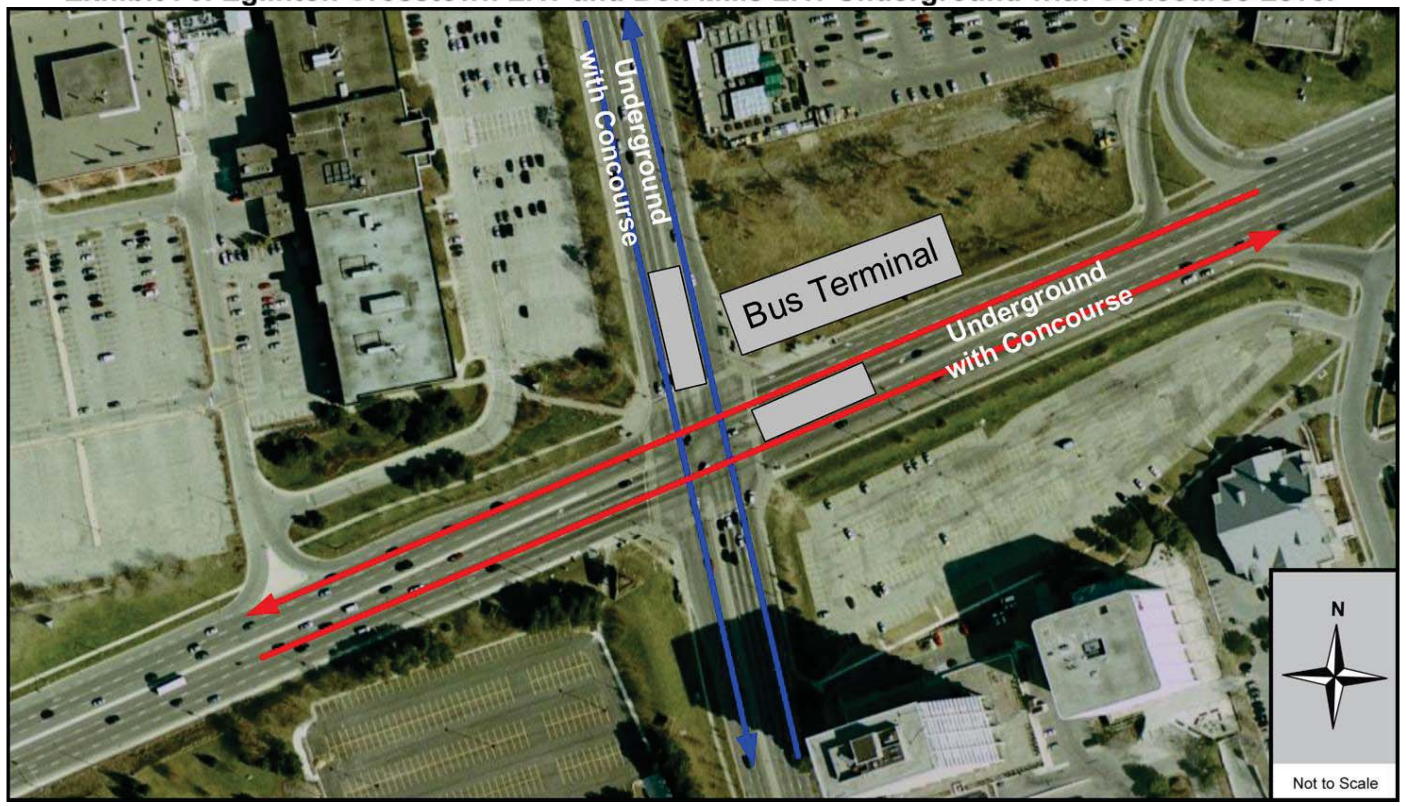
In general, the platform locations for Don Mills LRT and Eglinton Crosstown LRT (near side or far side) and the bus terminal locations vary depending on the options. A concourse level for passenger transfer is not proposed under these three options. Similar to Sub-option 5, the Eglinton Crosstown LRT underground alignment for Sub-option 8 is proposed to be south of the Eglinton Avenue roadway. Fundamentally, the characteristics under Sub-options 9 and 10 are the same with the exception of the bus terminal location.

For all three options, left turn traffic movements surface will operate under protected-permissive operation, which is the same as the existing operations.

2.10.2.4 Option 4 - Eglinton Crosstown LRT and Don Mills LRT Underground With Concourse Level

For the underground with concourse level category, both the Eglinton Crosstown and Don Mills LRTs transit right-of-ways are proposed to operate underground through the Eglinton Avenue and Don Mills Road intersection. In addition, a concourse level is proposed for passenger transfer. Similar to Option 3 (underground, no concourse level category), a underground transit signal operating with free mode of control is required. The alignment configuration is shown in **Exhibit 70**.

Exhibit 70: Eglinton Crosstown LRT and Don Mills LRT Underground with Concourse Level



Three options were considered in the underground, with concourse level category, as shown in **Exhibit 71**.

Exhibit 71: Summary of Underground Sub-Options with Concourse Level

Sub-Option	Don Mills LRT Platform		Eglinton Crosstown LRT Platform		Location of Bus Terminal	Passenger Transfer	Traffic Scenarios
	Configuration	Platform Location	Configuration	Platform Location			
11	Underground w/Concourse	Centre (South)[1]	Underground w/ Concourse (S of Road)	Centre (East)[1]	South-East Corner	Underground	Left Turn Prot/Perm
12	Underground w/ Concourse	Centre (North)[1]	Underground w/ Concourse	Centre (East)[1]	North-East Corner	Underground	Left Turn Prot/Perm
13	Underground w/ Concourse	Centre (South)[1]	Underground w/ Concourse	Centre (East)[1]	South-East Corner	Underground	Left Turn Prot/Perm

[1] Direction in relation to the Don Mills/Eglinton intersection.

In general, the Don Mills LRT centre platforms and the bus terminal location vary depending on the sub-options. The Eglinton Crosstown LRT centre platform is consistently located underground on the east side of the intersection. A concourse level is available for passenger transfers in these three sub-options. Lastly under Sub-option 11, the Eglinton Crosstown LRT underground alignment is proposed to be south of the Eglinton Avenue roadway.

For all three sub-options, left turn traffic movements on the surface will be under protected-permissive operation, which is the same as existing signal operations.

2.10.2.5 Option 5 - Eglinton Crosstown LRT and Don Mills LRT Special Options

The last three sub-options 14, 15, and 16, were evaluated at a high level to determine feasibility. For all three options both the Eglinton Crosstown and Don Mills LRTs centre median transit right-of-ways are proposed to operate on the surface through the Eglinton Avenue and Don Mills Road intersection. Cost estimates were not developed for these alternatives since they did not provide effective solutions to the constraints of the study.

The three sub-options developed are summarized in **Exhibit 72**. Drawings for these options are provided in the report “ECLRT – Don Mills LRT Special Study Area – Detailed Assessment” provided in **Appendix L**.

Exhibit 72 Summary of Special Sub-Options

Sub-Option	Don Mills LRT Platform		Eglinton Crosstown LRT Platform		Location of Bus Terminal	Passenger Transfer	Traffic Scenarios
	Configuration	Platform Location	Configuration	Platform Location			
14	Surface	Centre (North)[1]	Surface	Centre (East)[1]	North-East Corner	Surface	Ring Road
15	Surface	Centre (North)[1]	Surface	Centre (East)[1]	North-East Corner	Surface	Roundabout
16	Surface	Centre (North)[1]	Surface	Centre (East)[1]	North-East Corner	Surface	Underground Left Turn Lanes

[1] Direction in relation to the Don Mills/Eglinton intersection.

A ring road operation is considered under Sub-option 14. The new ring road is proposed to be located on the commercial property in the northwest quadrant connecting with Wynford Drive and on the public property in the southwest quadrant connecting with Rochefort Drive. Left turns are prohibited at the Eglinton Avenue and Don Mills intersection and will be re-routed onto the new ring road.

Under Sub-option 15, a roundabout operation is considered. Under this operation, transit and traffic signals are required to control the two intersecting LRT movements and the circulating traffic in the roundabout, to allow the LRTs to cross the roundabout. Left turns under this alternative will operate as right turns in the roundabout.

For Sub-option 16, underground tunnels are considered for the vehicular left turning movements at the Eglinton Avenue and Don Mills Road intersection.

For all three sub-options 14, 15, and 16, centre platforms are proposed for Don Mills LRT and Eglinton Crosstown LRT, and the bus terminal is proposed for the northeast quadrant.

2.10.3 Evaluation

The alignment options were evaluated based on the following criteria:

- Ensure an attractive transit service relative to the private auto: transit operations performance for the 2031 forecast ridership and beyond; quality of transfer between Eglinton CLRT, Don Mills LRT, and the local bus network; and potential effects on existing bus operations;
- Ensure safe and reasonable traffic operations: potential effects on traffic operations; and ability to provide safe pedestrian movement in the area.
- Impact to the environment and adjacent properties: potential effects on natural heritage, property waste and contamination, cultural heritage, utilities and municipal infrastructure, and the community.
- Support the City's urban structure: convenient access from other travel types; impact on walking distances; maximize redevelopment potential of adjacent properties; and potential impacts on adjacent stops.
- Ensure affordability: cost effective transit service for both LRT corridors.

To simplify the evaluation process, the options were organized in a stratigic manor. The process applied to the evaluation of the sixteen (16) sub-options included:

- Grouping the options into logical subcategories based on operating characteristics;
- Evaluating each of the options based on the evaluation criteria;
- Determine a preferred option under each of the configuration subcategories; and
- Determine from the preferred options for each subcategory, the final preferred alternative.

From the sixteen different options in the five groupings, one preferred option from each classification was selected, with the exception of the special options (Option 5). None of the concepts in this category were considered to have sufficient technical merit to be carried forward. A final evaluation was performed on the four preferred options to identify the final recommended alternative based on benefits and disbenefits. The four preferred options were identified as:

- Sub-Option 3;
- Sub-Option 6;
- Sub-Option 10; and
- Sub-Option 12.

A summary of the preferred options are shown in **Exhibit 73**.

Exhibit 73: Summary of Sub-Options from Each Configuration Category

Sub-Option	Don Mills LRT Platform		Eglinton Crosstown LRT Platform		Location of Bus Terminal	Passenger Transfer	Traffic Scenarios
	Configuration	Platform Location	Configuration	Platform Location			
3	Surface	Centre (North)[1]	Surface	Centre (East)[1]	North-East Corner	Surface	Left Turn Prohibited
6	Surface	Centre (North)[1]	Underground w/ Mezz.	Centre (East)[1]	North-East Corner	Underground	N/S Left Turn Prot, E/W Left Turn Prot/Perm
10	Underground w/o Mezz.	Near Side	Underground w/o Mezz.	Far Side	North-East Corner	Underground / Surface	Left Turn Prot/Perm
12	Underground w/ Mezz.	Centre (North)[1]	Underground w/ Mezz.	Centre (East)[1]	North-East Corner	Underground	Left Turn Prot/Perm

[1] Direction in relation to the Don Mills/Eglinton intersection.

The preferred options were evaluated to determine the final recommendation. A summary of the detailed evaluation is shown in **Exhibit 74**.

Exhibit 74: Summary of Detailed Evaluation of Preferred Options

Option	Eglinton Crosstown LRT Benefits	Don Mills LRT Benefits	Passenger Transfer Benefits	Traffic	Construction Impact	Construction Cost	Total Score
3	4	4	4	4	1	1	18
6	1	3	2	3	2	2	13
10	2	2	3	2	3	3	15
12	3	1	1	1	4	4	14

Legend: 1=Good; 4=Poor

From the results of the detailed evaluation, the following was determined:

- Sub-Option 6 provides the highest quality of Eglinton Crosstown LRT performance incurring little delay at the Eglinton Avenue and Don Mills Road intersection since Eglinton Crosstown LRT is operating underground without any signal delay due to general traffic or Don Mills LRT.
- Sub-Option 12 provides the highest quality Don Mills LRT performance since the LRT is underground incurring less signal delay than the surface operation.

- Sub-Option 12 provides the highest quality of passenger transfer since all transfers can occur underground without any interaction with general traffic. Sub-Option 6 provides high quality for passenger transfers between LRTs since passengers making transfers generally are not required to cross the street. The only time surface transfers could occur is transfers between Don Mills LRT and the bus terminal. Both these passenger transfers provide flexibility to manage increase in ridership without highly affecting general traffic operations.
- Sub-Option 12 provides the most benefit to general traffic with both the LRT lines and passenger transfers underground.
- Sub-Option 3 results in the least property impact because both LRT lines are surface. In contrast, Sub-Options 6, 10, and 12 will result in higher property impact with the LRT lines underground.
- Sub-Option 3 requires the lowest construction cost with the construction of the centre median transit way. The next lowest cost is Sub-Option 6 with construction of only the Eglinton Crosstown LRT underground. With construction of both Eglinton Crosstown LRT and Don Mills LRT underground, the construction cost is the highest, especially with the construction of the passenger transfer concourse level.

2.10.4 Recommendation

The preferred interface with the Don Mills LRT is Sub-Option 6 – Eglinton Crosstown LRT underground and Don Mills LRT surface. The preferred option includes the following components:

- Eglinton LRT underground with centre east side LRT platforms;
- Eglinton LRT underground alignment is directly under the Eglinton Avenue roadway;
- Don Mills LRT at surface with centre north side LRT platforms;
- Bus terminal location in the northeast quadrant of the Eglinton Avenue and Don Mills Road intersection;
- Passenger transfer to occur underground between the Eglinton Crosstown LRT and the bus terminal; and
- Passenger transfer to occur at surface between the Don Mills LRT and bus terminal.

This configuration has the following benefits:

- Provides the highest quality of Eglinton Crosstown LRT performance incurring little delay at the Eglinton Avenue and Don Mills Road signalized intersection since the Eglinton Crosstown LRT is operating underground without any type of signal delay due to general traffic or Don Mills LRT.
- Has the capability to manage further potential increases in Eglinton Crosstown LRT frequency and ridership.
- Provides high quality LRT underground transfers between Don Mills LRT and Eglinton Crosstown LRT.
- Results in less traffic and passenger/ pedestrian interaction surface.
- Results in less construction cost when compared to all options with both LRT lines underground.

Based on this recommendation, further development of the final alternative would include a proposed construction access road south of Eglinton Avenue to minimize the disruption to traffic during construction. Furthermore, with the Eglinton Crosstown LRT underground, the intersection of Eglinton Avenue and Gervais Drive can become signalized.

2.11 Wynford Stop

The existing configuration at Eglinton Avenue and Wynford Drive is a grade separated intersection with ramps to provide accessibility. This configuration does not meet the urban design initiatives of the City of Toronto. In addition, the grade separation does not provide easy access from all surrounding areas to a proposed stop platform on Eglinton Avenue. For these reasons an alternative was developed that created a more urban, transit friendly intersection.

2.11.1 Key Challenges and Constraints

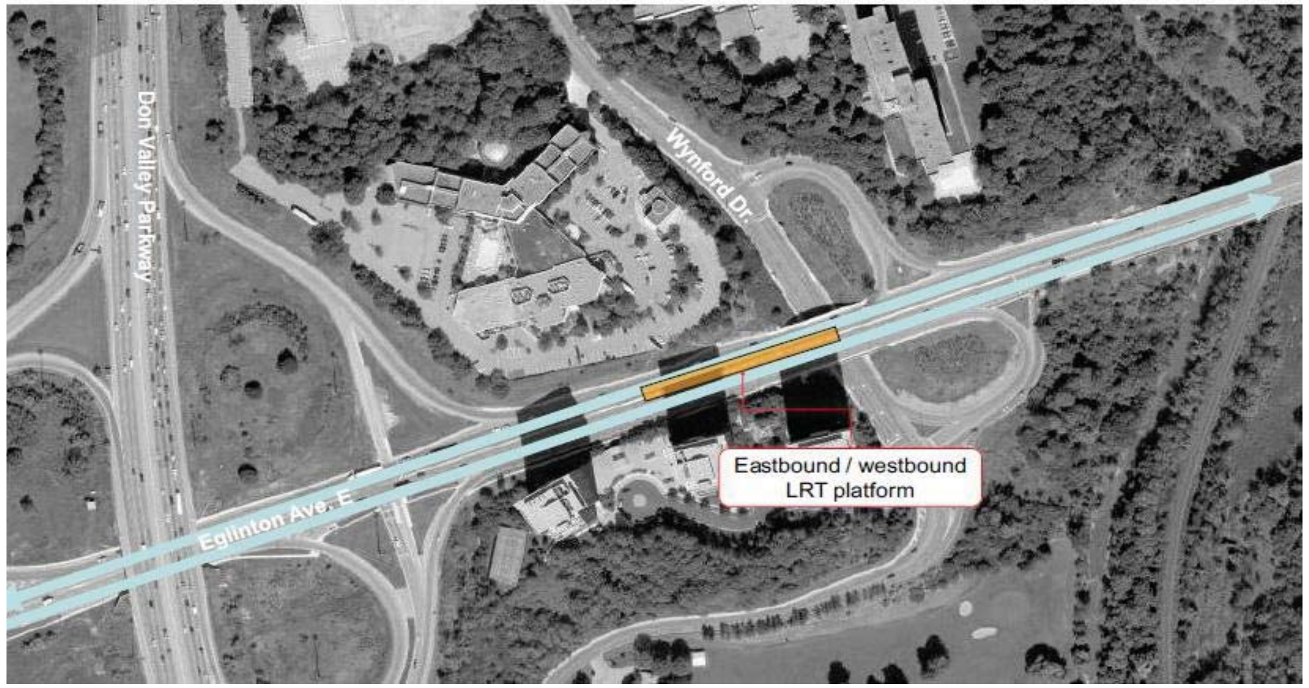
Wynford Drive is grade separated from Eglinton Avenue at this location, with a significant rise from street level on Wynford Drive to street level on Eglinton Avenue. Passengers from Wynford Drive would have to make this level change to access the LRT on Eglinton Avenue. The Transit City program objective is to provide easy accessibility at all stations and stops such that passengers with disabilities are able to access the LRT. An alternative was developed that eliminates the grade difference.

This grade difference would affect passengers coming from north and south on Wynford Drive. However, the major sources of pedestrians and transit passengers in the vicinity of this stop are the large residential condominium buildings on the north and south sides of Eglinton Avenue. The building on the south side was recently completed, and includes a surface access to the sidewalk on the south side of Eglinton Avenue. The building on the north side is under construction. The approved site plan shows a surface access to the sidewalk on the north side of Eglinton Avenue.

2.11.2 Options

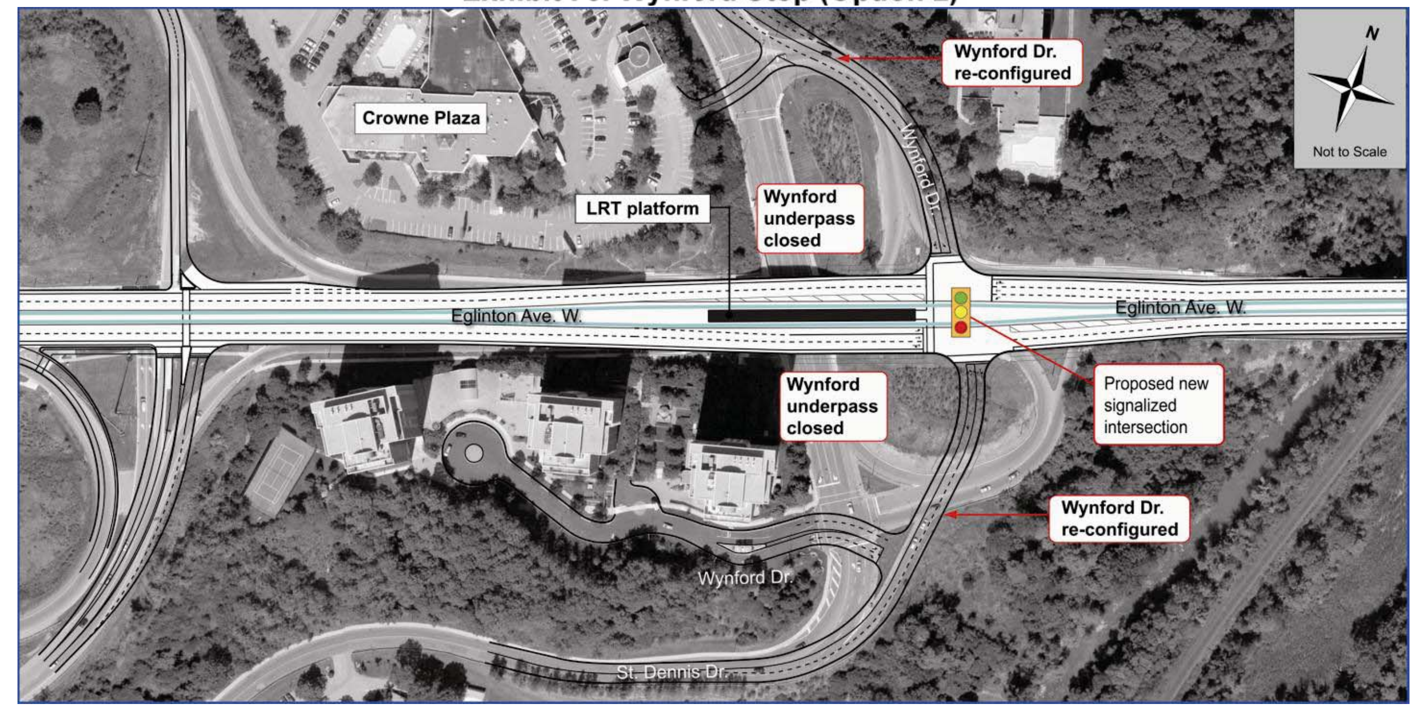
Two options were analyzed. The first option (Option 1) leaves the road network generally unaltered. It provides a centre platform at the stop, and traffic signals serving pedestrians only to provide access from each side of Eglinton Avenue to the centre platform. Wynford Drive remains grade-separated from Eglinton Avenue. There is currently a staircase on Wynford Drive for pedestrians to access Eglinton Avenue and then the platform. Option #1 has the platform located to the west of the bridge, and therefore pedestrian access is adjacent to the existing bus stop location. Option 1 is presented in **Exhibit 75**.

Exhibit 75: Wynford Stop (Option 1)



The second option (Option 2) changes the road network by creating a surface intersection with Eglinton Avenue. This creates a more "traditional" intersection of two roads. Sidewalks would be provided on the new Wynford Drive legs. It also provides a centre platform at the stop. Traffic signals would serve both the vehicular movements and the pedestrian movements. For Option 2, the platform is shifted eastward to accommodate passenger access via crosswalks at the new signalized intersection. This alternative is shown in **Exhibit 76**.

Exhibit 76: Wynford Stop (Option 2)



2.11.3 Evaluation

2.11.3.1 Horizontal and Vertical Alignment

Option 1 provides very little change to the horizontal and vertical alignment. It results in minor vehicular delays at the LRT stop to allow for pedestrian crossings to the stop.

Option 2 provides very little change to the horizontal and vertical alignment of Eglinton Avenue. However, it requires a major change to the alignment of Wynford Drive, and the access driveways for condominium buildings on the north side and south side of Eglinton Avenue. Under this alternative, all through traffic on Wynford Drive would pass through the signalized intersection. This will result in vehicular delays for both Eglinton Avenue and Wynford Drive traffic.

2.11.3.2 Environmental Impacts

The valley lands associated with the East Don River are identified as a ravine by the City of Toronto and are regulated by TRCA. Option 1 results in negligible environmental impact whereas Option 2 results in the removal of natural vegetation. The proposed realignment of Wynford Drive (Option 2) to remove the existing grade separation and create a new at grade intersection to the east will result in an encroachment into the East Don River valleylands. The vegetation community in this area is comprised of a high quality dry fresh sugar maple – beech deciduous forest (FOD5-2) that provides slope stabilization and a natural migration corridor along the East Don River. The proposed encroachment will extend over the top of bank in this location and will require a large retaining wall or fill slope to support the Wynford Drive road platform. Given the significance of impact in this location, including an encroachment into areas regulated by TRCA under Ontario Regulation 166/06 and Toronto Ravine and Natural Feature Protection By-law, the realignment of Wynford Drive will be investigated further during design.

2.11.4 Recommendation

It is recommended that Option 2 be adopted as it supports the urban design and development objectives of the City of Toronto. The principal reasoning for this recommendation is to meet the planning initiatives of the City of Toronto. The realignment of Wynford Drive will be further investigated during the design phase. The use of remnant lands will be determined at future consultations with the City of Toronto.

2.12 Swift Drive Stop

The desirability of locating a stop at the intersection of Swift Drive and Credit Union Drive with Eglinton Avenue (between Wynford Drive and Bermondsey Road) was investigated. The existing topography in this area does not support the ability to construct a stop platform at this location.

2.12.1 Key Challenges and Constraints

The issues associated with providing a platform for this location are related to the existing geometric configuration of Eglinton Avenue between the Don River East Branch and Bermondsey Road. The Eglinton Avenue alignment is on a horizontal curve from west of Swift Drive to just west of Bermondsey Road. In order to provide far side stops at Bermondsey Road, the proposed alignment must be modified to incorporate a tangent section west of Bermondsey Road. Due to the existing alignment geometry in the area, it is not feasible to create a horizontal tangent section on the east side of the Swift Drive intersection, necessitating that a centre platform stop be situated on the west side of the Swift Drive/Credit Union Drive intersection.

Eglinton Avenue is on an approximately 6% upward gradient from the bridge over the Don River East Branch to east of Swift Drive. To facilitate a stop on the west side of the Swift Drive/Credit Union Drive intersection, the grade of Eglinton Avenue must be decreased (flattened) to 3% at the platform location to meet TTC design criteria. The level of Eglinton Avenue is essentially fixed at the Don River bridge, and therefore the grade changes must be achieved in the section between the bridge and Swift Drive. With the limited distance between these two fixed points, vertical curves cannot be implemented. Therefore, the grade of Eglinton Avenue must be set at 3% beginning at the bridge and continuing to the east end of the platform at Swift Drive. The impact of this change in profile is lowering of the elevation of Eglinton Avenue by 6 metres at the Swift Drive/Credit Union Drive intersection.

2.12.2 Options

The two options assessed were:

- Provide a stop at Swift Drive/Credit Union Drive; or
- Do not provide a stop at this location.

2.12.3 Evaluation

2.12.3.1 Ridership

TTC staff investigated the population and employment surrounding a Swift Drive/Credit Union Drive Stop. An estimate was prepared of the 2031 population and employment within 300 metres, also within 500 metres, of the Swift Drive/Credit Union Drive intersection.

Exhibit 77: Distances from Swift/Credit Union and Bermondsey

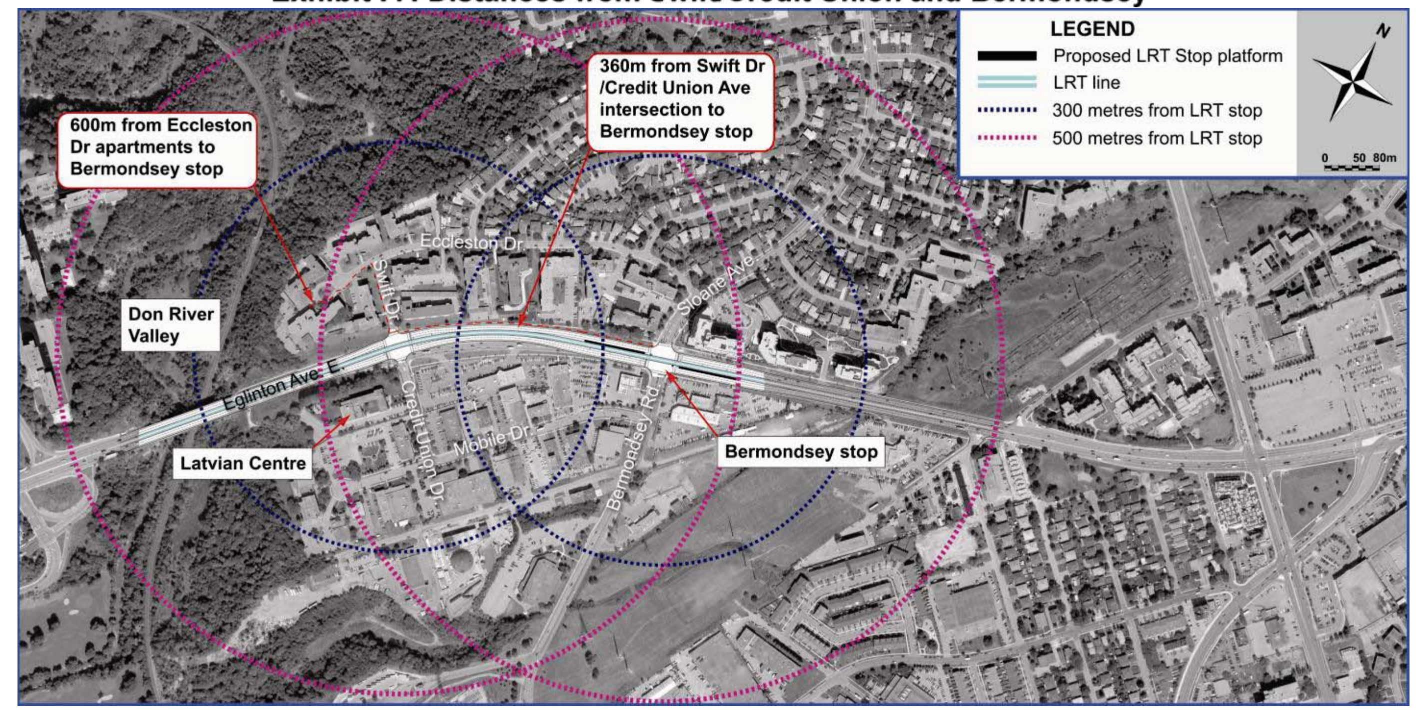


Exhibit 78: Population and Employment Information for a Swift/Credit Union Drive Stop

Location	Within 300m			Within 500m		
	Pop	Emp	Total	Pop	Emp	Total
Swift/Credit Union	925	750	1675	2003	1235	3238

Source: TTC 2009

Locating a centre platform on the west side of Bermondsey results in a spacing of approximately 350 metres between this proposed stop and the stop at Bermondsey Road.

A transit stop at Swift Drive/Credit Union Drive would service the residential development on the north side of Eglinton Avenue in the vicinity of this intersection. The benefit of a stop at this location is a reduction in travel distance for passengers destined to/from the west end of Eccleston Drive and Mobile Drive. However, the majority of density north of Eglinton Avenue is situated north of Eccleston Drive, approximately midway between Swift Drive and Bermondsey Road, while the travel distance for those south of Eglinton Avenue is only marginally reduced by a stop location at Swift Drive/Credit Union Drive.

The alternative to a stop at Swift Dr/Credit Union Dr is for transit patrons to board/alight the LRVs at the stop to be provided at Bermondsey Road. The area that would be served by the Swift Drive/Credit Union Drive Stop is within 500 metres of the Bermondsey Road Stop. Additionally, the walking environment to the Bermondsey Stop is along fairly flat streets. Conversely, providing a stop at Swift Drive/Credit Union Drive would create a “canyon” effect that would be uninviting.

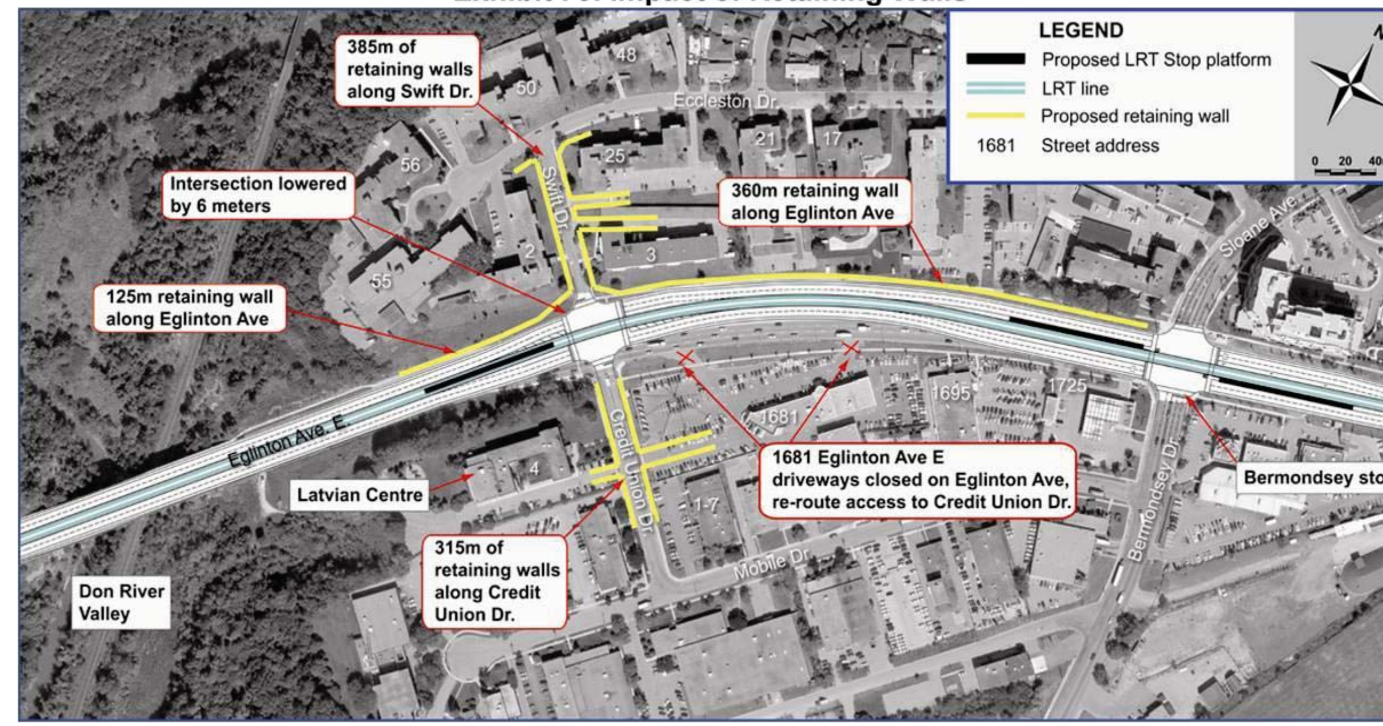
2.12.3.2 Property Impacts/Retaining Walls

The lowering of Eglinton Avenue by 6 metres at the Swift Drive/Credit Union Drive intersection has an impact not only on Eglinton Avenue, but also on the vertical profiles of Swift Drive and Credit Union Drive. There is limited right-of- way width to accommodate this significant elevation change on Eglinton Avenue. Grading of side slopes is feasible on the south side of Eglinton Avenue, although the two driveway accesses at #1681 Eglinton Avenue would have to be closed and replaced with a realigned driveway. Retaining walls would be required on the north side of Eglinton Avenue from approximately 100 metres west of Swift Drive through to Bermondsey Road.

The lowering of the grade at the intersection more significantly impacts upon Swift Drive and Credit Union Drive for two reasons. First, by incorporating the required vertical curve transitions from the crossfall on Eglinton Avenue, and applying a maximum grade of 6% on Swift Drive and Credit Union Drive, the impact of the grade change extends along the full length of Swift Drive and Credit Union Drive. Furthermore, the profile matches back to existing grades at the Mobile Road intersection, whereas on Swift Drive, the impact of the grade change “spills” beyond the full length of Swift Drive, extending 40 metres west and 60 metres east on Eccleston Drive. The impact of the grade change on Swift Drive and Credit Union Drive is exacerbated due to the narrow right of way, driveway accesses and minimal building setbacks. The 20m right of way requires the use of retaining walls along the street line to accommodate the grade change. Retaining walls, 6 metres at their highest point, are required on Swift Drive and Credit Union Drive on both sides of the street and for the full lengths of both roads. Secondly, the existing driveway accesses are also affected. To maintain existing driveways, retaining walls would extend beyond the building faces. This effectively eliminates all access to the property at #3 Swift Drive, landlocking this property unless an access easement agreement could be reached with an adjacent property owner. The driveway to #25 Swift Drive would also have to be closed, restricting access to the property to be solely from Eccleston Drive. Furthermore, the need for high retaining walls on both sides of the street results in a “tunnel effect”, presenting an unsafe condition for vehicles accessing the properties on Swift Drive and Credit Union Drive.

The extent of the impact of the retaining walls is shown on **Exhibit 79**.

Exhibit 79: Impact of Retaining Walls



2.12.3.3 Constructability

There would be substantial costs associated with excavation and road construction to lower Eglinton Avenue by 6 metres at the Swift Drive/Credit Union Drive intersection. Furthermore, the staging requirements would be extensive, disruptive and costly. Detours would be needed to stage the road reconstruction, with temporary shoring walls required to maintain reduced traffic lanes adjacent to the 6 metres deep excavation. This shoring and excavation would be carried out in at least two stages with access to and from Swift Drive and Credit Union Drive alternately closed at Eglinton Avenue during the staged construction.

2.12.3.4 Recommendation

The impacts summarized herein are significant and involve both social and economic costs resulting from diminished use of the properties both during and after construction. The construction costs for providing a stop at Swift Drive/Credit Union Drive are substantial. Based on the comparison of the considerable impacts versus the limited benefits, it is recommended that a stop at Swift Drive/Credit Union Drive should not be provided.

3. PROJECT DESCRIPTION

The development of the project was based on a number of inputs:

- The studies described in Chapter 2;
- Design Criteria developed by the Toronto Transit Commission;
- The assessment of Existing and Future Conditions described in Chapter 4; and
- The Consultation Process described in Chapter 6.

The following chapters describe the proposed project.

3.1 Design Principles

During preliminary planning for the Eglinton Crosstown LRT, the following design principles were established:

- Must provide fast, reliable, frequent and comfortable transit service from a passenger perspective;
- Fully accessible to persons with mobility difficulties;
- Must achieve highest level possible of safety and security for both passengers and employees;
- Must be achieved with minimum environmental impacts; and
- Must incorporate excellence in urban design – pedestrian realm, facilities, amenities, and landscaping.
- Excellent passenger transfer facilities between LRT and subway stations, and between LRT lines - typically grade-separated from other vehicular traffic -- minimizing vertical and horizontal movement required by passengers when transferring between lines;
- Transfer stations to be fully accessible between inter-connecting lines;
- Surface passenger stops to be located and designed for easy passenger transfer to intersecting bus routes, and to provide safe, signal-protected access between the stops and surrounding land uses;
- Fare transactions to be done through proof-of-payment fare media and random-check enforcement; and
- Vehicles, stations, and infrastructure must allow for:
    - the highest possible level of, and ease of, maintenance;
    - the highest possible level of customer and employee security;
    - must be fully accessible for people of differing levels of mobility.

3.2 Operations Plan

3.2.1 LRT Service

The service objective is to provide a peak-hour maximum capacity of 8000 pphpd (person per hour per direction) with at least 40% of passengers being able to be seated at the peak-hour demand. The service is proposed to operate at least every 6 minutes at peak times regardless of demand. It is expected that these requirements will result in all facilities being designed to accommodate ultimate train lengths of approximately 90 metres (consisting of three 30 metres long LRT vehicles).

Initially the LRT Is not planned to operate 24 hours a day. During LRT operations, existing bus services along Eglinton Avenue will no longer exist. Some north-south buses that have a portion of their route travelling along Eglinton Avenue will continue to operate in short sections of the LRT corridor where necessary. In general, customers travelling east-west along Eglinton Avenue will be served by the LRT during normal operation hours as opposed to buses.

LRT operating headways will likely vary throughout the corridor. The tunnel portion of the LRT corridor will have turn back capability at both ends of the tunnel section to allow the LRT to operate with short turn service and provide shorter headways than on the surface sections. Headways on the surface section of the LRT also may vary depending on ridership demand.

Fare collection will be operated as proof of payment. This system will be implemented to avoid delays associated with traditional fare collection. Station and stop platforms will include ticket vending machines, which will also be used to facilitate transit transfers to subways and buses.

3.2.2 Bus Service

<u>Parallel Bus Service</u>

Members of the public have requested that parallel bus service be provide on Eglinton Avenue, in particular through the underground section of the Eglinton Crosstown LRT. The TTC determines bus routings based on customer needs and observed travel demands, which, in some cases, includes operating buses in parallel to a rapid transit line.

The average station spacing on the Eglinton Crosstown LRT between Keele Station and Laird Station is approximately 850 metres. This spacing is comparable to the station spacing of the Bloor-Danforth Subway, where parallel bus service is not provided today. Parallel bus service is provided on the Yonge Street at all times between Davisville and Finch Station (where some stations are 1600 metres apart), and at peak times south of Davisville (where the stations are approximately 650 metres apart on average) .

The need for parallel bus service will be determined through the TTC Service Standards process based on observed ridership patterns and specific community needs, relative to the additional cost of providing the service.

<u>Feeder Bus Service</u>

The bus operating plan for the Eglinton Crosstown LRT includes the following changes to the bus network:

- The 32C Eglinton West – Trethewey route will be shortened from its current terminating point at Eglinton West Station to the new terminal at Keele Station. This route will operate on Eglinton Avenue from Emmett Avenue to Keele Street.
- The 32D Eglinton West – Emmett route will be shortened from its current terminating point at Eglinton West Station to the new terminal at Keele Station. This route will no longer operate on Eglinton Avenue.
- The 47 Landsdowne will be rerouted along Eglinton Avenue from Caledonia Road to Croham Road to a new bus loop located adjacent to the Caledonia Station.
- The 51 Leslie and 56 Leaside routes will be combined and will operate on Eglinton Avenue between Laird Drive and Leslie Street. The portions of these routes that serve Eglinton Avenue from Laird Drive to Eglinton Station at Yonge Street will be eliminated.
- The 100 Flemingdon Park route will be shortened from its current terminating point at Eglinton Station to the new terminal at Don Mills Station. This route will no longer operate on Eglinton Avenue.
- The 54 Lawrence East route will be shortened from its current terminating point at Eglinton Station to the new terminal at Don Mills Station. This route will no longer operate on Eglinton Avenue.

3.3 Design Criteria

3.3.1 Transit Elements

LRT vehicles will be of modern European-style design with a length of approximately 30 metres. Trainsets will consist of two cars initially, with opportunity to expand to three cars when ridership levels warrant. The capacity of the LRT for planning purposes is 260 passengers for two car trainsets and 390 passengers for three car trainsets. Maximum operating speed is 60 km/hr; though vehicles will not be permitted to operate above the posted speed limit along Eglinton Avenue. The vehicle's average speed including stops is projected to be 28-31 km/hr in the west surface section, 22-25 km/hr in the east surface section and 32 km/hr underground.

Trains will be powered by electricity from overhead catenary wires. Train operations on the surface sections of the LRT corridor, both train control and opening/closing of doors, will be controlled by on-board staff. In the underground section of the LRT corridor, vehicles may be controlled by automatic train operation (ATO).

The LRT vehicles will be fully accessible to all riders, with low floor vehicles with level boarding from platforms. Boarding will occur on all doors to reduce time spent serving stops/stations. Doors will be located on both sides of the vehicle to accommodate centre and parallel platforms. Operator cabs will be located on both ends of the trainsets to permit operation in either direction without the requirement for turn around loops.

The track technology to be used is a combination of a continuously welded rail with a rubber sleeve that isolates the rail from the concrete. This elimination of rail joints combined with the isolating sleeve provides a smooth operation with limited noise and vibration that is no different than the noise levels of a busy street.

To develop a conceptual plan for the Transit Project Assessment, design criteria for both LRT alignment and roadway geometry were assumed. The criteria were developed based on the "*TTC - Design and Supply of the Low Floor Light Rail Vehicle – Technical Specification*" and the "*Transportation Association of Canada (TAC) – Geometric Design Guidelines*". Additionally, in January 2008, TTC developed a set of technical specifications named "Design and Supply of the Low Floor Light Rail Vehicle – Technical Specification" to replace the existing streetcars and to support the proposed Transit City network. This technical specification provides the vision for the future Toronto LRT network and the basic design criteria for the vehicles to be used. The design criteria are listed in **Exhibit 80.**

Exhibit 80: LRT Design Guidelines

Design Parameters	Proposed Standards
Maximum Operating Speed	60 km / h
LRT Right-of-way Width	7.4 m – Midblock
Median Width	TBD
Minimum Grade	0.5 %
Maximum Grade (LRT)	5.0 %
Minimum Curve Radius	25.0 metres
Platform Width	Side platform – 3.0 metres Centre Platform – 6.0 / 5.0 metres (desirable / minimum)
Platform Length	90 metres
Platform Area Grade	Desired – 0.0% (provided that adequate drainage can be provided) Maximum – 3.0%
Operating Height	Maximum – 6.7 metres from Top of Rail (TOR) Nominal – 5.5 metres from Top of Rail (TOR) Minimum – 4.0 metres from Top of Rail (TOR)

3.3.2 Road Elements

Due to the implementation of the LRT, existing roads along the Eglinton Crosstown LRT corridor will require modifications. **Exhibit 81** summarizes the road design criteria that were used during this study.

Exhibit 81: Roadway Design Criteria

Design Parameters	Proposed Standards
Posted Speed	60 km/h
Pavement Width	2 x 3.3 metres through lanes 2 x 1.6 m for delineated bicyle lane
Left Turn Lane	1 x 3.0 metres
Median	7.4 metres for LRT
Minimum Grade	0.5 %
Maximum Grade (Roadway)	5.0 %
Minimum Curve Radius	230 metres

Section 3.4.5 explains roadway modifications proposed as part of this project.

3.3.2.1 Bridge Structures

Structural assessments of the existing bridges have been carried out for the following load conditions:

Loads

Dead Loads:

The dead (fixed) loads include: deck, sidewalk, barrier walls, asphalt wearing surface, new LRT conventional trackbed and accessories or new LRT track with lightweight fill material.

Live Loads:

The live (moving) loads assessed include LRT Live Load and additional loads due to conventional trackbed and accessories; and LRT Live Load and additional loads due to lightweight trackbed and accessories.

Only primary loads noted were addressed in the preliminary evaluations to confirm feasibility of the proposed routing.

Other Loads

Other loads that need to be considered in the assessment of the bridge include wind and braking.

Additional analysis will be required during design to address local and other secondary loads including the following:

- Power supply will be provided through an overhead catenary system supported on poles attached to the bridge structure. The poles will induce local effects. Some local deck reinforcing may be required depending on the final configuration.
- Longitudinal track forces will be transmitted to the deck depending on the type of track fixation selected.
- Stray currents.
- Trackbed has been primarily assumed as a conventional reinforced concrete slab. Attachment to the bridge deck will be considered during design. Any local strengthening to assure load distribution would be addressed at that time.
- The LRT loading is comparable to current highway loadings and as such, causes only a marginal change to the loadings at underpass footings. It is noted however, that any roadway lowering to accommodate vertical clearance requirements may necessitate insulation of the existing footings.
- All structures were visually assessed to identify any conditions impacting structural integrity and evaluation methodology. No conditions of concern were identified. However, further review of the structure should be carried out at the time of design.

3.3.3 Typical Runningway at Surface

The Transit City program consists of seven LRT lines. Most of these corridors follow existing major roads where a 36 metre right-of-way is available. In these road corridors the preferred alignment for the LRT is to operate in the centre of the right of way. Centre lanes offer the following major advantages:

- The transit lanes do not block access to property or minor streets and in turn transit vehicles are not blocked by right-turning automobiles;
- LRT vehicles in centre lanes are more easily and more safely controlled at intersections when they are in the centre of the road rather than on either side; and
- A similar amount of right-of-way is required regardless of whether the transit lanes are on the side or in the centre.

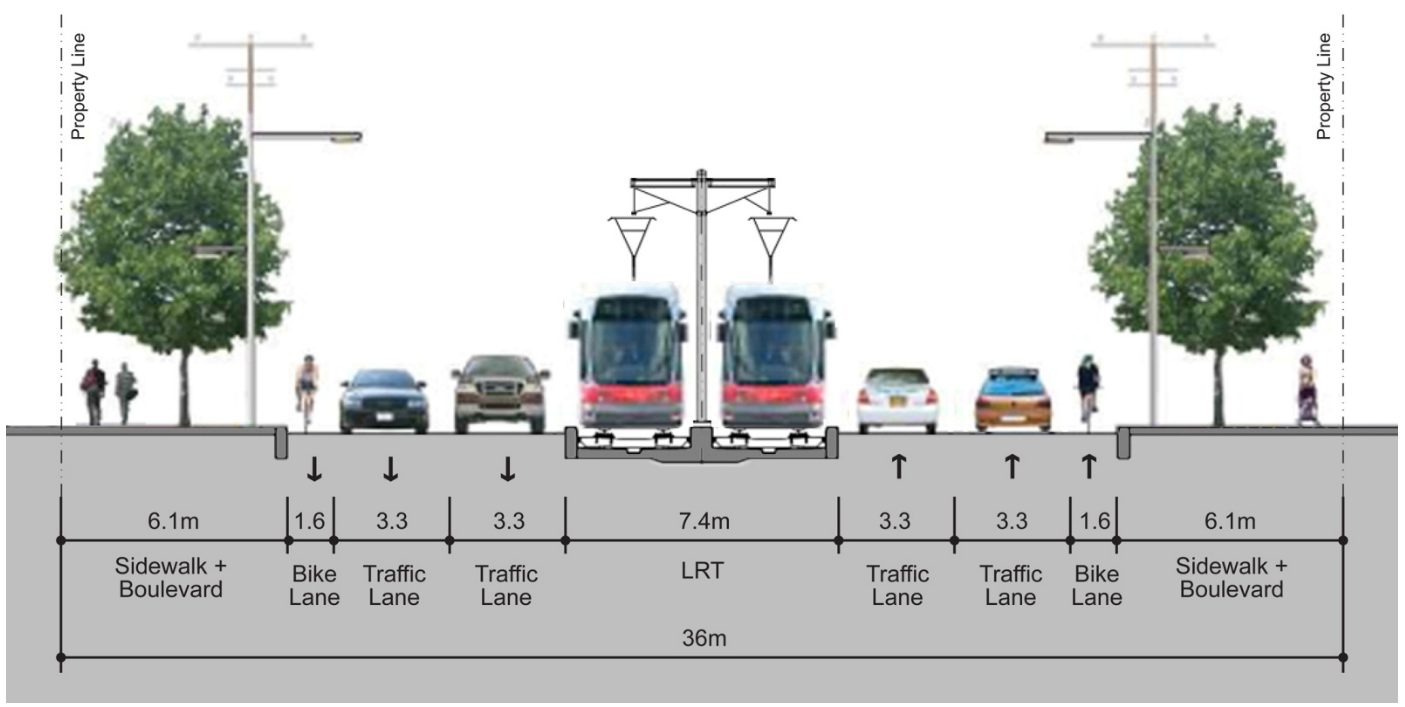
On the basis of these arguments a median corridor was selected as being the base alignment for the Eglinton Crosstown LRT. Special study areas investigated alignments outside the centre of roadway to see if the alignment provided any advantages in those cases.

A typical 36 metres cross section for mid-block section was developed as part of the overall Transit City program. The recommended cross section elements for midblock sections include:

- 7.4 metres dedicated LRT right-of-way with raised curbs for LRT tracks and median;
- 2 x 3.3 metres vehicular traffic lanes operating in each direction;
- 1.6 metres bicycle lane in each direction; and
- 6.1 metres boulevard, including the sidewalk, on each side of the street.

These elements result in a total cross section width of 36 metres.

Exhibit 82: Typical Mid Block Cross Section



3.3.4 Typical Surface Stops

While the actual dimensions may be subject to some minor modifications during design, the typical layout with far side platform along the LRT corridor for the preferred design solution include:

- 7.0 metres dedicated LRT right-of-way for LRT tracks and median (excluding curb);
- 3.0 metres station platform on the farside of the intersection;
- 3.0 metres left turn and u-turn lane on the nearside;
- 2 x 3.3 metres vehicular traffic lanes in each direction;
- 1.6 metres bicycle lane in each direction; and
- 3.1 metres boulevard, including the sidewalk, on each side of the street.

These elements result in a total cross section width of 36 metres. Depending on the overall available right-of-way width, streetscaping features could be provided where there is sufficient space.

Platforms will be approximately 90 metres long to accommodate three-car trains. In general, each surface stop will be furnished with a canopy and windscreen to provide passengers with protection from adverse weather. Surface stops will also provide other passenger amenities, including information panels, seating and self-service ticket vending/validation equipment. The proposed surface stops will be designed to be compliant with accessibility requirements including ramps proposed at the end of each platform near the intersection to connect to the crosswalks.

For the Eglinton Crosstown LRT, four stop types are proposed for the surface section. The stop type of each surface stop location was selected by considering the site geometry, traffic arrangement, LRT operations, and integration with existing and proposed infrastructure. The four types of stops provided are described below.

Farside Stops: (typical stop) are located beyond the intersection in the direction of travel. Farside platforms are provided at most locations where eastbound and westbound left turn lanes are permitted because they best conform to the intersection geometry and minimize the impact to adjacent property. Farside stops will consist of two 3 metre wide platforms on opposite sides of the intersection. **Exhibits 83 and 84** present a graphical presentation of this type of stop.

Exhibit 83: Typical Cross Section of a Farside Stop

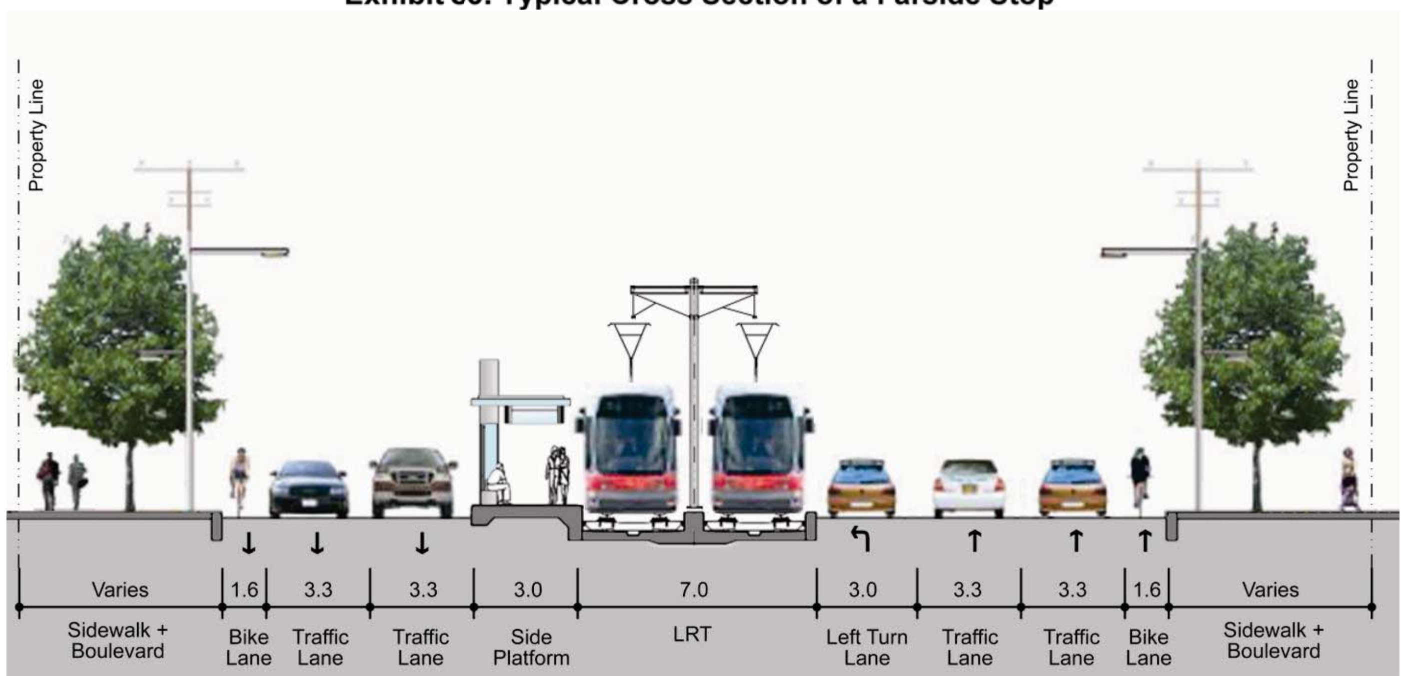
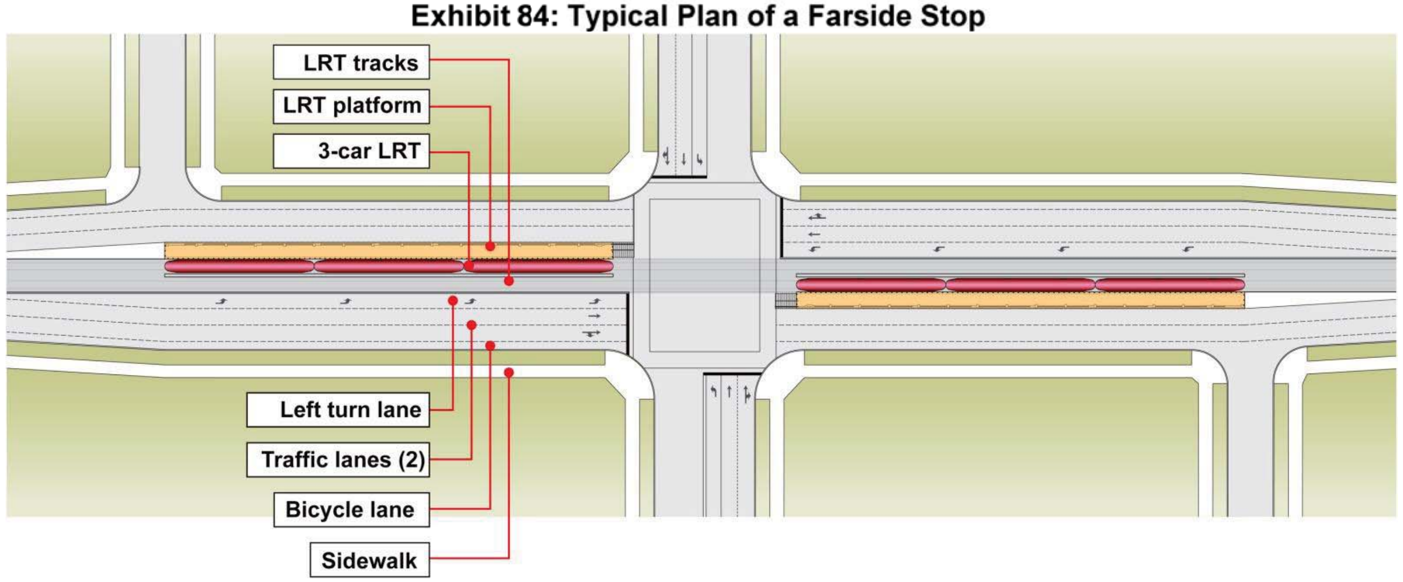


Exhibit 84: Typical Plan of a Farside Stop



Nearside Stops: are located before the intersection in the direction of travel. They are provided at major intersections where east and west left turns are prohibited. Nearside stops are provided at these locations because they do not require the LRT from double-stopping (i.e. stopping once at a red light, and then stopping again at the platform). Nearside stops will consist of two 3 metres wide platforms on opposite sides of the intersection. **Exhibits 85 and 86** present a graphical presentation of this type of stop.

Exhibit 85: Typical Cross Section of a Nearside Stop

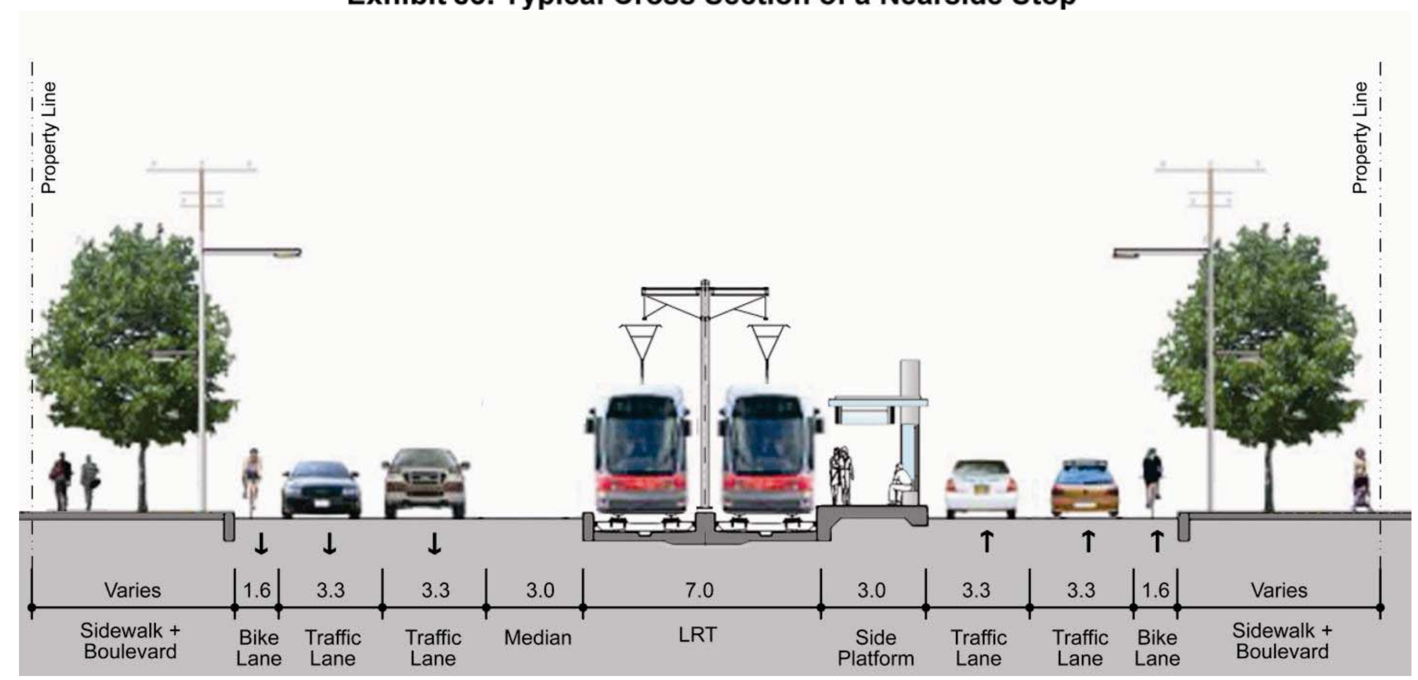
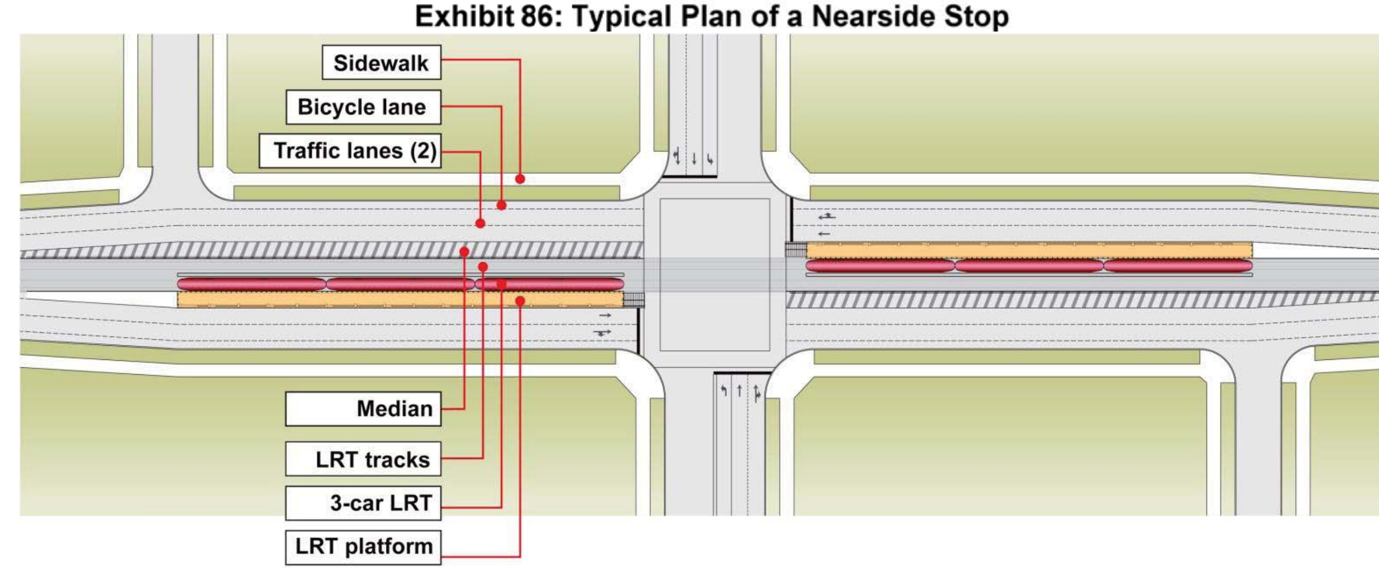


Exhibit 86: Typical Plan of a Nearside Stop



Centre Stops: can be located on either side of the intersection. They are provided at locations where the site geometry (i.e. horizontal and vertical curvature) or track configuration (e.g. crossover tracks) make it disadvantageous to provide farside or nearside platforms. Centre platforms are also provided at junctions with existing or proposed infrastructure to better facilitate passenger transfers. Centre stops will consist of one 6 metre wide platform on one side of the intersection. **Exhibits 87 and 88** present a graphical presentation of this type of stop

Exhibit 87: Typical Cross Section of a Centre Stop

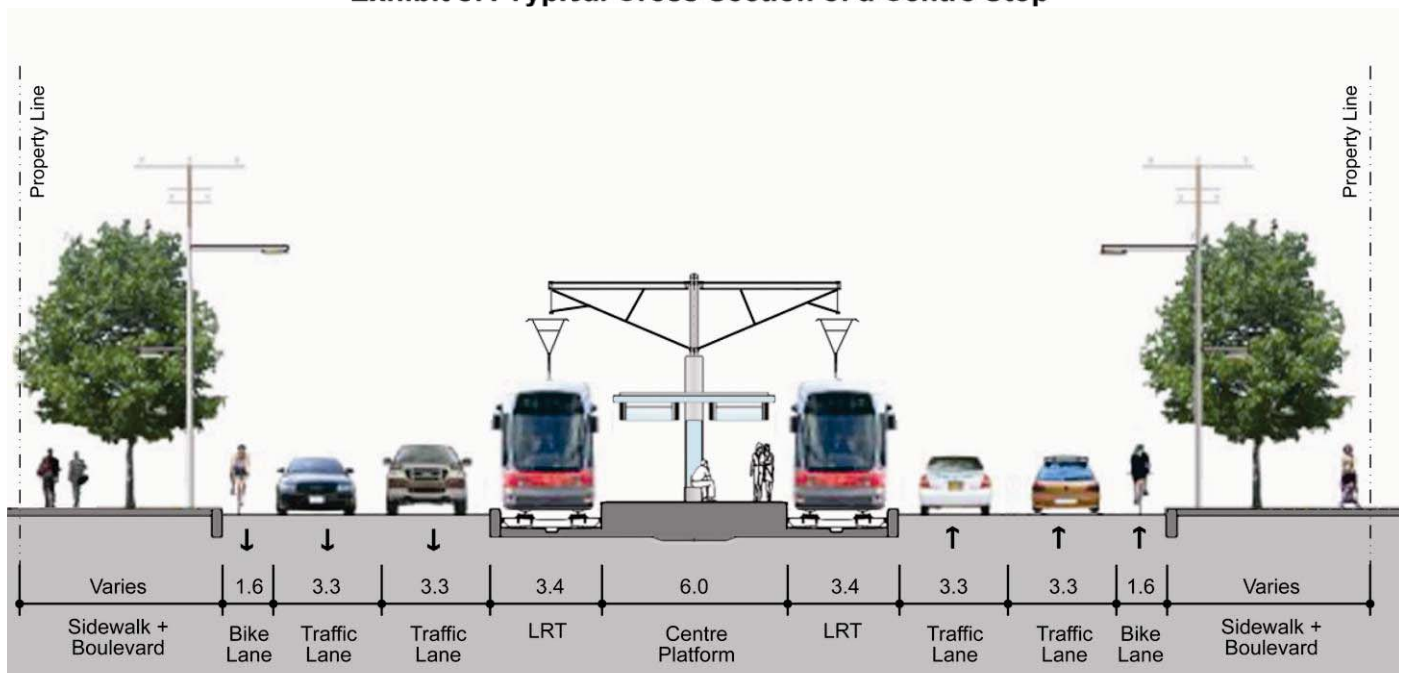
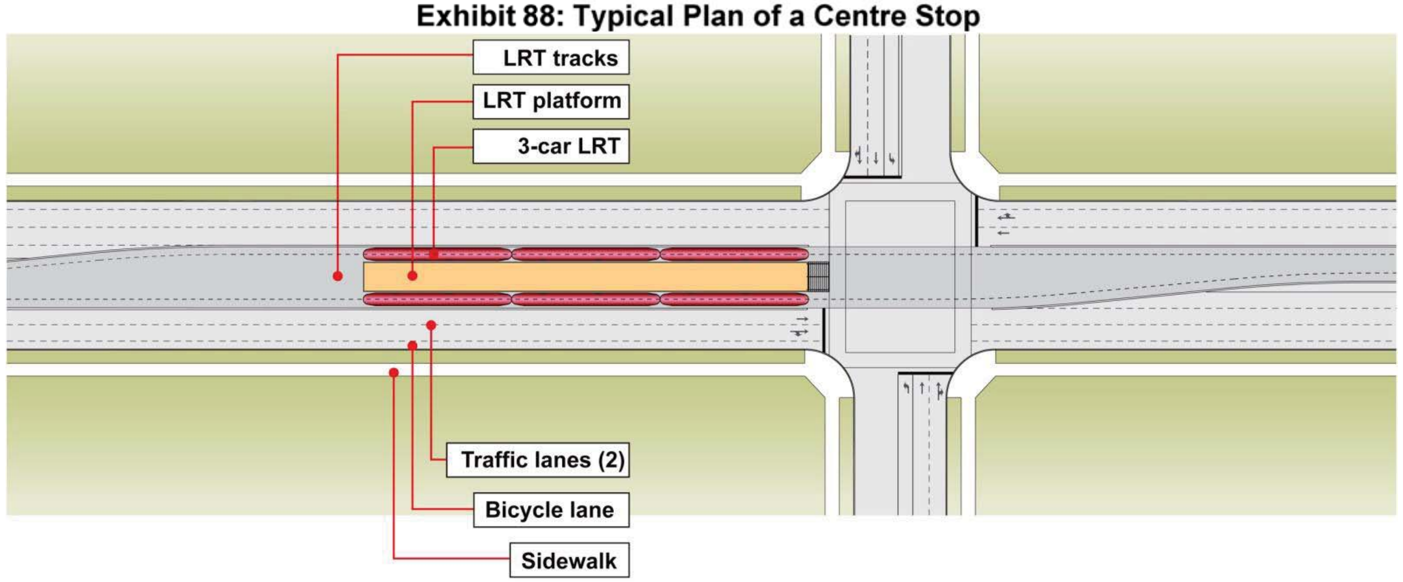


Exhibit 88: Typical Plan of a Centre Stop



Parallel Stops: can be located on either side of the intersection. They are provided at locations where the site geometry (i.e. horizontal and vertical curvature), track configuration (e.g. crossover tracks), and LRT track alignment make it disadvantageous to provide farside or nearside platforms. This application is applied in locations where it is disadvantageous to widen track centres to provide a centre platform. Parallel stops will consist of two 3 metre wide platforms on the same side of the intersection. **Exhibits 89 and 90** present a graphical presentation of this type of stop.

Exhibit 89: Typical Cross Section of Parallel Stop

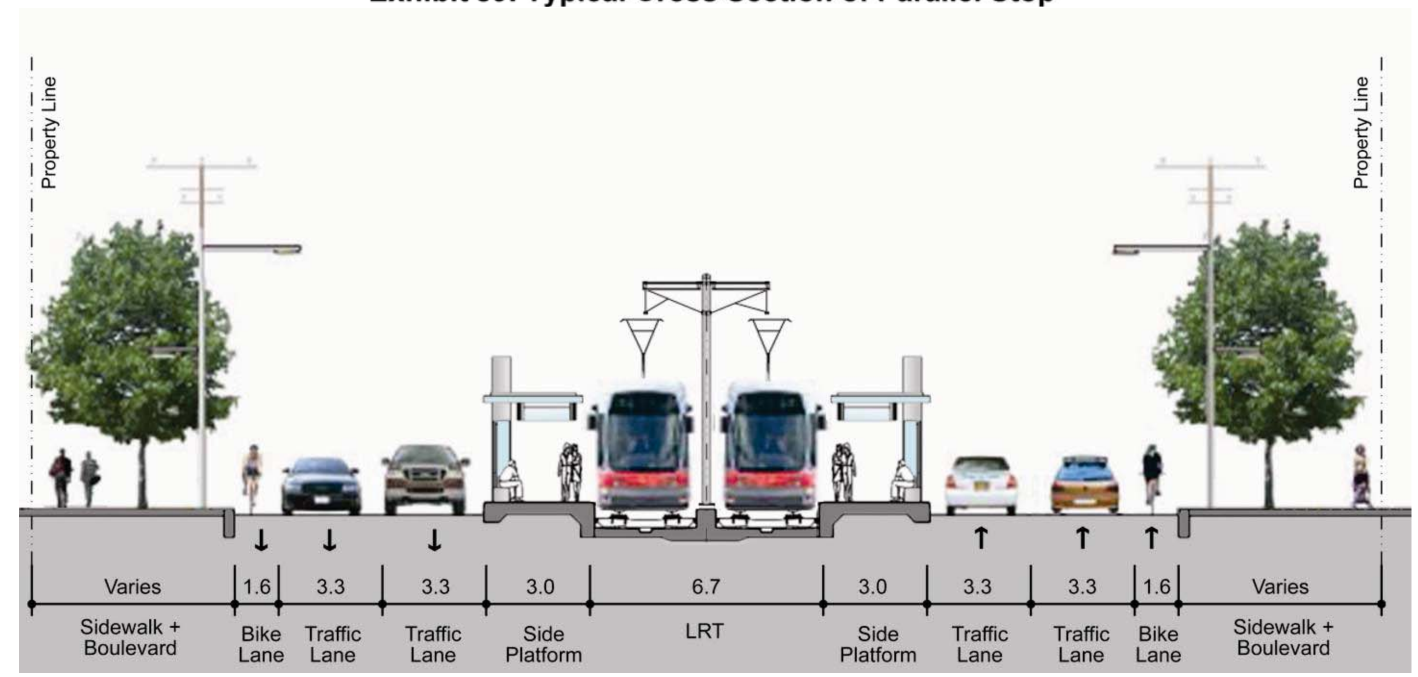
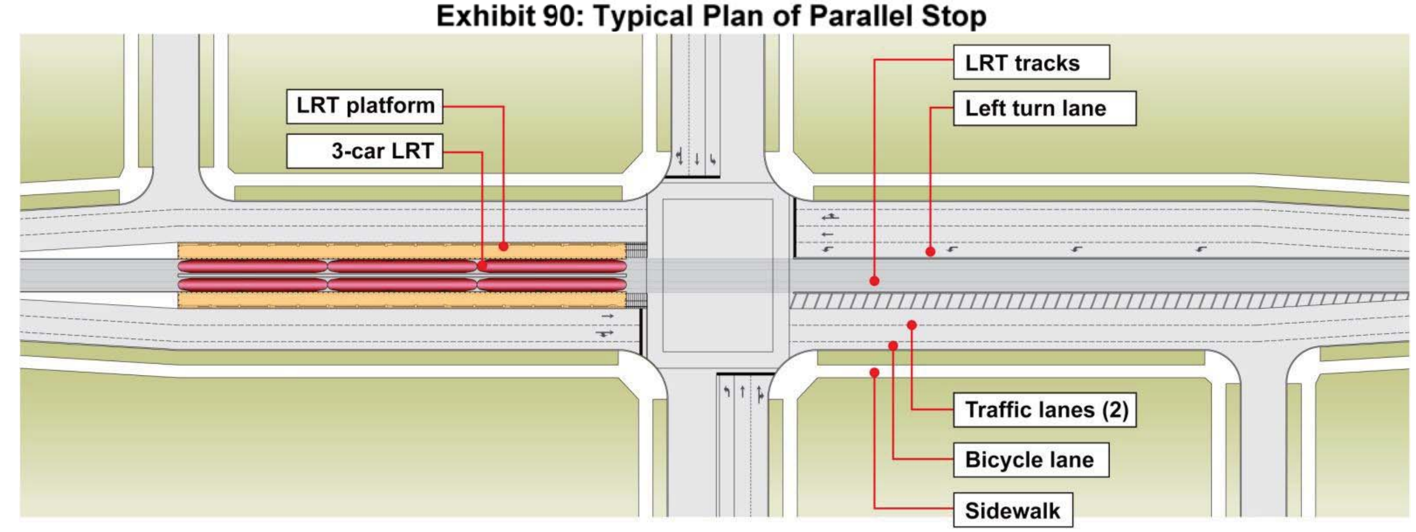


Exhibit 90: Typical Plan of Parallel Stop



3.3.5 Stations

At the street level, the typical underground station will generally include three station entrances, one main entrance, and two secondary entrances ideally located to the north and/or south of Eglinton Avenue and at either end of the station. Entrances serve as access and egress points for walk-in traffic along the underground LRT route.

Main entrances and secondary entrances are typically located to coincide with north-south bus routes and associated stops to provide a quick and convenient point of transfer. The main entrance will be accessible in accordance with TTC Easier Access standards. It will include an elevator, an escalator, and stairs. The secondary entrances will include only stairs (**Exhibit 91**). The stairs and escalator(s) will be oriented to provide a direct line of sight from the street level to the concourse level and vice-versa where possible. All entrances subject to site circumstances will have a glass enclosure along the entire perimeter to ensure visibility and daylight access. The entrances will connect the street level to the station concourse level, which includes an underground walkway. Elevator and escalator connections will be provided between the concourse level and the platform level **(Exhibit 91).**

At the concourse level, all LRT stations and stops will be proof of payment except at interfaces with existing subway stations (i.e. Eglinton West (Allen) Station and Eglinton (Yonge) Station). Ticket vending and validation machines will be located at the concourse level of LRT stations. At subway stations, the LRT will be accessed through existing subway paid entrances as well as new automated entrances at select locations.

All stations have a low-floor centre platform configuration which allows passengers to board and alight the LRT vehicles via a single platform between the two tracks. The platform width is 8.2 metres compared to a standard 10.3 metres subway platform and maintains the utilization of standard vertical circulation and cross-platform transfers subject to confirmation in during design.

The typical station box accommodates a 90 metres platform with a 40 metres service area at one end and a 20 metre service area at the opposite end resulting in a total station box length of 150 metres. Initially the LRT operation will consist of a 2-car trainset requiring a 60 metres platform. To protect for the ultimate 3-car train set the 90 metres platform would be constructed, but then temporary walls would be installed to create the initial 60 metres long platform. A 2.5 metres wide corridor would bisect the remaining 30 metres reserved portion of the platform leading to an additional secondary entrance. **Exhibits 91 and 92** show a typical station configuration. **Exhibit 93** shows an example of secondary station entrance.

Platform Level

Landing for two escalators (entraining/detraining), one set of stairs and one elevator is accommodated within the initial 60 metres platform, allowing 10 metres at either end of the platform. Station will be constructed to accommodate a 30 metres platform lengthening to be put in service when traffic increases and three car trains are required.

Fire Ventilation Requirements

Fire ventilation units are located at the concourse level at either end of the station box above the platform level service areas. The size and configuration of these units including associated ventilation shafts are subject to a separate study involving computational fluid dynamics (CFD), to be completed in the design phase.

Fire ventilation shafts will be incorporated into stations to balance air pressure within the tunnels and stations and to provide for emergency exhaust and fresh air supply in case of an underground fire. Generally, four fire ventilation shafts will be incorporated into the stations, with two ventilation shafts at either end of the station, each on opposite sides of the Eglinton Avenue. Certain site configurations have necessitated the consolidation of fire ventilation shafts to one side of the street, either at one end or both ends of the station. Fire ventilation shafts will generally be located outside of the Eglinton Avenue public-right-of-way, within the boulevard along side streets, on adjacent properties with open space (e.g. parking lots) and if no open space is available, on properties currently occupied by a low-level building.

For the purpose of this study, a 19 square metres ventilation shaft has been applied at each corner of the station box. The size is derived from ongoing fire ventilation projects on existing and proposed subway stations. The typical footprint of 3 metres by 6 metres may also be reconfigured subject to specific site circumstances. Fire ventilation shafts are typically 1 metre above street level and in certain circumstances may warrant a chimney-like structure.

Exhibit 91: Typical Station Cross Section

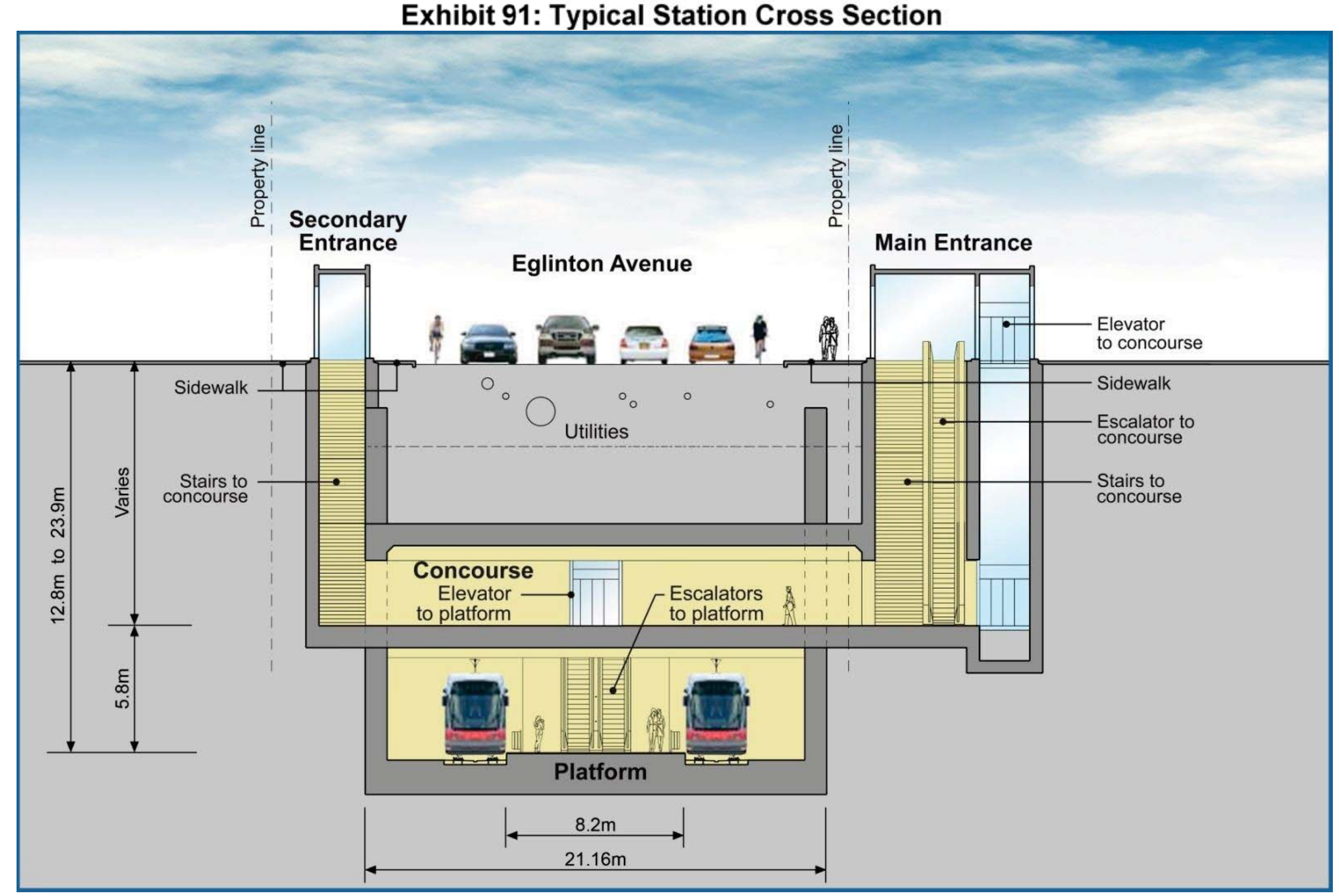


Exhibit 92: Typical Station Plan

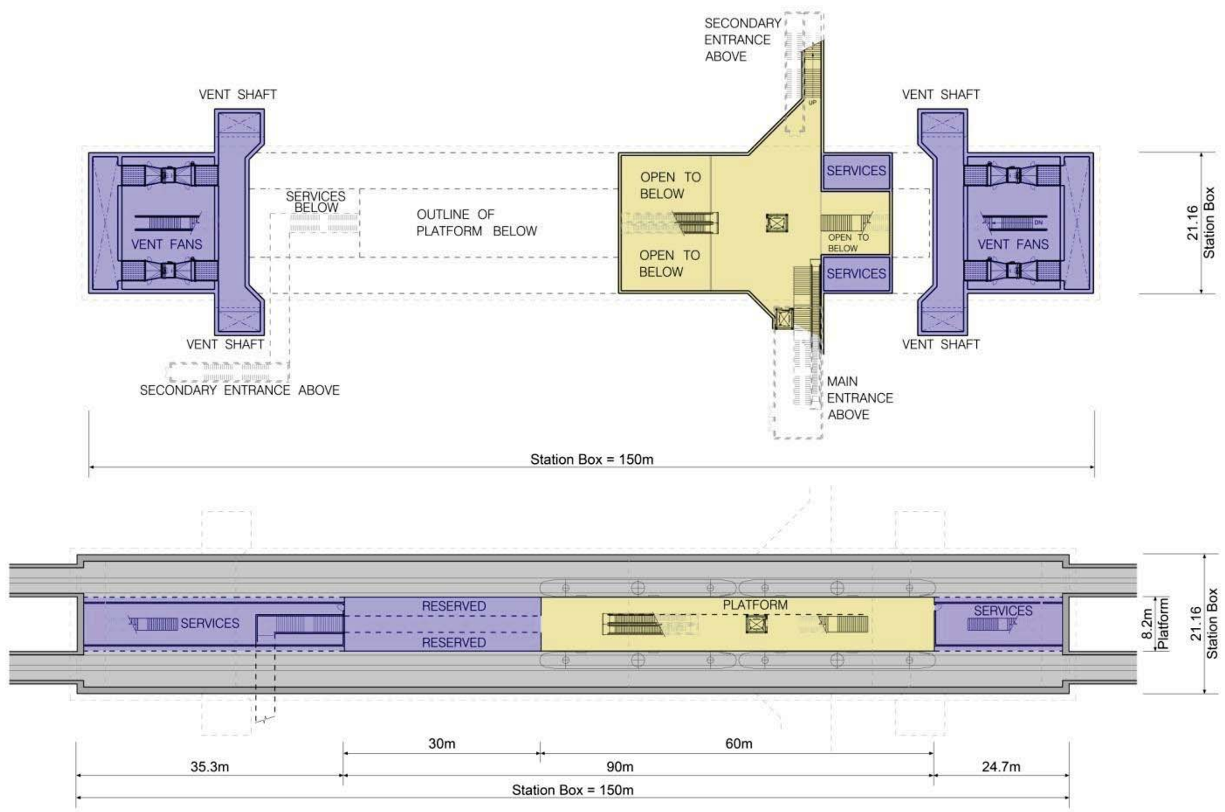


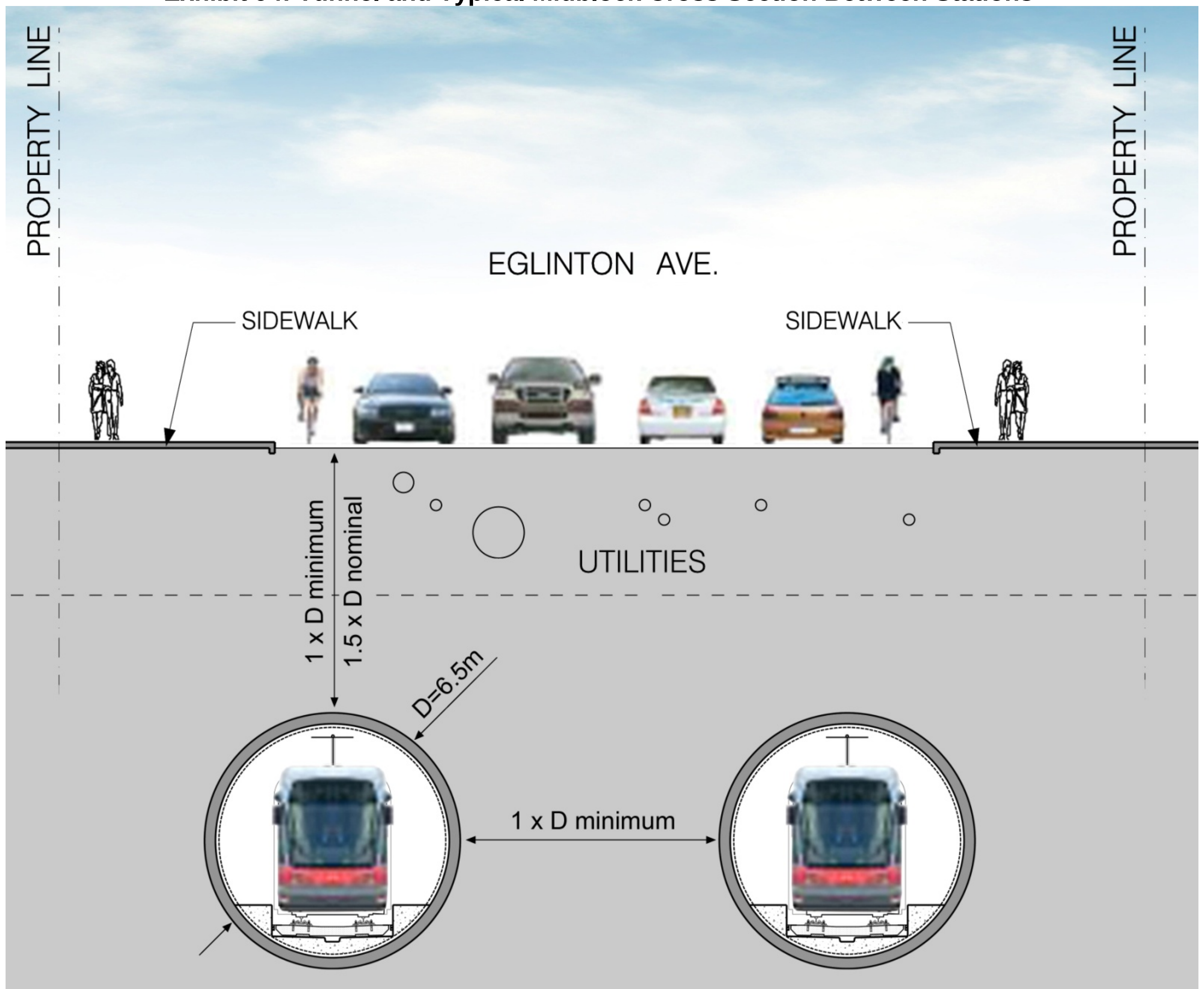
Exhibit 93: Secondary Entrance

3.3.6 Tunnels

The twin tunnel section of the project is located beneath the Eglinton Avenue roadway. Between stations, the tunnel can be designed to avoid as many utilities and subsurface obstructions as possible. The alignment of the tunnel section can be seen in Sheet Nos. 36-68 following Section 3.6.

Exhibits 94 and 95 present the typical tunnel cross section.

Exhibit 94: Tunnel and Typical Midblock Cross Section Between Stations



3.3.7 Special Trackwork

To allow the LRT vehicles to change direction for operational and emergency purposes, special track work is required. The types of special trackwork that are proposed within the corridor include crossovers and storage (pocket) tracks. Crossovers allow trains to transfer from one track to the other in order to change directions. All of the crossovers provide bi-directional capability. Storage (pocket) tracks provide a third track section between the two main line tracks with turn outs at one or both ends. This allows vehicles to be moved off of the mainline track to be stored during lower demand periods or when vehicles are disabled.

Based on TTC design standards and consideration of the operational needs of the Eglinton Crosstown line, crossovers are located at least every 4 kilometres, at terminal stations and at the last stations in the tunnel section to facilitate line management and operating flexibility. In addition, storage capacity is to be provided for at least one train at or near all terminal stations.

3.3.8 Emergency Exit Buildings

Emergency exit buildings (EEBs) are provided to allow for evacuation of underground facilities in the event of an emergency. EEBs are equipped with emergency backup power and ventilation and form part of an emergency egress system that also includes a common stairwell vestibule between the twin tunnels, a series of stairways and a tunnel leading up to the surface level. At the surface level, EEB's are small buildings located along side streets immediately north or south of Eglinton Avenue to accommodate future streetscaping or other urban design initiatives along the Avenue. Each EEB requires direct road access to the building by a fire pumper truck. Also, two parking spaces are provided at each EEB for TTC maintenance purposes unless specific circumstances (for example, conflict with by-law provisions) could preclude such parking spaces. In most locations, EEB's are located within the public right-of-way adjacent to parking lots or other open spaces. In some locations, property acquisition will be required.

Each LRT station located underground is equipped with an emergency or secondary access. Additionally, In accordance with NFPA 130 and TTC Standards DM-0102-03 / 4.2.1, emergency exit buildings have been provided along the underground segment where station platforms are more than 762 metres apart. Where stations are less than 762 metres apart and the distance to an exit does not exceed 381 metres, emergency exit buildings are not required.

Exhibit 95: Emergency Exit Building at Bessarion Rd. Along the Sheppard subway line

3.3.9 Traction Power Substations

Traction power substations (TPSS) are required to house the electrical distribution equipment necessary to supply electrical power to the LRT. The traction power network, including transformers, switches and circuits will supply adequate power at an acceptable voltage to the transit vehicles and will be designed to minimize stray current and voltage hazards.

A draft traction power plan titled "Transit City Traction Power Overview" was prepared by the TTC in March 2009 to outline the traction power substation requirements and the electrical demands for the Transit City program. The plan proposes nineteen (19) traction power substations along the Eglinton Crosstown LRT route, two of which are located outside the Eglinton Crosstown study area at Toronto Pearson International Airport and Kennedy Station. The average spacing proposed by the plan is 1.5 kilometres in the surface sections, 2.0 kilometres in the tunnel sections, and a substation being located at each end of the transit line. The mainline substations are tentatively sized at 1.5 MW which coincides with the smallest sized TPS presently operated by TTC. At transit route intersections, the substations are positioned to be able to serve both lines, and are proposed to be double capacity (3.0 MW). Traction power substations are typically located within the public right-of-way near proposed stops along the surface segment of the LRT corridor and combined with other station surface facilities along the underground segment of the LRT corridor.

3.4 Preferred Design – Alignment Overview

The following sections provide a overview of the components of the project. The compoents described apply throughout the project and are not specific to any particular location.

3.4.1 Vertical Alignment

The Eglinton Crosstown LRT travels at the surface of Eglinton Avenue in the east and west sections and travels underground in a tunnel through the central section. In total, the length of the proposed project is approximately 33 kilometres. The west surface section begins at Silver Dart Drive near the Pearson International Airport and ends east of Black Creek Drive, with a distance of 12.2 kilometres. Just east of Black Creek Drive, the LRT enters a portal section and then continues underground to Brentcliffe Road, for an approximate distance of 10.3 kilometres. East of Brentcliffe Road, the LRT exits the tunnel section through a portal and travels at surface past the Leslie Stop. East of the Leslie Stop, the LRT enters a portal and proceeds underground at Don Mills Station. After passing Don Mills Station, the LRT surfaces through a portal and continues to Kennedy Station for a distance of 7.6 kilometres.

There is only one elevated section of the LRT corridor. It crosses Highway 401 north of Commerce Boulevard. This crossing will be strictly used for LRT and maintenance access only. Vehicle and pedestrian use will be prohibited.

The vertical tunnel alignment for the central section will be dependent on station depth, existing topography, maximum slope requirements and utility locations. The station depths to the platform level will range from 12 metres to 25 metres. The tunnels will have a minimum depth of cover of approximately 6 metres (one tunnel diameter). The tunnel alignment will travel beneath three operating heavy rail lines (e.g. the GO line west of Caledonia Road and the Spadina and Yonge subways).

3.4.2 Horizontal Alignment

The Eglinton Crosstown LRT horizontal alignment generally follows the centre of the existing Eglinton roadway. It deviates from the existing roadway beginning at the intersection of Commerce Drive and Matheson Boulevard and passes north over Highway 401 to Convair Drive in the Pearson Airport lands. In this section the LRT travels north of Matheson Boulevard through an undeveloped parcel, then proceeds along a proposed LRT bridge across Highway 401 to Convair Drive within the Pearson International Airport properties.

The tunnel alignment will be located within the Eglinton Avenue right-of-way. Between stations, the tunnels will be separated by a minimum pillar width (distance between tunnels) of one tunnel diameter.

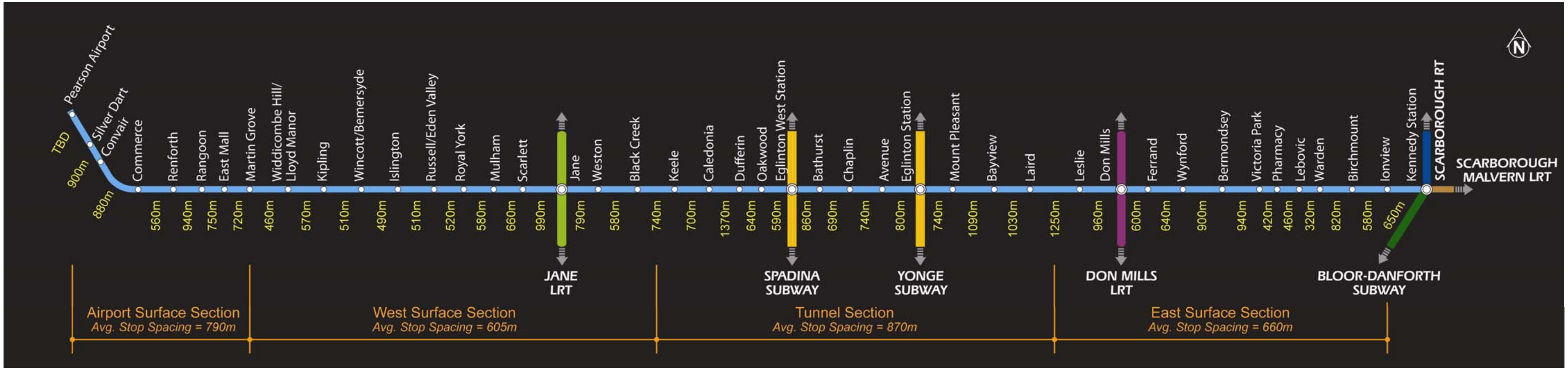
3.4.3 Stop and Stations

Stations and stops are located based on a balance between good local access and speed of service. Closely spaced stations and stops provide excellent local access, but speed of the service will suffer if they are too close. Stops will be spaced approximately 670 metres apart on the west end surface sections, 850 metres apart on the underground sections, and 660 metres apart on the east end surface sections. Stations and stops will be located at major intersections where other TTC services (buses and subways) intersect Eglinton Avenue to provide convenient passenger connections to the existing transit infrastructure. Stations and stops will also be located across the corridor to provide access to existing residential neighbourhoods and commercial areas, and future developments.

A total of 41 stations and stops are being planned along Eglinton Avenue. This includes 28 surface stops and 13 underground stations.

Exhibit 96 is a key plan that shows all the LRT stops and stations.

Exhibit 96: Key Plan



3.4.4 Bus Terminals

Off-street bus terminals are required at Keele Station (4-bus bays) and Don Mills Station (7-bus bays). As well, an off-street bus loop is required at Caledonia Station. These locations facilitate an interface between significant north-south routes of the feeder bus network and the LRT.

3.4.5 Road Modifications and Traffic Management

In the west surface section there is primarily 2 lanes of traffic in each direction. The LRT will occupy the middle two lanes of traffic, and road widening will be required to accommodate the additional cross section. In the east surface section there is primarily 3 lanes of traffic in each direction, consisting of two general purpose lanes and one high-occupancy-vehicle (HOV) lane. The LRT will occupy the middle two lanes. The remaining two lanes in each direction will be provided for traffic as proposed by the Eglinton Crosstown LRT project. To make a more urban environment to meet the goals of Transit City, the proposed lane widths will be narrower than the existing. Therefore, widening in the east surface section will generally only be necessary adjacent to stop platforms.

In addition to road widening and other modifications to Eglinton Avenue, some intersecting roads and ramps require modifications. These modifications are required to facilitate proposed traffic operations and accommodate improved transit transfers and the modifications to Eglinton Avenue.

With the introduction of the LRT in the centre of the roadway on the surface, traffic operations will be modified. In the central section of Eglinton Avenue with the LRT operating underground there will be no changes to traffic operation.

Between signalized intersections, the LRT will travel in a transit only right-of-way in the centre of the street physically separated from vehicular traffic to enhance LRT operating speed, reliability and safety. Traffic movements across the dedicated LRT running way will not be permitted except at signalized intersections. Consequently, left turns to driveways and minor streets will no longer be permitted. Future accesses will only permit right-in and right-out turns. The only exception to the right-in/right-out operation may be for emergency services. In cases where an emergency services facility has direct access to Eglinton Avenue, consideration will be given to permitting lefts-in and lefts-out turns by way of a curb depression opposite the access of the emergency services facility. This would be supplemented by the necessary by-laws/signage to prohibit non-emergency vehicles from making these movements"

In an effort to ensure fast and reliable transit service, left turn movements will be restricted at some major intersections to provide more green time the LRT. To accommodate the vehicular left turn movements, U-turns have been proposed at adjacent signalized intersections. There are three variations to this scenario:

- Travellers will travel through the intersection to a signalized U-turn, return to the intersection and make a right turn.
- Travellers will turn right at the intersection, proceed to a signalized U-turn, and travel through the intersection.
- Travellers will use new or existing roads which divert their movement to an adjacent intersection.

The application of the variations has been applied as follows:

- At Martin Grove Road and Victoria Park Avenue, where all left turning traffic will be re-routed to new or existing roads;
- At seven intersections, where median U-turns are being recommended;
- At Kipling Avenue, Islington Avenue, Royal York Road, Scarlett Road and Birchmount Road, where median U-turns located on Eglinton Avenue will replace left turns onto north/south streets; and
- At Jane Street and Pharmacy Avenue, where median U-turns will replace left turns in all directions.

Exhibit 97 shows the recommended operation at the ten identified intersections as a result of the analysis. The operations are shown in the exhibits included in **Section 3.2.8.**

Exhibit 97: Recommended Intersection Operation

Cross Street	Vehicle Movements
Martin Grove Rd	• North-south movements remain at intersection • East-west through remain at intersection • East-west right and left turns rerouted to new connector roads to turn at new traffic signals on Martin Grove Rd
Kipling Ave	• North-south movements remain at intersection • East-west through and right turns remain at intersection • East-west left turns rerouted to u-turn at new midblock u-turn signals on Eglinton Ave
Islington Ave	• North-south movements remain at intersection • East-west through and right turns remain at intersection • East-west left turns rerouted to u-turn at new midblock u-turn signals on Eglinton Ave
Royal York Rd	• North-south movements remain at intersection • East-west through and right turns remain at intersection • East-west left turns rerouted to u-turn at new midblock u-turn signals on Eglinton Ave
Scarlett Rd	• North-south movements remain at intersection • East-west through and right turns remain at intersection • East-west left turns rerouted to u-turn at new midblock u-turn signals on Eglinton Ave
Jane St	• North-south through and right turns remain at intersection • North-south left turns rerouted to u-turn at new midblock u-turn signals on Jane Street • East-west through and right turns remain at intersection • East-west left turns rerouted to u-turn at new midblock u-turn signals on Eglinton Ave
Victoria Park Ave	• North-south movements remain restricted • East-west through and right turns remain at intersection • East left turns rerouted to turn right onto Eglinton Square, turn right onto Victoria Park Avenue, and proceed through Eglinton Avenue • West left turns rerouted to turn left at Eglinton Square, then turn Left at Victoria Park Avenue
Pharmacy Ave	• North-south through and right turns remain at intersection North left turns rerouted to u-turn at a new traffic signal at Craigton Dr • South left turns rerouted to u-turn at an existing traffic signal at the Metro access • East-west through and right turns remain at intersection • East left turns rerouted to u-turn at a new midblock u-turn signal on Eglinton Ave • West left turns prohibited
Warden Ave	• All movements remain at intersection
Birchmount Rd	• North-south movements remain at intersection • East-west through and right turns remain at intersection • East-west left turns rerouted to u-turn at new midblock u-turn signals on Eglinton Ave

3.4.6 Bridge Structures

The bridge structures along the Eglinton Crosstown LRT corridor were reviewed to confirm the feasibility of providing a light rail transit right-of-way on the existing bridge structures. An assessment of horizontal and vertical clearances was coordinated for the bridges in the surface section of the LRT corridor. In addition, bridges were evaluated structurally in conformance with Section 14 of the Canadian Highway Bridge Design Code and reviewed to assess adequate room to fit the LRT.

Seven modifications are proposed to existing structures along the corridor. Bridge widenings are planned for Mimico Creek, Black Creek, West Don River and East Don River. The bridge over Wynford Drive will be removed and replaced by a signalized, four leg intersection. The pedestrian bridge located between Royal York Road and Scarlett Road will be removed and replaced by a pedestrian crossing at the new signalized intersection at the Mulham Stop. The culvert on Wilson Brook will be extended to the north for approximately 3.5 metres.

Underpass structures were reviewed geometrically to confirm the feasibility and constraints on the provision of the right-of-way through the structure.

3.4.7 Bicycle and Pedestrian Facilities

Bike lanes will be available throughout the surface section of the alignment with the exception of a segment from The East Mall to Jane Street and from Commerce Boulevard northward to the project limit near the Pearson International Airport. In the section from The East Mall to Jane, there is an existing bike path on the south side of Eglinton Avenue and the addition of new bike lanes would require the removal of established wood lots. Bike lanes will not be provided throughout the underground section of the alignment as no road alignment modifications are planned within this project.

3.4.8 Urban Design

Urban design was not addressed as part of the scope of this Transit Project Assessment Process. Urban design, including layout and selection of elements, will be developed as part of the design stage. These elements with co-ordinated street furniture and landscaping will be incorporated into the project during the design phases. Tree planting in the Eglinton Crosstown LRT corridor will be determined during the design stage.

3.4.9 Traction Power Substations

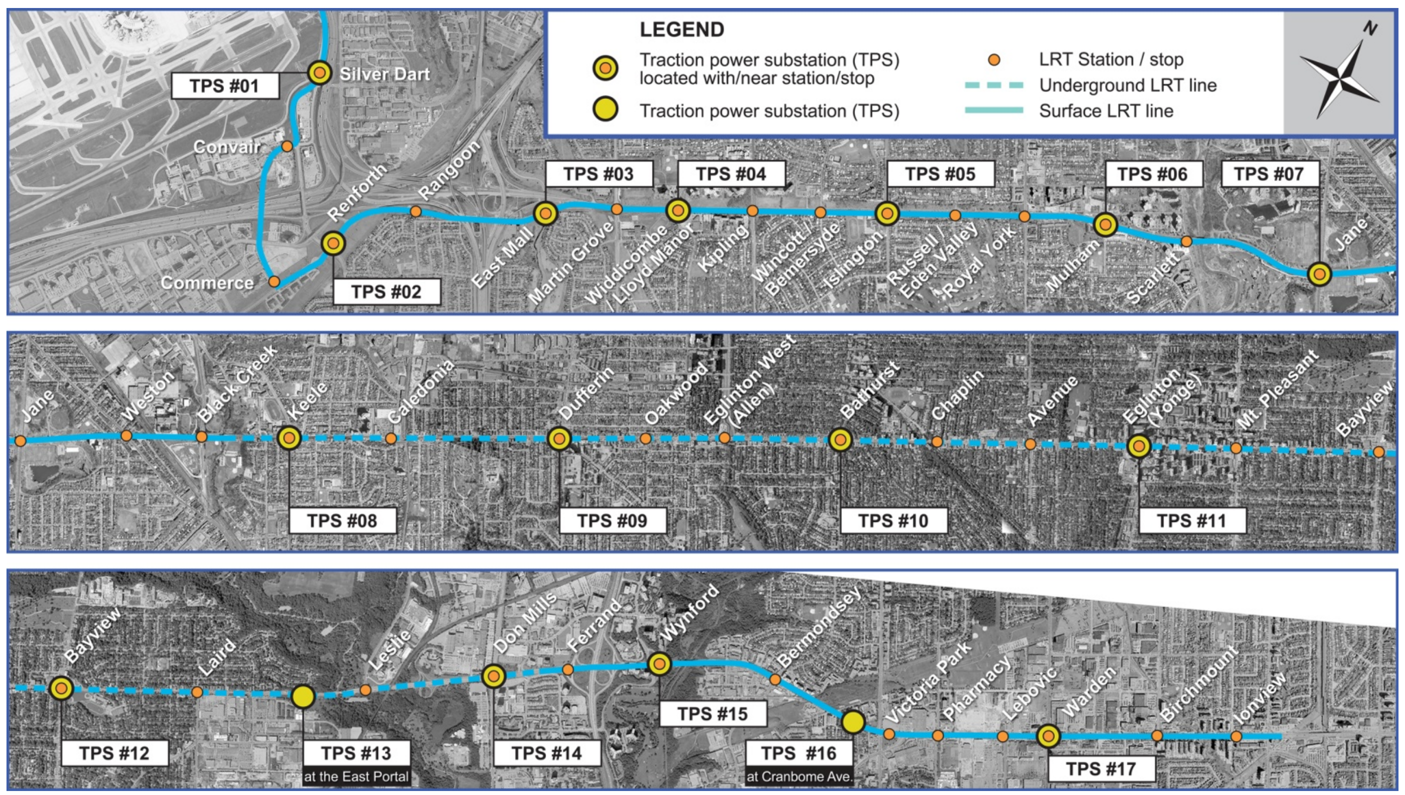
A total of seventeen (17) traction power substations (TPS) are proposed along the Eglinton Crosstown LRT corridor at the following locations

- Silver Dart Drive and Renforth Boulevard (TPS #01 at Silver Dart Stop);
- Renforth Drive and Eglinton Avenue West (TPS #02 at Renforth Stop);
- The East Mall and Eglinton Avenue West (TPS #03 at East Mall Stop);
- Lloyd Manor Drive and Eglinton Avenue West (TPS #04 at Widdicombe Hill Stop);
- Islington Avenue and Eglinton Avenue West (TPS #05 at Islington Stop);
- Royal York Road and Eglinton Avenue West (TPS #06 at Royal York Stop);
- Jane Street and Eglinton Avenue West (TPS #07 at Jane Stop);
- Yore Road and Eglinton Avenue West (TPS #08 at Keele Station);
- Dufferin Street and Eglinton Avenue West (TPS #09 at Dufferin Station);
- Bathurst Street and Eglinton Avenue West (TPS #10 at Bathurst Station);

- Duplex Avenue and Eglinton Avenue West (TPS #11 at Eglinton (Yonge) Station);
- Bayview Avenue and Eglinton Avenue West (TPS #12 at Bayview Station);
- mid-block along Eglinton Avenue West between Brentcliffe Road and Leslie Street (TPS #13 at the East Portal);
- Don Mills Road and Eglinton Avenue West (TPS #14 at Don Mills Station);
- Wynford Drive and Eglinton Avenue West (TPS #15 at Wynford Stop);
- Cranborne Avenue and Eglinton Avenue West (TPS #16 at Victoria Park Stop); and
- Warden Avenue and Eglinton Avenue West (TPS #17 at Warden Stop).

The traction power substation locations are shown in **Exhibit 98.**

Exhibit 98: Traction Power Substations Locations



3.4.10 Special Track Work

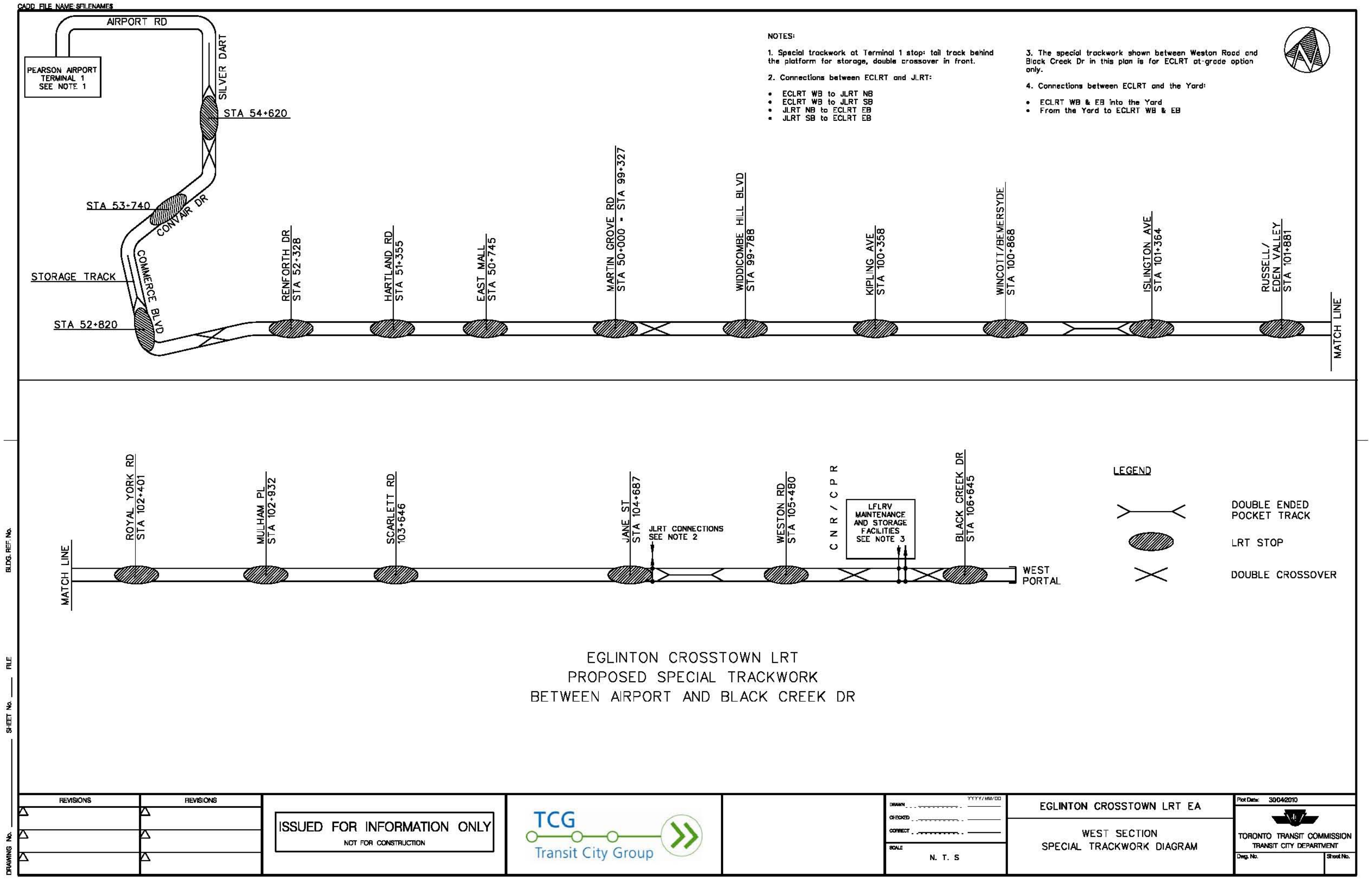
The locations of special track work are as follows:

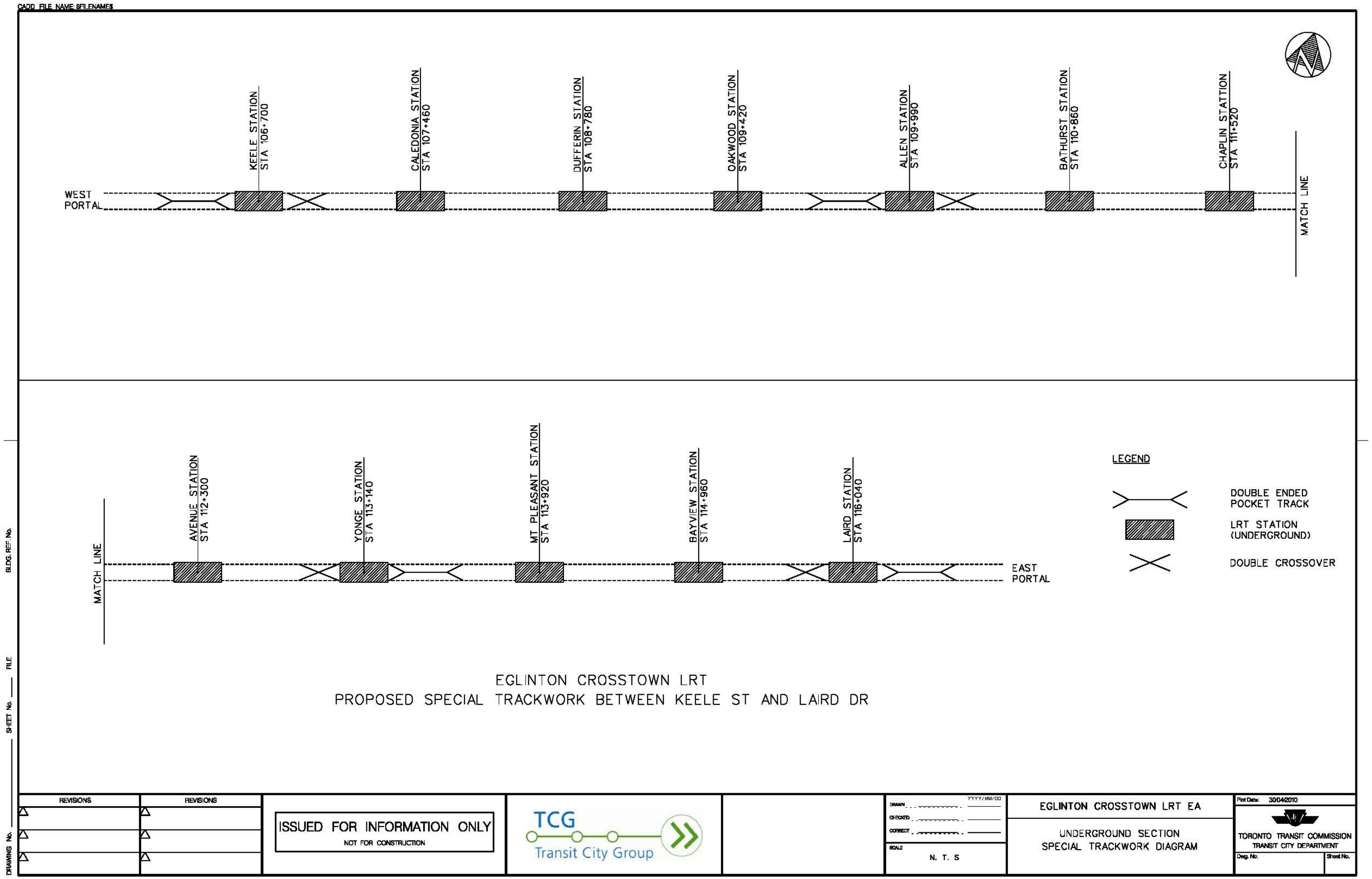
- Silver Dart Stop – Single ended storage (pocket) track north of the platform;
- Commerce Stop – Single ended storage (pocket) track north of the platform, double crossover east of the platform;
- Martin Grove Stop – Double crossover east of the platform;
- Islington Stop – Double ended storage (pocket) track west of the platform;
- Jane Stop – Double ended storage (pocket) track east of the platform;
- Weston Stop – Double crossover east of the platform. This crossover provides operational flexibility on the west side of the Maintenance and Storage (pocket) Facility;
- Black Creek Stop – Double crossover west of the platform. This crossover provides operational flexibility on the east side of the Maintenance and Storage (pocket) Facility;
- Keele Station – Double ended storage (pocket) track west of the station, double crossover east of the station. Keele Station is the west terminus of the tunnel. The track work provided here allows short turn capability to operate the tunnel section at shorter headways;
- Allen Station – Double ended storage (pocket) track west of the station, double crossover east of the station;
- Yonge Station – Double ended storage (pocket) track east of the station, double crossover west of station;
- Laird Station - Double ended storage (pocket) track east of the station, double crossover west of station. Laird Station is the east terminus of the tunnel. The track work provided here allows short turn capability to operate the tunnel section at shorter headways;
- Don Mills Station – Double ended storage (pocket) track east of the station, double crossover west of the station;
- Pharmacy Stop – Double crossover east of the platform;
- Ionview Stop – Storage (pocket) track east of the platform; and
- Kennedy Station – This is the east terminus of the Eglinton Crosstown LRT. Turn back capability will be provided as part of a separate project.

All special track work within the tunnel section will be built by cut and cover construction. A diagram showing locations of special track work is shown in **Exhibit 99.** The locations are also noted in the following sections where applicable in the station and stop descriptions.

All storage (pocket) tracks are proposed to be double ended with the exception of the Silver Dart Drive, which is the west terminus of the project.

Exhibit 99: Special Track Work Diagram

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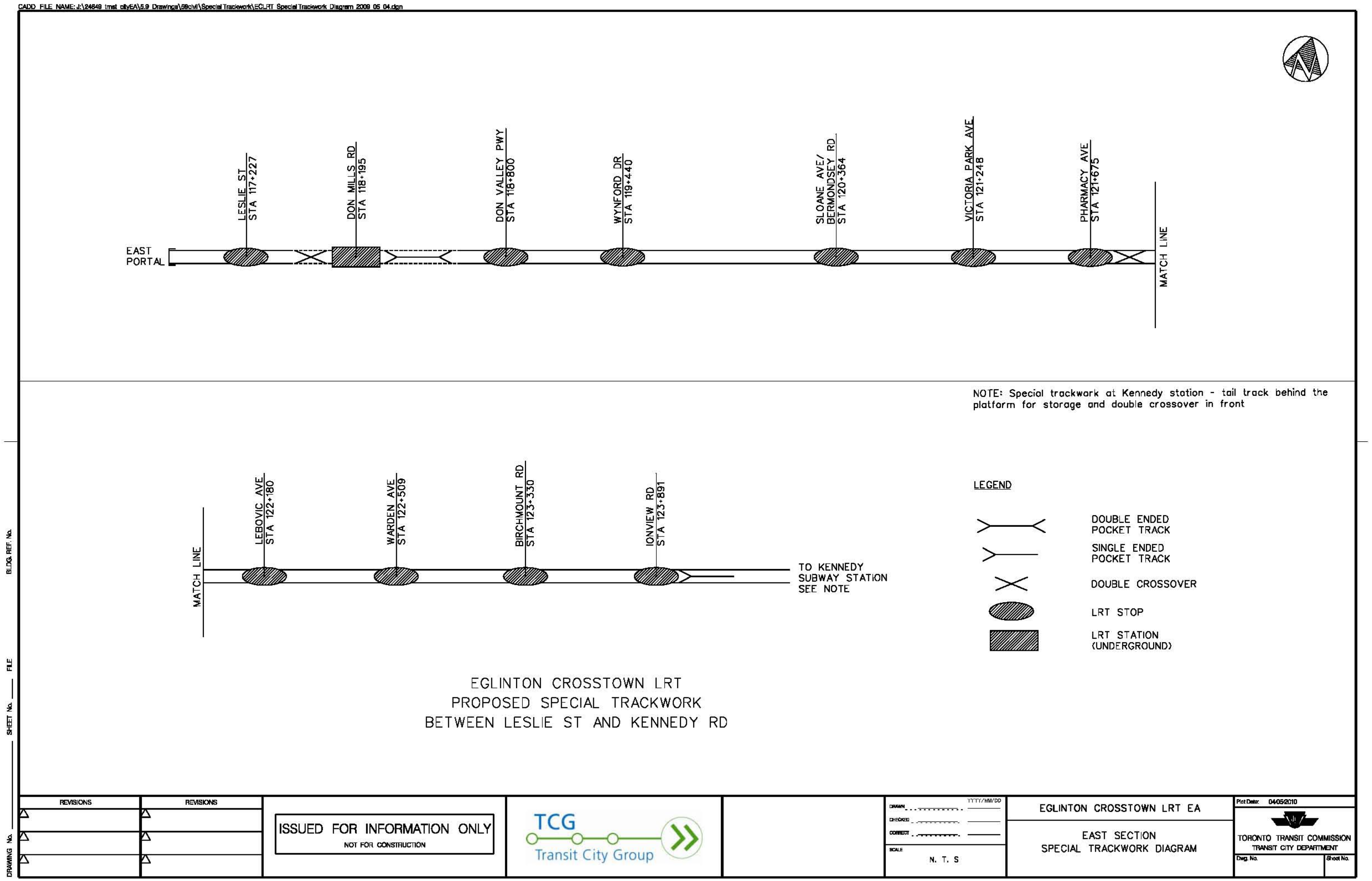
WEST PORTAL
KEELE STATION STA 106+700
CALEDONIA STATION STA 107+460
DUFFERIN STATION STA 108+780
OAKWOOD STATION STA 109+420
ALLEN STATION STA 109+990
BATHURST STATION STA 110+860
CHAPLIN STATION STA 111+520
MATCH LINE
MATCH LINE
AVENUE STATION STA 112+300
YONGE STATION STA 113+140
MT PLEASANT STATION STA 113+920
BAYVIEW STATION STA 114+960
LAIRD STATION STA 116+040
EAST PORTAL
LEGEND
DOUBLE ENDED POCKET TRACK
LRT STATION (UNDERGROUND)
DOUBLE CROSSOVER
EGLINTON CROSSTOWN LRT
PROPOSED SPECIAL TRACKWORK BETWEEN KEELE ST AND LAIRD DR
REVISIONS
REVISIONS
ISSUED FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
TCG
Transit City Group
N. T. S
EGLINTON CROSSTOWN LRT EA
UNDERGROUND SECTION
SPECIAL TRACKWORK DIAGRAM
TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT


CADD FILE NAME: J:\24649 tmst cityEA\5.9 Drawings\59civil\Special Trackwork\ECLRT Special Trackwork Diagram 2009 05 04.dgn
EAST PORTAL
LESLIE ST STA 117+227
DON MILLS RD STA 118+195
DON VALLEY PWY STA 118+800
WYNFORD DR STA 119+440
SLOANE AVE/ BERMONDSEY RD STA 120+364
VICTORIA PARK AVE STA 121+248
PHARMACY AVE STA 121+675
MATCH LINE
NOTE: Special trackwork at Kennedy station - tail track behind the platform for storage and double crossover in front
MATCH LINE
LEBOVIC AVE STA 122+180
WARDEN AVE STA 122+509
BIRCHMOUNT RD STA 123+330
IONVIEW RD STA 123+891
TO KENNEDY SUBWAY STATION SEE NOTE
LEGEND
DOUBLE ENDED POCKET TRACK
SINGLE ENDED POCKET TRACK
DOUBLE CROSSOVER
LRT STOP
LRT STATION (UNDERGROUND)
EGLINTON CROSSTOWN LRT
PROPOSED SPECIAL TRACKWORK
BETWEEN LESLIE ST AND KENNEDY RD
REVISIONS
REVISIONS
ISSUED FOR INFORMATION ONLY
NOT FOR CONSTRUCTION
TCG Transit City Group
N. T. S
EGLINTON CROSSTOWN LRT EA
EAST SECTION
SPECIAL TRACKWORK DIAGRAM
Plot Date: 04/05/2010
TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT
Dwg. No.
Sheet No.

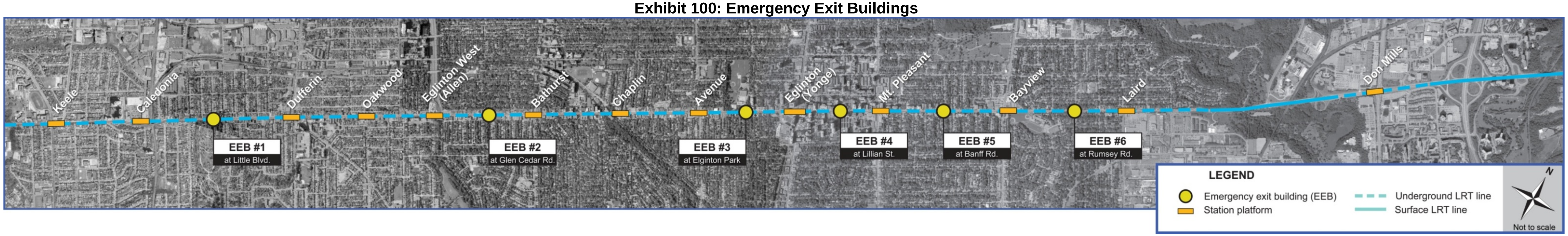
3.4.11 Emergency Exit Buildings

A total of six EEBs are proposed along the underground segment and are located between the following stations:

- Caledonia Road and Dufferin Street (EEB 1 at Little Boulevard);
- Allen Road and Bathurst Street (EEB 2 at Glen Cedar Road);
- Avenue Road and Yonge Street (EEB 3 at Eglinton Park/North Toronto Community Memorial Centre);
- Yonge Street and Mount Pleasant Road (EEB 4 at Lillian Street);
- Mount Pleasant Road and Bayview Avenue (EEB 5 at Banff Road); and
- Bayview Avenue and Laird Drive (EEB 6 in the vicinity of Rumsey Road).

Exhibit 100 presents the location of Emergency Exit Buildings within the Eglinton Crosstown LRT corridor.

Exhibit 100: Emergency Exit Buildings



3.5 Preferred Design – Description of LRT/Road Layout, Stops and Stations

The following section includes a detailed description of LRT/ road layout (including special cross-sections), bridge modifications, and stop and statons, bus terminals, running from west to east.

Drawings which show the full vertical and horizontal alignment, including the resulting road layout, stops, stations, emergency exit buildings, traction power substations and special trackwork are also organized running from east to west. These drawings (sheets) begin on page 112.

Exhibit 101 provides a summary of features for each surface stop. The level of detail provided in the text following the exhibit varies between the locations. However, greater detail is provided in corridor drawings presented from west to east following **Section 3.6**.

Exhibit 101: Surface Stops

Stop Name	Cross Street Name	Stop Type	Left Turns on Main Street	Left Turns on Cross Street
Airport to West of Tunnel				
Silver Dart	Renforth Drive	Centre – North side	Traditional.	Northbound left turns prohibited.
Convair	Convair Drive	Centre – North side	Traditional.	Traditional.
Commerce	Commerce Boulevard	Centre – North side	Traditional.	Traditional.
Renforth	Renforth Drive	Centre – East side	Traditional.	Traditional.
Rangoon	None	Centre	None.	None.
East Mall	The East Mall	Centre – East side	Traditional.	Traditional.
Martin Grove	Martin Grove Road	Centre – East side	Re-routed to new connector road.	Traditional.
Widdicombe Hill / Lloyd Manor	Widdicombe Hill Boulevard / Lloyd Manor Drive	Far Side	Traditional.	Traditional.
Kipling	Kipling Avenue	Near Side	Prohibited at intersection. Provided at downstream U-turn signals.	Traditional.
Wincott / Bemersyde	Wincott Drive / Bemersyde Drive	Far Side	Traditional.	Traditional.
Islington	Islington Avenue	Near Side	Prohibited at intersection. Provided at downstream U-turn signals.	Traditional.
Russell / Eden Valley	Russell Road / Eden Valley Drive	Far Side	Traditional.	Traditional.
Royal York	Royal York Road	Near Side	Prohibited at intersection.	Traditional.

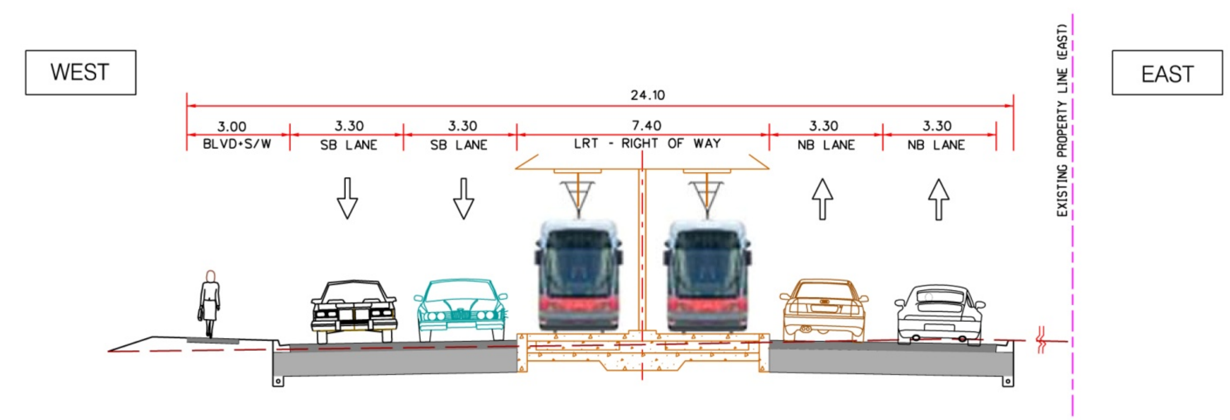
Stop Name	Cross Street Name	Stop Type	Left Turns on Main Street	Left Turns on Cross Street
			Provided at downstream U-turn signals.	
Mulham	Plant World Access	Parallel	Traditional.	Traditional.
Scarlett	Scarlett Road	Near Side	Prohibited at intersection. Provided at downstream U-turn signals.	Traditional.
Jane	Jane Street	Centre – West side	Prohibited at intersection. Provided at downstream U-turn signals.	Prohibited at intersection. Provided at downstream U-turn signals.
Weston	Weston Road	Centre – West side	Traditional.	Traditional.
Black Creek	Black Creek Drive	Far Side	Traditional.	Traditional.
East of Tunnel to Kennedy Station				
Leslie	Leslie Street	Centre – East side	Traditional.	Traditional.
Ferrand	Don Valley Parkway West Ramp	Centre – West side	Traditional.	Traditional.
Wynford	Wynford Drive	Centre – West side	Traditional.	Traditional.
Bermondsey	Bermondsey Road	Far Side	Traditional.	Traditional.
Victoria Park	Victoria Park Avenue	Centre – East side	Prohibited.	Prohibited.
Pharmacy	Pharmacy Avenue	Centre – East side	Prohibited at intersection. Provided at downstream U-turn signals.	Prohibited at intersection. Provided at downstream U-turn signals.
Lebovic	Lebovic Avenue	Far Side	Traditional.	Traditional.
Warden	Warden Avenue	Far Side	Traditional.	Traditional.
Birchmount	Birchmount Road	Far Side	Prohibited at intersection. Provided at downstream U-turn signals (Sinnott, and Lonview).	Traditional.
Ionview	Ionview Road	Far Side	Traditional.	Traditional.

3.5.1 Silver Dart Drive to Highway 401

3.5.1.1 Typical Cross-Section

The cross section from Silver Dart Drive to Highway 401 is similar to the typical LRT cross section with the exception of bike lanes. Bike lanes are not provided within this section. The typical cross section for this segment is shown in **Exhibit 102**.

Exhibit 102: Typical Cross Section at Silver Dart Drive



3.5.1.2 Silver Dart Stop

The Silver Dart Stop will be located at the intersection of Silver Dart Drive and Renforth Drive. The Silver Dart Stop is shown on Sheet No. 1. The northwest corner of this intersection is occupied by the Pearson International Airport. The northeast and southeast corners of the intersection are occupied by Highway 427. The southwest corner of the intersection is occupied by a rental car facility.

Stop Layout

The Silver Dart Stop will include one centre platform located on the north leg of the Renforth Drive at the Silver Dart Drive intersection due to the horizontal curve in the alignment south of the intersection, which precludes the ability to provide a stop platform at that location.

Road Layout and Traffic Operations

With the implementation of the Eglinton Crosstown LRT on Silver Dart Drive, southbound left turns will require a separate lane and phase. Given that there is currently no provision for northbound left turns, it is proposed that northbound left turns become prohibited at this intersection.

3.5.1.3 Convair Stop

The Convair Stop will be located on Convair Drive adjacent to the Greater Toronto Airports Authority (GTAA) Administration Building Parking Lot. The Convair Stop is shown on Sheet No. 4. A proposed traffic signal is required to permit full movement access across the LRT right-of-way, to provide access to the GTAA parking lot and to provide pedestrian crossing opportunities to the proposed LRT stop located east of the driveway. Currently, the northwest and northeast corners of this intersection are occupied by the GTAA office buildings and parking lots. The southeast and southwest corners of the intersection are an unoccupied parcel of land that is currently used as a staging area for construction.

Stop Layout

The Convair Stop will include one centre platform located on the north side of Convair Drive at the GTAA Parking Lot intersection. The centre platform is required due to the horizontal curve in the alignment south of the road crossing which precludes the ability to provide a stop platform at that location.

Road Layout and Traffic Operations

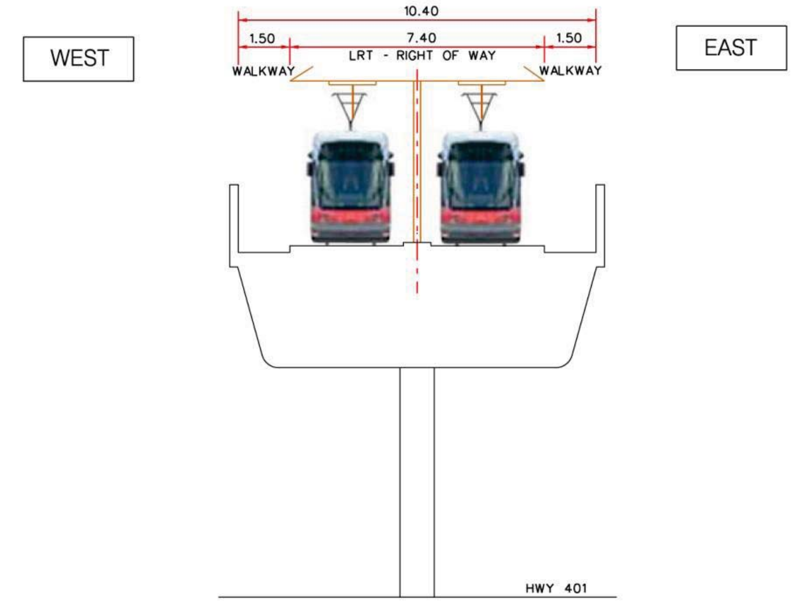
The proposed Convair Stop location is currently unsignalized. A traffic signal is proposed at this location to allow the LRT to pass in and out of the right-of-way, to provide controlled access to GTAA's main parking lot entrance and to allow pedestrians to reach the platforms. This proposed traffic signal will have a dedicated phase to allow the LRT to enter and exit the right-of-way which can be overlapped with the westbound traffic phase.

In terms of lane configuration, the preferred scenario includes one left turn lane, and two through lanes on the eastbound approach, one through lane and a shared through-right turn lane on the westbound approach. On the southbound approach, one dedicated through left turn lane and a dedicated right turn lane are included. Bicycle lanes will not be provided at this intersection.

3.5.2 Highway 401 Bridge Crossing

The proposed crossing over Highway 401 is proposed for LRT use only. The cross section for this segment allows for light rail vehicles in both directions and access on both sides for maintenance personnel. The proposed structure will be determined in the design phase. The typical cross section for this segment is shown in **Exhibit 103**.

Exhibit 103: Cross Section of Bridge Over 401

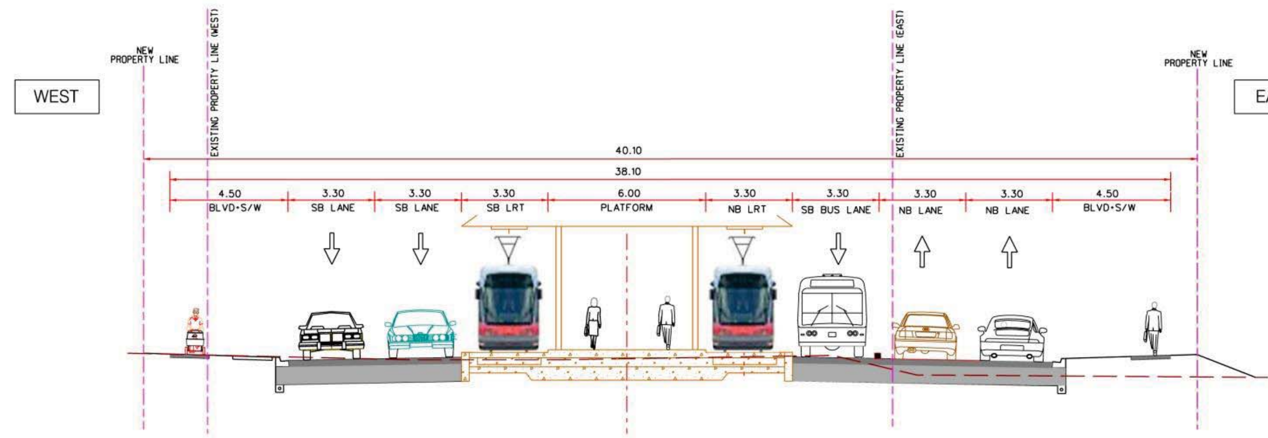


3.5.3 Highway 401 to Commerce/ Eglinton

3.5.3.1 Cross-Section

The Commerce Boulevard cross section is approximately 40 metres wide. The cross section in this area provides all of the elements of the typical cross section, and in addition provides a bus only contra-flow lane on the east side of the LRT. This lane is provided to facilitate the operational need of the proposed Mississauga BRT facility. The typical cross section for this segment is shown in **Exhibit 104**.

Exhibit 104: Typical Cross Section at Commerce Blvd



3.5.3.2 Commerce Stop

The Commerce Stop will be located at the intersection of Eglinton Avenue and Commerce Boulevard. The Commerce Stop is shown on Sheet No. 6 and 7. Currently, the northwest and northeast corners of this intersection are undeveloped. The southeast and southwest corners of the intersection are occupied by a housing complex. In the future, a proposed Mississauga Transit/GO Transit BRT station will occupy the northeast corner of the intersection, and the BRT runningway will occupy the northwest corner.

Stop Layout

The LRVs will perform a 90 degrees turn from Commerce Boulevard to Eglinton Avenue at this location. The recommended layout includes one centre platform located on the north leg of the Eglinton Avenue at Commerce Blvd intersection. A centre platform is provided at the northern leg of this intersection to limit the interaction of pedestrians with general purpose traffic.

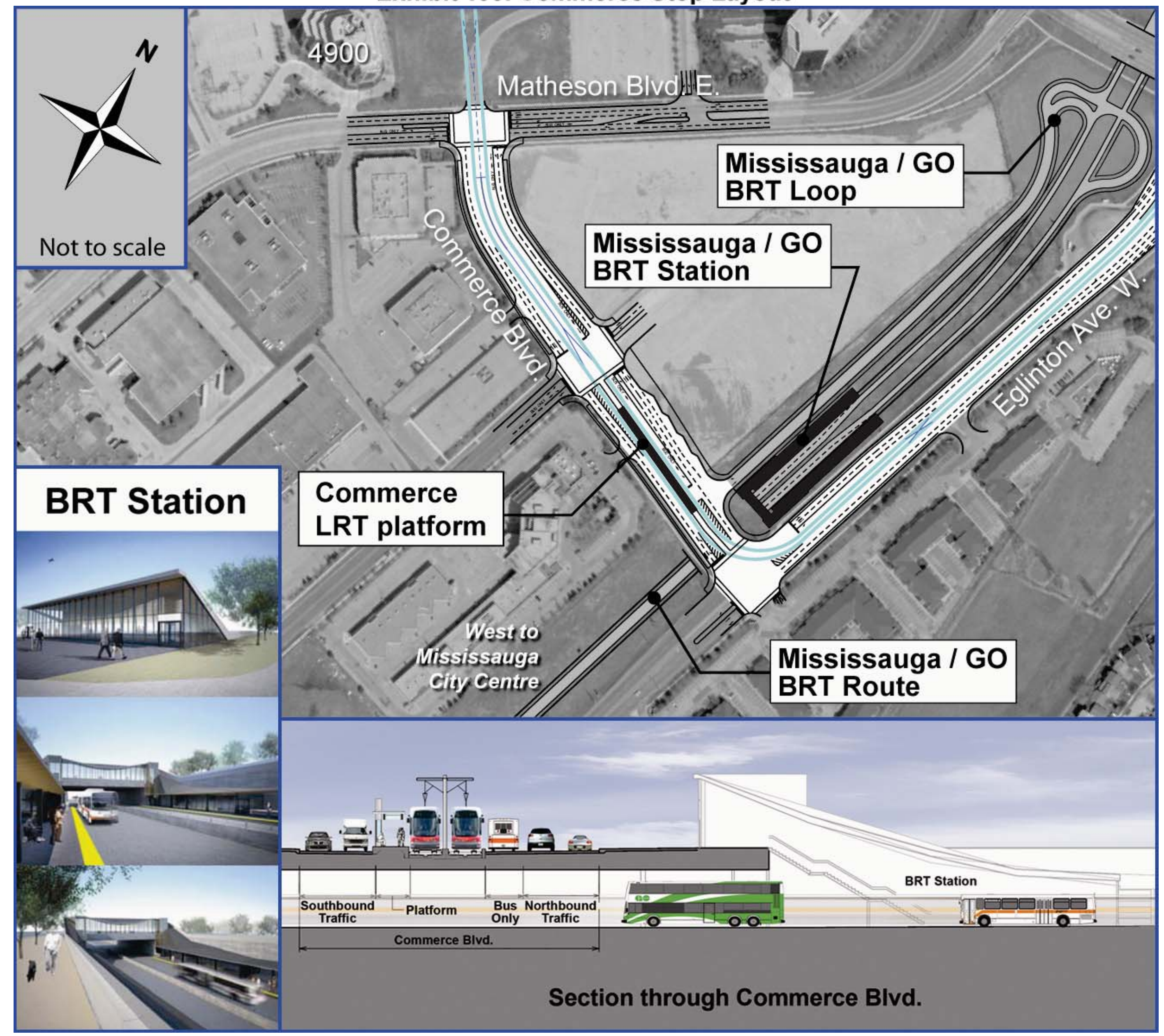
Road Layout and Traffic Operations

To accommodate the LRVs turning at this intersection, the traffic signal timings will be modified to include a dedicated protected phase. It is recommended that the north-south pedestrian crossing on the east leg of the intersection be eliminated to improve traffic operations.

On the northbound and southbound approaches, one dedicated left turn lane and a shared through-right turn lane are included. Bicycle lanes will be provided along Eglinton Avenue in the east and west directions, east of the intersection.

Exhibit 105 illustrates the recommended Commerce Stop layout.

Exhibit 105: Commerce Stop Layout

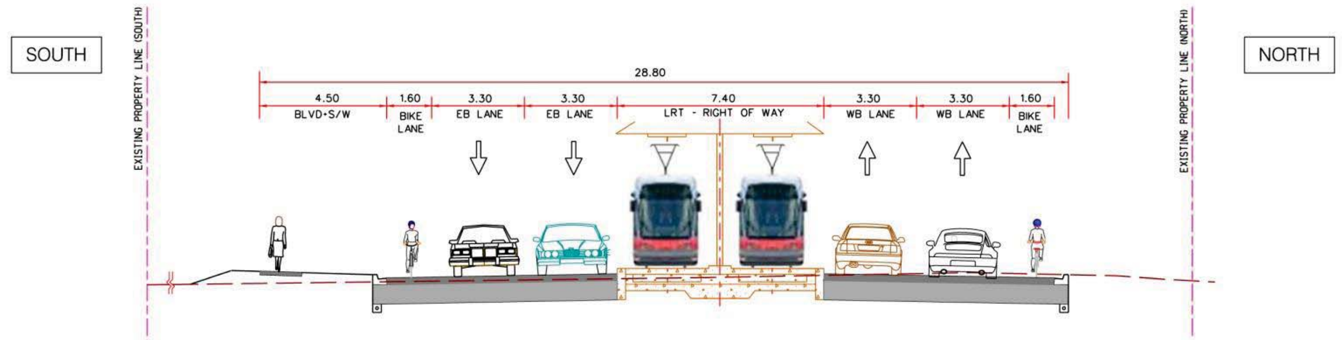


3.5.4 Commerce to The East Mall

3.5.4.1 Cross-Section

The cross section from Commerce Blvd to The East Mall is similar to the typical cross section with the exception of sidewalks. Sidewalks are not provided on the north side of the roadway through this segment. Given the location of residential areas on the south side, and Highway 401 on the north side there is not a benefit to pedestrians to provide a sidewalk on the north side. The typical cross section for this segment is shown in **Exhibit 106**.

Exhibit 106: Typical Cross Section from Commerce Blvd to The East Mall



3.5.4.2 Renforth Stop

The Renforth Stop will be located at the intersection of Eglinton Avenue and Renforth Drive. The Renforth Stop is shown on Sheet No. 8. Currently, the northwest and northeast corners of this intersection are undeveloped. The southeast and southwest corners are occupied by hydro transmission towers. In the future, a proposed Mississauga / GO BRT bus loop will occupy the northwest corner of the intersection.

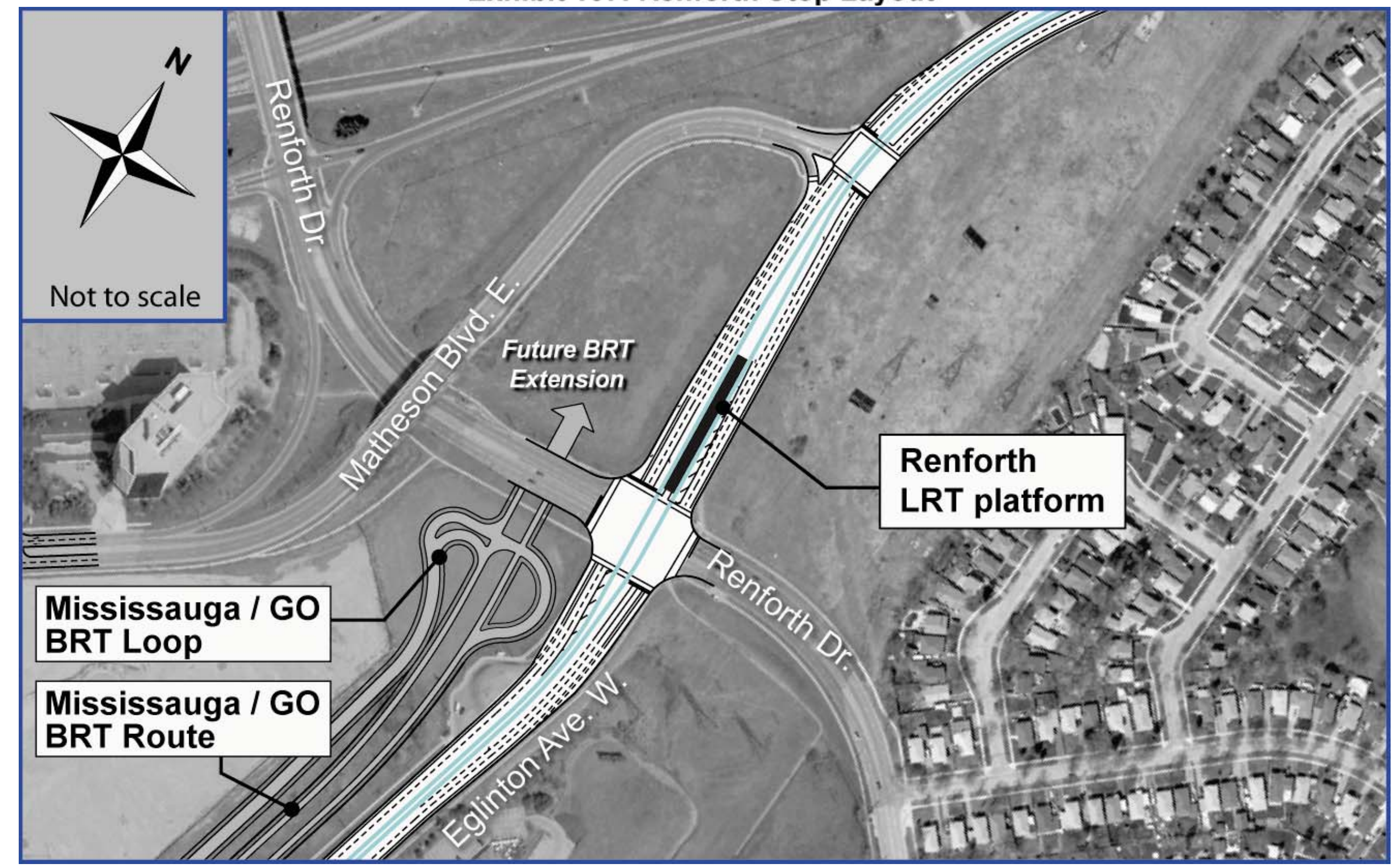
Stop Layout
The Renforth Stop will include one centre platform located on the east side of the Eglinton Avenue and Renforth Drive intersection. A centre platform is provided at this location because the geometric requirement of platforms on a horizontal tangent can only be accommodated on the west side of the intersection.

Road Layout and Traffic Operations

The permitted traffic and pedestrian movements are unchanged.

Exhibit 107 illustrates the recommended Renforth Stop layout.

Exhibit 107: Renforth Stop Layout



3.5.4.3 Rangoon Stop

The Rangoon Stop will be located on Eglinton Avenue just west of Highway 427. The Rangoon Stop is shown on Sheet No. 11. Currently, the north side of the intersection is occupied by Highway 427 and Highway 401 ramps. The south side is occupied by a residential neighbourhood. There is currently no traffic signal at this location. A half traffic signal, that does not impact westbound traffic, is proposed to allow pedestrians to access the LRT stop and the south side of Eglinton Avenue through a pedestrian access path to be provided to the adjacent residential area.

Stop Layout

The Rangoon Stop will include one centre platform located on Eglinton Avenue provided at this location because the geometric requirement of platforms being located on a horizontal tangent does not allow it to be east or west of the proposed location.

Road Layout and Traffic Operations

Since this stop is not located at an intersection, the proposed traffic signal will be provided only for pedestrians to access the platform, and will stop only eastbound road traffic.

In terms of lane configuration, the preferred scenario includes two through lanes each in the eastbound and westbound directions. Bicycle lanes will also be provided on the south side of Eglinton Avenue in the east and west directions.

3.5.5 The East Mall to Jane

3.5.5.1 Cross-Section

The cross section from The East Mall to Jane Street is similar to the typical cross section with the exception of bike lanes. Bike lanes are not proposed throughout this section. There is an existing bike path through this segment on the south side of the roadway. The exclusion of bike lanes through this area reduces the cross section and allows the preservation of portions of the existing woodlots on the north side of the roadway. The typical cross section for this segment is shown in **Exhibit 108**.

Exhibit 108: Typical Cross Section From The East Mall to Jane Street

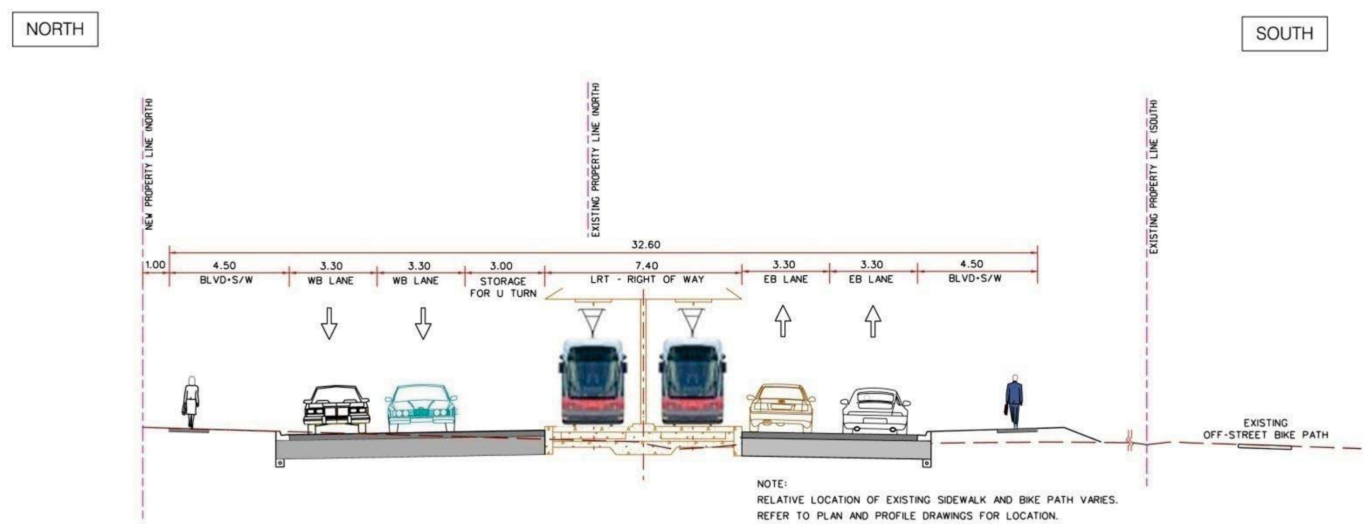
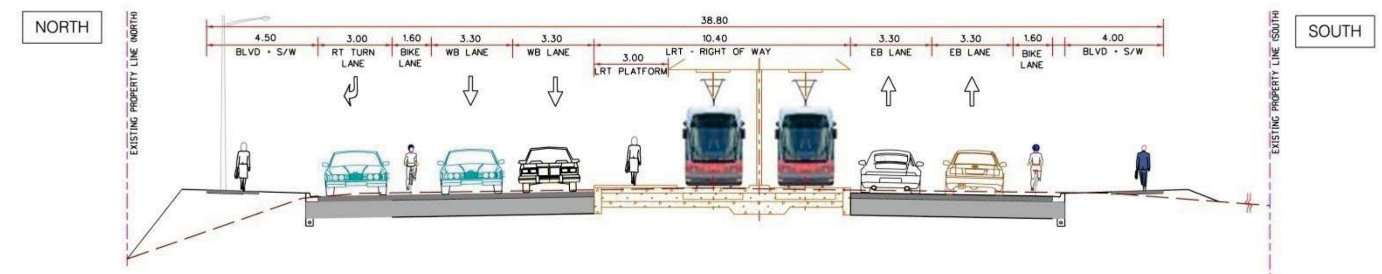


Exhibit 109: Typical Cross Section for a Right Turn Lane at Rerouted Left Intersections



3.5.5.2 East Mall Stop

The East Mall Stop will be located at the intersection of Eglinton Avenue and The East Mall. The East Mall Stop is shown on Sheet No. 13. The north leg of this intersection is the Highway 427 northbound off ramp. Currently, the northwest and northeast corners of the intersection are occupied by Highway 427 and Highway 401 ramps. The southeast corner is an undeveloped parcel of land, and the southwest corner is occupied by a commercial complex. The TTC operates an express bus service from Highway 427 through this intersection.

Stop Layout

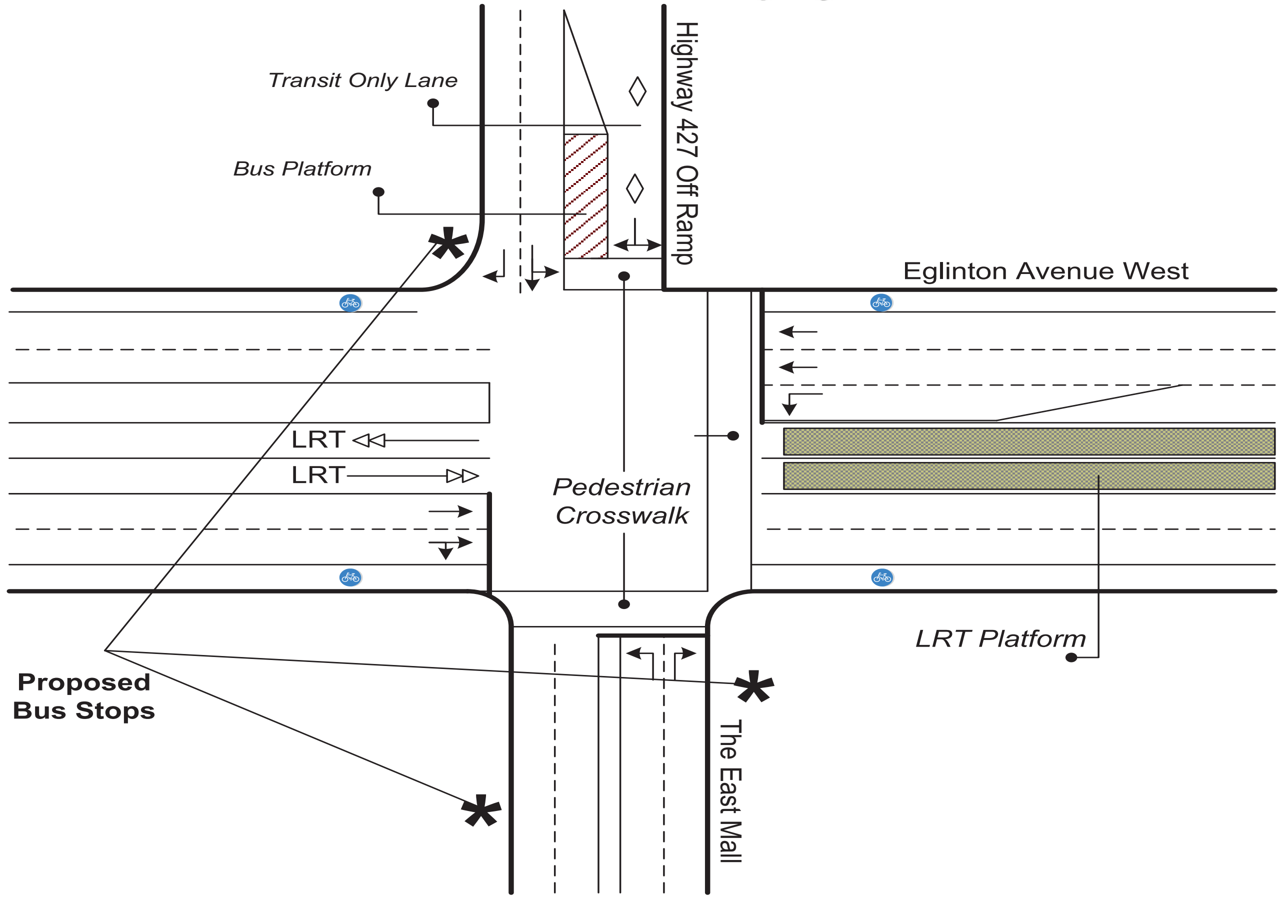
The East Mall Stop will include one centre platform located on the east side of the Eglinton Avenue at The East Mall intersection. A centre platform is provided at this location because the geometric configuration (i.e. horizontal curvature) of the west side of the intersection makes it a less advantageous location to provide far side or near side platforms. Analysis was conducted at this location to compare transit operations under traditional conditions, to operations with a bus queue jump lane and bus phase at the intersection. The analysis determined that while both future designs are acceptable, the implementation of a queue jump lane and phase is preferred.

Road Layout and Traffic Operations

Analysis was conducted at this location to compare traffic operations under normal operating conditions, to operations with a bus queue jump lane and bus phase at the intersection to serve the TTC express bus service. Based on this analysis, the preferred scenario was found to include a seven phase signal operation at Eglinton Avenue at The East Mall, with southbound buses operating on a dedicated phase. The southbound approach will therefore consist of a transit only left turn lane-right turn lane, one through-left turn lane and a right turn lane.

Exhibit 110 illustrates the recommend The East Mall Stop layout.

Exhibit 110: East Mall Stop Layout



3.5.5.3 Martin Grove Stop

The Martin Grove Stop will be located at the intersection of Eglinton Avenue and Martin Grove Road. The Martin Grove Stop is shown on Sheet No. 15. Currently, the area on all quadrants of this intersection is undeveloped. Martin Grove Collegiate Institute is located approximately 50 metres south of the intersection, on the east side of Martin Grove Road.

Stop Layout

The Martin Grove Stop will include one centre platform located on the east side of the Eglinton Avenue at Martin Grove Road intersection. A centre platform is provided at this location because the horizontal curvature on the west side of the intersection makes it difficult to provide platforms on that side.

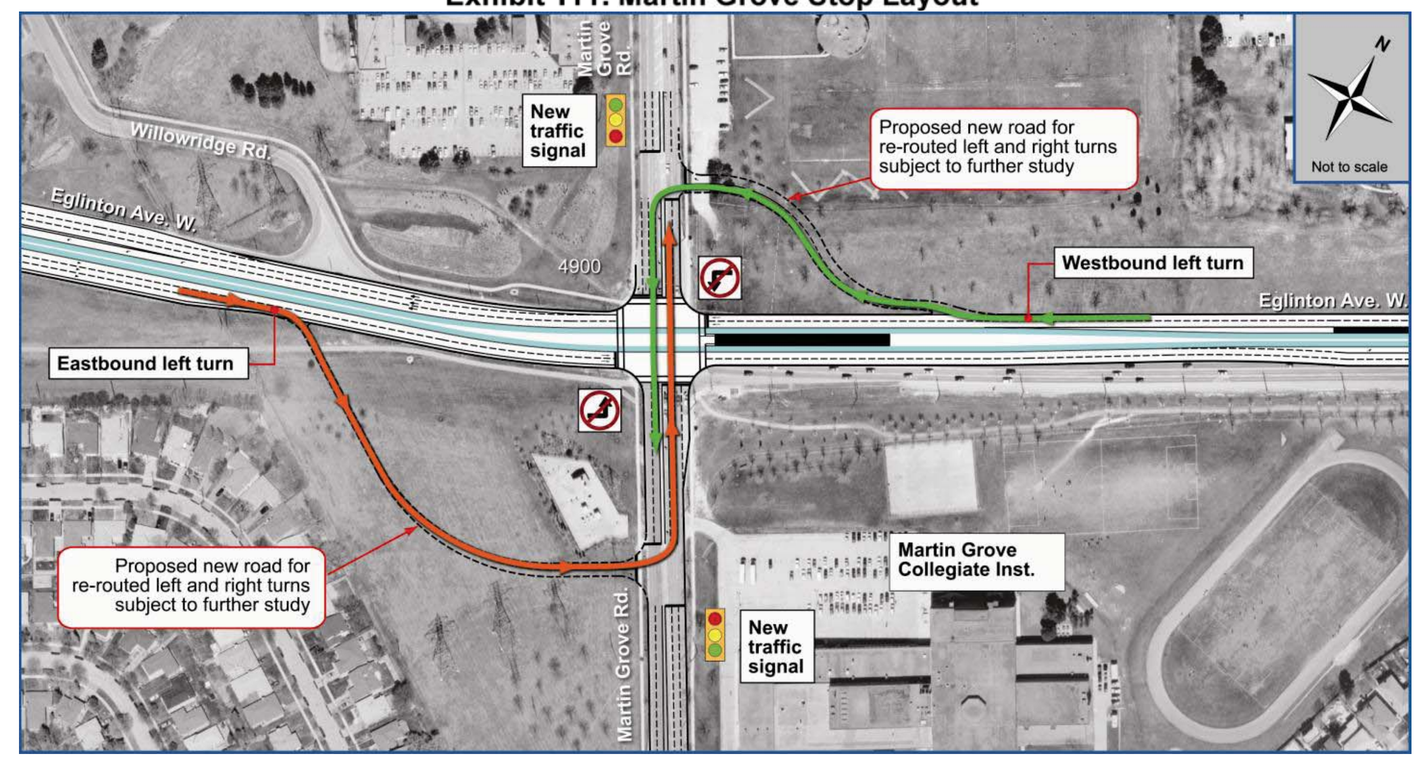
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Martin Grove Road. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to travellers. Based on this analysis, the preferred scenario was a six phase signal operation at Eglinton Avenue and Martin Grove Road with rerouted east-west right and left turn movements as follows:

- Eastbound right and left turns rerouted to a new connector road to turn at new traffic signals on Martin Grove Road south of Eglinton Avenue.
- Westbound right and left turns rerouted to a new connector road to turn at new traffic signals on Martin Grove Road north of Eglinton Avenue. This connector road will be designed to minimize impacts on the land parcel.

Exhibit 111 illustrates the recommended Martin Grove LRT stop layout and rerouted east-west turning movements.

Exhibit 111: Martin Grove Stop Layout



3.5.5.4 Widdicombe Hill / Lloyd Manor Stop

The Widdicombe Hill / Lloyd Manor Stop will be located at the intersection of Eglinton Avenue and Widdicombe Hill Boulevard and Lloyd Manor Drive. The Widdicombe Hill/Lloyd Manor Stop is shown on Sheet No. 16. Currently, on the northwest and northeast sides, adjacent to the intersection, are vacant lands owned by the City of Toronto which separate roadway from apartment buildings on both sides. The southeast corner of the intersection is occupied by a shopping plaza (Lloyd Manor Place), and the southwest corner of the intersection is occupied by a gas station.

Road Layout and Traffic Operations

The permitted traffic and pedestrian movements are unchanged.

3.5.5.5 Kipling Stop

The Kipling Stop will be located at the intersection of Eglinton Avenue and Kipling Avenue. The Kipling Stop is shown on Sheet No. 18. Currently, on the northwest and northeast sides, adjacent to the intersection, are vacant lands owned by the City of Toronto.The southeast corner of the intersections occupied by a residential neighborhood, and the southwest corner of the intersection is occupied by apartment buildings.

Stop Layout

The Kipling Stop will include two nearside platforms located before the intersection in the direction of travel. Nearside stops are provided at this location because eastbound and westbound left turn lanes are not provided, and the nearside stops prevent the LRVs from double-stopping (i.e. stopping once at a red light, and then stopping again at the platform).

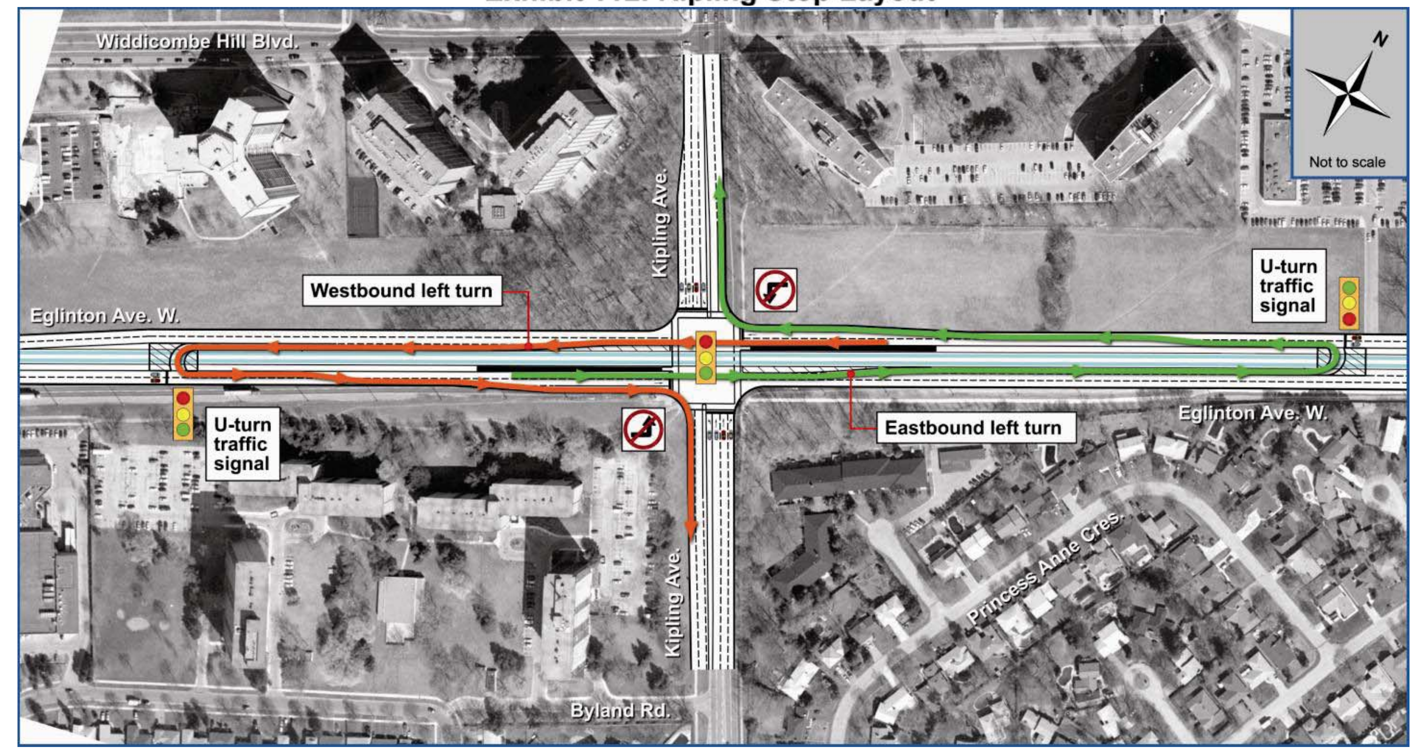
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue at Kipling Avenue. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to travellers. Based on this analysis, the preferred scenario was a four phase signal operation at Eglinton Avenue and Kipling Road with rerouted east-west left turn movements as follows:

- Eastbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave east of Kipling Avenue
- Westbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave west of Kipling Avenue

Exhibit 112 illustrates the recommended Kipling Stop layout and rerouted east-west left turns.

Exhibit 112: Kipling Stop Layout



3.5.5.6 Wincott / Bemersyde Stop

The Wincott / Bemersyde Stop will be located at the intersection of Eglinton Avenue and Wincott Drive/ Bemersyde Drive. The Wincott/Bemersyde Stop is shown on Sheet No. 19 and 20. On the northwest and northeast corners of the intersection, are vacant lands owned by the City of Toronto that separate the roadway from the Richview Square Shopping Centre, apartment buildings and residential subdivisions. The southwest and southeast corner of the intersection is occupied by residential subdivisions.

Road Layout and Traffic Operations

The permitted traffic and pedestrian movements are unchanged.

3.5.5.7 Islington Stop

The Islington LRT stop will be located at the intersection of Eglinton Avenue and Islington Avenue. The Islington Stop is shown on Sheet No. 20 and 21. On the northwest and northeast corners of the intersection, are vacant lands owned by the City of Toronto. Further to the north, the northwest corner of this intersection is occupied by a residential neighborhood, while the northeast corner of the intersection is occupied by a place of worship. The southeast corner of the intersections occupied by a residential neighborhood, and the southwest corner of the intersection is occupied by the Richview Collegiate Institute. A fire station (Station 443) is also located south of the intersection, on the west side of Islington Avenue.

Stop Layout

The Islington Stop will include two nearside platforms located before the intersection in the direction of travel. Nearside stops are provided at this location because eastbound and westbound left turn lanes are not provided and the nearside stops prevent the LRVs from double-stopping (i.e. stopping once at a red light, and then stopping again at the platform).

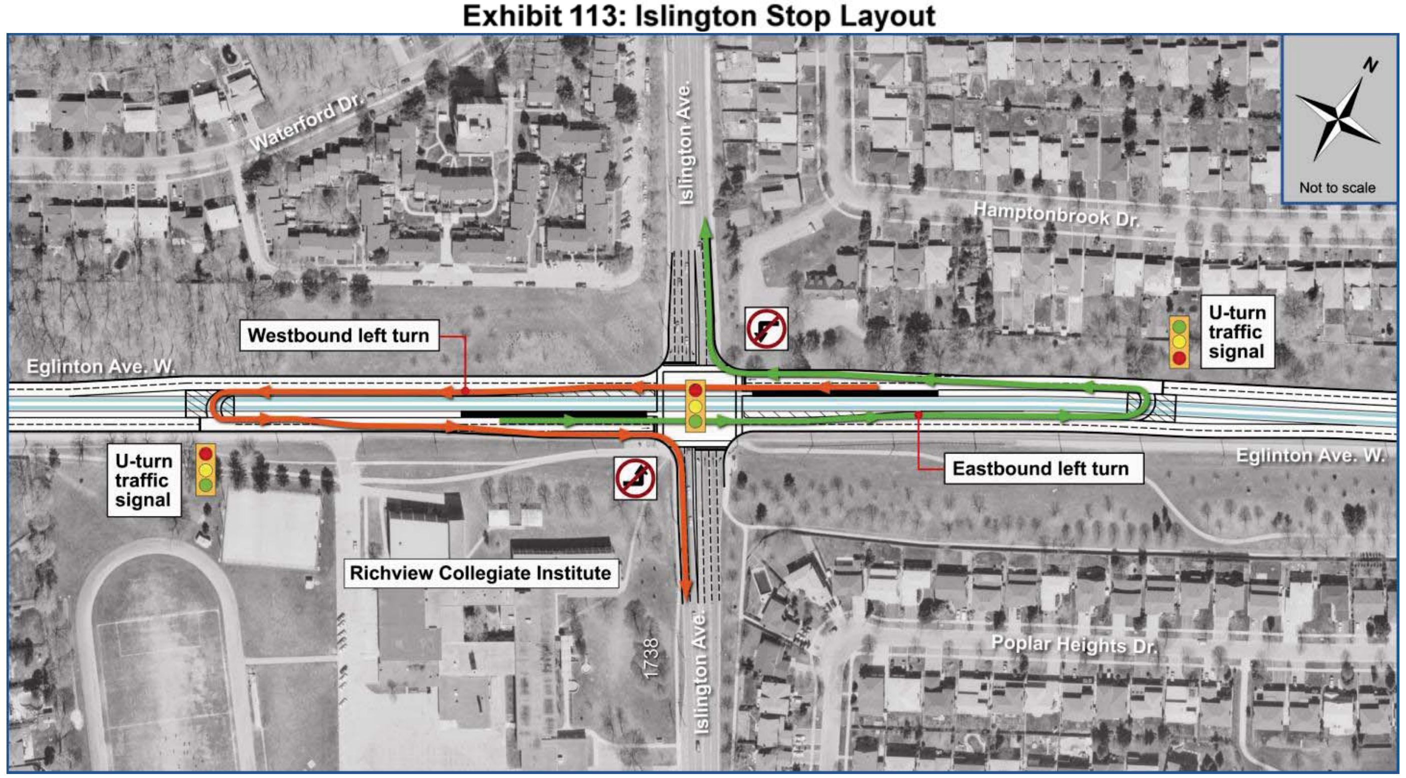
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Islington Avenue. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to travellers. Based on this analysis, the preferred scenario was a four phase signal operation at Eglinton Avenue and Islington Road with rerouted east-west left turn movements as follows:

- Eastbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave east of Islington Avenue
- Westbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave west of Islington Avenue

Exhibit 113 illustrates the recommended Islington Stop layout and rerouted east-west left turns.

Exhibit 113: Islington Stop Layout



3.5.5.8 Russell / Eden Valley Stop

The Russell / Eden Valley Stop will be located at the intersection of Eglinton Avenue and Wincott Russell Road and Eden Valley Drive. The Russell/Eden Valley Stop is shown on Sheet No. 22. This intersection is currently surrounded by undeveloped land that separates the roadway from the surrounding land use. All four corners of the intersection are occupied by residential neighborhoods.

Road Layout and Traffic Operations

The permitted traffic and pedestrian movements are unchanged.

3.5.5.9 Royal York Stop

The Royal York Stop will be located at the intersection of Eglinton Avenue and Royal York Road. The Royal York Stop is shown on Sheet No. 23 and 24. Currently, the northwest corner of this intersection is occupied by undeveloped land that separates the roadway from a residential neighborhood. The northeast corner of the intersection is occupied by condominium and apartment buildings. The southeast and southwest corners of the intersection are occupied by undeveloped land that separates the road from residential neighborhoods.

Stop Layout

The Royal York Stop will include two nearside platforms located before the intersection in the direction of travel. Nearside stops are provided at this location because eastbound and westbound left turn lanes will not be provided and the nearside stops prevent the LRVs from double-stopping (i.e. stopping once at a red light, and then stopping again at the platform).

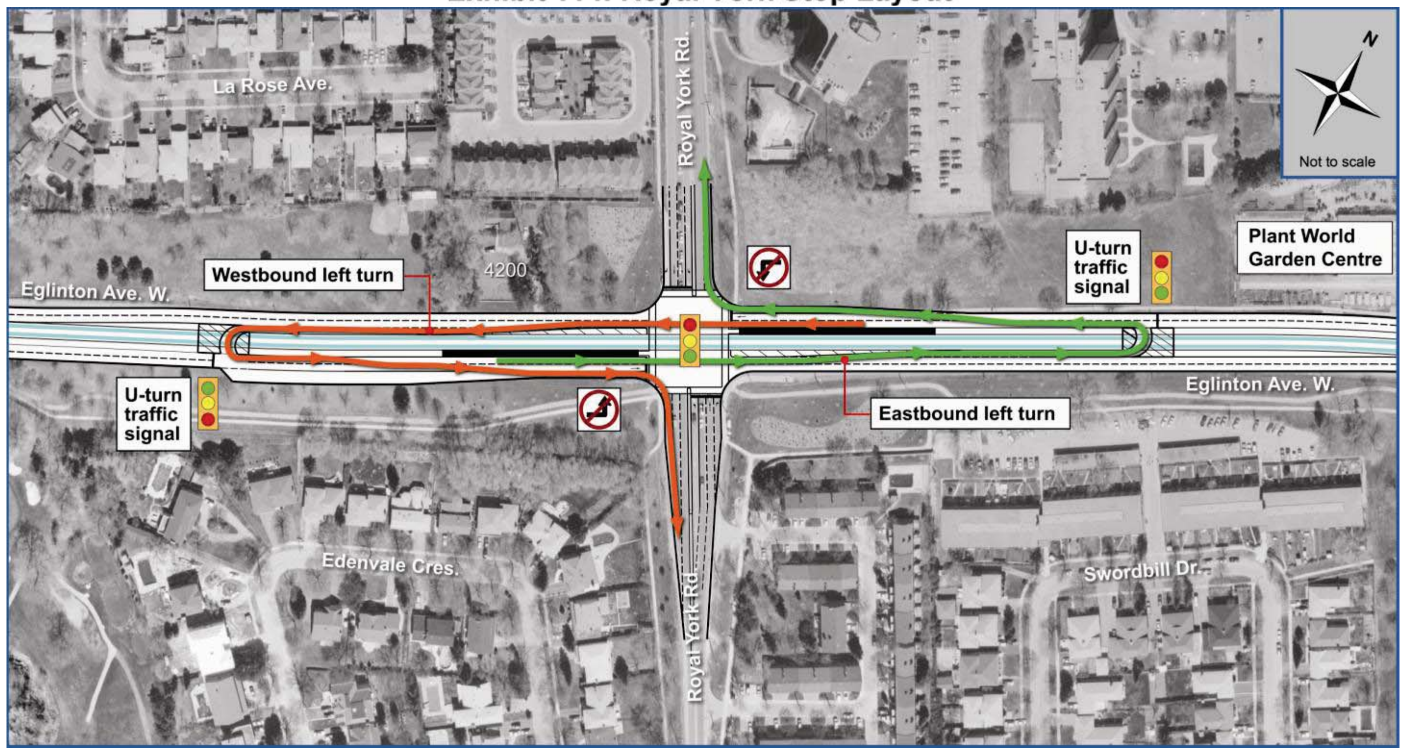
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Royal York Road. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT cross-street transit vehicles, truck routing, general traffic, and pedestrians to determine which scenario was most beneficial to travellers. Based on this analysis, the preferred scenario was a four phase signal operation at Eglinton Avenue and Royal York Road with rerouted east-west left turn movements as follows:

- Eastbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave east of Royal York Road
- Westbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave west of Royal York Road

Exhibit 114 illustrates the recommended Royal York Stop layout and rerouted east-west left turns.

Exhibit 114: Royal York Stop Layout



3.5.5.10 Mulham Stop

The Mulham Stop will be located on Eglinton Avenue approximately 550 metres east of Royal York Road, situated approximately at the west end of the existing Richview Road cul-de-sac. The Mulham Stop is shown on Sheet No. 25. The northwest corner of this location is currently occupied by Plant World Garden Centre, which is located approximately 200 metres west of the proposed Mulham Stop location. Northeast of this stop location is the western limit of Richview Road, which loops around back eastwards. The area south of the stop location is currently occupied by a retirement residence.

The proposed Mulham Stop location is currently unsignalized. Access to the LRT platforms in the middle of Eglinton Avenue would necessitate a pedestrian signal at this location. In order to also provide vehicular and truck access to the Plant World Garden Centre, it is proposed that a signalized intersection be provided at this stop location. This intersection and access road is accommodated by making minor adjustments to the Richview Road cul-de-sac.

Stop Layout

The Mulham LRT stop will include two parallel platforms located on the east side of the proposed intersection in the direction of travel. Parallel platforms are provided at this location because the geometric configuration (i.e. horizontal curvature) and LRT track alignment make it disadvantageous to provide farside, nearside, or centre platforms. This stop type is also well situated to provide good LRT access for the residential communities immediately to the north and south of the stop location. The existing overhead pedestrian bridge will be removed to accommodate the road widening.

Road Layout and Traffic Operations

The proposed Mulham Stop location is currently unsignalized, with only east and west though movements provided. The implementation of a traffic signal at this location provides an opportunity for truck traffic to make left turns into Plant World via a new access road, and also for eastbound vehicles to access Plant World.

3.5.5.11 Scarlett Stop

The Scarlett Stop will be located at the intersection of Eglinton Avenue and Scarlett Road. The Scarlett Stop is shown on Sheet No. 27. Currently, the northwest corner of this intersection is occupied by undeveloped land that separates the roadway from a series of apartment buildings. The Humber River occupies the land northeast and southeast of the intersection and the southwest corner of the intersection is occupied by a condominium. A bridge supports Eglinton Avenue as it crosses cross the Humber River east of the intersection.

Stop Layout

The Scarlett Stop will include two nearside platforms located before the intersection in the direction of travel. Nearside stops are provided at this location because eastbound and westbound left turn lanes are not provided and the nearside stops prevent the LRVs from double-stopping (i.e. stopping once at a red light, and then stopping again at the platform).

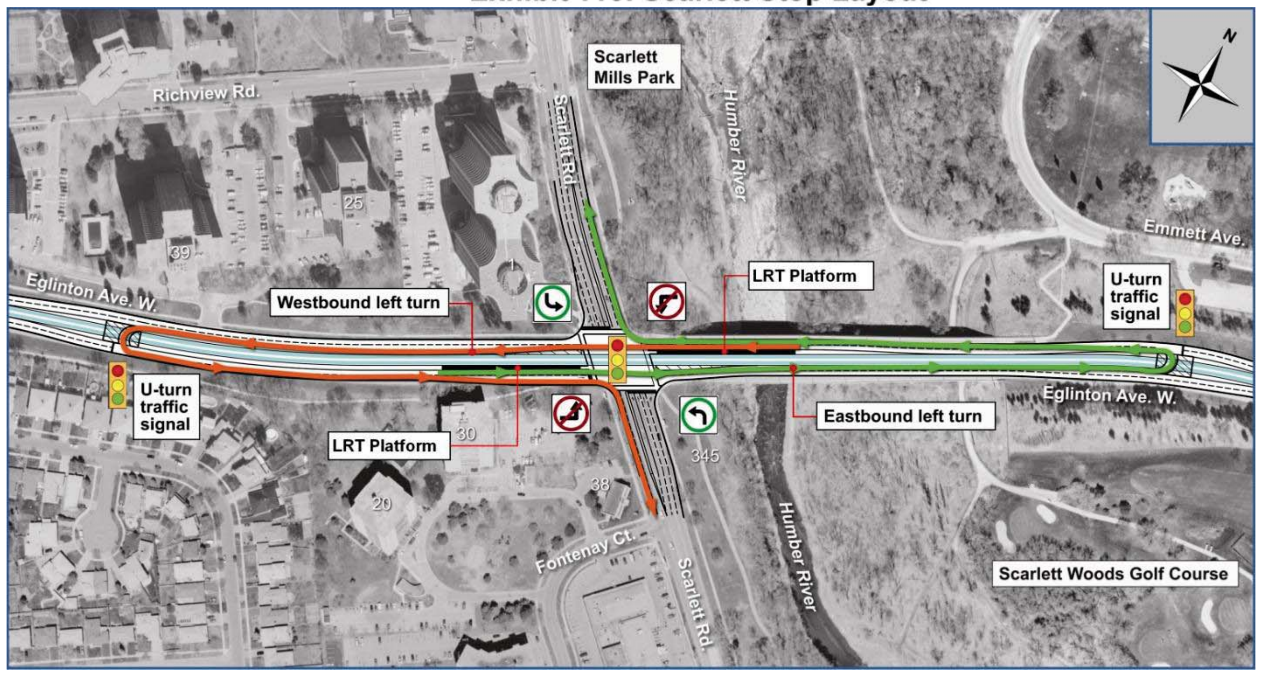
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Scarlett Road. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to the travellers. Based on this analysis, the preferred scenario was a six phase signal operation at Eglinton Avenue and Scarlett Road with rerouted east-west left turn movements as follows:

- Eastbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave east of Scarlett Road
- Westbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave west of Scarlett Road

Exhibit 115 illustrates the recommended Scarlett Stop layout and rerouted east-west left turns.

Exhibit 115: Scarlett Stop Layout



3.5.5.12 Jane Stop

The Jane Stop will be located at the intersection of Eglinton Avenue and Jane Street. The Jane Stop is shown on Sheet No. 30. Currently, this area consists of recreational land use, surrounded by residential neighborhoods. The northwest corner of this intersection is currently unoccupied, while the northeast, southeast and southwest corners of the intersection are occupied by recreational sporting facilities, which include cricket fields, soccer fields, tennis courts and a golf course. Travelling north through the intersection, Jane Street descends downhill towards the intersection, and ascends uphill past the intersection.

Stop Layout

The Jane Stop will include a centre platform located on the west side of the intersection. A centre platform is provided at this location to better facilitate the passenger transfers between the Eglinton Crosstown LRT and the proposed Jane LRT line.

Road Layout and Traffic Operations

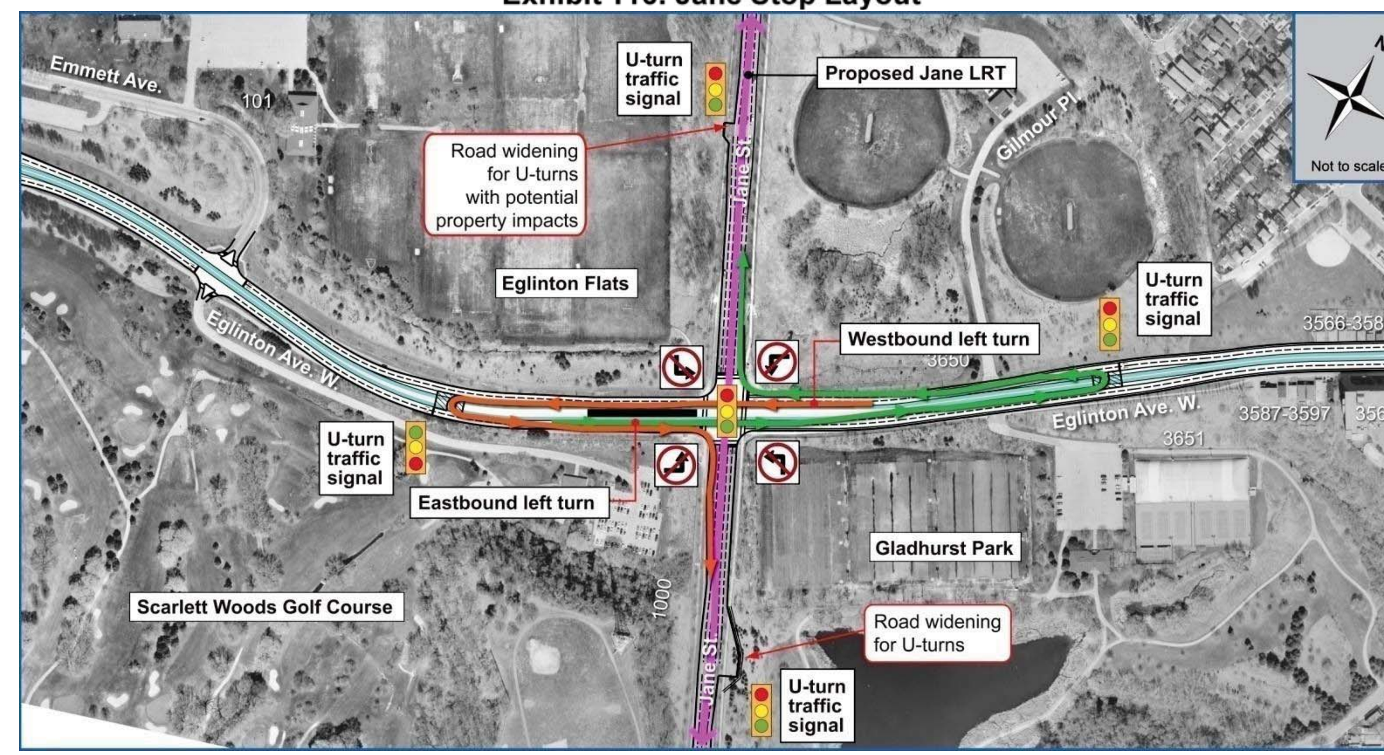
Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Jane Street. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to the travellers. Based on this analysis, the preferred scenario includes a four phase signal operation at Eglinton Avenue at Jane Road with rerouted left turn movements as follows:

- Northbound left turns rerouted to U-turn at a new midblock U-turn signal on Jane Street north of Eglinton Avenue
- Southbound left turns rerouted to U-turn at a new midblock U-turn signal on Jane Street south of Eglinton Avenue
- Eastbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave east of Jane Street
- Westbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Ave west of Jane Street

To the west of this intersection, cyclists will use the multi-use path south of Eglinton Avenue. East of the intersection, bicycle lanes will be provided along Eglinton Avenue in the east and west directions.

Exhibit 116 illustrates the recommended Jane Stop layout and rerouted east-west left turns.

Exhibit 116: Jane Stop Layout

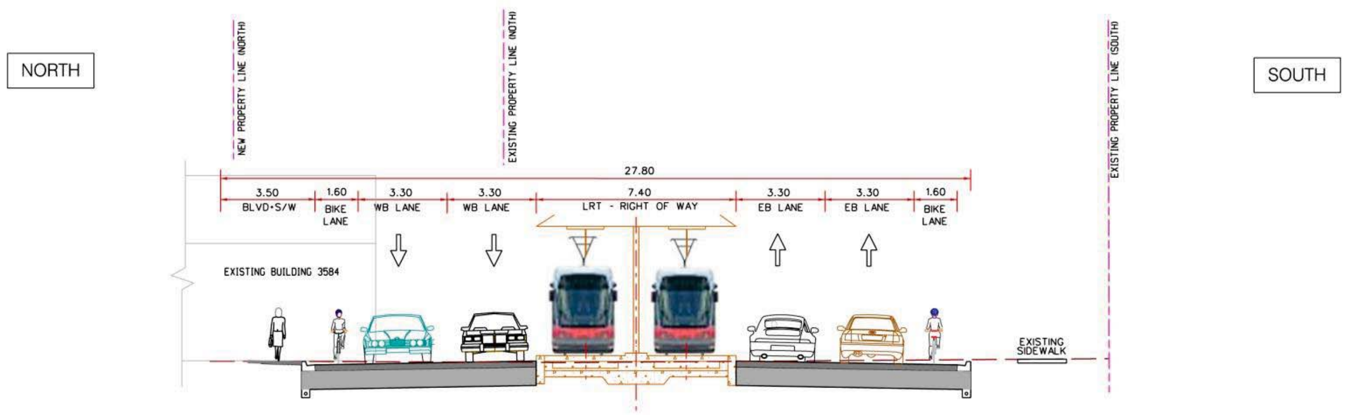


3.5.6 Jane to Black Creek

3.5.6.1 Cross-Section

The cross section through this segment varies. The existing cross section west of Pearen Avenue is very narrow with existing businesses and residences very close to the existing right of way. To preserve properties as much as possible, the cross section has a reduced boulevard section. The typical cross section for this segment is shown in **Exhibit 117**.

Exhibit 117: Cross Section from 3559 Eglinton Avenue West to Peren Street



3.5.6.2 Weston Stop

The Weston Stop will be located at the intersection of Eglinton Avenue and Weston Road. The Weston Stop is shown on Sheet No. 32. Currently, the northwest and northeast corners of this intersection are occupied by an assortment of retail stores, varying from local convenience stores to banks. The southeast corner of the intersection is occupied by a place of worship and the southwest corner is occupied by a mix of retail developments and residential houses. In terms of horizontal geometry, Eglinton Avenue and Weston Road meet at an angle of approximately 45°(degrees), creating a skewed intersection. Just east of Weston Road, Eglinton Avenue begins to decline down-grade, and continues to pass under a railway bridge utilized by CN, CP and GO Transit trains.

Stop Layout

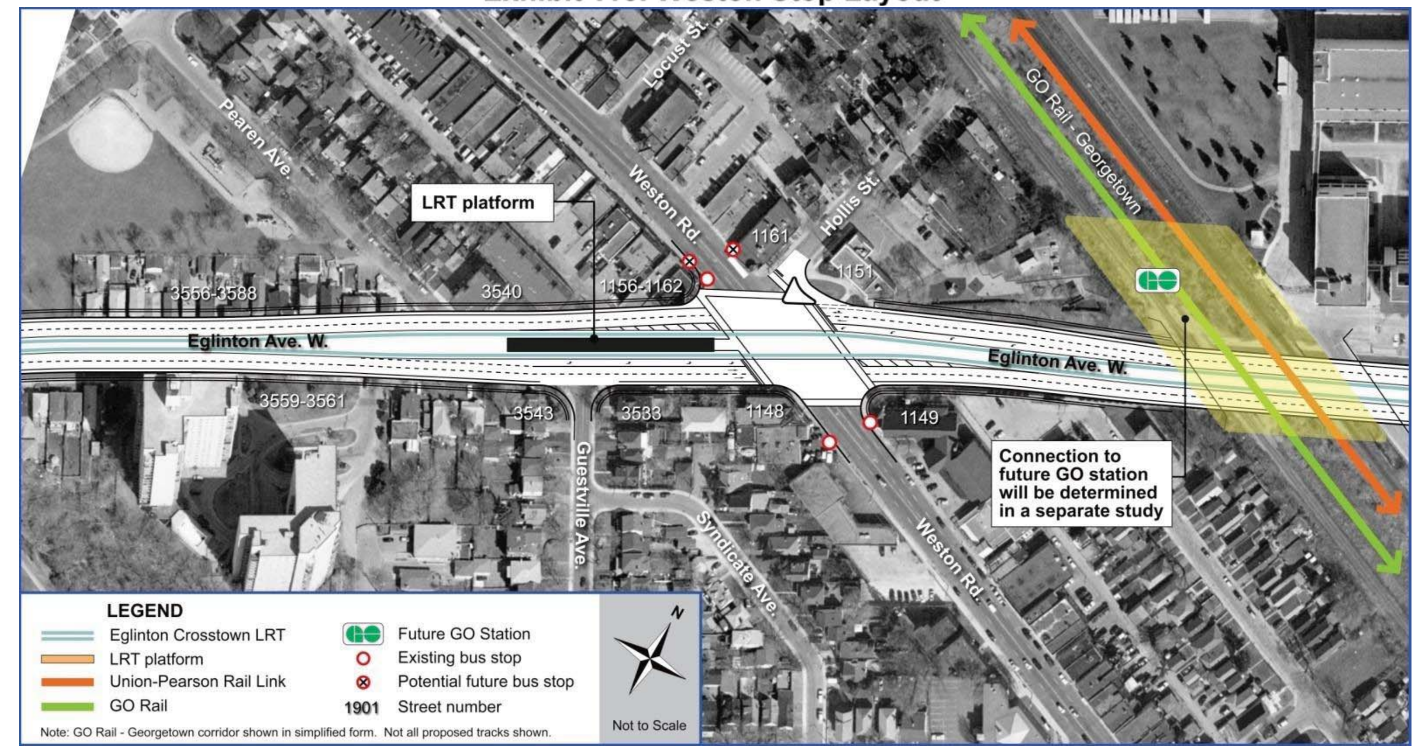
The Weston Stop will include one centre platform on Eglinton Avenue and Weston Road, on the west side of the intersection. A centre platform is provided at this location because the geometric configuration (i.e. horizontal curvature and vertical decline) of the east side of the intersection makes it a less advantageous location to provide farside or nearside platforms. East of the intersection, a GO Transit rail station is proposed to serve the Georgetown GO Rail line. The connection between the Weston LRT stop with this proposed GO station is the subject of a separate study.

Road Layout and Traffic Operations

North and south right turns currently use right turn cut-off lanes which channel vehicles away from the traffic signal. In promoting a safer environment for pedestrians and cyclists, these cutoff lanes will be removed.

Exhibit 118 illustrates the recommended Weston Stop layout.

Exhibit 118: Weston Stop Layout



3.5.6.3 Black Creek Stop

The Black Creek Stop will be located at the intersection of Eglinton Avenue and Black Creek Drive. The Black Creek Stop is shown on Sheet No. 34. The northwest corner of this intersection is currently unoccupied. An LRV maintenance and storage facility (M&S facility) is proposed at the northwest quadrant of Eglinton Avenue West and Black Creek Drive. The northeast corner of the intersection is currently occupied by a park (Coronation Park) including a baseball diamond. Similarly, the southeast corner of the intersection is occupied by Keelesdale Park, which also contains a baseball diamond. In the future, a community centre is proposed in the southeast corner of the intersection. The southwest corner of the intersection is currently occupied by a supermarket. Additional office, retail and residential development are also anticipated sometime in the future in the southwest quadrant.

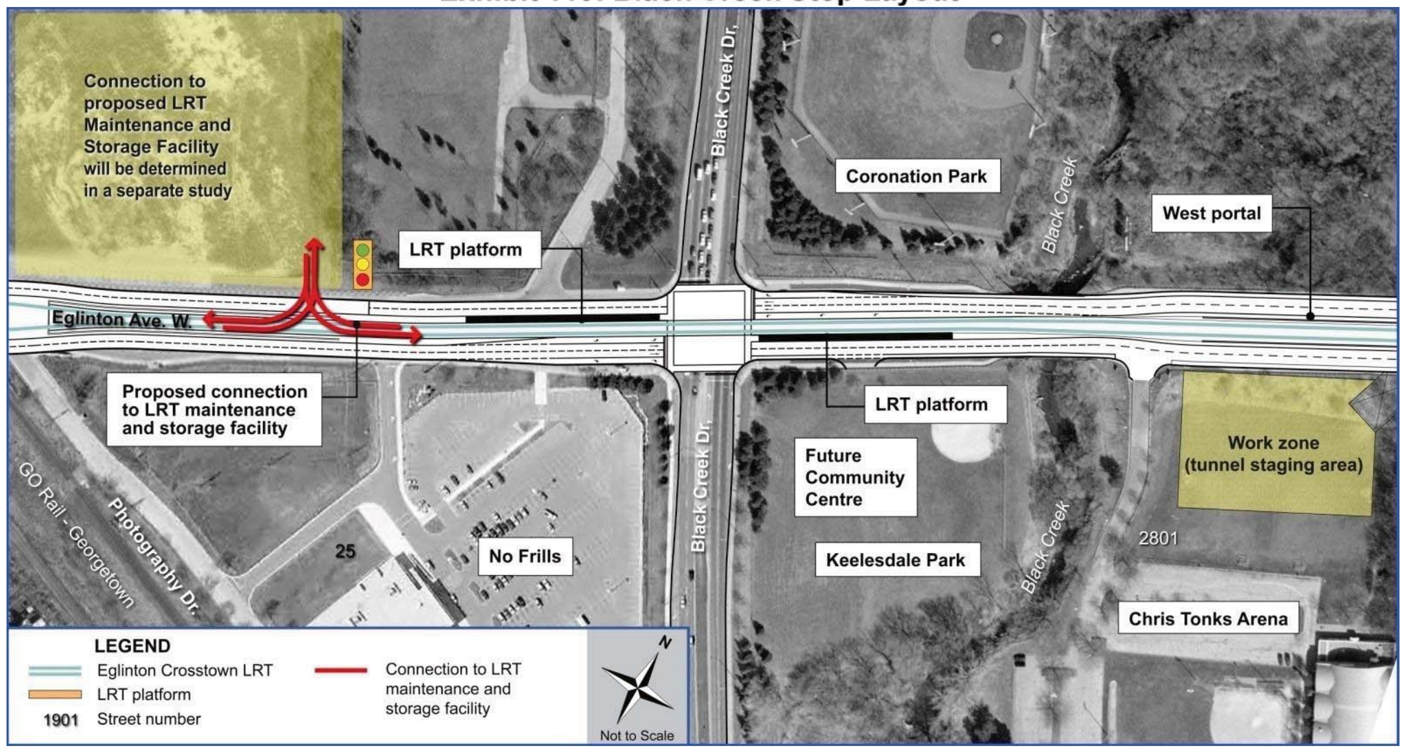
The proposed M&S facility in the northwest quadrant of Eglinton Avenue West and Black Creek Drive will provide service to the proposed Eglinton Crosstown, and Jane LRT lines as well as the St. Clair line. This facility will be used for loading and offloading LRV throughout the day, using Eglinton Avenue to access the LRT lines. A transit half-signal is proposed at the entrance to the M&S facility to permit LRVs to enter and exit without conflict with the westbound vehicles.

Road Layout and Traffic Operations

The permitted traffic and pedestrian movements are unchanged.

Exhibit 119 illustrates the recommended Black Creek Stop layout.

Exhibit 119: Black Creek Stop Layout



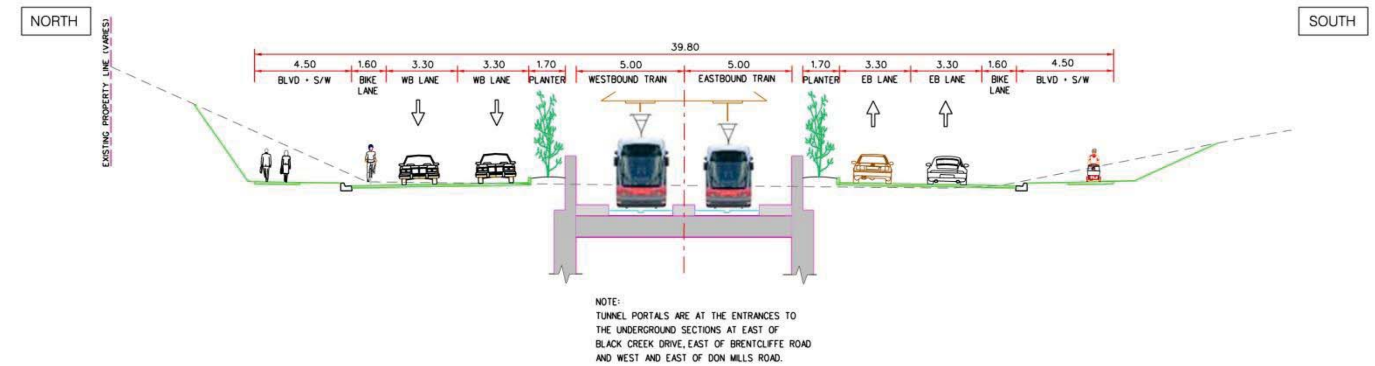
3.5.7 Black Creek to Don Mills

The segment from Black Creek Drive to Don Mills Road includes the underground portion of the project. This segment is almost entirely underground, with the exception of one surface section from east of Brentcliffe Road to west of Don Mills Road. This segment includes portals at both ends of the main tunnel and at the ends of a shorter underground section from west of Don Mills Road to east of Don Mills Road.

3.5.7.1 Portal

The west portal location is location east of Black Creek Drive, near Keelesdale Park. In this section the LRT transitions from the surface to underground. The typical cross section for the portal section is shown in **Exhibit 120**.

Exhibit 120: Portal View



3.5.7.2 Keele Station

Keele Station will be located at the intersection of Eglinton Avenue and Trethewey Drive/Keele Street. It will be the western-most station in the main LRT underground section. Keele Station is shown on Sheet No. 37A.

Currently, the land on all sides of the intersection is developed with a mix of institutional, commercial, emergency services and residential buildings uses. At the intersection, the land use is as follows:

- Northwest corner – York Memorial Collegiate Institute;
- Northeast corner – City of Toronto Emergency Medical Service (EMS) Station 19;
- Southeast corner –1-storey restaurant and parking lot; and
- Southwest corner –1-storey financial institution

Special Track Work

Storage (pocket) tracks approximately 200 metres long will be located to the west of the Keele Station platform within the underground tunnel. Storage (pocket) tracks are a third set of tracks longer than the length of a typical LRT located between the two normal tracks. LRT can enter the storage (pocket) tracks from either direction to allow other LRT to pass them by, reverse direction or bypass construction or breakdowns.

Crossover tracks approximately 90m long will be located directly to the east of the Keele Station platform, to allow trains to change direction by crossing from one track to the other track.

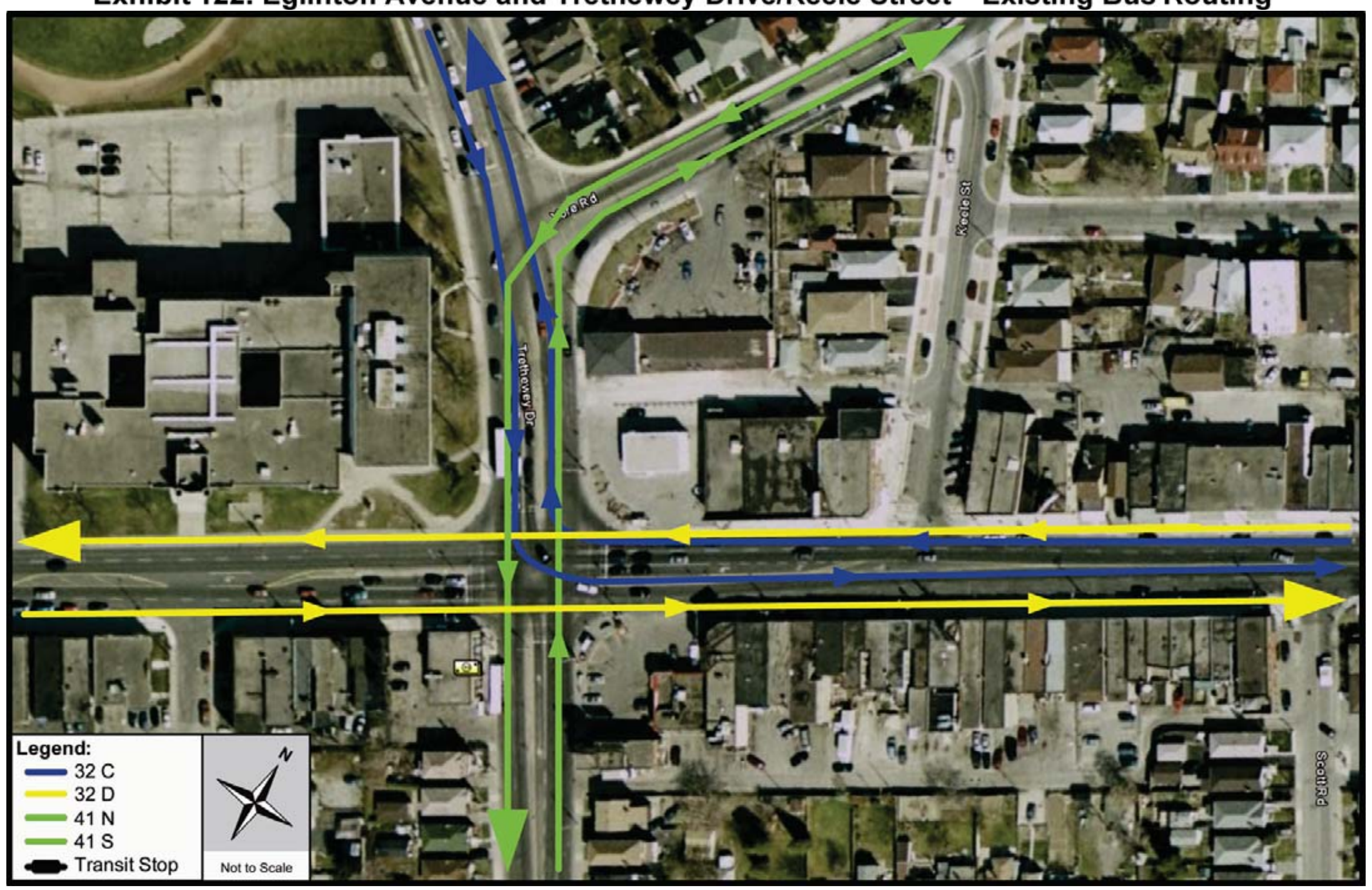
Interface with Existing Transit

While most of the existing 32 Eglinton West bus service will be replaced by the LRT, several surface transit routes will continue to operate in this area as shown in **Exhibit 121**. Existing Route 32C travels along Eglinton Avenue from the Yonge Subway station to the Trethewey Drive area; Route 32C will originate at Keele and service the Trethewey Drive road segment under future conditions. Similarly the 32D service will be cut back to terminate here. 41 Keele service will continue to opeate north-south through the intersection. Existing routings of these buses are shown on **Exhibit 122**.

Exhibit 121: Eglinton Avenue and Keele Street – Bus Service

Transit Route	Description	Bus Movements
32 C	Trethewey	Terminating here
32 D	Eglinton West – Emmett	Terminating here
41 N	Keele northbound	Through
41 S	Keele southbound	Through

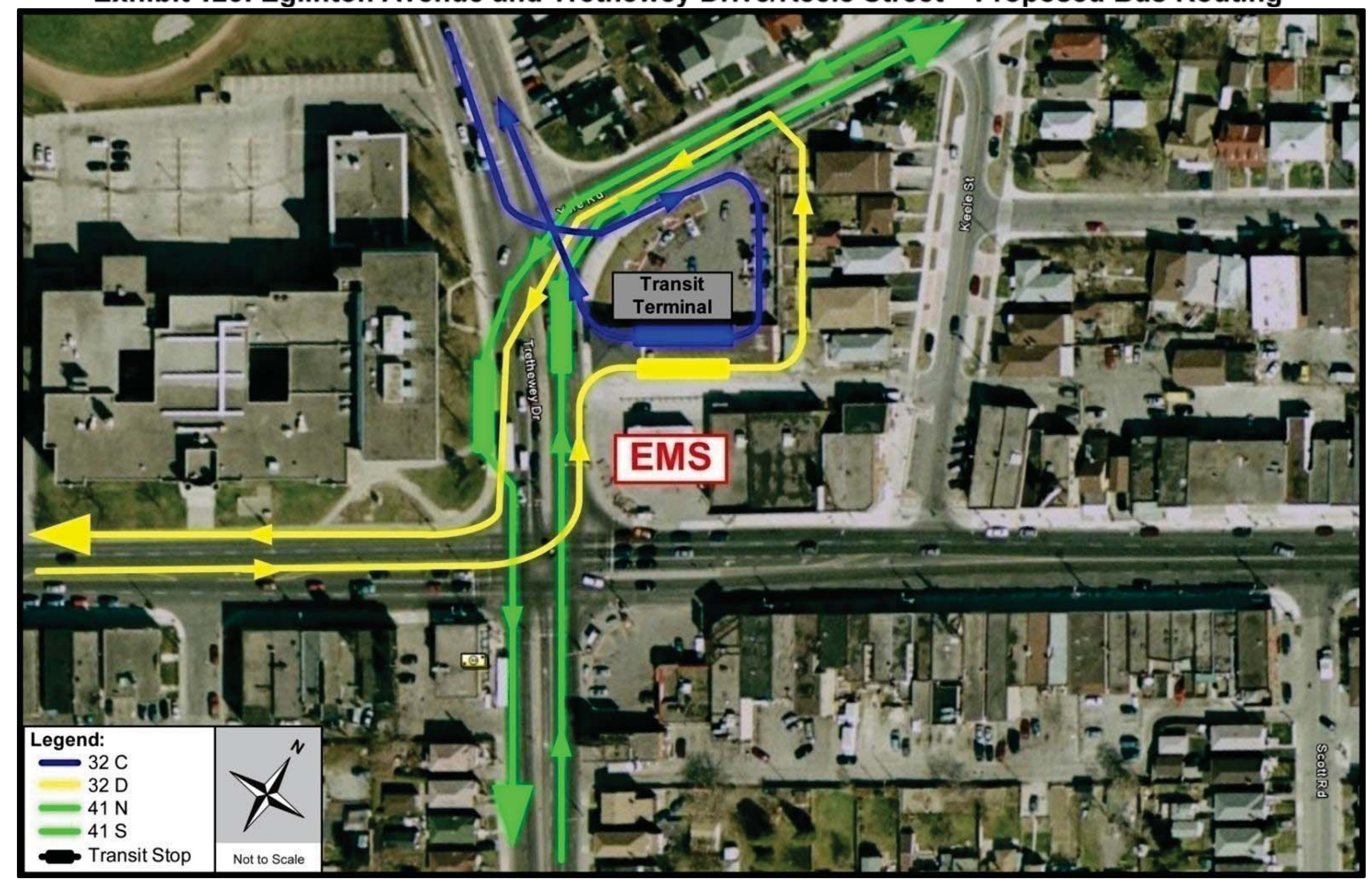
Exhibit 122: Eglinton Avenue and Trethewey Drive/Keele Street – Existing Bus Routing



A new 4-bay bus terminal is proposed adjacent to Keele Station to provide a direct connection between the Eglinton Crosstown LRT with bus routes along Trethewey Drive and Eglinton Avenue. The proposed bus terminal is located off-street in the southeast quadrant of the intersection of Trethewey Drive and Yore Road, north of the existing EMS Station 19.

The proposed bus terminal will operate with both clockwise and counter-clockwise bus operation. The entrance/exits accesses of the terminal will be located on Trethewey Drive between Eglinton Avenue and Yore Road, and on Yore Road. The proposed routing is shown in **Exhibit 123.**

Exhibit 123: Eglinton Avenue and Trethewey Drive/Keele Street – Proposed Bus Routing

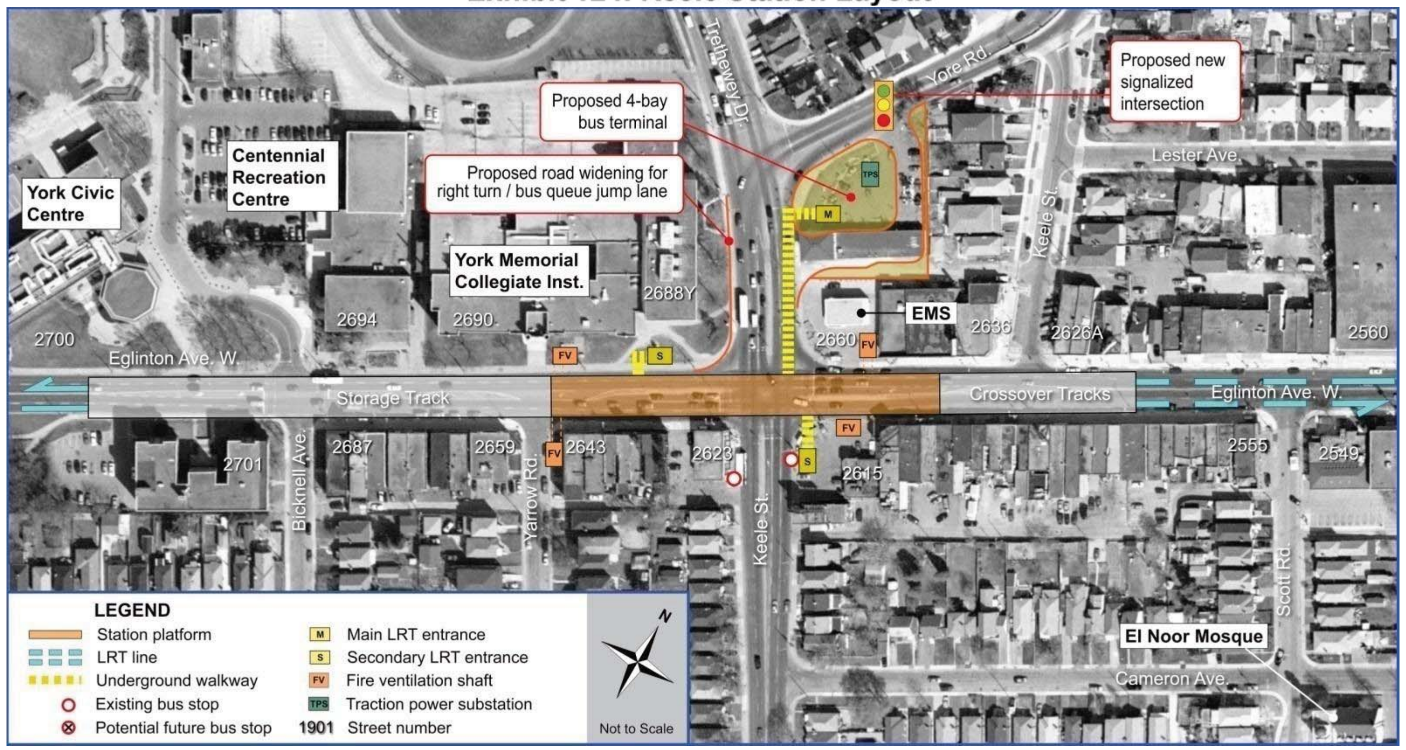


Road Layout and Traffic Operations

Based on traffic analysis, a new traffic signal is proposed at the bus terminal access on Yore Road to allow transit vehicles to safely merge onto Yore Road. For safety reasons the northbound right turn on red at Trethewey Drive and Yore Road will be prohibited to limit the number of vehicles stopped on Yore Road when the Yore Road terminal access signal is activated. In addition, a westbound left turn transit only lane is proposed for the Trethewey Drive and Yore Road intersection. Lastly, an exclusive southbound right turn lane is proposed for the Eglinton Avenue and Trethewey Drive/ Keele Street intersection to serve southbound right turning vehicles and to act as a transit queue jump lane.

Exhibit 124 illustrates the recommended Keele Station layout.

Exhibit 124: Keele Station Layout



3.5.7.3 Caledonia Station

Caledonia Station will be located 300 metres west of the intersection of Eglinton Avenue and Caledonia Road, immediately to the west of the north-south GO Rail – Barrie rail corridor. Caledonia Station is shown on Sheet No. 39. Currently, land on all sides of the intersection of Eglinton Avenue and the GO Rail – Barrie rail corridor is developed with a mix of commercial and residential buildings. At the immediate intersection, the land use is as follows:

- Northwest corner – Westside Mall with Canadian Tire and a food store as its main tenants and surface parking towards Eglinton Avenue; Additionally, immediately west of Westside Mall is a small cluster of high density development;
- Northeast corner (west of Croham Road) – public land with billboards and low rise commercial buildings (barbershop, fabric store);
- Southeast corner – Parkette and low-rise residential buildings; and
- Southwest corner – low-rise commercial/light industrial buildings (bodyshop, plumbing supplies).

Entrances

There will be a main entrance on the north side of Eglinton Avenue just east of the GO Rail-Barrie rail corridor. The main entrance will be co-located with the new Caledonia bus loop, which is proposed for the northwest corner of Eglinton Avenue and Croham Road.

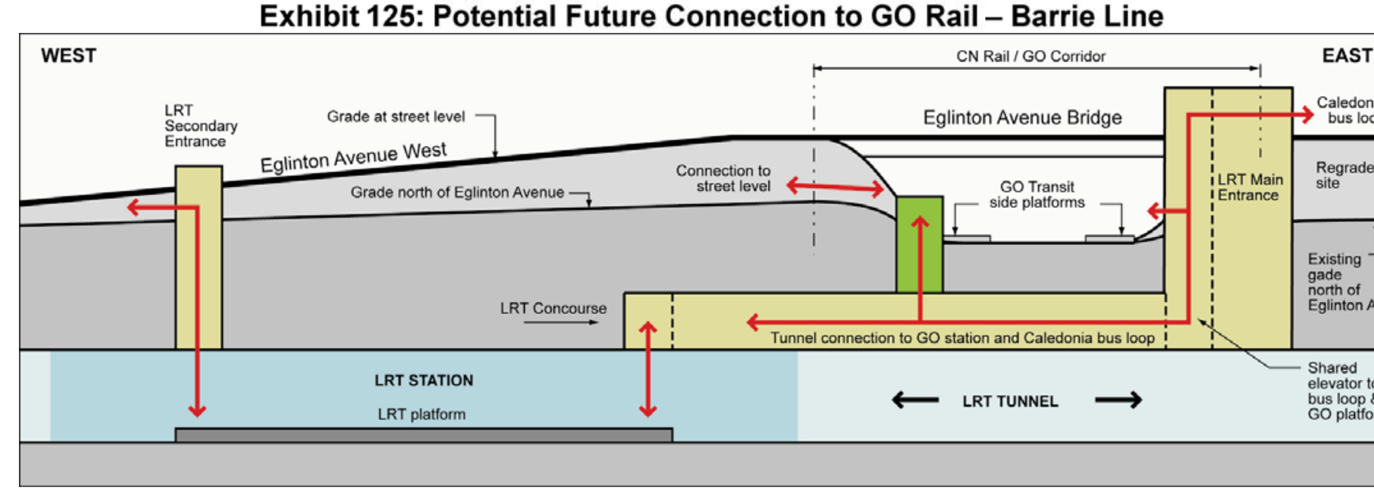
Interface with Existing Transit

A bus loop is proposed adjacent to Caledonia Station to provide a direct connection between the Eglinton Crosstown LRT with the existing Route 47B and Route 47C (Lansdowne) buses which currently travel in a north-south direction on Caledonia Road. The proposed bus loop is located at the northwest corner of Eglinton Avenue and Croham Road. Buses will travel counterclockwise through the loop, which will have one bus bay for passenger pickup/drop-off.

To facilitate the proposed LRT/bus interface, the through bus services on Caledonia Road (47 Lansdowne) will be rerouted via Eglinton Avenue to a bus loop located east of the GO Rail line next to the main entrance. Northbound and southbound buses on Caledonia Road will turn west onto Eglinton Avenue, followed by a right turn north onto Croham Road then a left turn into the east end of the bus loop. After passing counterclockwise through the loop, buses will exit the bus loop by making an eastbound left turn onto Eglinton Avenue, and from there rejoin its regular route on Caledonia Road.

In addition to the bus interface, there is potential for a future connection with GO Rail at Caledonia Station, which operates its Barrie service in the north-south rail corridor between Caledonia Station and the proposed bus loop. The potential future connection is shown in **Exhibit 125** although exact connectivity will be subject to GO Rail alignment and platform configurations.

Exhibit 125: Potential Future Connection to GO Rail – Barrie Line

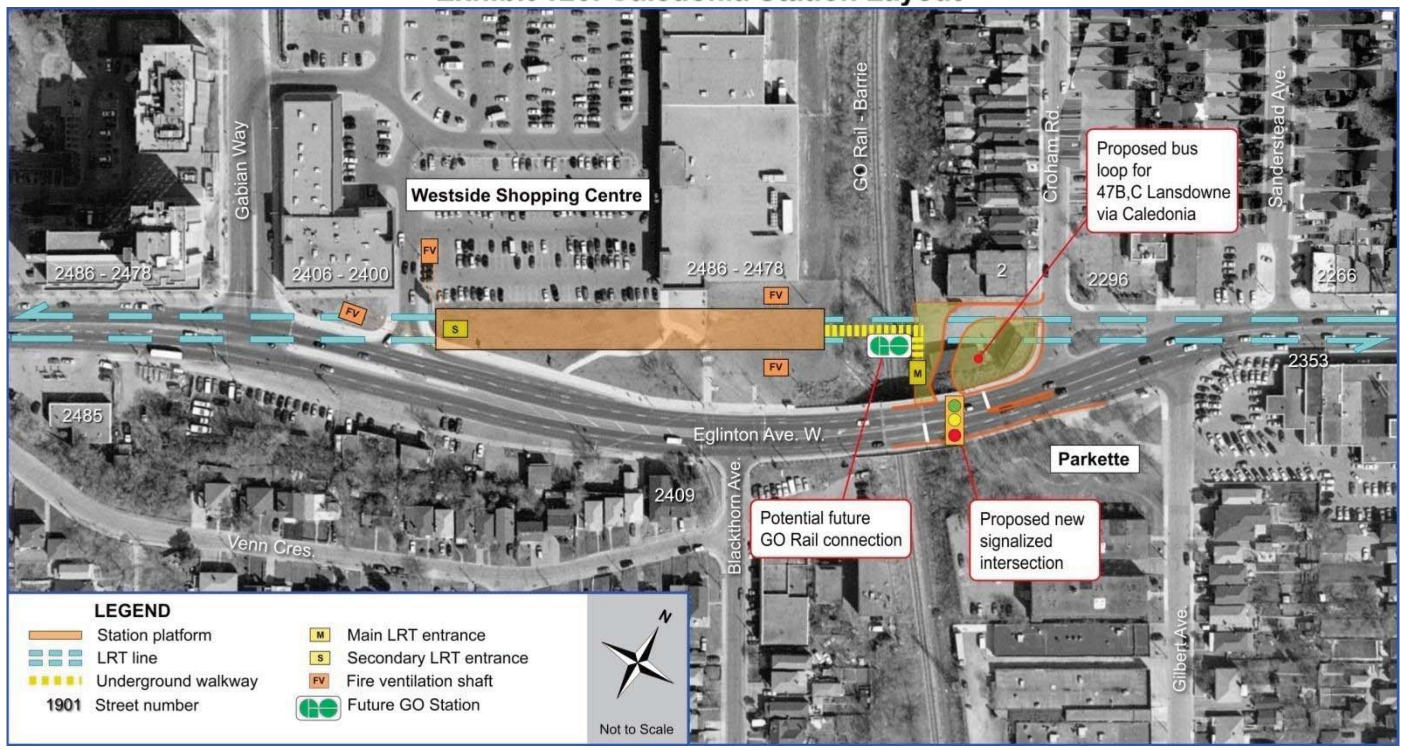


Road Layout and Traffic Operations

A new traffic signal is proposed at the intersection between the south end of the bus loop (i.e. the exit) and Eglinton Avenue to facilitate buses making the eastbound left turn onto Eglinton Avenue.

Exhibit 126 illustrates the recommended Caledonia Station layout.

Exhibit 126: Caledonia Station Layout



3.5.7.4 Dufferin Station

Dufferin Station will be located at the intersection of Eglinton Avenue and Dufferin Street. Dufferin Station is shown on Sheet No. 43. Currently the land on all sides of the intersection is developed with a mix of commercial, residential, religious and recreational buildings. At the immediate intersection, the land use is as follows:

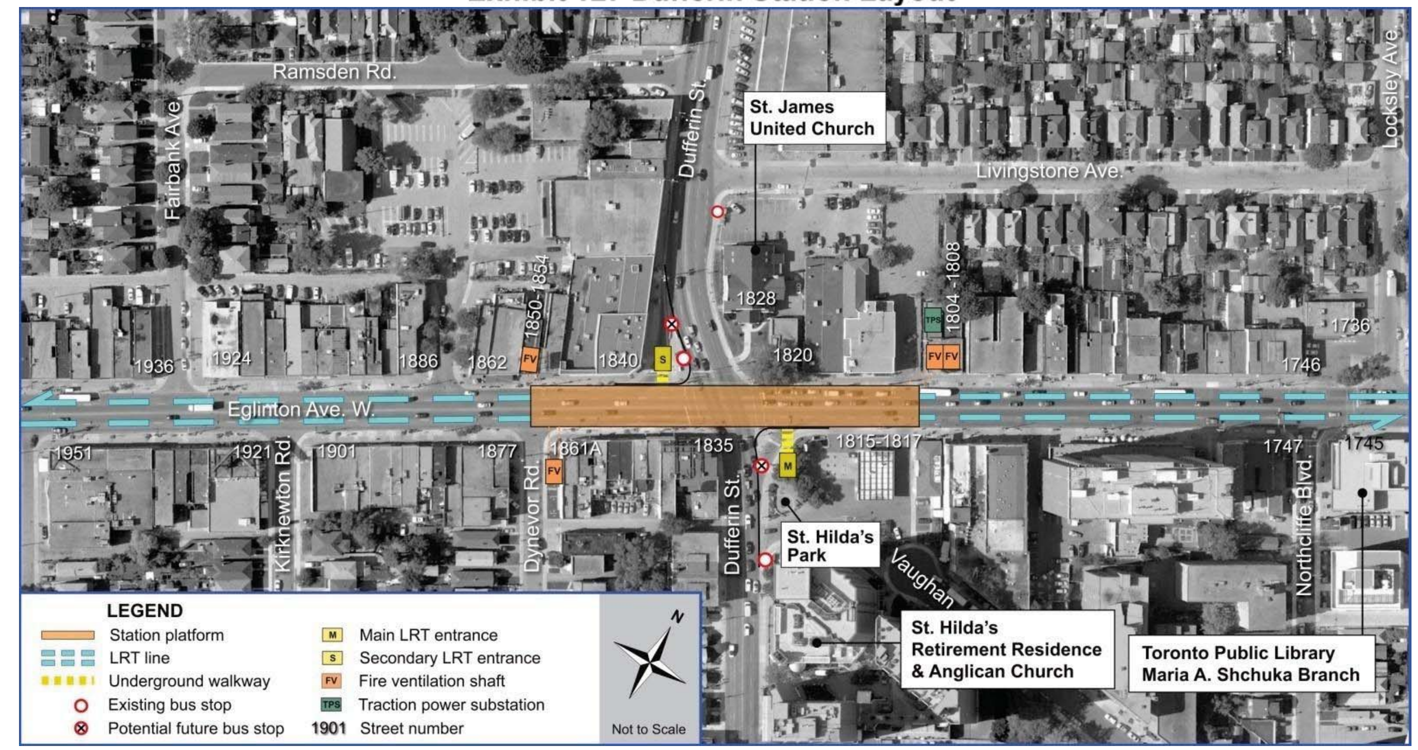
- Northwest corner – Commercial building;
- Northeast corner – St. James United Church;
- Southeast corner – St. Hilda's Park and immediately south is St. Hilda's Retirement Community with 3 high rise towers; and
- Southwest corner – Mixed use two-storey commercial/residential buildings.

Road Layout and Traffic Operations

On the northwest and southeast quadrants of the intersection, the existing traffic islands separated by channelized right turn lanes will be removed to provide a larger base for sidewalk area and space for locating the entrances. Northbound and southbound right turn movements will continue to be permitted.

Exhibit 127 illustrates the recommended Dufferin Station layout.

Exhibit 127 Dufferin Station Layout



3.5.7.5 Oakwood Station

Oakwood Station will be located at the intersection of Eglinton Avenue and Oakwood Avenue. Oakwood Station is shown on Sheet No. 45. Currently the land on all sides of the intersection is developed with a mix of commercial and residential buildings. At the immediate intersection (which is a T-intersection), the land use is as follows:

- North side of Eglinton Avenue at Oakwood Avenue – Mixed use two-to-three-storey commercial/residential buildings.
- Southeast corner – Mixed use two-storey commercial/residential buildings; and
- Southwest corner – Single storey commercial building with parking lot further west of the building. This site is currently subject to a development proposal for a mid-rise residential building with retail at ground level facing Eglinton Avenue.

Exhibit 128 illustrates the recommended Oakwood Station layout.

Exhibit 128: Oakwood Station Layout

3.5.7.6 Eglinton West (Allen) Station

Eglinton West (Allen) Station will be located at the intersection of Eglinton Avenue and Allen Road/ Everden Road. The plan view of Eglinton West (Allen) Station is shown on Sheet No. 47. Additional drawings are shown in sheet nos 47A through 47D. Allen Road is divided into separate northbound and southbound on/off-ramps north of Eglinton Avenue, separated by the Eglinton West Subway Station.

Currently the land on all sides of the intersection is developed with a mix of commercial, institutional and recreational uses. At the immediate intersection, the land use is as follows:

- Northwest corner of Eglinton Avenue and Allen Road southbound – TTC parking lot;
- North side of Eglinton Avenue in between Allen Road southbound and Allen Road northbound – Eglinton West subway station;
- Northeast corner of Eglinton Avenue and Allen Road northbound – TTC parking lot;
- Southeast corner – Ben Nobleman Park; and
- Southwest corner – Toronto Police 13 Division.

Station Box and Entrances

The Eglinton West (Allen) Station box will be located longitudinally beneath Eglinton Avenue and the Spadina subway, and centered directly with the Eglinton West subway station on the north side of Eglinton Avenue.

The main entrance to Eglinton West (Allen) Station will be shared with the existing Eglinton West subway entrance on the north side of Eglinton Avenue. The existing subway station will have new vertical connections from the bus platform level to the LRT.

There will be an automatic entrance to the LRT and subway stations on the southwest corner of Eglinton Avenue and Everden Road.

Special Track Work

Storage (pocket) tracks approximately 200 metres long will be located to the west of the Eglinton West (Allen) Station platform.

Crossover tracks approximately 90 metres long will be located directly to the east of the Eglinton West (Allen) Station platform.

Interface with Existing Transit

There will be a direct connection between the existing University/Spadina subway and the Eglinton Crosstown LRT, as the Eglinton West subway station will be located directly above the Eglinton West (Allen) LRT Station. Entrance to the LRT at Eglinton West (Allen) Station will be via the Eglinton West subway station. The existing bus terminal will remain.

Exhibit 129: Eglinton West Station – Bus Service

Transit Route	Description	Bus Movements
109 B	Ranee via Flemington	Terminating here
109 C	Ranee via Varna	Terminating here
63	Ossington	Terminating here

Exhibit 130 illustrates the recommended Eglinton West (Allen) Station layout.

Exhibit 130: Eglinton West Station Layout

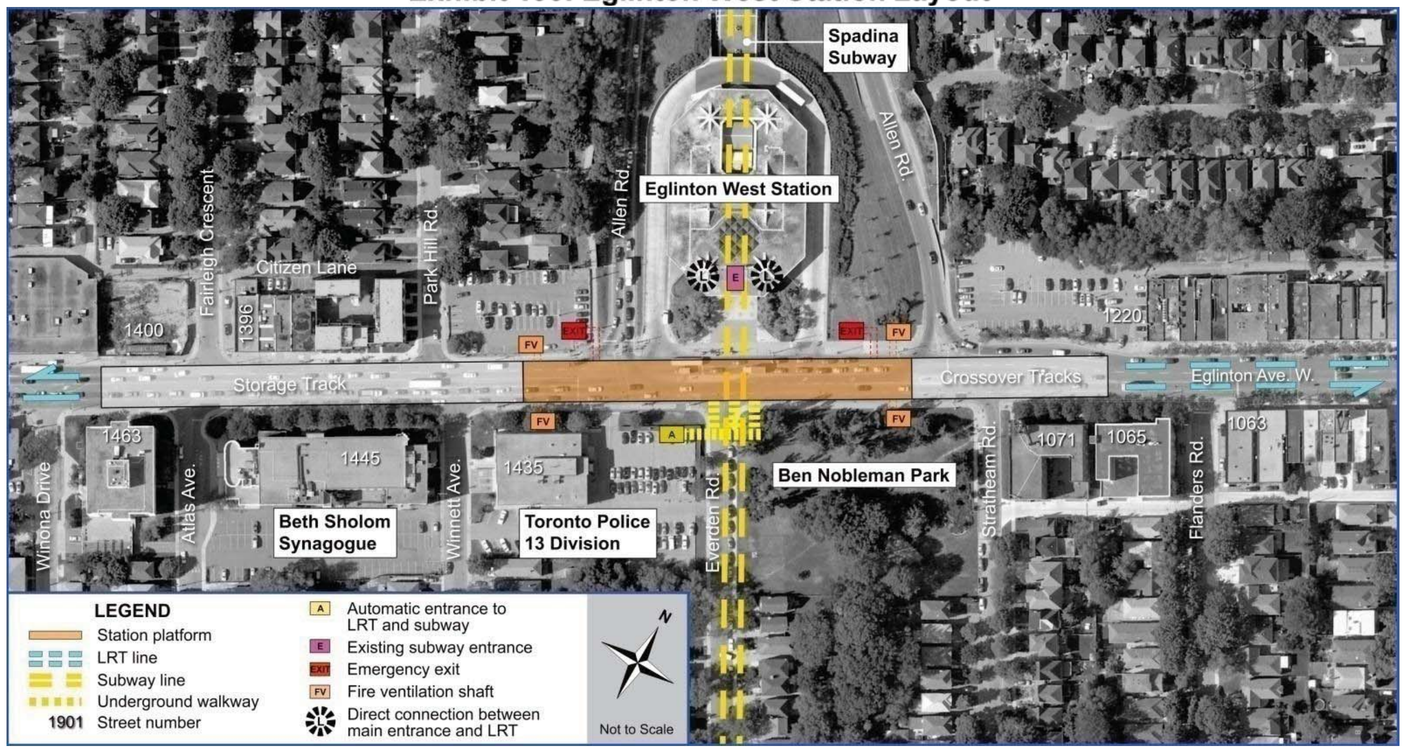
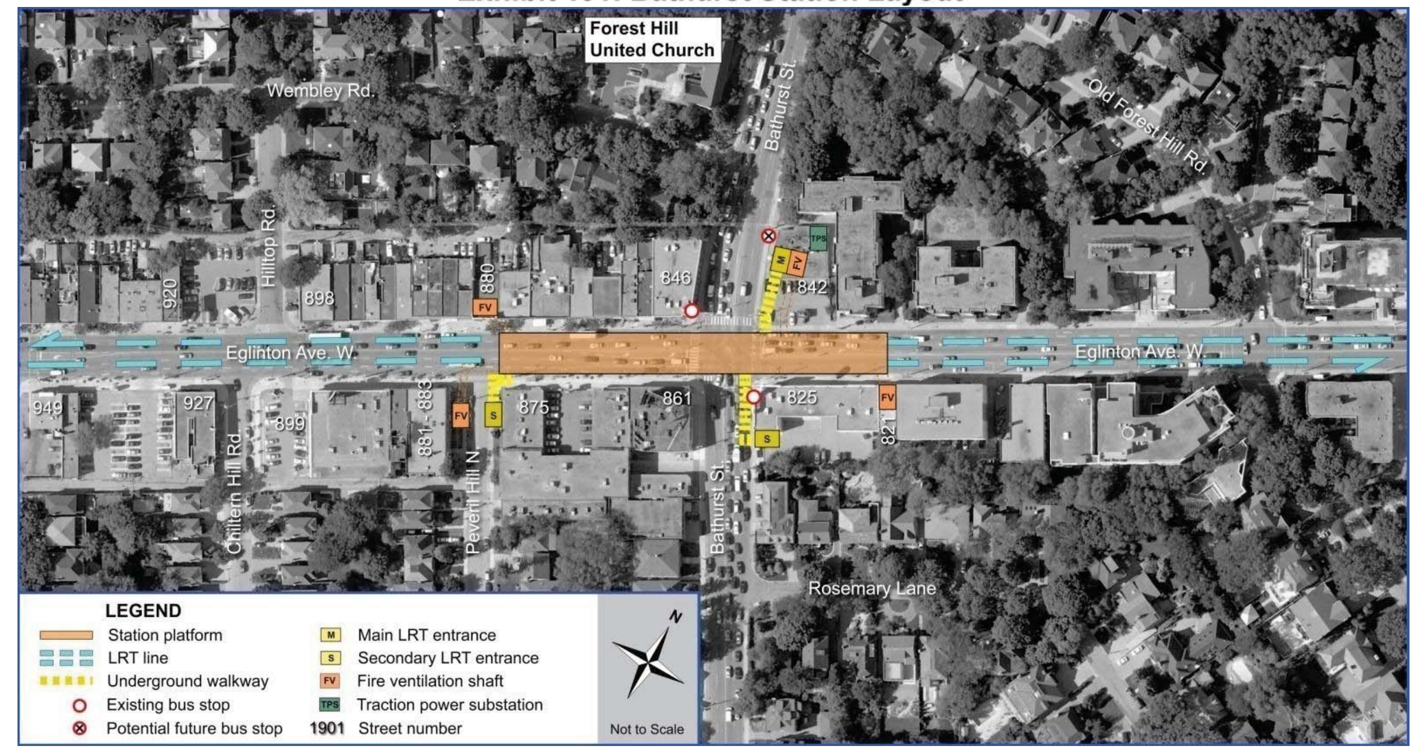


Exhibit 131: Bathurst Station Layout



3.5.7.7 Bathurst Station

Bathurst Station will be located at the intersection of Eglinton Avenue and Bathurst Street. Bathurst Station is shown on Sheet No. 50. Currently the land on all sides of the intersection is developed with a mix of commercial aand residential buildings. At the immediate intersection, the land use is as follows:

- Northwest corner – TD Canada Trust building, with mixed use two-storey commercial/residential buildings further west;
- Northeast corner – One-storey commercial plaza and parking lot, with apartment building clusters further east;
- Southeast corner – One-storey building (Hakim Optical and Blockbuster Video), with low-rise commercial buildings further east; and

Southwest corner – Scotiabank, with commercial buildings and small parking lots further west.**Exhibit 131** illustrates the recommended Bathurst Station layout.

3.5.7.8 Chaplin Station

Chaplin Station will be located at the intersection of Eglinton Avenue with Chaplin Crescent. Chaplin Station is shown on Sheet No. 52. Currently the land on all sides of the intersection is developed with a mix of commercial, residential and recreational uses. At the immediate intersection, the land use is as follows:

- Northwest corner – Multi-storey residential building with the Belt Line Linear Park further west;
- Northeast corner – Parkette and 2-storey commercial building (Coffee Time);
- Southeast corner –Toronto Fire Station #35 and a neighbourhood sign; and
- Southwest corner – Multi-storey residential building, with the Belt Line Linear Park further west.

Exhibit 132 illustrates the recommended Chaplin Station layout.

Exhibit 132: Chaplin Station Layout

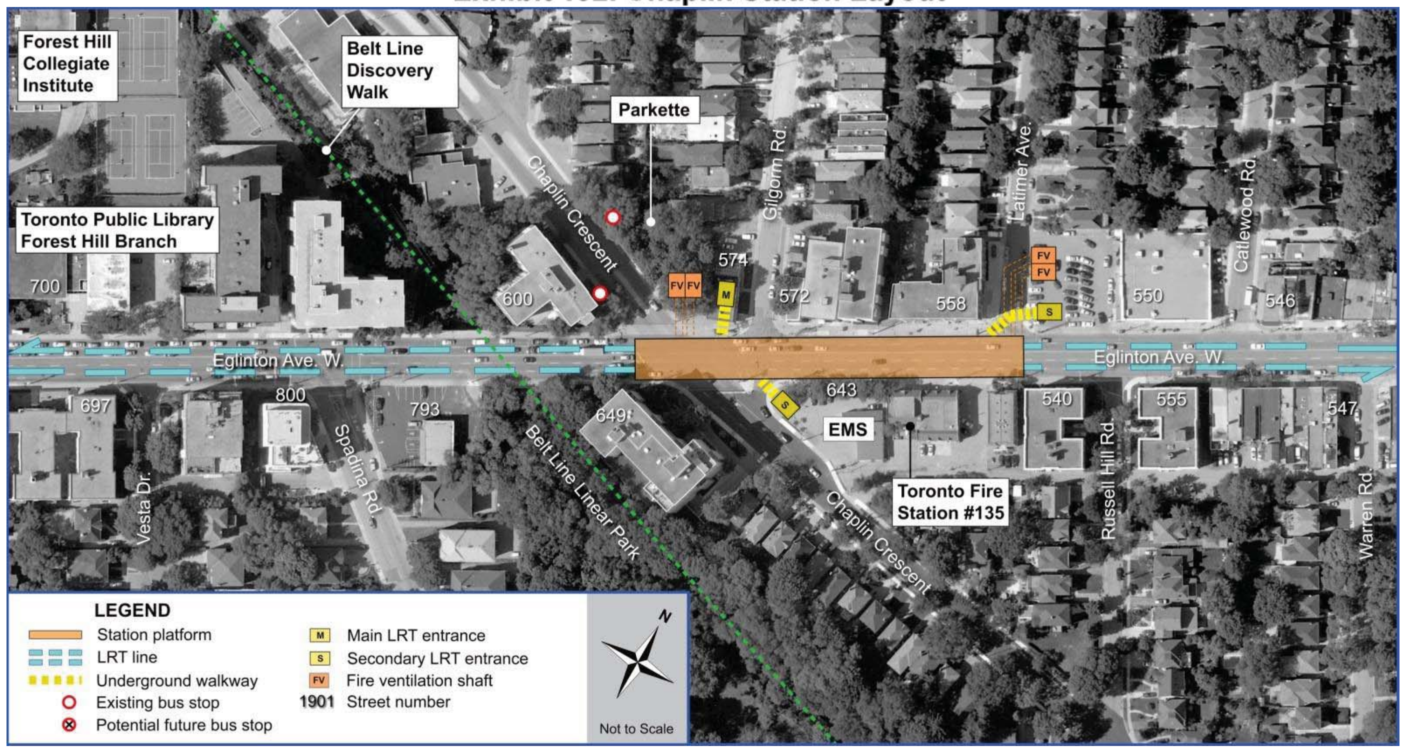


Exhibit 133: Avenue Station Layout

3.5.7.9 Avenue Station

Avenue Station will be located at the intersection of Eglinton Avenue and Avenue Road. Avenue Station is shown on Sheet No. 54. Currently the land on all sides of the intersection is developed primarily with commercial buildings. At the immediate intersection, the land use is as follows:

- Northwest corner –One-storey retail (Mac's) and parking lot, with single and two-storey commercial buildings further west;
- Northeast corner – Two-storey commercial buildings;
- Southeast corner – Petro-Canada gas station; and
- Southwest corner – Two-storey commercial buildings.

Exhibit 133 illustrates the recommended Avenue Station layout.

3.5.7.10 Eglinton (Yonge) Station

Eglinton Station will be located at the intersection of Eglinton Avenue and Yonge Street. The plan view of Eglinton (Yonge) Station is shown on Sheet No. 57. Additional station drawings are shown in Sheet nos. 57A – 57E. Currently the land on all sides of the intersection is developed with a heavy concentration of commercial buildings. At the immediate intersection, the land use is as follows:

- Northwest corner –High-rise commercial buildings (Yonge-Eglinton Centre) with a pedestrian square. This corner is subject to a development proposal to reduce the pedestrian square and increase retailing footprint;
- Northeast corner – Two-storey commercial buildings with higher-rise commercial buildings further east;
- Southeast corner – High rise commercial buildings; and
- Southwest corner – Eglinton subway station main entrance and bus terminal, high-rise commercial buildings, and Toronto Police 53 Division further west.

Station Box and Entrances

The Eglinton (Yonge) Station box will be located longitudinally beneath Eglinton Avenue and centered directly beneath the Yonge subway. All existing vertical circulation elements (e.g. station entrances) for the subway will be used for the LRT. Pedestrian circulation improvements are proposed in the underground northwest and southwest quadrants with consideration for future developments.

The **main entrance** to Eglinton (Yonge) Station will be shared with the existing Eglinton subway station entrances on all four corners of Eglinton Avenue and Yonge Street.

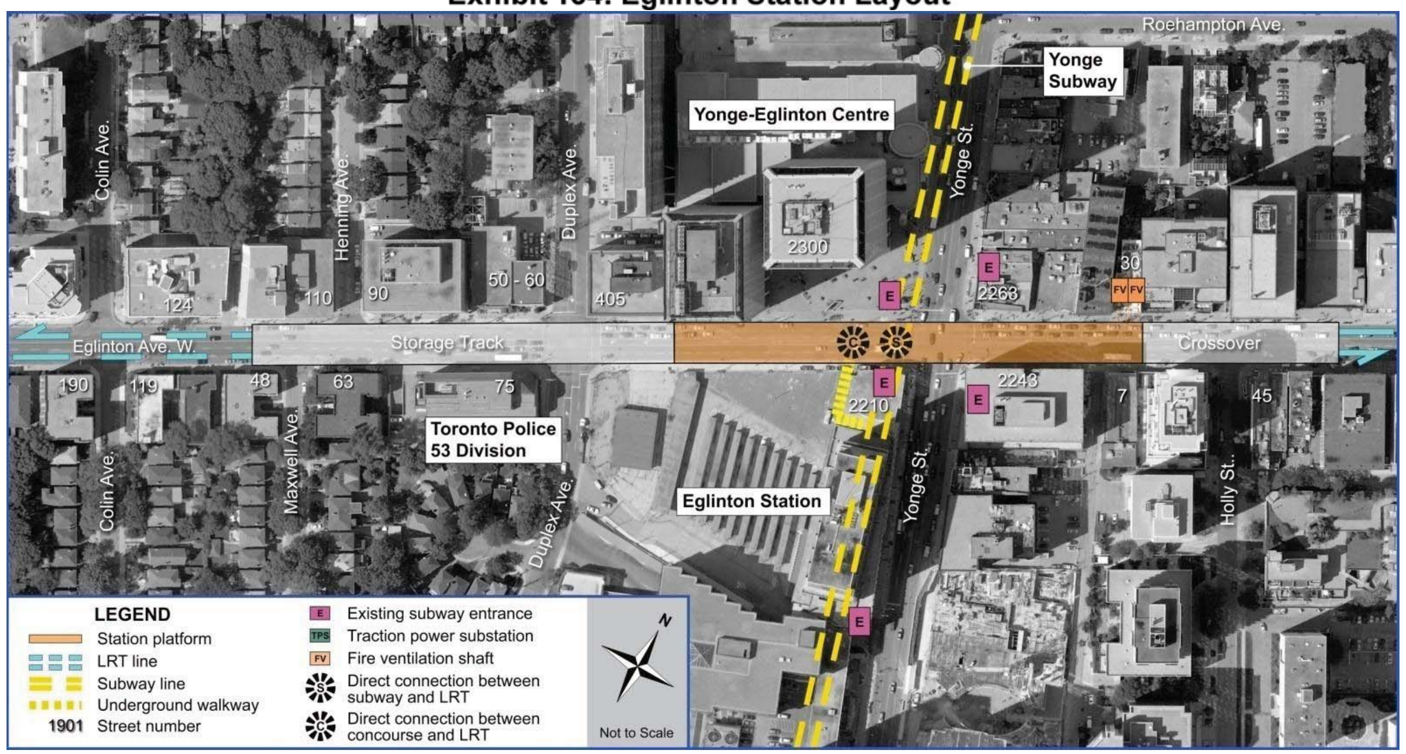
NOTE: The location of Eglinton Crosstown LRT vent shafts, traction power substation and emergency exits on the lands at the southwest corner are to be determined through a separate study. This study will also address ventilation requirements for the existing subway station and the future bus facilities requirements.

Interface with Existing Transit

There will be a direct connection between the existing Yonge subway and the Eglinton Crosstown LRT, as the Yonge subway station will be located directly above the Eglinton (Yonge) LRT Station. Entrance to the LRT at Eglinton (Yonge) Station will be via the Eglinton Subway Station.

Exhibit 134 illustrates the recommended Eglinton Station layout.

Exhibit 134: Eglinton Station Layout



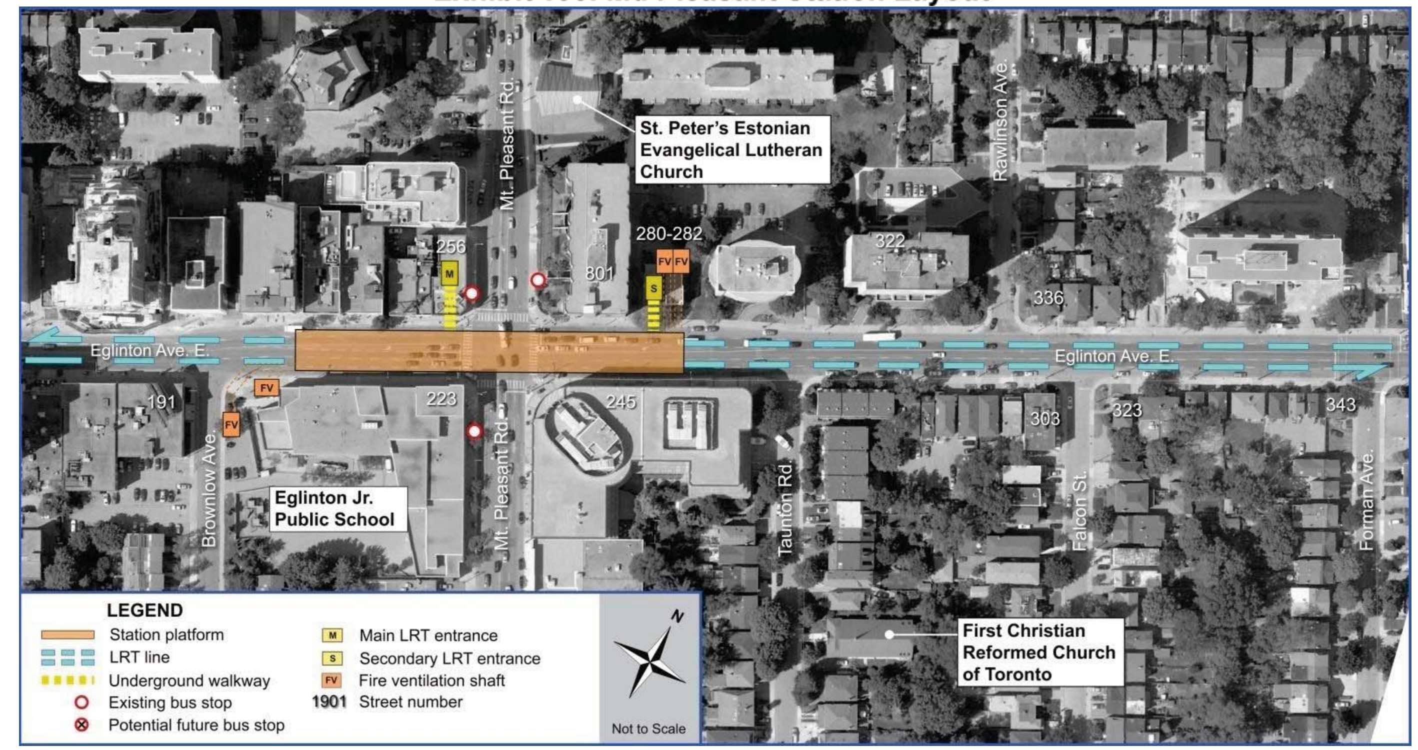
3.5.7.11 Mount Pleasant Station

Mount Pleasant Station will be located at the intersection of Eglinton Avenue and Mouth Pleasant Road. The Mount Pleasant Station is shown on Sheets No. 59 and 60. Currently the land on all sides of the intersection is developed with a mix of commercial, institutional and residential buildings. At the immediate intersection, the land use is as follows:

- Northwest corner – Two-storey commercial buildings;
- Northeast corner – High rise residential buildings;
- Southeast corner – Multi-storey commercial building complex; and
- Southwest corner – Eglinton Junior Public School.

Exhibit 135 illustrates the recommended Mt. Pleasant Station layout.

Exhibit 135: Mt. Pleasant Station Layout



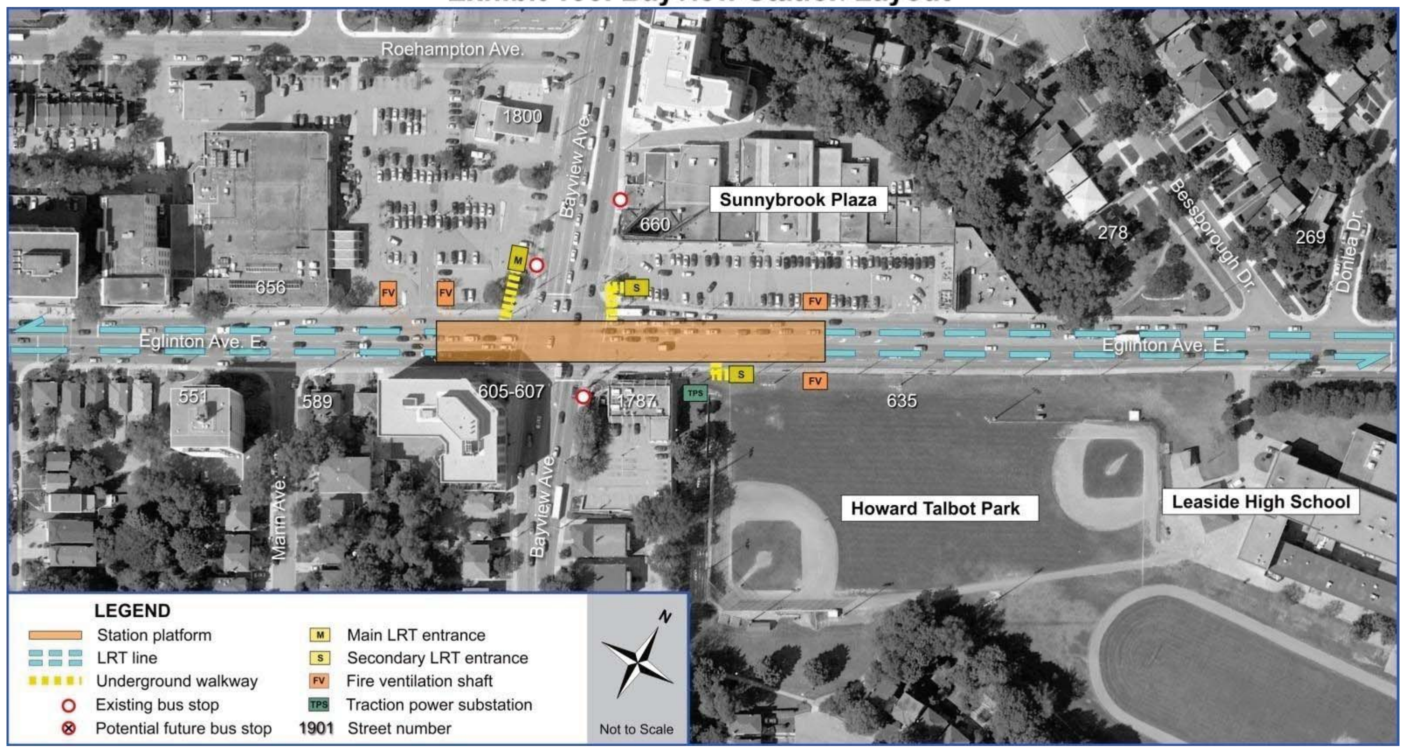
3.5.7.12 Bayview Station

Bayview Station will be located at the intersection of Eglinton Avenue and Bayview Avenue. Bayview Station is shown on Sheets No. 62 and 63. Currently the land on all sides of the intersection is developed with a mix of commercial, institutional, recreational and residential uses. At the immediate intersection, the land use is as follows:

- Northwest corner – Supermarket (Metro) and parking lot;
- Northeast corner – Commercial plaza and parking lot (Sunnybrook Plaza);
- Southeast corner – McDonald's, with Howard Talbot Park and Leaside High School further east; and
- Southwest corner – Multi-storey residential building (with commercial use on ground floor).

Exhibit 136 shows the configuration of the station.

Exhibit 136: Bayview Station Layout



3.5.7.13 Laird Station

Laird Station will be located at the intersection of Eglinton Avenue and Laird Drive. It will be the eastern-most station in the main LRT underground section. Laird Station is shown on Sheets No. 65 and 66.

Currently the land on all sides of the intersection is developed with a mix of commercial and residential buildings. At the immediate intersection, the land use is as follows:

- Northwest corner – Two-storey commercial buildings;
- Northeast corner – Scotiabank, with three-storey residential buildings further east;
- Southeast corner – One-storey retail (Pier 1 Imports), with Leaside Centre parking lot further southwest; and
- Southwest corner – One-storey commercial plaza and parking lot.

Special Track Work

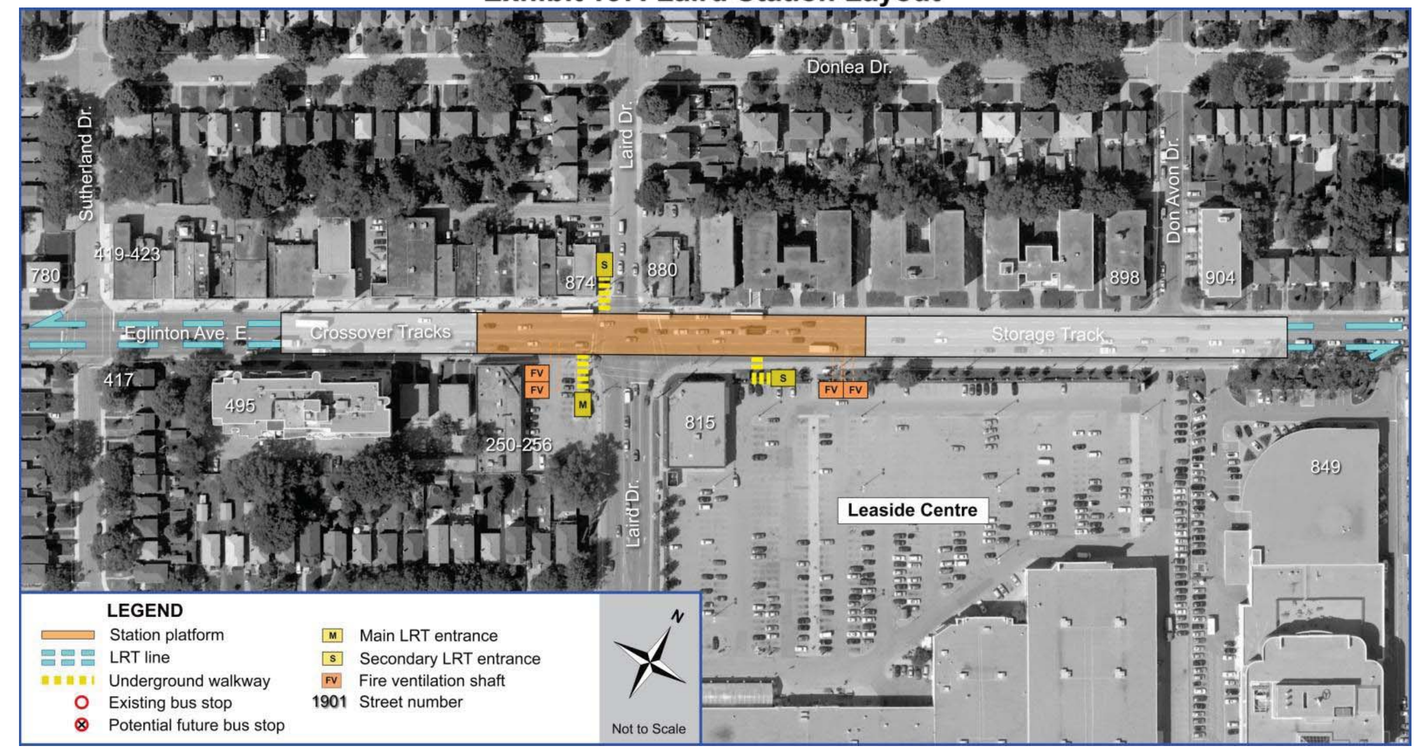
Crossover tracks approximately 90m long will be located directly to the west of the Laird Station platform, to allow trains to change direction by crossing from one track to the other track.

Storage (pocket) tracks approximately 200m long will be located to the east of the Laird Station platform within the underground tunnel. Storage (pocket) tracks are a third set of tracks longer than the length of a typical LRT located between the two normal tracks. LRT can enter the storage (pocket) tracks from either direction to allow other LRT to pass them by, reverse direction or bypass construction or breakdowns.

The LRT surfaces to the east of this location.

Exhibit 137 illustrates the recommended Laird Station layout.

Exhibit 137: Laird Station Layout



3.5.7.14 Leslie Stop

The Leslie Stop will be located at the intersection of Eglinton Avenue and Leslie Street. The LRT surfaces to the west of this intersection. The Leslie Stop is shown on Sheet No. 70. This intersection is the southern terminus of Leslie Street, a major arterial road that continues north through the City of Toronto to the northern City limits. The area northwest of this intersection is currently occupied by Sunnybrook Park, while the northeast corner is occupied by a car dealership. South of intersection is Ernest Thompson Seton Park.

Road Layout and Traffic Operations

Currently, westbound and southbound right turns travel through right turn cutoff lanes which channel vehicles away from the traffic signal. In promoting a safer environment for pedestrians and cyclists, these cutoff lanes will be removed. The recommended layout includes one shared left turn/ u-turn lane, and two through lanes on the eastbound approach.

3.5.7.15 Don Mills Station

Don Mills Station will be located at the intersection of Eglinton Avenue and Don Mills Road in a tunnel section extending from approximately 400 metres west of Don Mills Road to approximately 350 metres east of Eglinton Don Mills Road. Don Mills Station is shown on Sheets No. 72 and 73.

The area surrounding the intersection is a major employment district, with neighbouring pockets of residential land use.

Currently the land on all sides of the intersection is open space with a mix of commercial and residential buildings set further back from the roadways. At the immediate intersection, the land use is as follows:

- Northwest corner – Celestica parking lot;
- Northeast corner – City of Toronto green space, with Real Canadian Superstore and parking lot further north;
- Southeast corner – City of Toronto green space, with high rise residential and office buildings further south; and
- Southwest corner – Ontario Science Centre (OSC) parking lot, with West Don River further west and the OSC further south.

Station Box

The Eglinton Avenue and Don Mills intersection will be the point of interface for two LRT lines, the Eglinton Crosstown LRT (Eglinton Crosstown LRT) and the Don Mills LRT (Don Mills LRT). The Don Mills Station box will be aligned beneath Eglinton Avenue at the intersection with Don Mills Road, with the centre of the station box shifted slightly to the left of the intersection. The station box will have a footprint of approximately 150 metres long (with an initial platform length of 60 metres, expandable to 90 metres in the future) lying parallel to Eglinton Avenue.

Entrances, Fire Vents, Emergency Exit Buildings

There will be a main entrance located on the northeast corner of Eglinton Avenue and Don Mills Road. The main entrance will be co-located with the new Don Mills Station Bus Terminal, which is proposed at that location. There will be two secondary entrances, one at the southeast corner of Eglinton Avenue and Don Mills Road, and the other at the southwest corner.

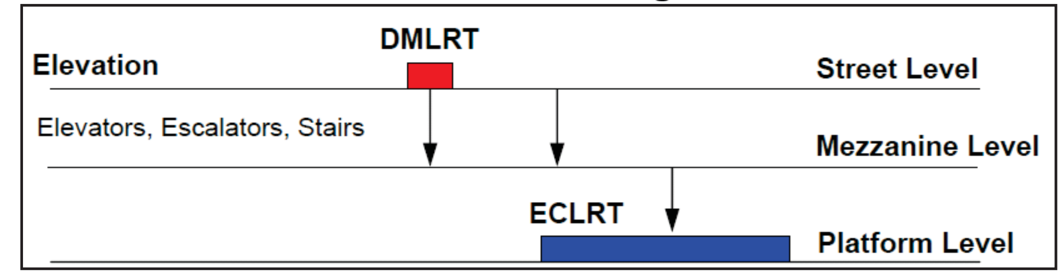
Interface with Transit

The Eglinton Avenue and Don Mills intersection will be the point of interface for two LRT lines, the Eglinton Crosstown LRT and the proposed Don Mills LRT (Don Mills LRT). A detailed interface assessment was conducted which determined that the interface providing the highest quality of Eglinton Crosstown LRT performance and incurring least delay at the intersection is one where:

- The Eglinton Crosstown LRT travels underground following the Eglinton Avenue alignment, with a centre platform;
- The Don Mills LRT travels surface through the intersection, with a centre platform located north of Eglinton Avenue;
- A bus terminal is provided in the northeast quadrant of Eglinton Avenue and Don Mills Road;
- A underground passenger transfer connection is provided between the Eglinton Crosstown LRT and the bus terminal; and
- A surface passenger transfer connection is provided between the Don Mills LRT and the bus terminal.

The elevation profile of Don Mills LRT and Eglinton Crosstown LRT at Eglinton Avenue and Don Mills Road is shown in **Exhibit 138.**

Exhibit 138: Elevation Profile for Don Mills LRT/Eglinton Crosstown LRT Interface



The proposed bus terminal will have 7 bays, with a dedicated passenger boarding/alighting area to accommodate the high number of passenger transfers.

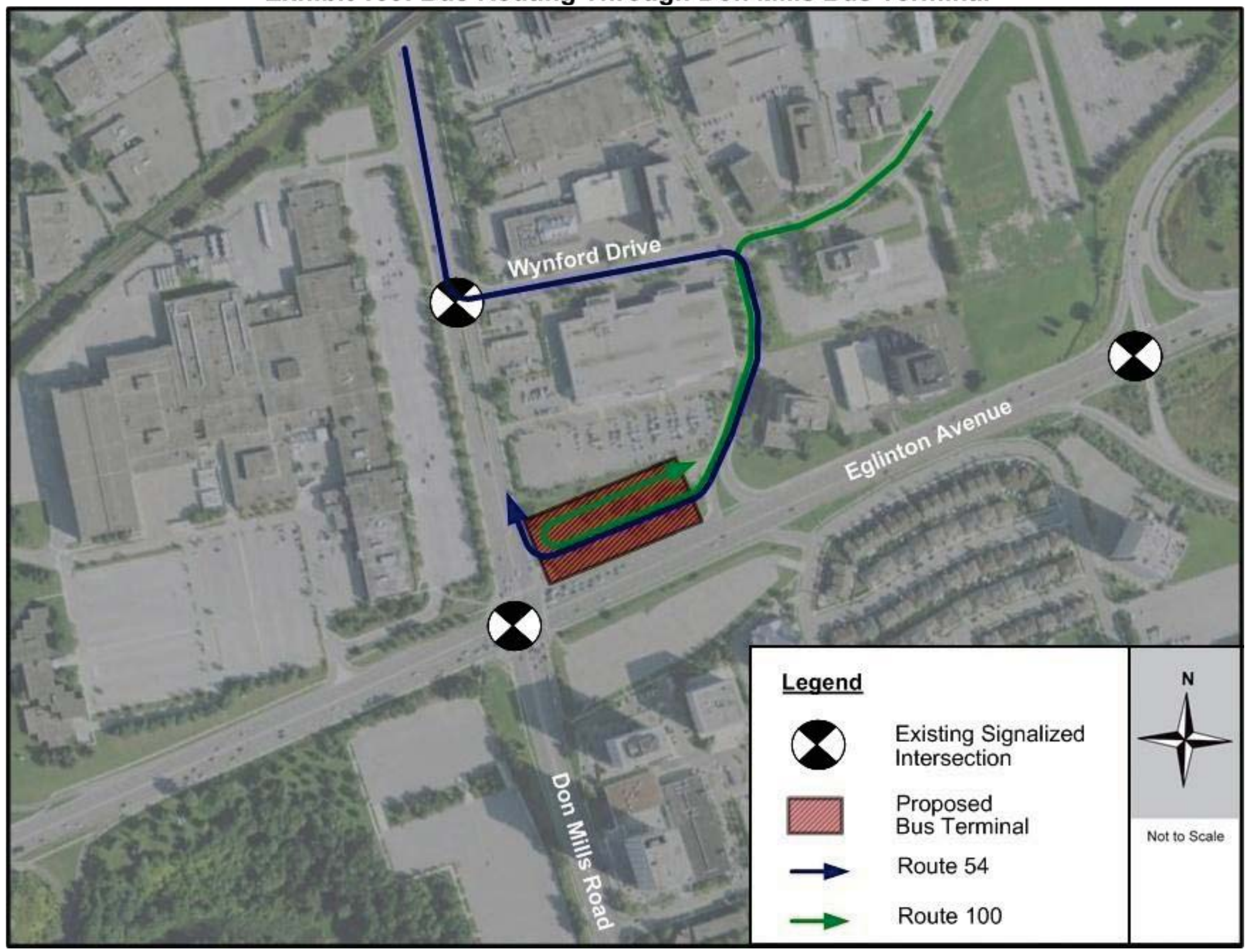
Following the implementation of the Eglinton Crosstown LRT but prior to the implementation of the Don Mills LRT, potentially four feeder buses will operate in the area: Route 54 Lawrence East, Route 100 Flemingdon Park, Route 25 Don Mills and possibly an Eglinton Avenue local service route. Once the Don Mills LRT has also been implemented, Route 25 Don Mills will be eliminated.

The proposed bus movements of the two main routes through the bus terminal are as follows:

- Route 54 Lawrence East: Entering the terminal via a southbound left at Don Mills Road and Wynford Drive, eastbound right at Gervais Drive, and southbound right from Gervais Drive. Exiting the terminal via a westbound right onto Don Mills Road; and
- Route 100 Flemingdon Park: Entering via a southbound right from Gervais Drive, and exiting via an eastbound left from the terminal onto Gervais Drive.

The proposed routings are illustrated in **Exhibit 139**. Based on these routings, only one bus route faces potential signal delay at one signalized intersection, the Don Mills Road and Wynford Drive intersection.

Exhibit 139: Bus Routing Through Don Mills Bus Terminal

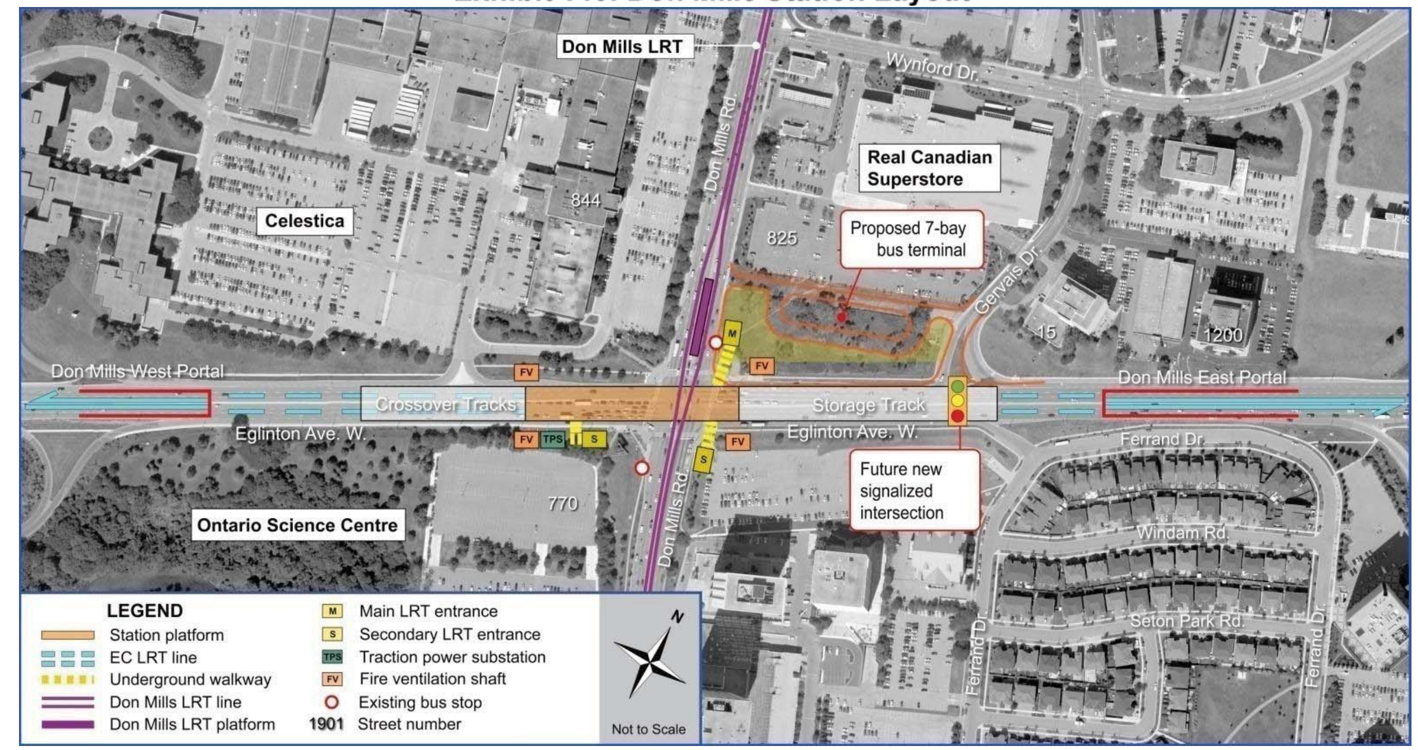


Road Layout and Traffic Operations

To accommodate the movement of buses through the bus terminal, a new signalized intersection will be provided at the intersection of Eglinton Avenue and Gervais Drive.

Exhibit 140 illustrates the recommended Don Mills Station layout.

Exhibit 140: Don Mills Station Layout



3.5.8 Don Mills to Kennedy Road

3.5.8.1 Ferrand Stop

The Ferrand Stop will be located at the intersection of Eglinton Avenue and the Don Valley Parkway southbound off ramp. The northwest corner of this intersection is currently occupied by commercial office buildings. East of the intersection is a major north-south highway (The Don Valley Parkway). The southwest corner of this intersection is occupied by a residential neighborhood. The Ferrand Stop is shown on Sheet No. 74.

Stop Layout

The Ferrand Stop will include one centre platform on Eglinton at the Don Valley Parkway West Ramp, just west of the signalized intersection. A centre platform is provided at this location because the geometric configuration (i.e. horizontal curvature and vertical decline) of the east side of the intersection makes it a less advantageous location to provide farside or nearside platforms and the centre platform better services the passenger generators at this location.

Road Layout and Traffic Operations

Currently, eastbound and westbound right turns travel through right turn cutoff lanes which channel vehicles away from the traffic signal on the Don Valley Parkway. In promoting a safer environment for pedestrians and cyclists, the eastbound cutoff lane will be removed. The westbound right turn cutoff will remain since the ramp configuration requires it. Left turns are not provided and will continue to not be provided at the intersection of Eglinton Avenue at Don Valley Parkway West.

The southbound through lane functions as a bus queue-jump lane. Bicycle lanes will also be provided along Eglinton Avenue in the east and west directions.

3.5.8.2 Wynford Stop

The Wynford Stop will be located in the area of Eglinton Avenue and Wynford Road. The Wynford Stop is shown on Sheet No. 76. In the vicinity of this stop are large condominium buildings on the north and south sides of Eglinton Avenue. The building on the south side is complete, and includes a surface access to the sidewalk on the south side of Eglinton Avenue. The building on the north side is under construction.

Currently, Eglinton Avenue and Wynford Drive are grade separated. Eglinton Avenue is supported by a bridge structure over top of Wynford Drive. The two roads are connected by ramps on Eglinton Avenue just east of the underground Wynford Drive. Due to the grade separation at this stop location, accessibility concerns arose. To address these concerns, two options were assessed at this location.

The first alternative provides a centre platform at the stop, and traffic signals serving pedestrians only to provide access from each side of Eglinton Avenue to the centre platform. Wynford Drive remains grade-separated from Eglinton Avenue. There is currently a staircase on Wynford Drive for pedestrians to access Eglinton Avenue and then the platform.

The second alternative changes the road network by creating a surface intersection between Wynford Drive and Eglinton Avenue. This creates a more “traditional” intersection of two roads. Sidewalks would be provided on the new Wynford Drive legs. Traffic signals would serve both the vehicular movements and the pedestrian movements.

The proposed realignment will result in an encroachment into the East Don River valleylands. The vegetation community in this area is comprised of a high quality dry fresh sugar maple – beech deciduous forest (FOD5-2) that provides slope stabilization and a natural migration corridor along the East Don River. The proposed encroachment will extend over the top of bank in this location and will require a large retaining wall or fill slope to support the Wynford Drive road platform. Given the significance of impact in this location, including an encroachment into areas regulated by TRCA under Ontario Regulation 166/06 and Toronto Ravine and Natural Feature Protection By-law, the realignment of Wynford Drive will be investigated further during design.

It was determined that the second alternative would provide the best overall accessibility.

Stop Layout

The Wynford Stop will include one centre platform on Eglinton Avenue directly above the current alignment of Wynford Drive, just west of the proposed signalized intersection.

Road Layout and Traffic Operations

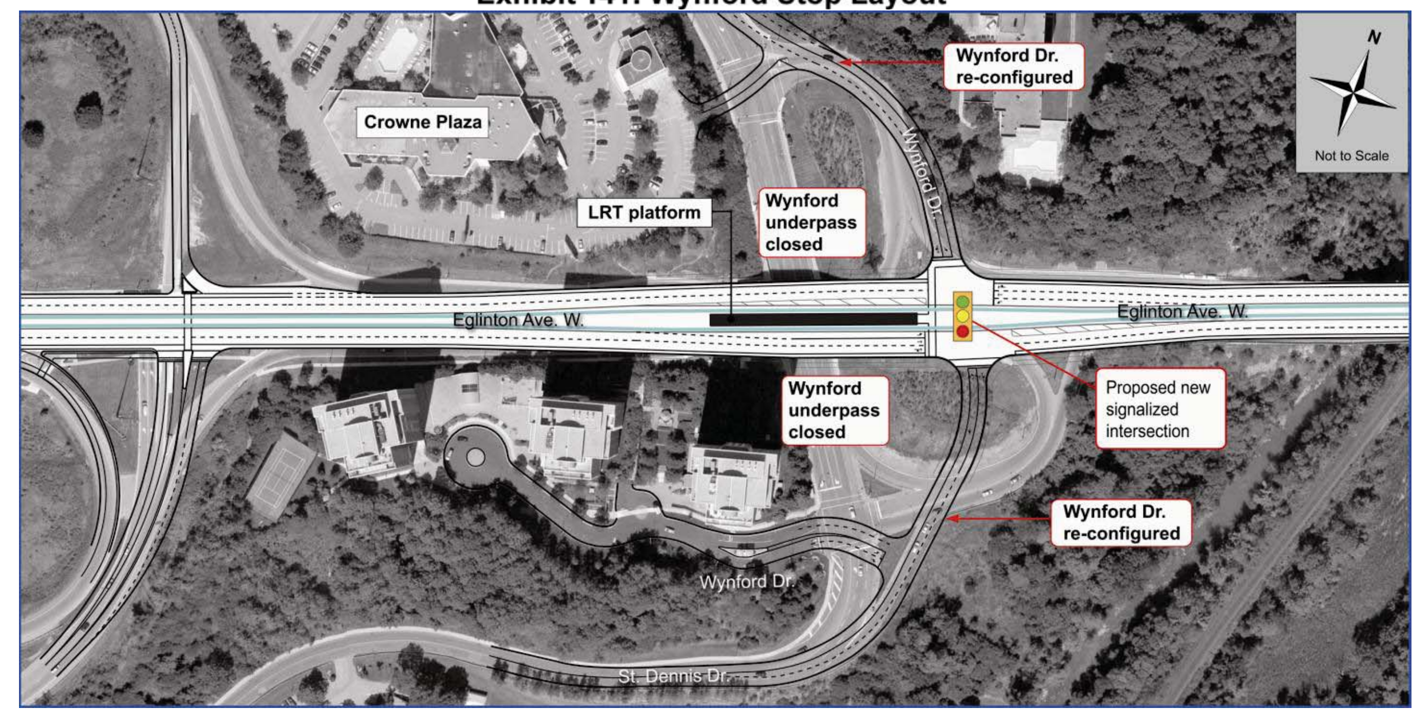
Currently, the ramp configuration between the grade separated Eglinton Avenue and Wynford Drive provides only right turns access between the two streets. The proposed signalized intersection between Eglinton Avenue and Wynford Drive will also accommodate left turns off Wynford onto Eglinton Avenue. In the east and west directions, U-turns will also be permitted at this intersection to allow vehicle access to unsignalized intersections and driveways between traffic signals.

In terms of lane configuration, the preferred scenario includes one through lane, one left turn lane, and one shared through-right turn lane in the eastbound approach, and one left turn lane, two through lanes and a dedicated right turn in the westbound approach. In the northbound and southbound approaches, a dedicated left turn lane and a shared through and right turn lane are provided. Bicycle lanes will also be provided along Eglinton Avenue in the east and west directions.

The existing roadways that will no longer be used will be removed.

Exhibit 141 illustrates the proposed Wynford Stop layout.

Exhibit 141: Wynford Stop Layout



3.5.8.3 Bermondsey Stop

The Bermondsey Stop will be located at the intersection of Eglinton Avenue and Bermondsey Road/Sloane Avenue. The Bermondsey Stop is shown on Sheets No. 78 and 79. This location is surrounded by a mix of residential and commercial development. The northwest corner of this intersection is currently occupied by low-rise apartment units, while the northeast corner is occupied by high-rise apartment buildings. The southeast corner of the intersection is occupied by a strip of commercial stores, which includes a coffee shop and a car dealership. The southwest corner of the intersection is occupied by a gas station. This stop will have far side platforms.

3.5.8.4 Victoria Park Stop

The Victoria Park Stop will be located at the intersection of Eglinton Avenue and Victoria Park Avenue. The Victoria Park Stop is shown on Sheet No. 81. Currently, the northwest corner of this intersection is occupied by a complex of apartment buildings. The northeast corner of the intersection is occupied by the parking lot of a shopping plaza (The Golden Mile Supercentre). The southeast corner of the intersection is currently an unoccupied green parcel, and the southwest corner of the intersection is occupied by a residential neighborhood.

Stop Layout

The Victoria Park Stop will include one centre platform located on the east side of the intersection. A centre platform is provided at this location because the geometric configuration (i.e. horizontal curvature) of the west side of the intersection makes it a less advantageous location to provide farside or nearside platforms.

Road Layout and Traffic Operations

Under existing conditions, eastbound and westbound left turns are permitted at the intersection of Eglinton Avenue and Victoria Park Avenue. A detailed traffic analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, truck routing, general traffic, and pedestrians to determine which scenario was most beneficial to the travellers. Based on this analysis, the preferred scenario was a four phase signal operation at Eglinton Avenue and Victoria Park Avenue with rerouted east-west and north-south left turn movements as follows:

- Northbound and southbound left turns to remain prohibited as existing
- Eastbound left turns rerouted through Eglinton Square
- Westbound left turns rerouted through Eglinton Square

Redesign of the intersection of Eglinton Avenue and Eglinton Square is proposed to accommodate the rerouted eastbound right turns. **Exhibit 142** illustrates the recommended Victoria Park Stop layout and rerouted east-west left turns.

Exhibit 142: Victoria Park Stop Layout

3.5.8.5 Pharmacy Stop

The Pharmacy Stop will be located at the intersection of Eglinton Avenue and Pharmacy Avenue. The Pharmacy Stop is shown on Sheets No. 82 and 83. Currently, the northwest corner of this intersection is occupied by a shopping plaza, which includes a supermarket. The northeast corner of the intersection is occupied by a gas station, and is adjacent to big-box retail store. The southeast corner of the intersection is currently occupied by an industrial development, and the southwest corner of the intersection is occupied by a shopping plaza.

Stop Layout

The Pharmacy Stop will include one centre platform located on the east side of the Eglinton Avenue and Pharmacy Avenue intersection.

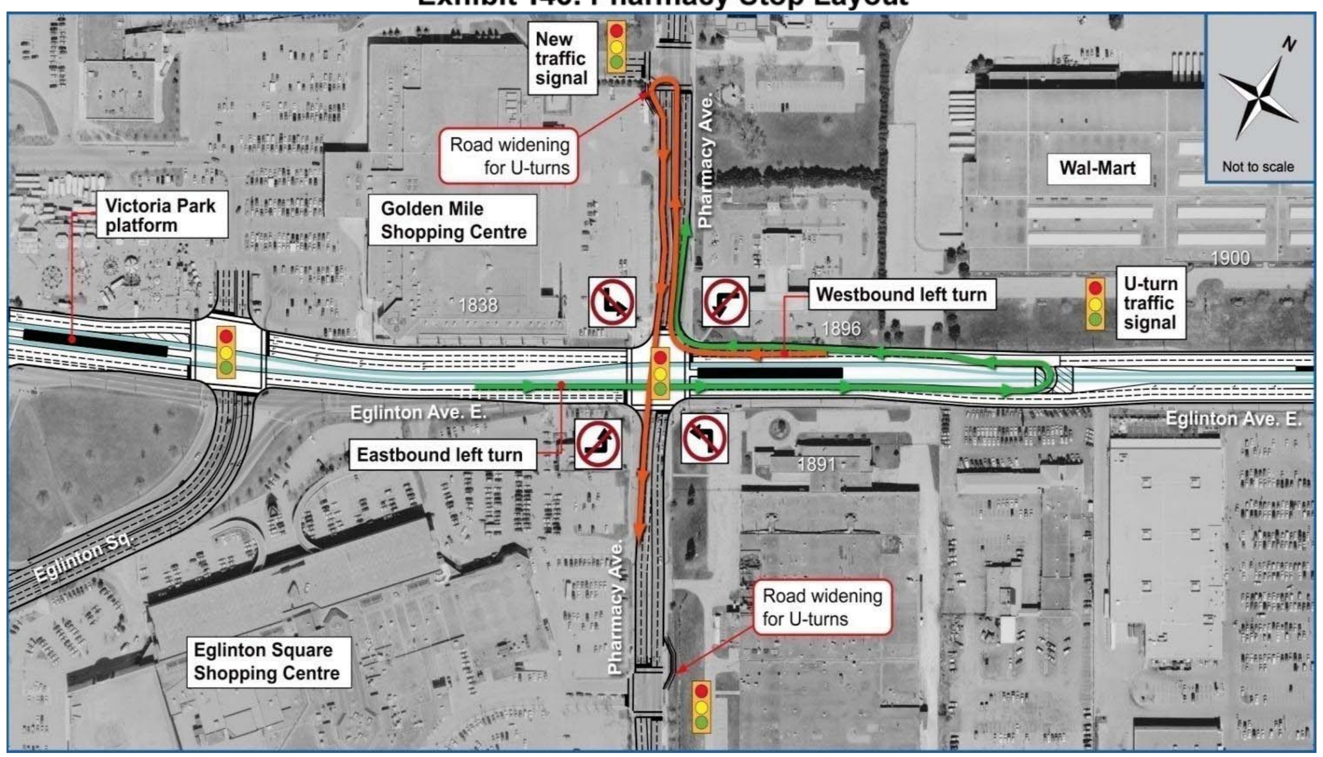
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Pharmacy Avenue. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, general traffic, and pedestrians to determine which scenario was most beneficial to the travellers. Based on this analysis, the preferred scenario was a four phase signal operation at Eglinton Avenue and Pharmacy Avenue with rerouted east-west and north-south left turn movements as follows:

- Northbound left turns rerouted to U-turn at a new traffic signal at Craigton Drive;
- Southbound left turns rerouted to U-turn at an existing traffic signal at the shopping plaza access;
- Eastbound left turns rerouted to U-turn at a new midblock U-turn signal on Eglinton Avenue approximately 200 metres east of Pharmacy Avenue; and
- Westbound left turns rerouted to U-turn at a new traffic signal at Craigton Drive.

Exhibit 143 illustrates the recommended Pharmacy Stop layout and rerouted east-west left turns.

Exhibit 143: Pharmacy Stop Layout



3.5.8.6 Lebovic Stop

The Lebovic Stop will be located at the intersection of Eglinton Avenue and Lebovic Drive. The Lebovic Stop is shown on Sheets No. 83 and 84. This location is surrounded by commercial retail development. The northwest corner of this intersection is currently occupied by commercial shopping plaza. The northeast corner is occupied by a car dealership, which is adjacent to a big-box shopping plaza further east. The southeast corner of the intersection is occupied by a commercial retail plaza, and the southwest corner of the intersection is occupied by Eglinton Town Centre.

3.5.8.7 Warden Stop

The Warden Stop will be located at the intersection of Eglinton Avenue and Warden Avenue. The Warden Stop is shown on Sheets No. 84 and 85. Currently, the northwest corner of this intersection is occupied by a financial office building, and the northwest corner of this intersection is occupied by a commercial office building. The southeast corner of the intersection is occupied by small commercial strip adjacent to a car dealership and the southwest corner is occupied by a larger commercial shopping strips.

Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Warden Avenue. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, truck routing, general traffic, and pedestrians to determine which scenario was most beneficial to the travellers. Based on this analysis, the preferred scenario was a traditional eight phase signal operation at Eglinton Avenue and Warden Avenue with existing left turn movements remaining at the intersection.

Stop Layout

This stop will have far side platforms.

3.5.8.8 Birchmount Stop

The Birchmount Stop will be located at the intersection of Eglinton Avenue and Birchmount Road. The Birchmount Stop is shown on Sheet No. 87. Currently, the northwest corner of this intersection is occupied by a parking lot connected to an office building. The northeast corner of the intersection is occupied by Toronto Police 41 Division. The southeast corner of the intersection is occupied by a place of worship and the southwest corner of the intersection is occupied by a large institutional development.

Stop Layout

The Birchmount Stop will include two nearside platforms located before the intersection in the direction of travel. Nearside stops are provided at this location because eastbound and westbound left turn lanes are not provided, and the nearside stops prevent the LRVs from double-stopping (i.e. stopping once at a red light, and then stopping again at the platform).

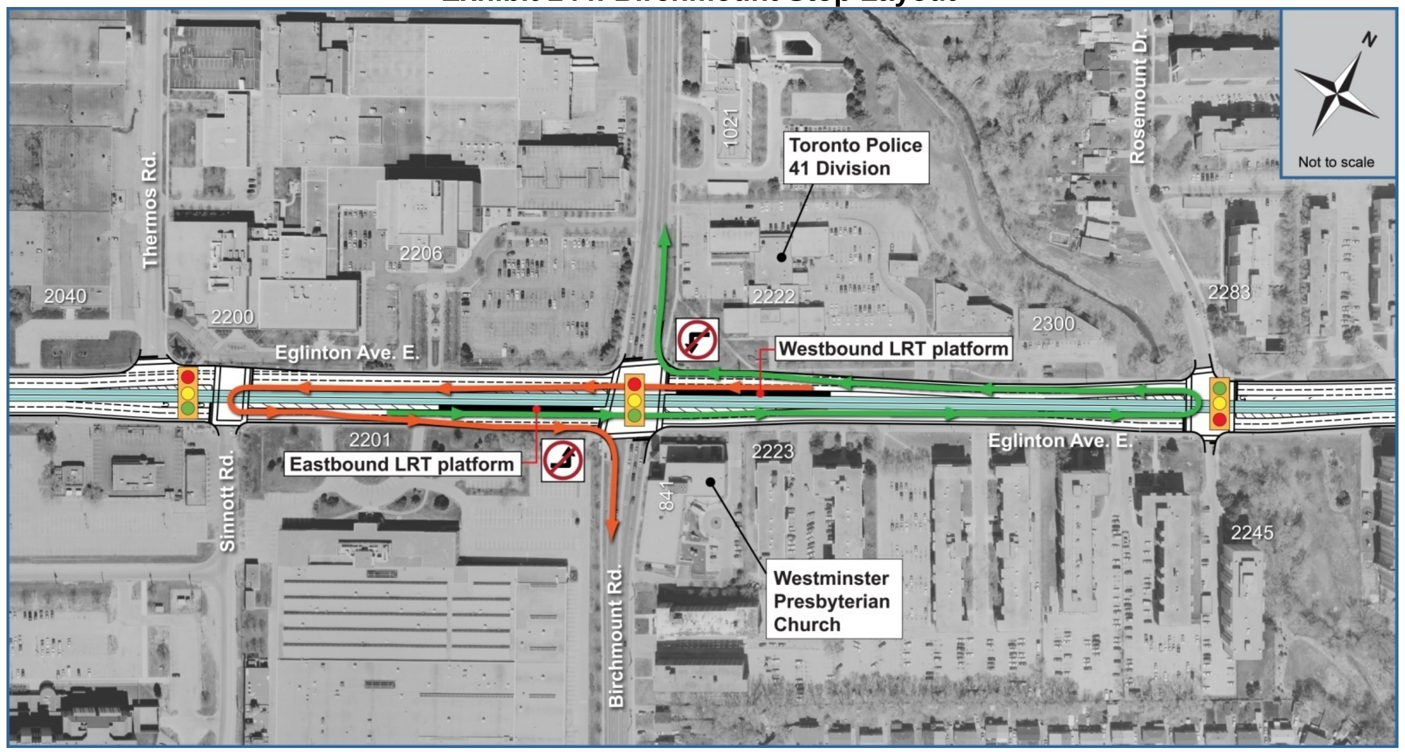
Road Layout and Traffic Operations

Under existing conditions, left turns are permitted in all directions at the intersection of Eglinton Avenue and Birchmount Road. A detailed traffic-traveller analysis was conducted at this location, comparing operation with traditional left turns to various left turn rerouting scenarios, and also considering impacts on truck routing. The scenarios were compared based on the delays experienced by the Eglinton Crosstown LRT, cross-street transit vehicles, truck routing, general traffic, and pedestrians to determine which scenario was most beneficial to the travellers. Based on this analysis, the preferred scenario was a five phase signal operation (four phase during the AM peak) at Eglinton Avenue and Birchmount Road with rerouted east-west left turn movements as follows:

- Eastbound left turns rerouted to U-turn at an existing traffic signal at Rosemont Drive; and
- Westbound left turns rerouted to U-turn at an existing traffic signal at Sinnott Road.

Exhibit 144 illustrates the recommended Birchmount Stop layout and rerouted east-west left turns.

Exhibit 144: Birchmount Stop Layout



3.5.8.9 Ionview Stop

The Ionview Stop will be located at the intersection of Eglinton Avenue and Ionview Drive. The Ionview Stop is shown on Sheets No. 88 and 89. The northwest corner of the intersection is currently occupied by apartment buildings and the northeast corner of the intersection is occupied by a strip of retail development. The southeast and southwest corners of the intersection are occupied apartment buildings.

3.5.8.10 Kennedy Station

The Eglinton Crosstown LRT route will terminate at Kennedy Subway Station. The connection to Kennedy Station subway is being addressed in a separate study.

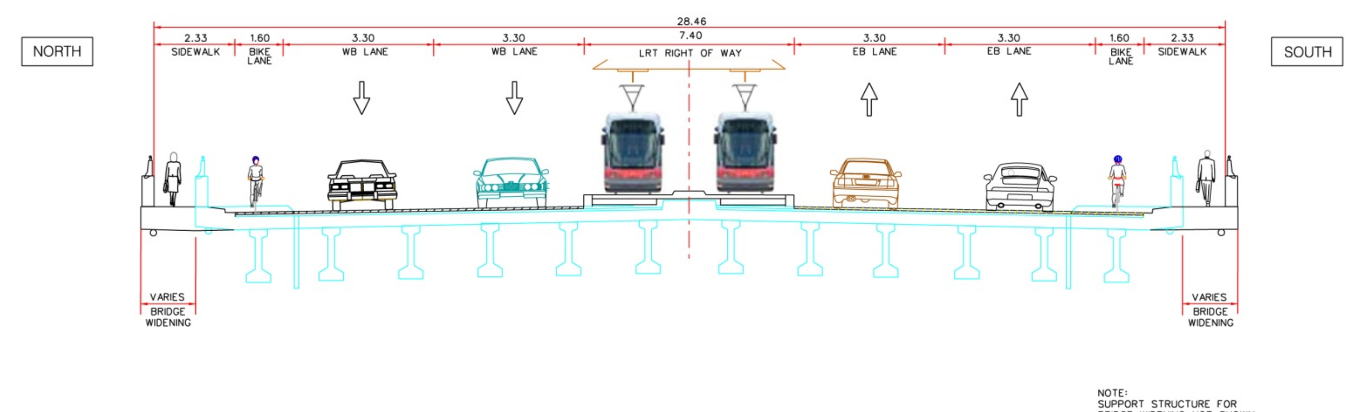
3.5.8.11 Bridge Modifications

The following sections describe the proposed modifications to existing bridges.

- East Don River Bridge - Interior girders are adequate to accommodate LRT along centre line of Eglinton Avenue without strengthening, providing lightweight trackbed is utilized. Exterior girders require strengthening to accommodate widening. Widening of 1.15 metres on both sides required.
- Wynford Drive - Bridge to be removed.
- Pedestrian bridge between Royal York Road and Scarlett Road - Bridge to be removed.
- West Don River Bridge - Girders are adequate to accommodate LRT right-of-way and required deck widening. Supplementary support or deck strengthening may be required to accommodate deck widening. Widening of 1.05 metres on both sides required.
- Eglinton Avenue West over Black Creek - Widening of 1.55 metres on both sides required. Widening will be accomplished by widening abutments and adding new deck and girders outside current bridge.
- Eglinton Avenue West over Mimico Creek - No girder strengthening required to accommodate centre line right-of-way and platform. Significant widening is required. Widening will be accomplished by widening abutments and adding new deck and girders outside current bridge. Widening of 5.55 metres on the south side and 5.50 metres on the north side required.
- Eglinton Avenue West Underpasses under Highway 427 and Ramps (8 underpass bridges) - Modification required on the south side of each underpass, entailing construction of retaining wall in side slope to accommodate sidewalk. Eastbound and westbound LRT tracks are separated to clear centre bridge support piers.

The bridge modifications will be further developed in the design phase. A typical bridge widening cross section is shown in **Exhibit 145**.

Exhibit 145: Typical Cross Section for Bridge Widening



3.6 Construction Methods

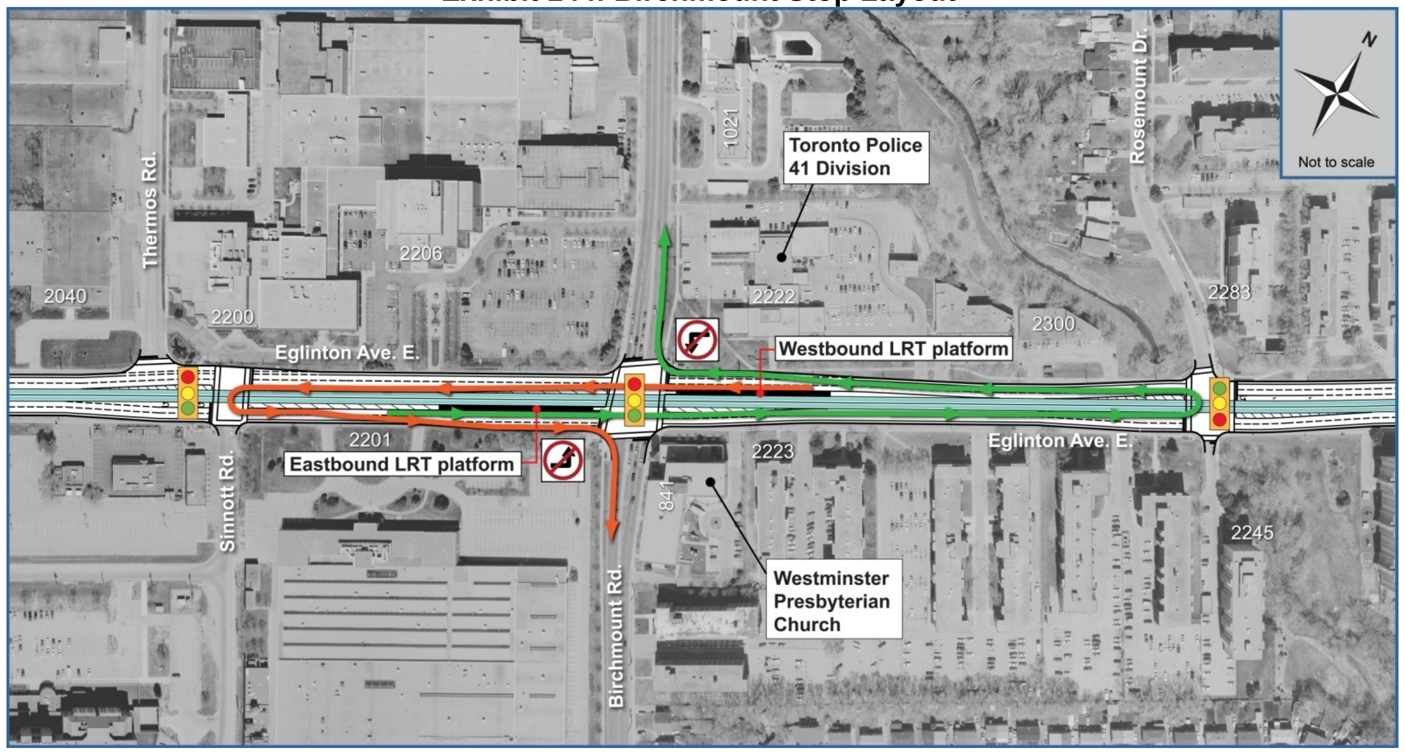
Once the preferred design is identified, it is important to address the construction methods for both the surface sections and the underground section.

3.6.1 Surface Construction

The construction in the surface sections is very similar to a typical road widening construction project. Construction staging for the east and west surface sections will likely proceed as follows:

- Reconstruct the curb line on one side of the roadway and provide continuous traffic lanes on the other side of the roadway. The reconstruction will include rebuilding the curb lines,

Exhibit 144: Birchmount Stop Layout



3.5.8.9 Ionview Stop

The Ionview Stop will be located at the intersection of Eglinton Avenue and Ionview Drive. The Ionview Stop is shown on Sheets No. 88 and 89. The northwest corner of the intersection is currently occupied by apartment buildings and the northeast corner of the intersection is occupied by a strip of retail development. The southeast and southwest corners of the intersection are occupied apartment buildings.

3.5.8.10 Kennedy Station

The Eglinton Crosstown LRT route will terminate at Kennedy Subway Station. The connection to Kennedy Station subway is being addressed in a separate study.

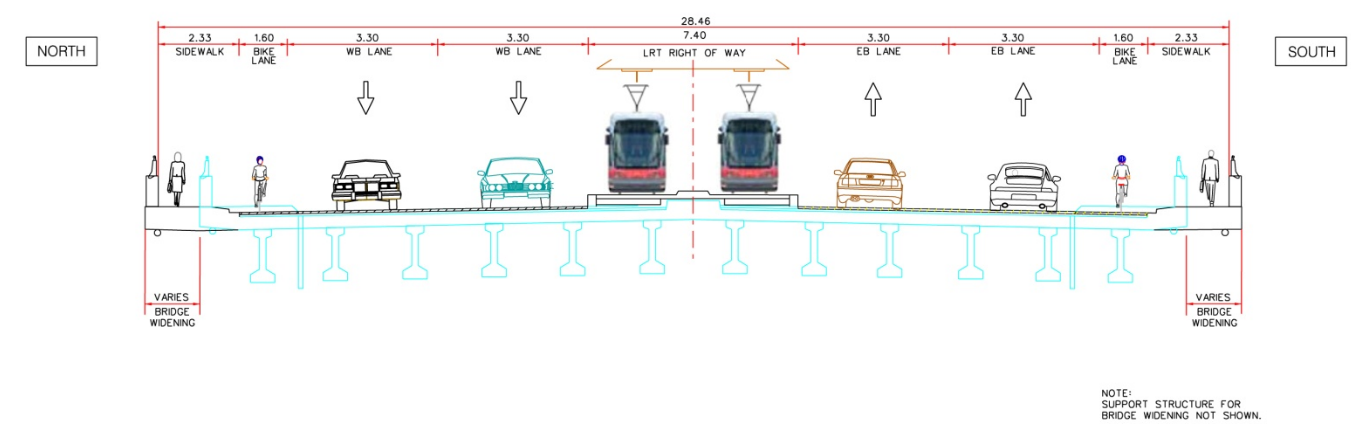
3.5.8.11 Bridge Modifications

The following sections describe the proposed modifications to existing bridges.

- East Don River Bridge - Interior girders are adequate to accommodate LRT along centre line of Eglinton Avenue without strengthening, providing lightweight trackbed is utilized. Exterior girders require strengthening to accommodate widening. Widening of 1.15 metres on both sides required.
- Wynford Drive - Bridge to be removed.
- Pedestrian bridge between Royal York Road and Scarlett Road - Bridge to be removed.
- West Don River Bridge - Girders are adequate to accommodate LRT right-of-way and required deck widening. Supplementary support or deck strengthening may be required to accommodate deck widening. Widening of 1.05 metres on both sides required.
- Eglinton Avenue West over Black Creek - Widening of 1.55 metres on both sides required. Widening will be accomplished by widening abutments and adding new deck and girders outside current bridge.
- Eglinton Avenue West over Mimico Creek - No girder strengthening required to accommodate centre line right-of-way and platform. Significant widening is required. Widening will be accomplished by widening abutments and adding new deck and girders outside current bridge. Widening of 5.55 metres on the south side and 5.50 metres on the north side required.
- Eglinton Avenue West Underpasses under Highway 427 and Ramps (8 underpass bridges) - Modification required on the south side of each underpass, entailing construction of retaining wall in side slope to accommodate sidewalk. Eastbound and westbound LRT tracks are separated to clear centre bridge support piers.

The bridge modifications will be further developed in the design phase. A typical bridge widening cross section is shown in **Exhibit 145**.

Exhibit 145: Typical Cross Section for Bridge Widening



3.6 Construction Methods

Once the preferred design is identified, it is important to address the construction methods for both the surface sections and the underground section.

3.6.1 Surface Construction

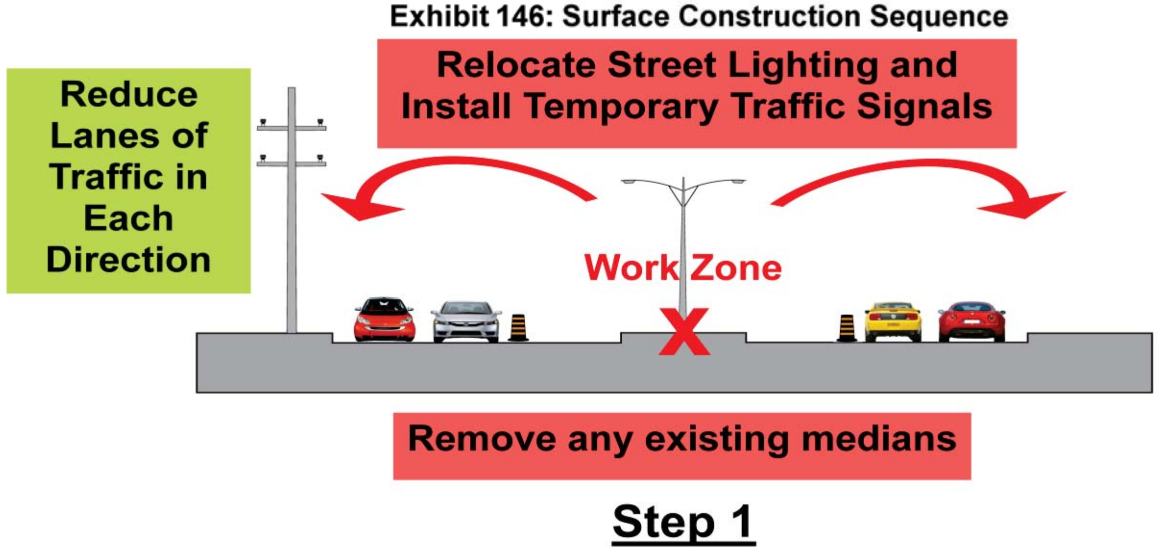
The construction in the surface sections is very similar to a typical road widening construction project. Construction staging for the east and west surface sections will likely proceed as follows:

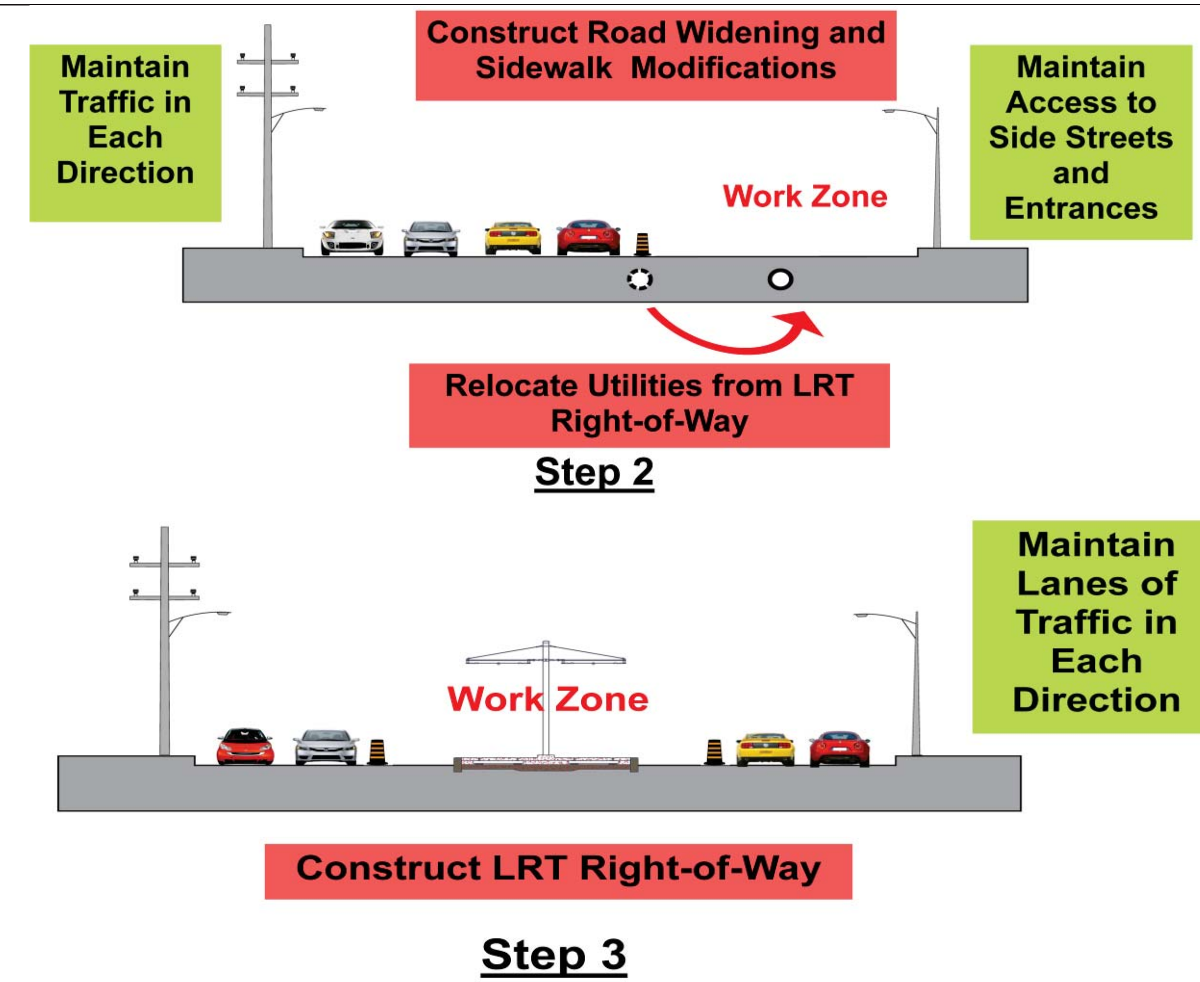
- Reconstruct the curb line on one side of the roadway and provide continuous traffic lanes on the other side of the roadway. The reconstruction will include rebuilding the curb lines, gutters, catch basins etc. It should be noted that the reconstruction of the curb line may potentially occur simultaneously during the utility relocation.

- Relocate the underground utility plant as required. This will include relocation of illumination poles and above ground utility poles, relocation of traffic signals and provision for temporary traffic signals where required.
- Reconstruct the other side of the roadway after the first side is completed. Traffic lanes in each direction on Eglinton Avenue will be maintained where feasible. A minimum of one lane in each direction will be provided at all times. Resurface the roadway after the roadway reconstruction.
- Construct new LRT facilities within the LRT right-of-way, including the track bed, track slab, tracks, LRT curbs, poles, platforms, etc.
- Construct streetscaping and urban design elements and provide bicycle lanes on both sides of the roadway as included in the plan.

Exhibit 146 illustrates this sequence.

Exhibit 146: Surface Construction Sequence





The bridge construction methods will vary between bridges depending on the extent of modification and structure type. The Mimico Creek and Black Creek Bridges are single span structures. In these cases, girders and abutments can be added without entering the watercourse. The West Don River and East Don River Bridges are multi span structures. The widening required for these bridges is minor and can be done from the bridge deck without entering the watercourse by adding a cantilever deck on the existing structure. The exact construction required for these structures will be determined during design.

3.6.2 Underground Construction

The underground section will be constructed using the tunnelling method between stations, and the cut and cover method at stations and special tracks work areas.

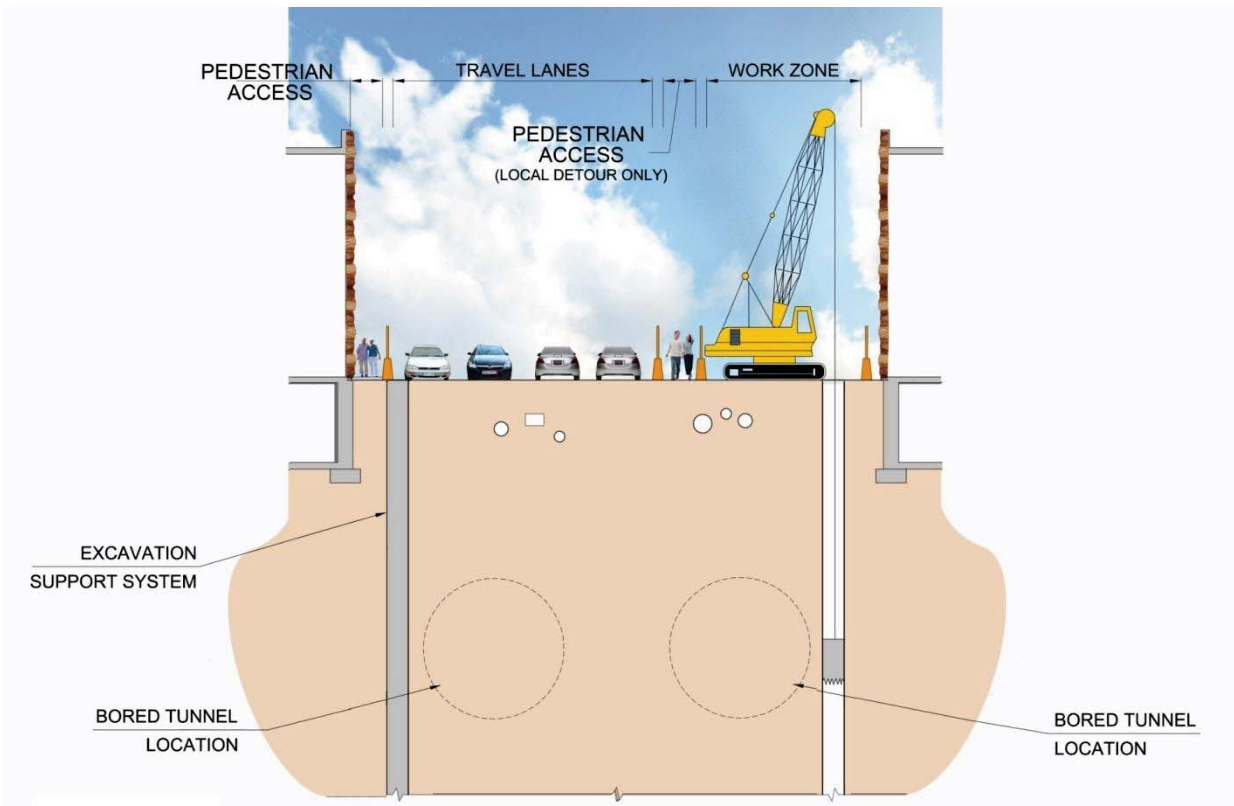
Cut and cover construction can be very disruptive and needs to be carefully planned. The construction sequence shown in this section allows portions of the roadway to be available at all times and minimizes the impact of construction to the extent possible.

3.6.2.1 Cut and Cover

The cut and cover method will be used at all 13 underground stations and will typically be 150 metres at eight stations. Cross over tracks and storage (pocket) tracks will be included in the design of the underground section, which will extend the cut and cover length to a total of 440 metres at Keele; Eglinton West (Allen); Eglinton (Yonge); Laird and Don Mills stations. Cut and Cover construction of underground stations will proceed in the following steps:

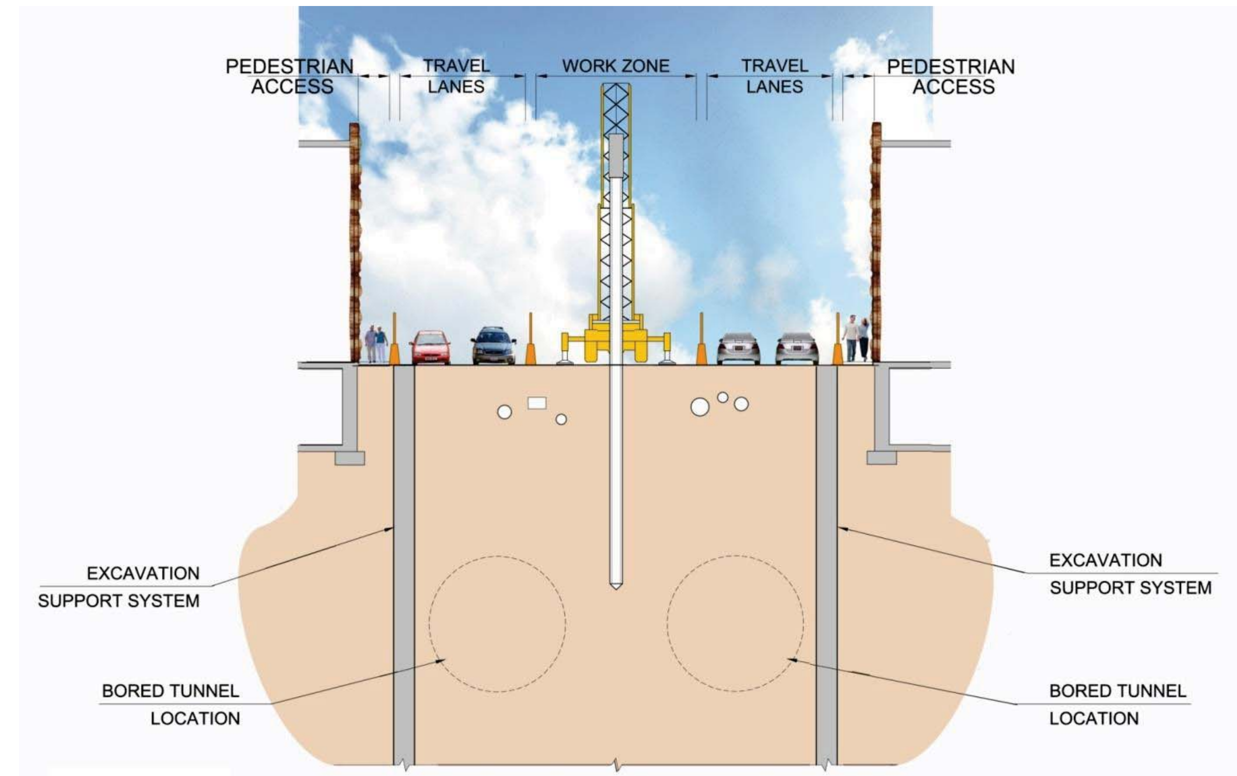
Step 1: Construct South Wall

- An excavation support wall will be constructed along the south side of Eglinton Avenue;
- Traffic lanes will be realigned to the north side of Eglinton Avenue and operate between protective barriers; and
- Utilities in the path of the support wall will be relocated.



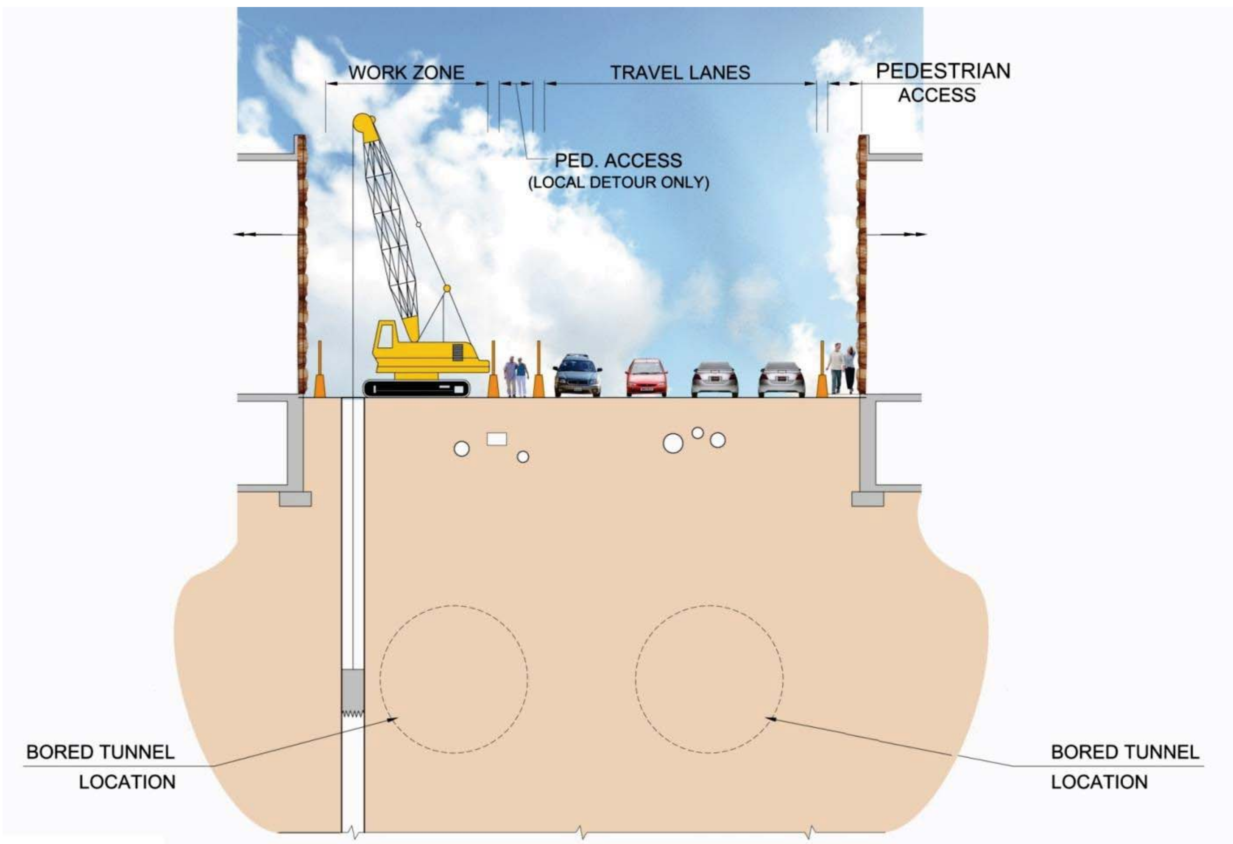
Step 2: Construct Centre Wall

- The work zone moves to the centre of the street where centre supports are constructed;
- Traffic is split along either side of the centre work zone and barriers are erected; and
- Utilities in the path of the support wall will be supported.



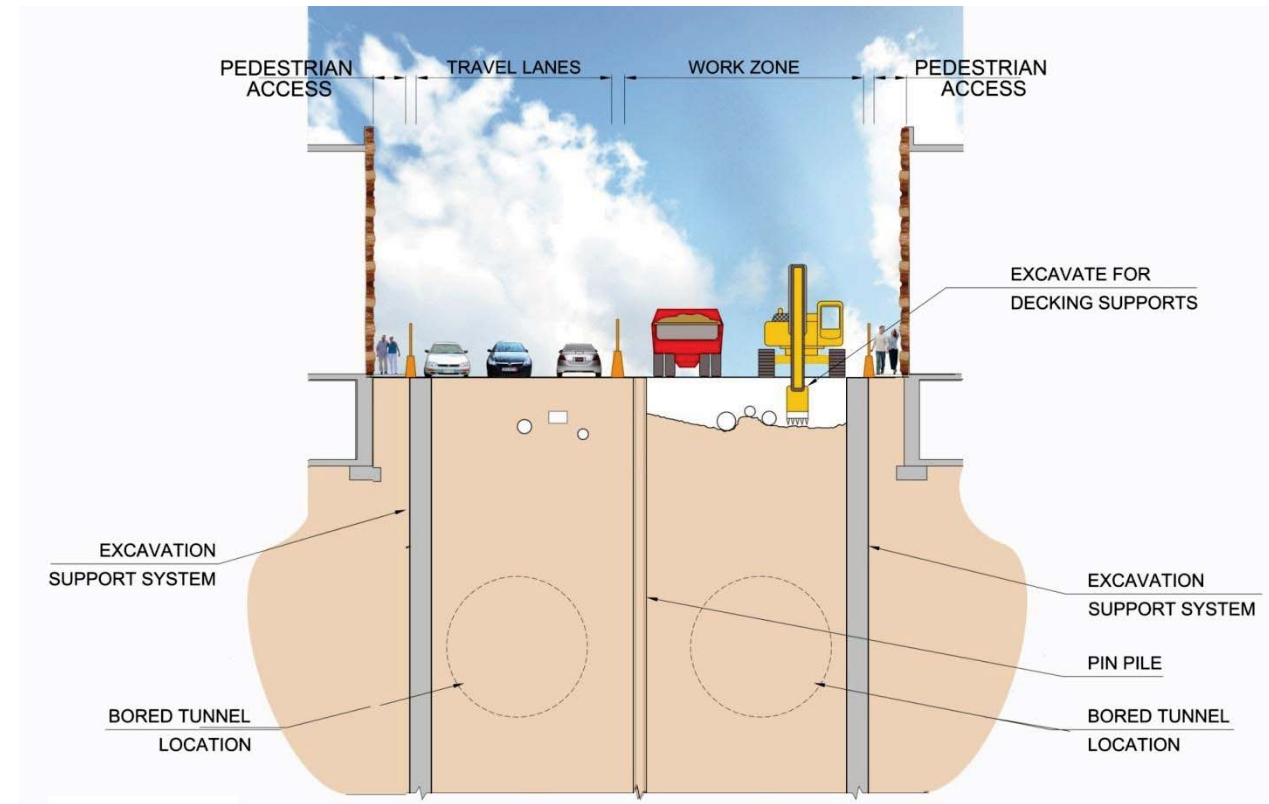
Step 3: Construct North Wall

- An excavation support wall will be constructed along the north side of Eglinton Avenue;
- Traffic lanes will be realigned to the south side of Eglinton Avenue and operate between protective barriers; and
- Utilities in the path of the support wall will be supported.



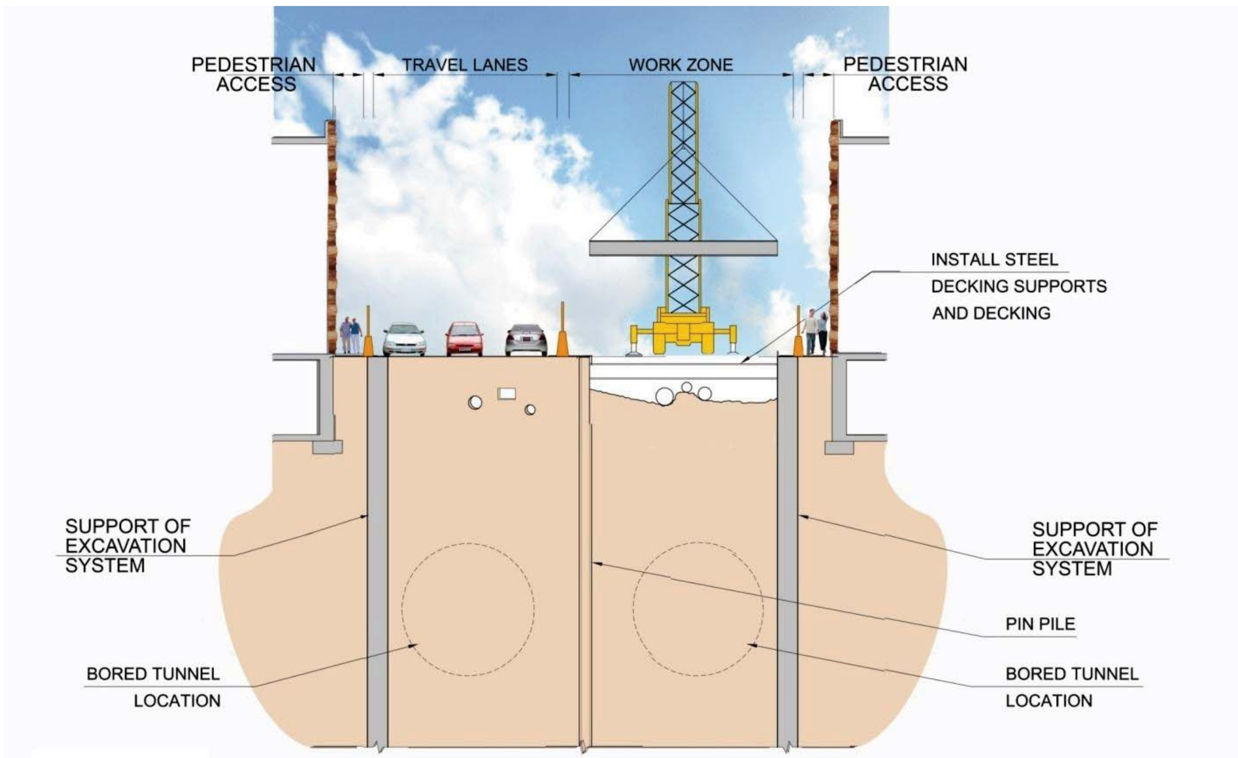
Step 4: Excavate South Side for Decking Support

- Traffic is again realigned to the north side of Eglinton;
- Shallow excavation to prepare for erecting decking supports begins on the south side; and
- Utilities in the path of decking supports will be relocated.



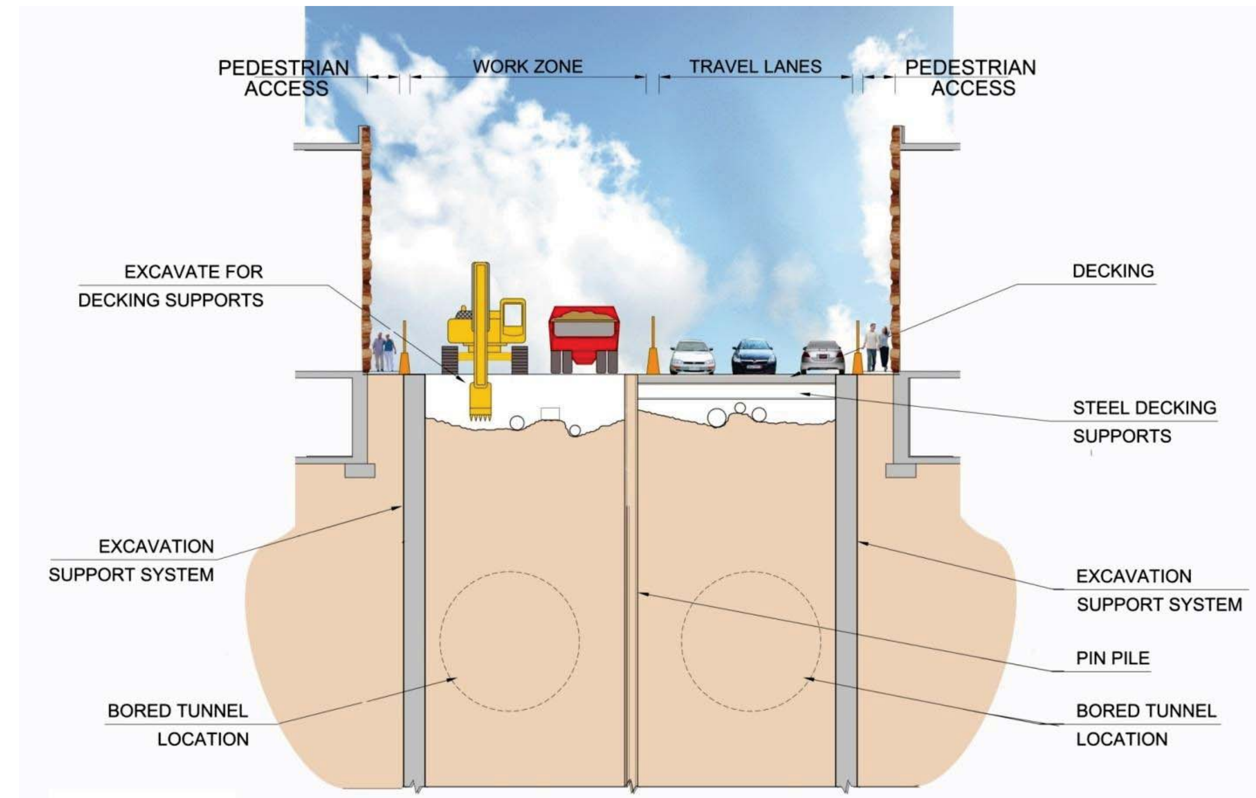
Step 5: Install Decking-South Side

- Steel supports are installed on south side;
- Utilities are suspended from supports; and
- Surface decking is installed on south side.



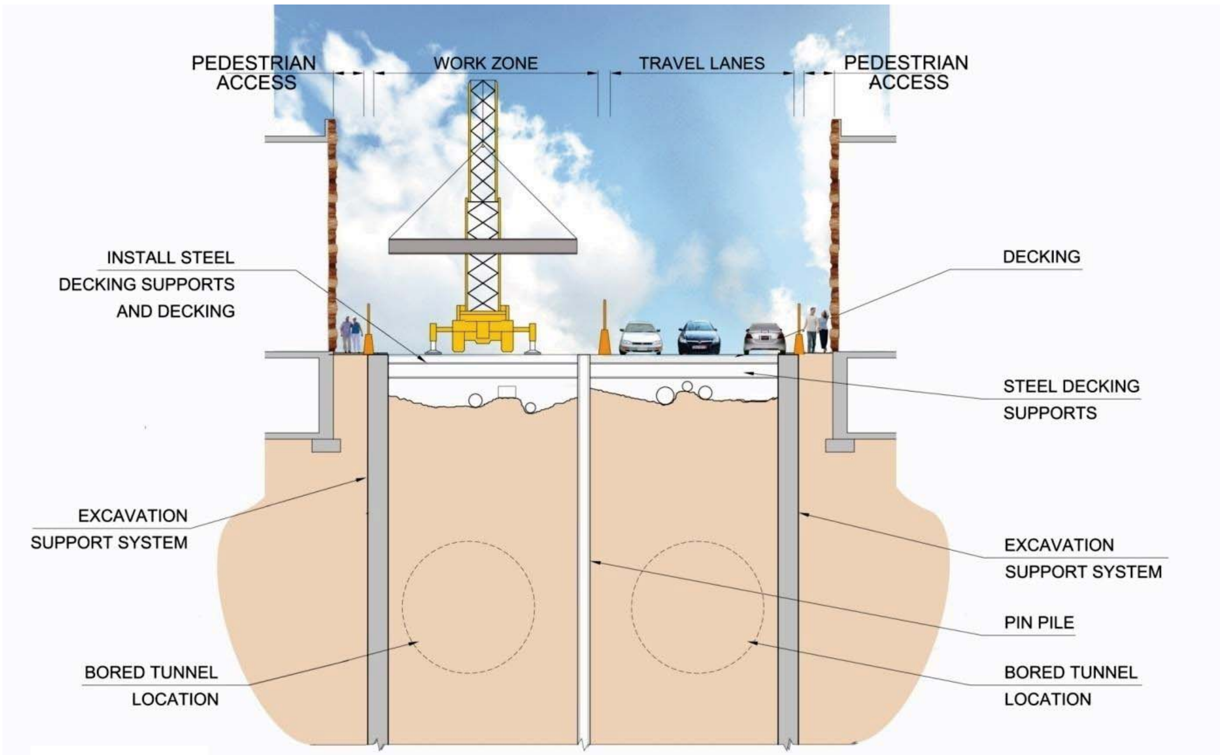
Step 6: Excavate North Side for Decking Support

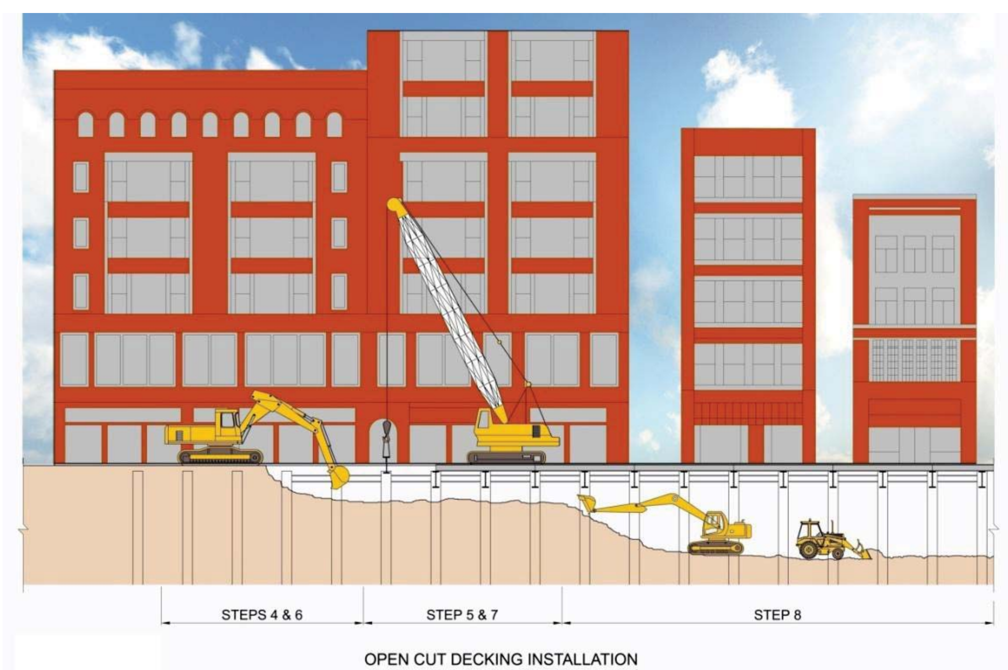
- Shallow excavation to prepare for erecting decking support begins on the north side;
- Traffic is again realigned to the south side of Eglinton; and
- Utilities in the path of decking supports will be relocated.



Step 7: Install Decking North Side

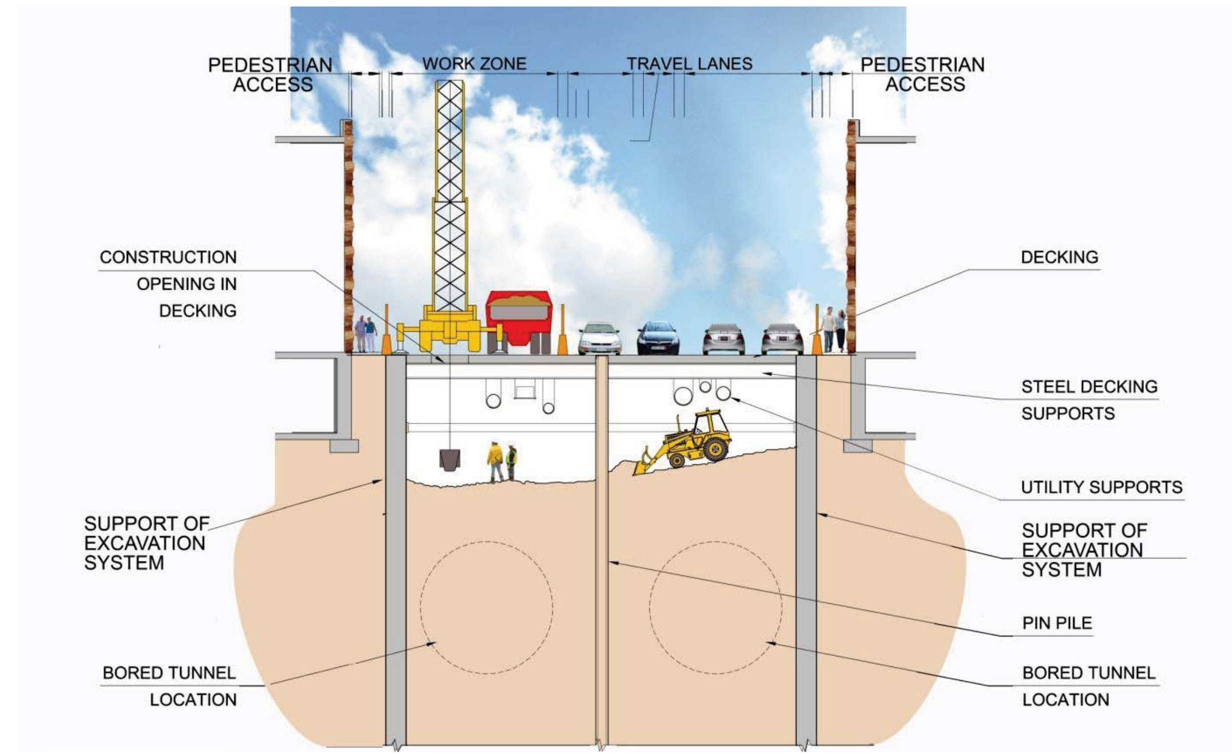
- Steel supports are installed on the north side; and
- Surface decking is installed on the north side.





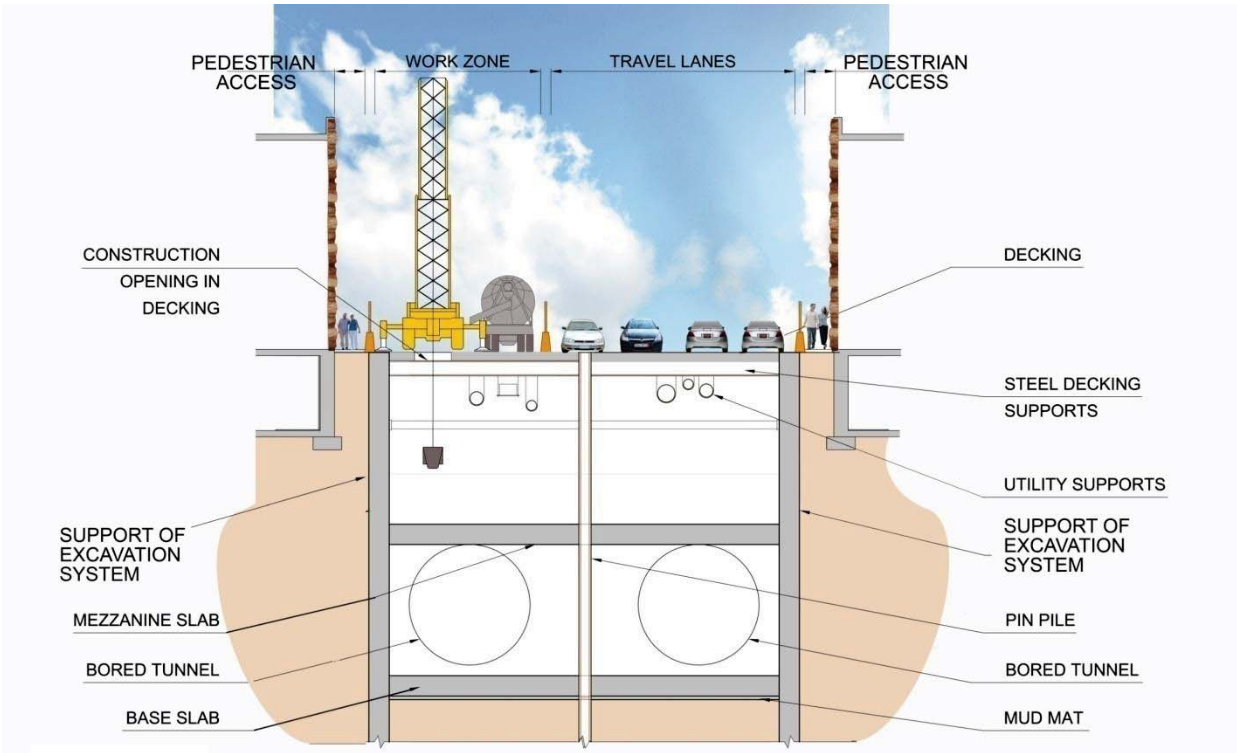
Step 8: Decking Complete – Excavate Below

- With all decking installed, deep excavation can begin;
- The work zone becomes narrower and more traffic can be accommodated;
- Utilities are held in place with supports; abd
- As excavation deepens, temporary struts are installed for additional support.



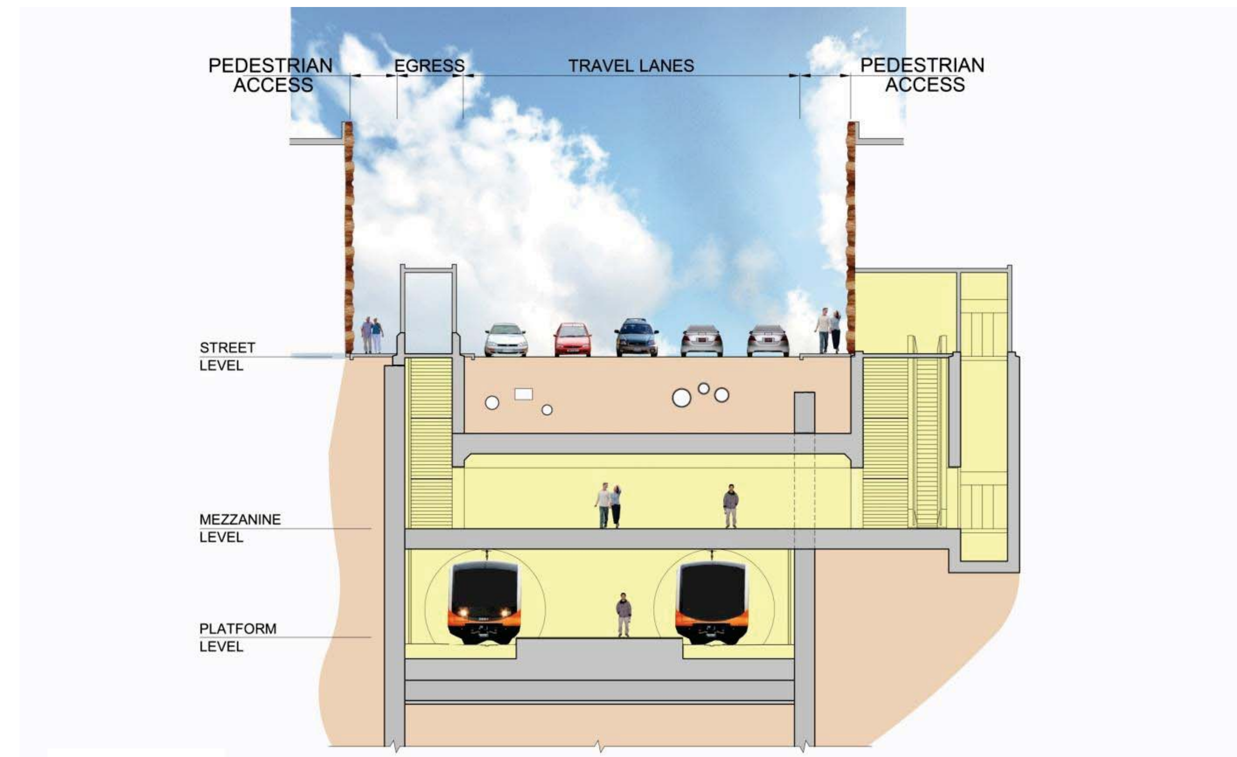
Step 9: Station Construction

- Construction of the final station structure can begin; and
- Twin tunnel construction is coordinated with station construction.



Step 10: Completion

- Hanging utilities are back-filled;
- Decking and steel supports are removed;
- As the surface roadway is restored, traffic lanes will shift similar to the early stages of construction; and
- Station entrances are constructed as well as passages, vent shafts etc.



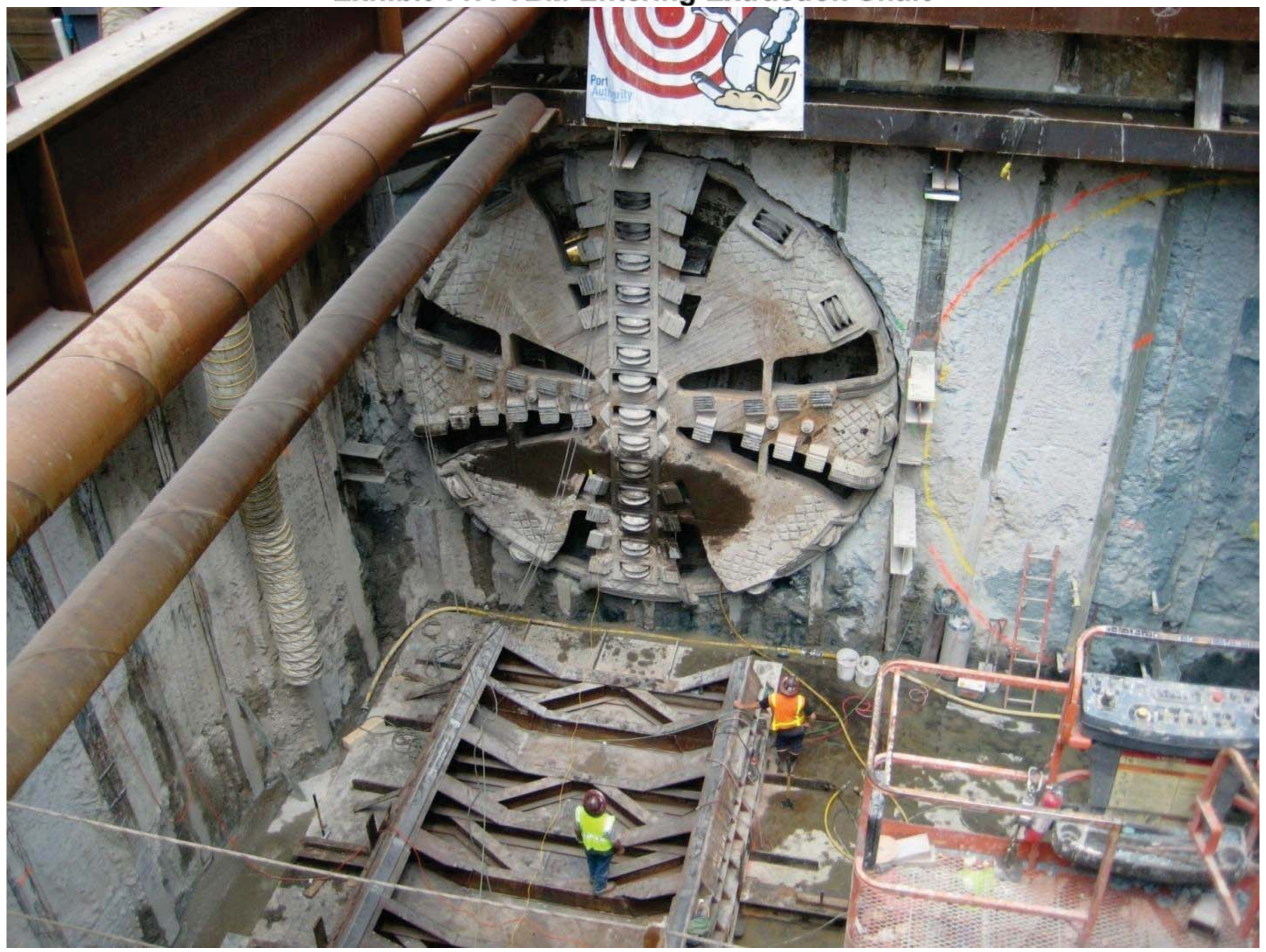
During these stages of construction, traffic will be maintained in each direction, though not all current lanes will be available. Pedestrian access will also be maintained. Due to space constraints, no on-street parking will be available

3.6.2.2 Tunnel Construction

Technology

As mentioned previously, the central section of the LRT corridor will be underground. The tunnel portion will be constructed with a tunnel boring machine (TBM) and the stations will be constructed by the cut and cover method. The TBMs will be launched at the west and east ends, bore towards the middle of the tunnel and be extracted at Chaplin Station, which is approximately the midpoint of the tunnel. **Exhibit 147** shows TBM entering cut and cover section.

Exhibit 147: TBM Entering Extraction Shaft



TBM Operation

The tunnel structure is constructed using precast concrete tunnel liner segments. Tunnel liner segments are installed by the TBM as it progresses, which provides the structural support of the tunnel. Typical TBM advancement rates are in the range of 10-15 metres per day. The TBM advancement rate will be coordinated with the station cut and cover operations.

Removal of excavated soils during tunneling generally includes a conveyor system that transports soils from the TBM to the work site. The soils will be transported by trucks from the work site to a disposal site.

3.6.2.3 Work Sites and Portal Locations

Portals are the approach entrances where the LRT surface section transitions into the underground section. There are four portals planned as part of the Eglinton Crosstown LRT project: two portals for the main tunnel portion of the LRT corridor and two portals for the underground segment at Don Mills Station. The underground segment at Don Mills Station will be built by cut and cover construction and not by a tunnel boring machine. As such the portals associated with the Don Mills Station will be different than the main tunnel portals and will not require a dedicated work site.

The portals for the main tunnel will be located east of Black Creek Drive in the west and east of Brentcliffe Road in the east. These portals provide the location for the launching of the tunnel boring machines. As such, they will require a large nearby work site to facilitate tunnel access, material delivery and storage (pocket).

The work site in the west will be located at Keelesdale Park; since Keelesdale Park is at a lower grade than the roadway, direct access from the work site to the tunnel will be underneath Eglinton Avenue. The work site in the east will be located on vacant land east of Brentcliffe Road on the south side of Eglinton Avenue; an access shaft will be constructed at this work site to facilitate the transportation of materials in and out of the tunnel.

Exhibits 148 and **149** present plan views of the works sites and the portals of the main tunnel portion.

Exhibit 148: Tunnel West Portal

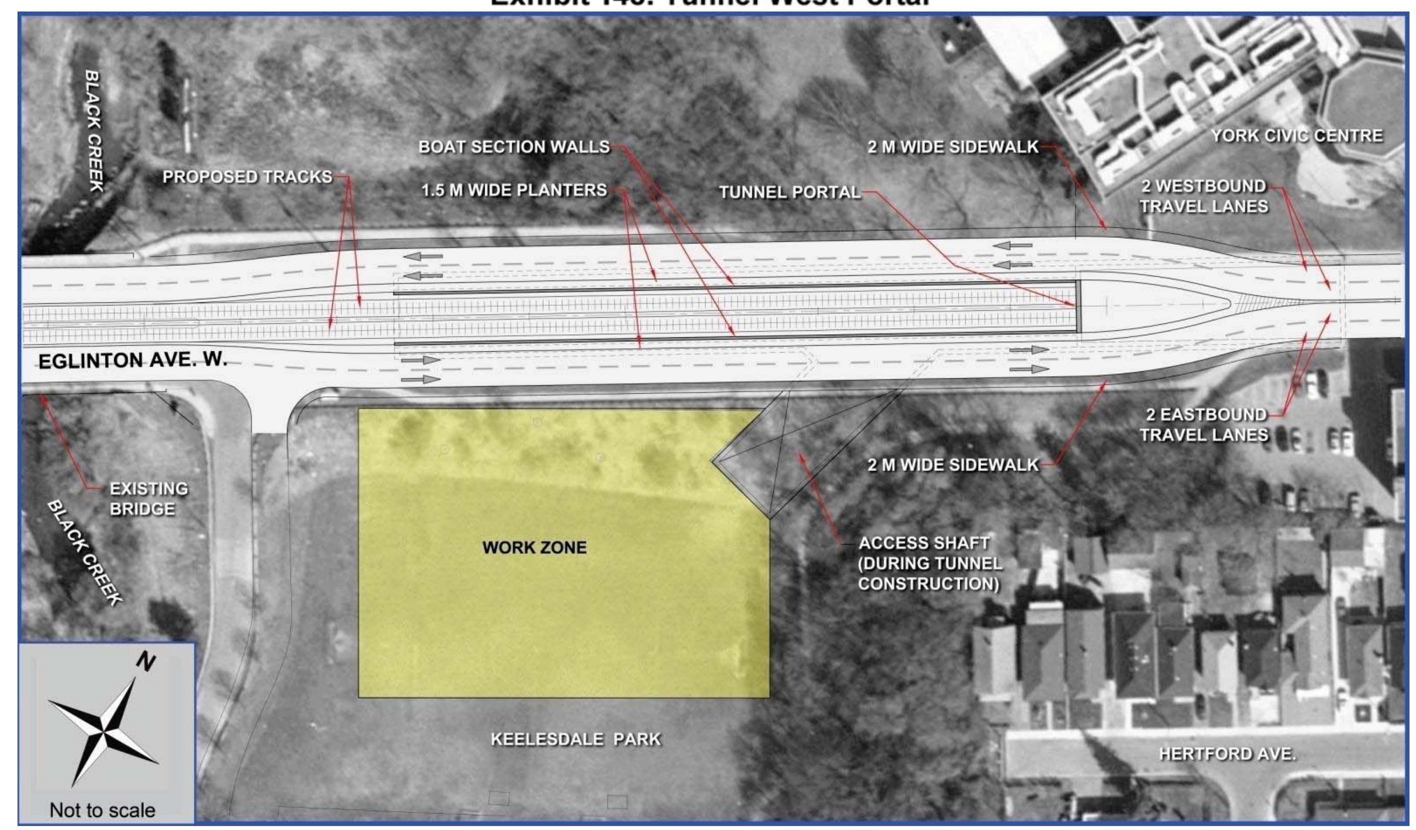
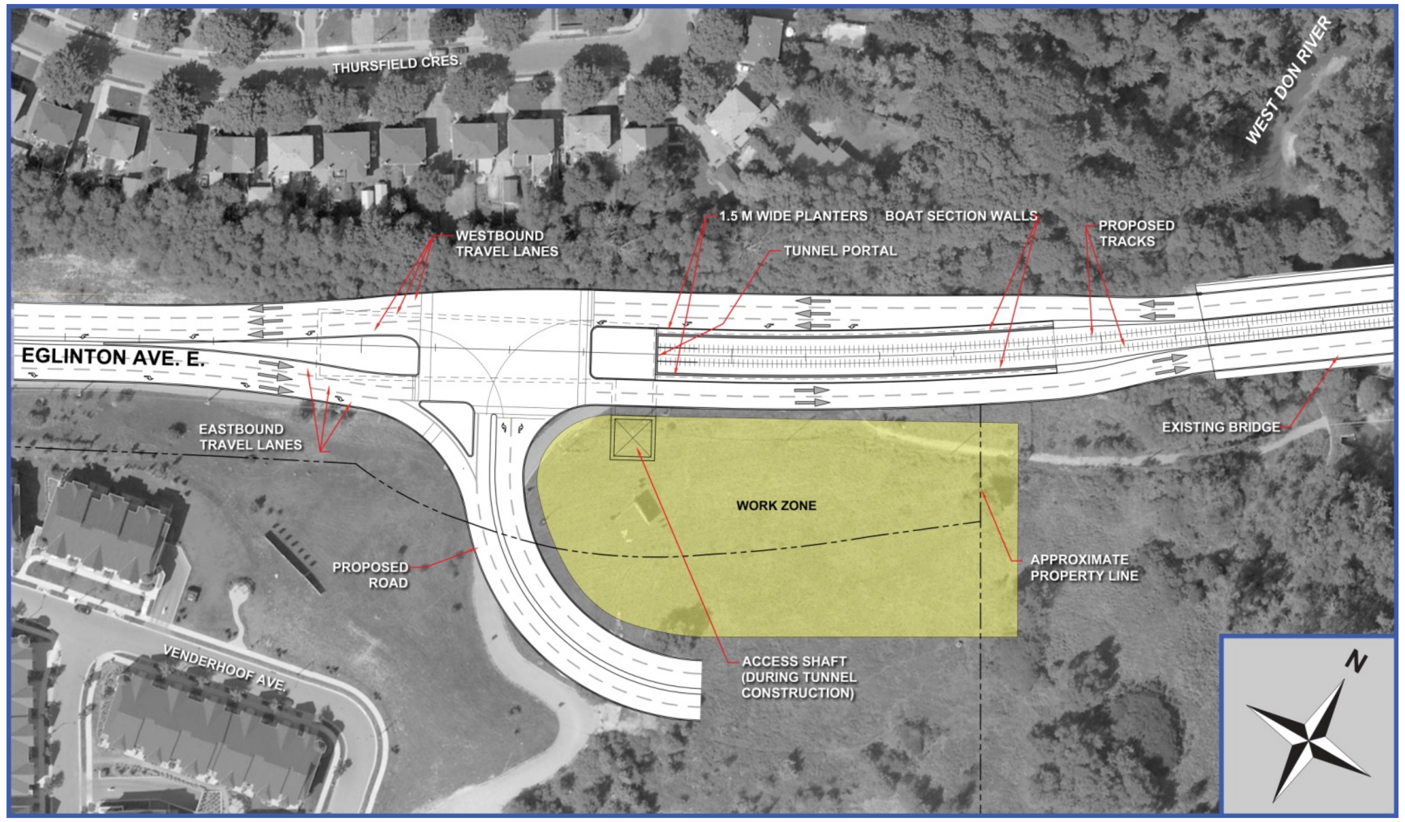
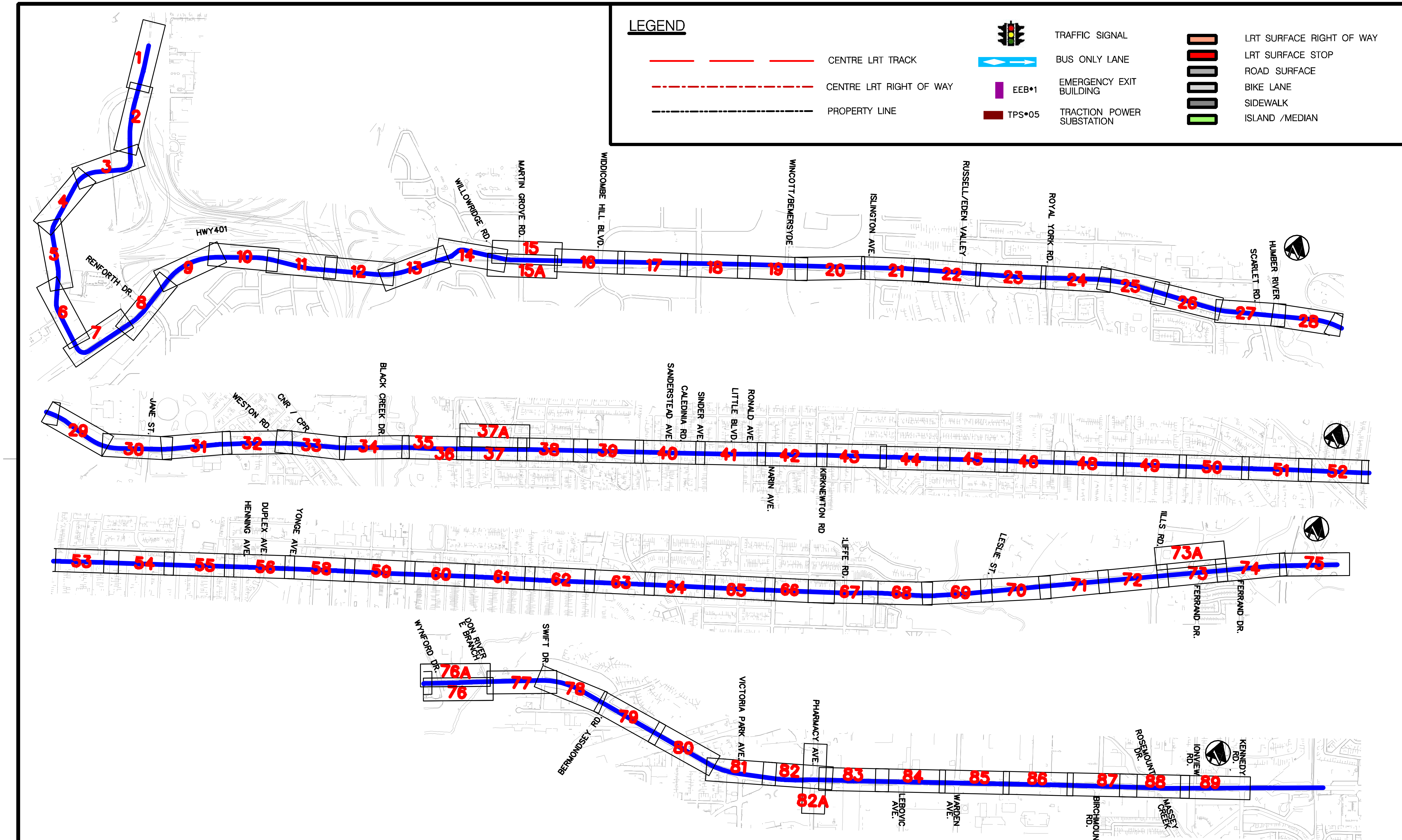


Exhibit 149: Tunnel East Portal





EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

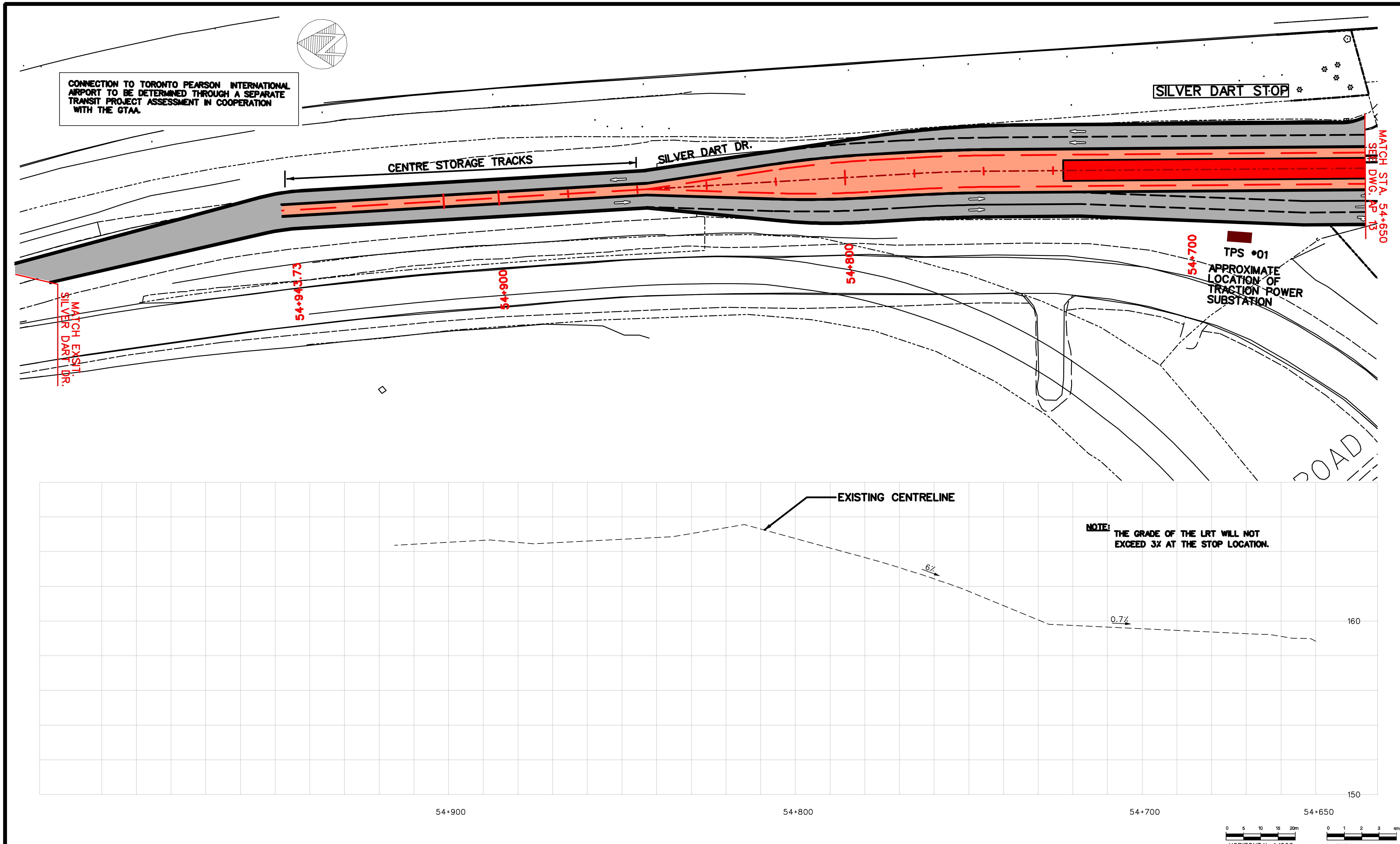
KEY PLAN

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
1



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

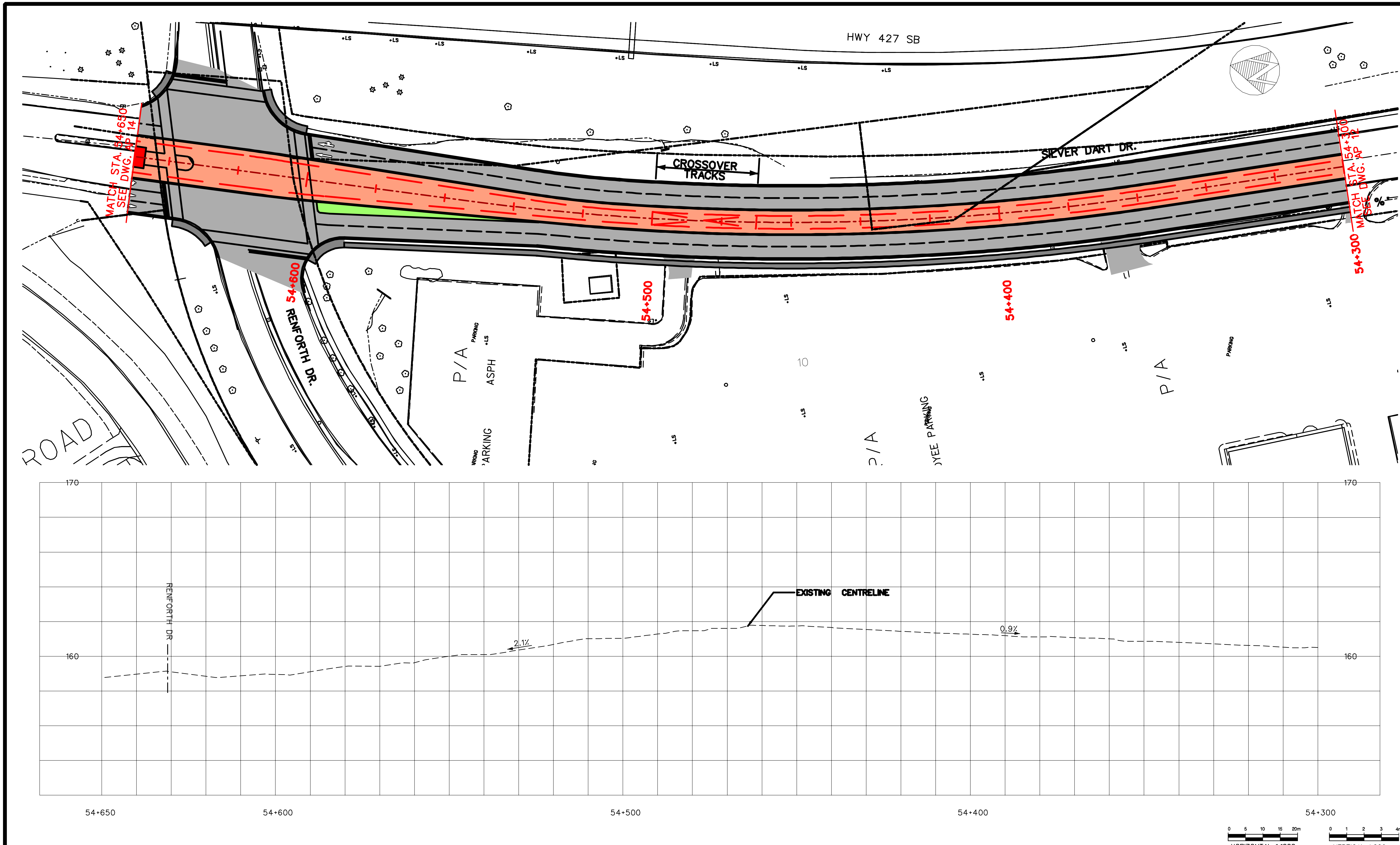
PLAN AND PROFILE STA 54+650 TO STA 54+943.73

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 14R

Sheet No. 1



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

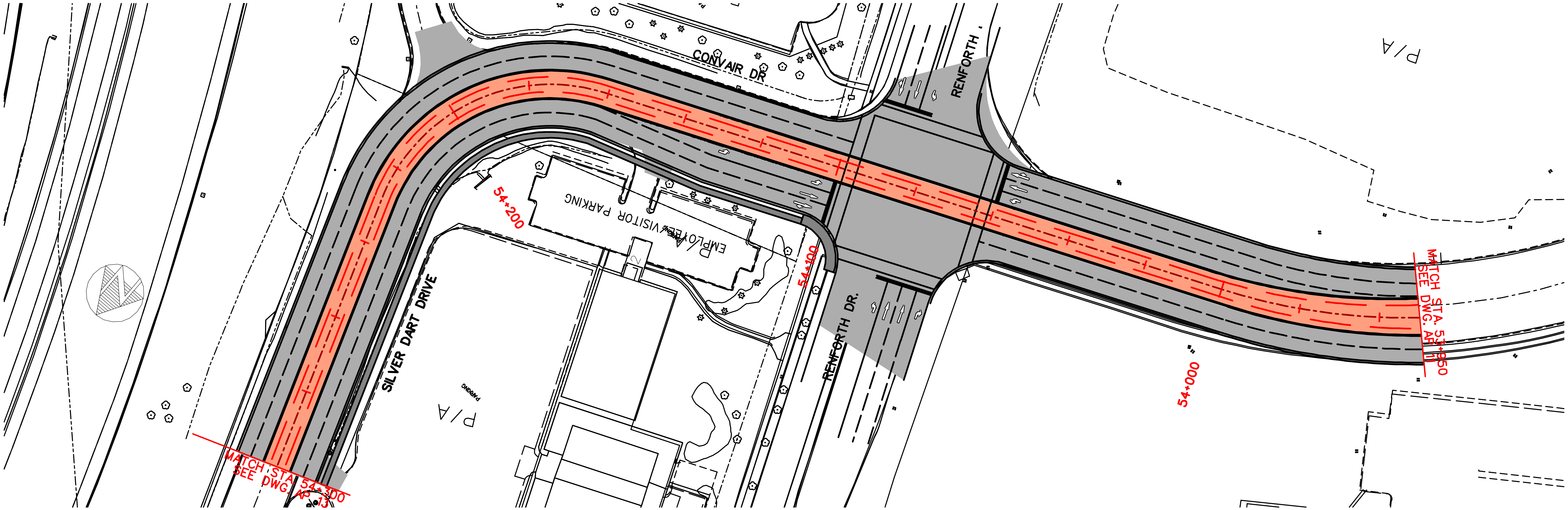
PLAN AND PROFILE STA 54+300 TO STA 54+650

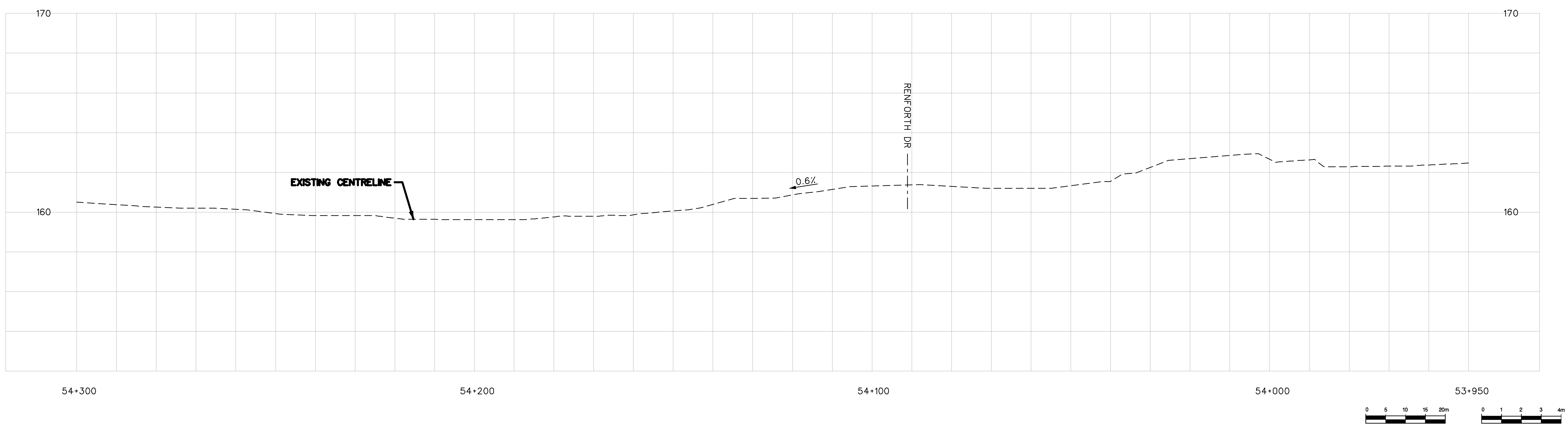
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 13R

Sheet No. 2





EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

PLAN AND PROFILE STA 53+950 TO STA 54+300

TCG
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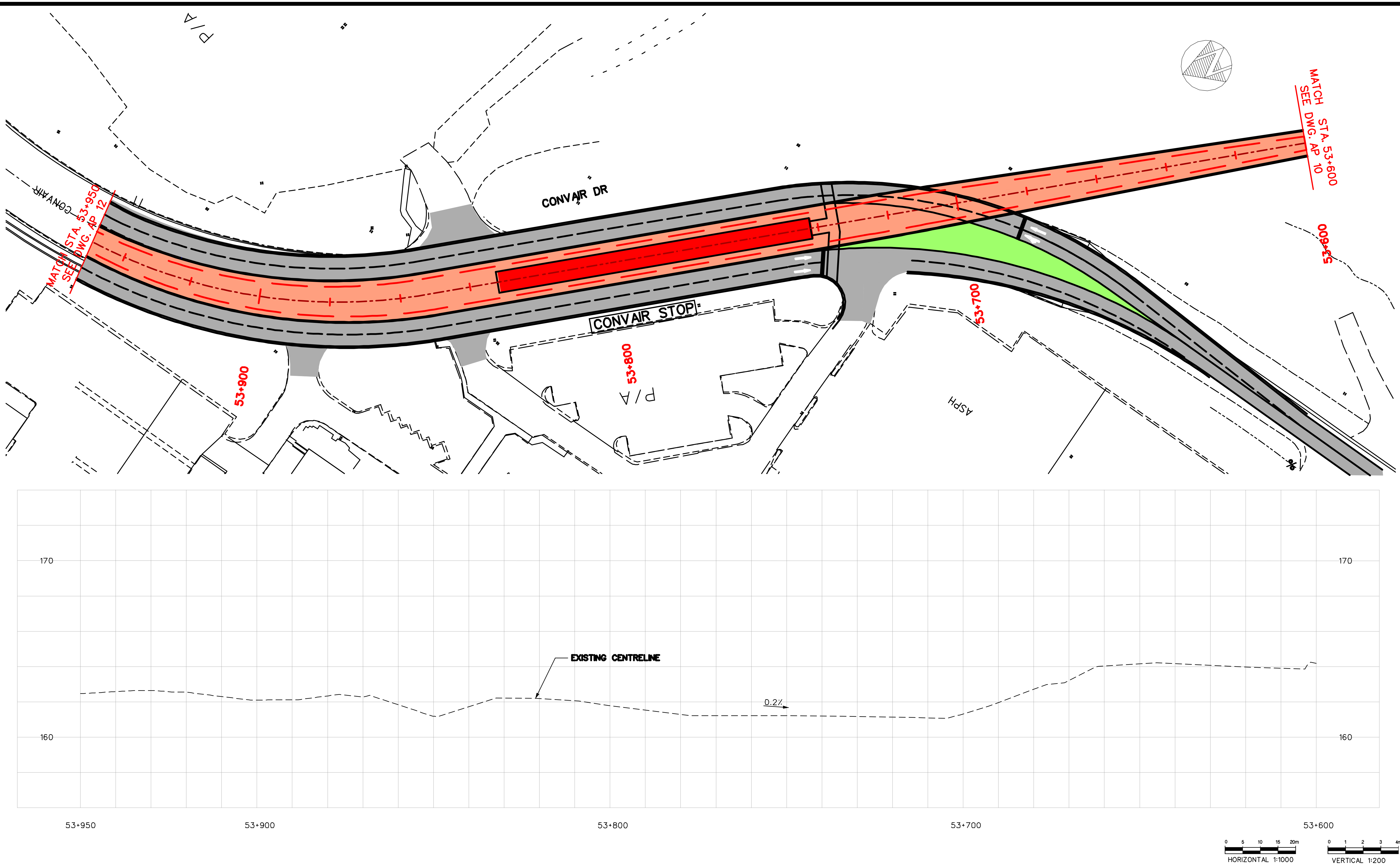
TRANSIT CITY DEPARTMENT

Dwg. No.
AP 12R

Sheet No.
3



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

PLAN AND PROFILE STA 53+600 TO STA 35+950

TCG Transit City Group

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TRANSIT CITY DEPARTMENT

Dwg. No. AP 11R

Sheet No. 4

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

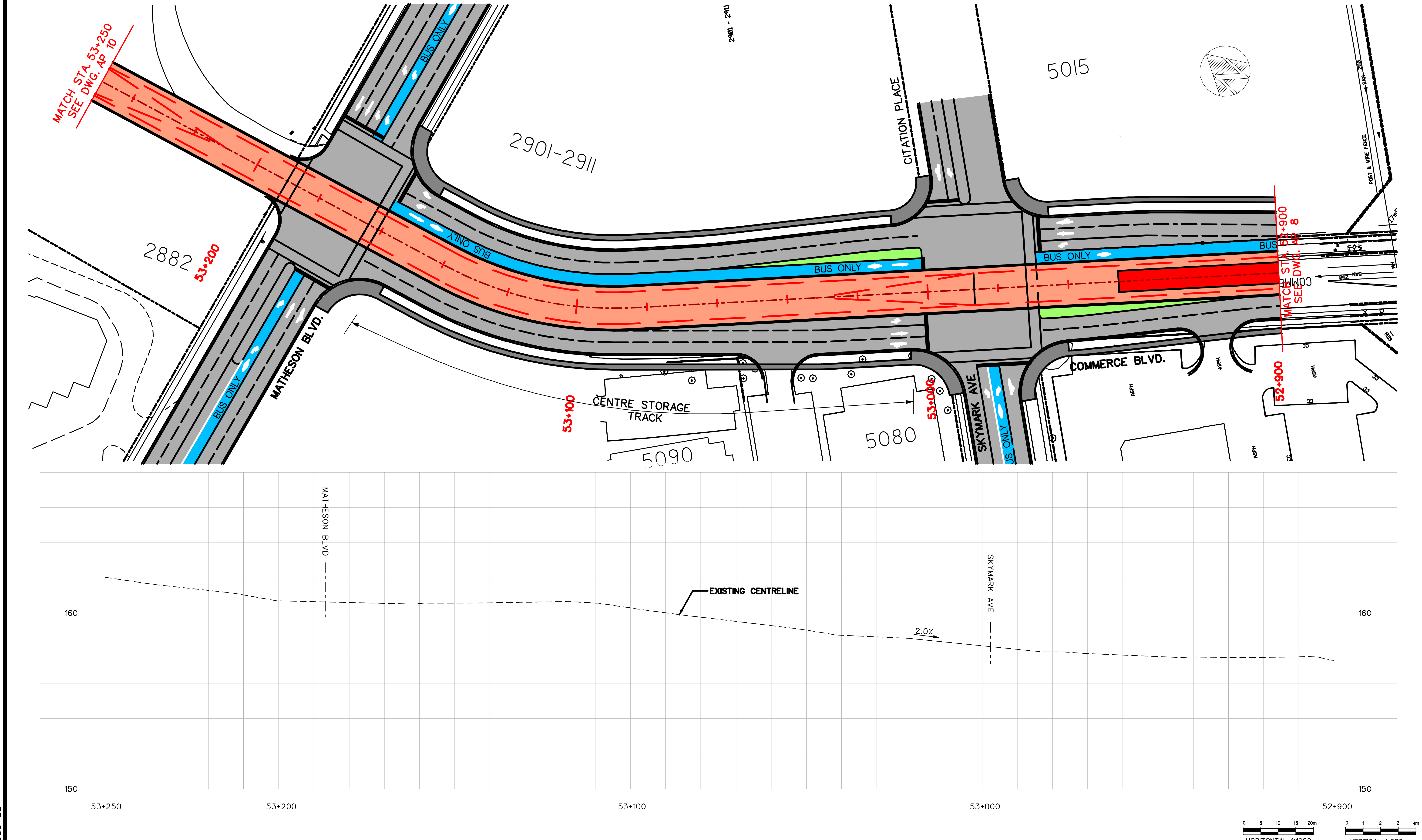
PLAN AND PROFILE STA 53+250 TO STA 54+600

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.
AP 10R

Sheet No.
5



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

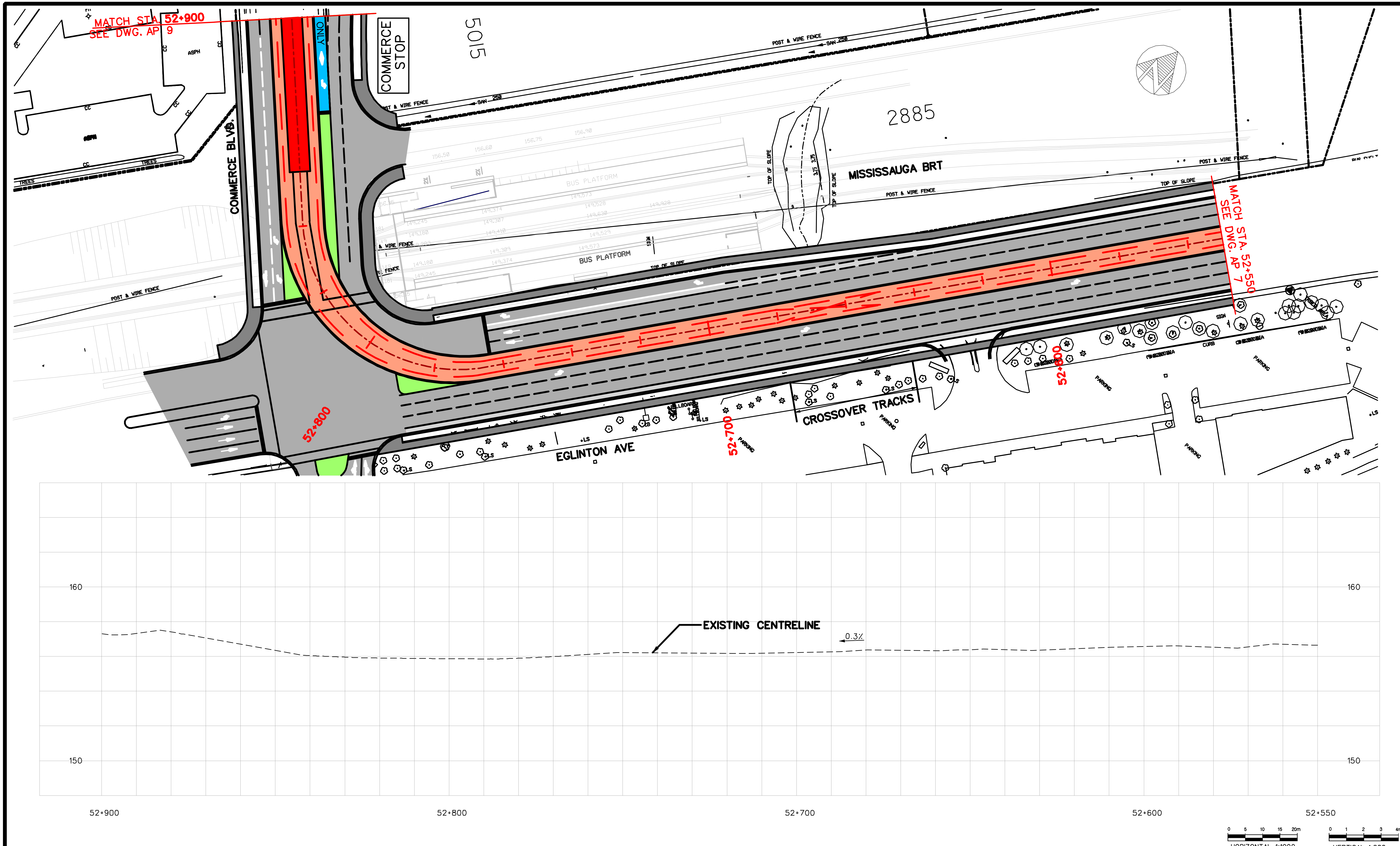
PLAN AND PROFILE STA 52+900 TO STA 53+250

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 9R

Sheet No. 6



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

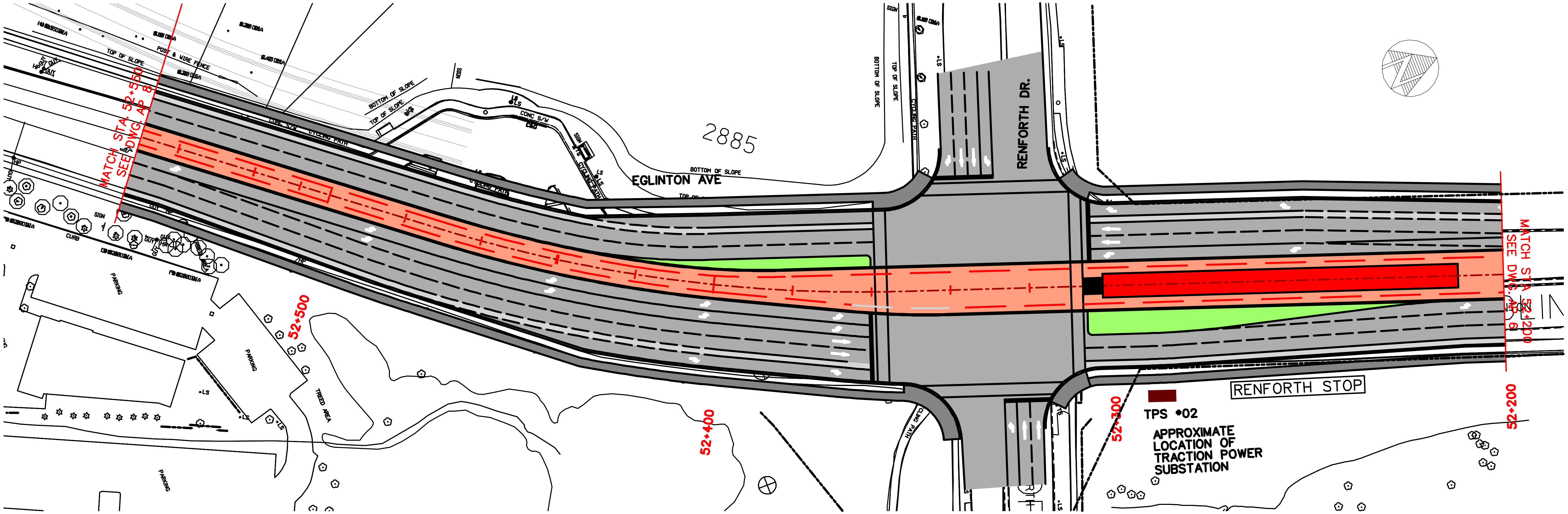
PLAN AND PROFILE STA 52+550 TO STA 52+900

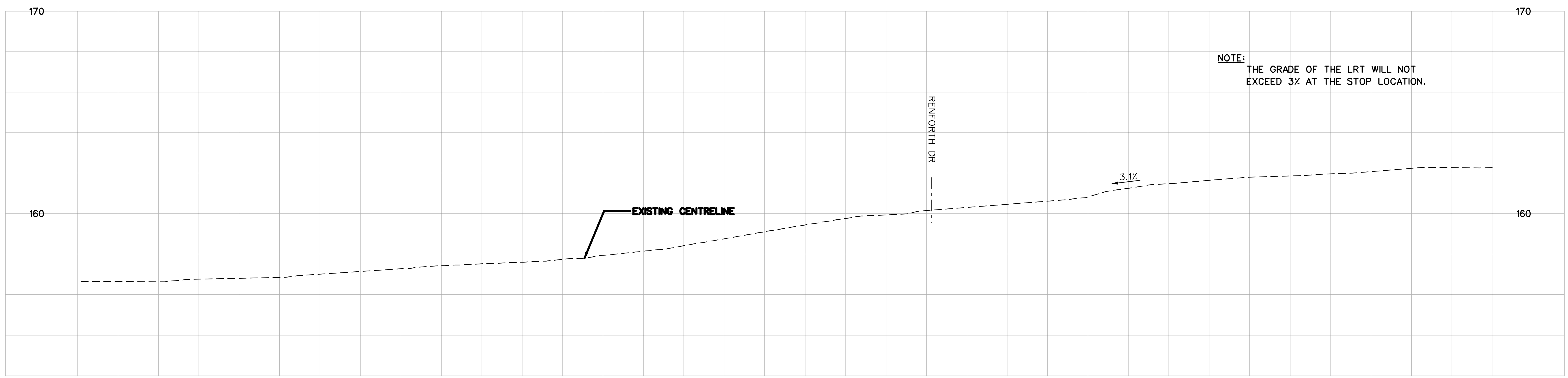
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 8R

Sheet No. 7





EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

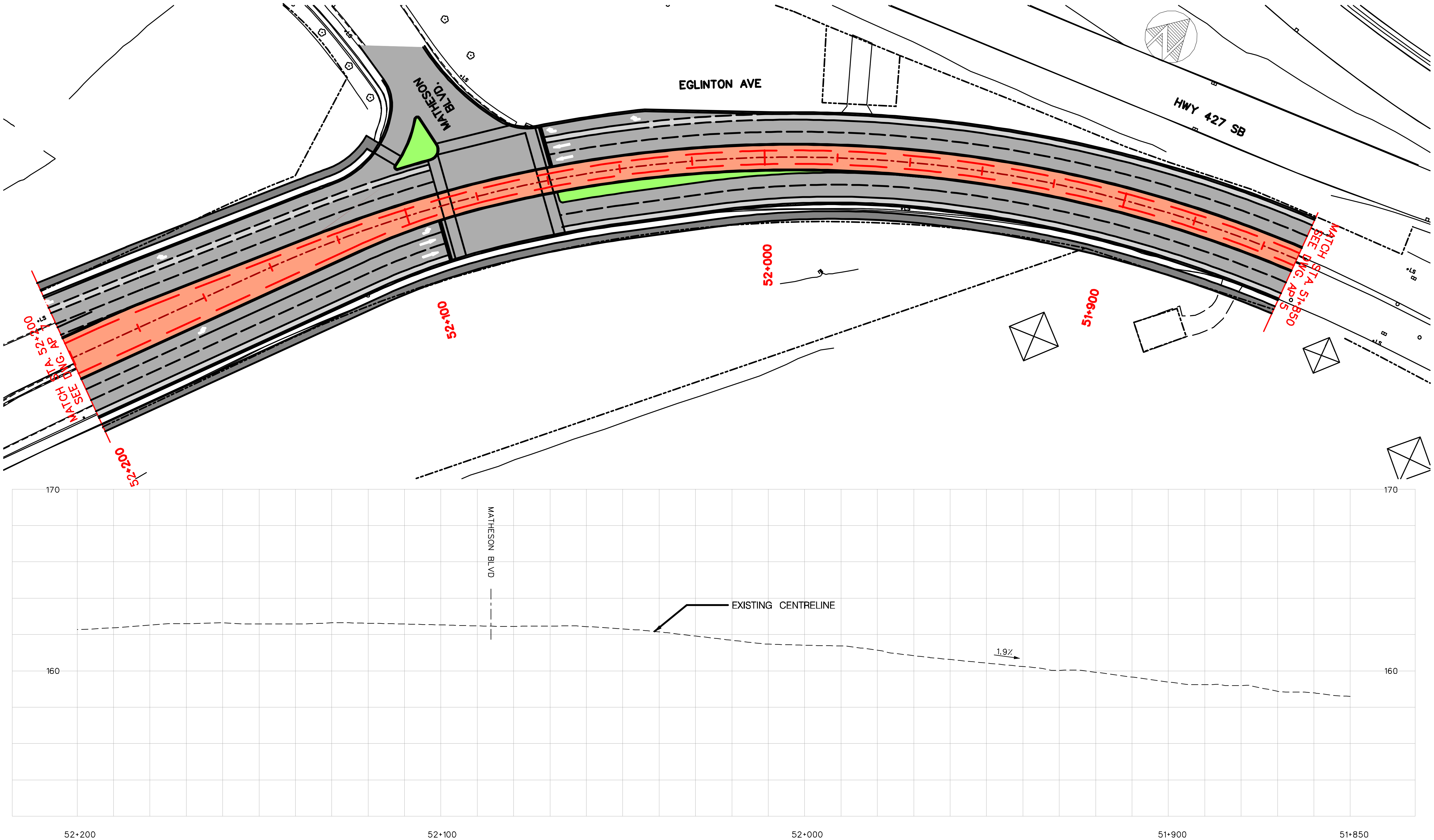
PLAN AND PROFILE STA 52+200 TO STA 52+550

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.
AP 7R

Sheet No.
8



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

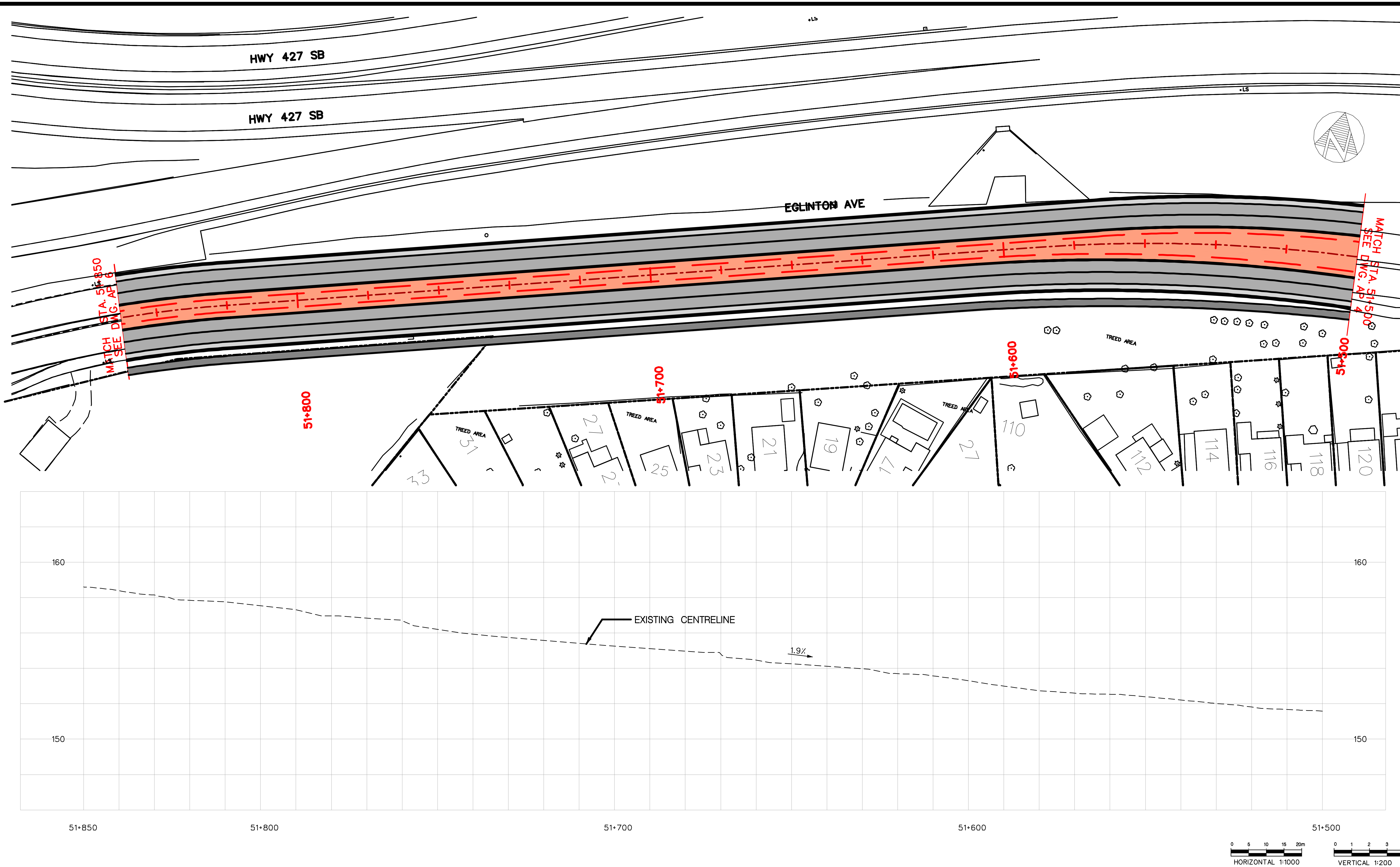
PLAN AND PROFILE STA 51+850 TO STA 52+200

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 6R

Sheet No. 9



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

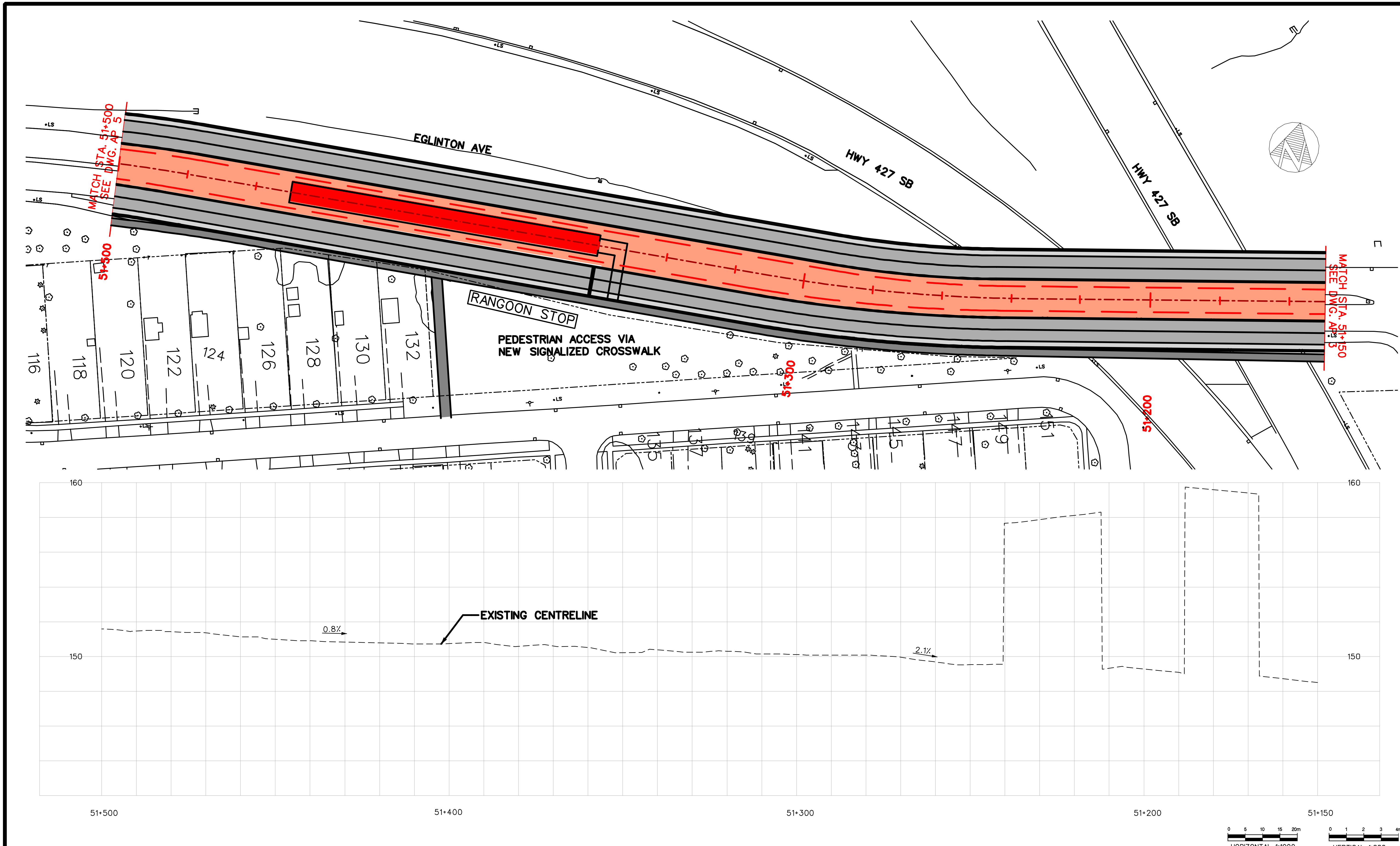
PLAN AND PROFILE STA 51+500 TO STA 51+850

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 5R

Sheet No. 10



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

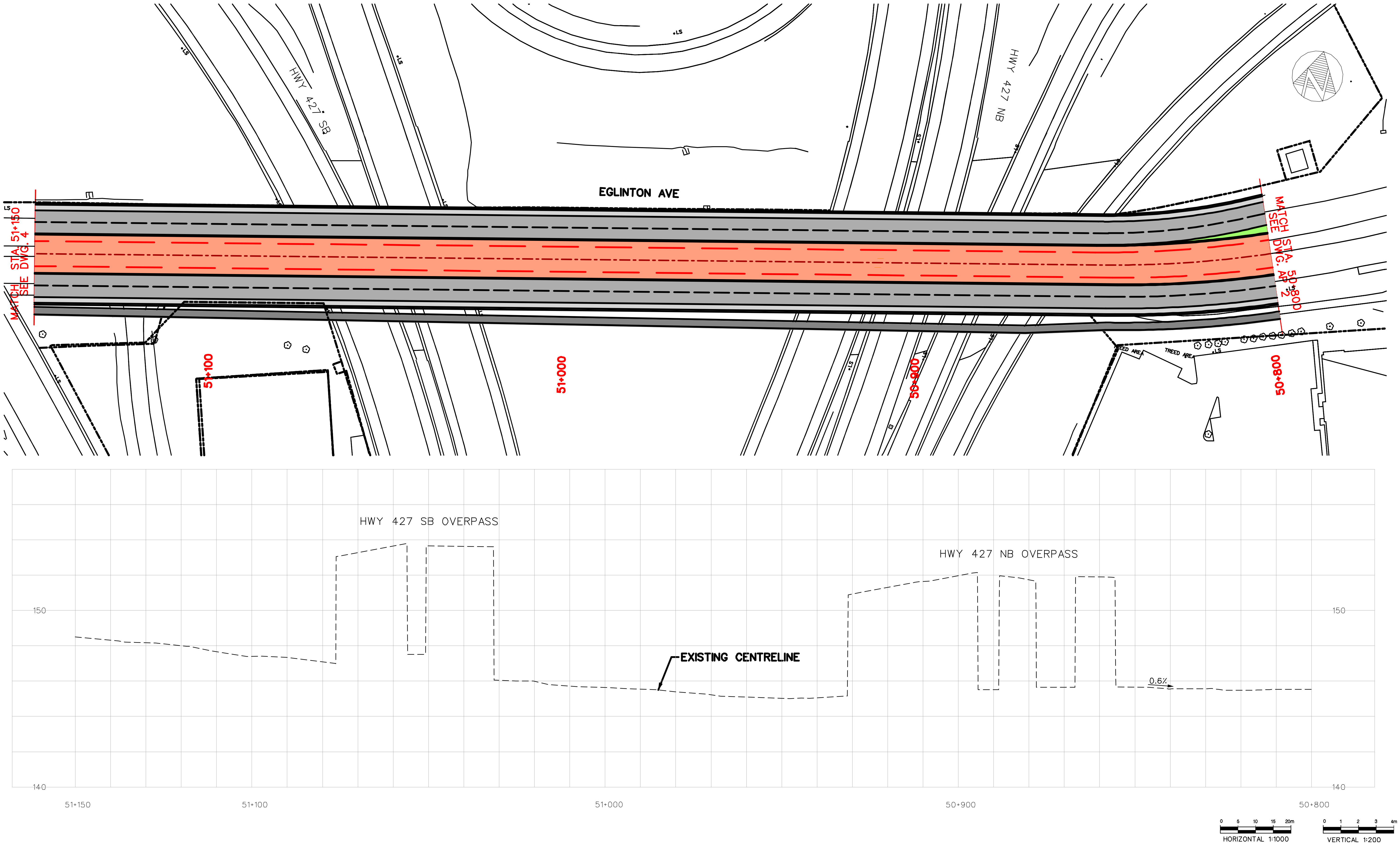
PLAN AND PROFILE STA 51+150 TO STA 51+500

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 4R

Sheet No. 11



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

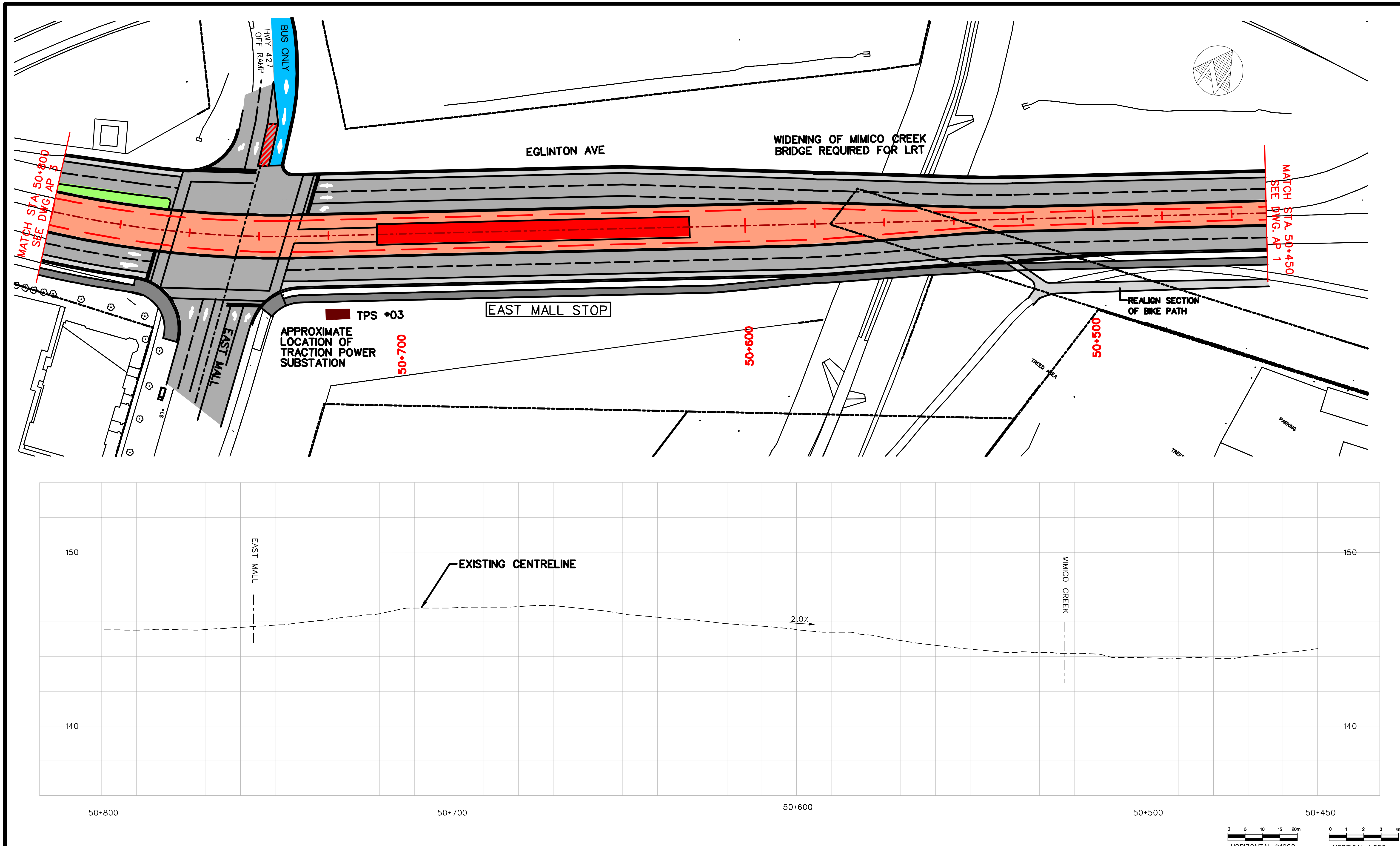
PLAN AND PROFILE STA 50+800 TO STA 51+150

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 3R

Sheet No. 12



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

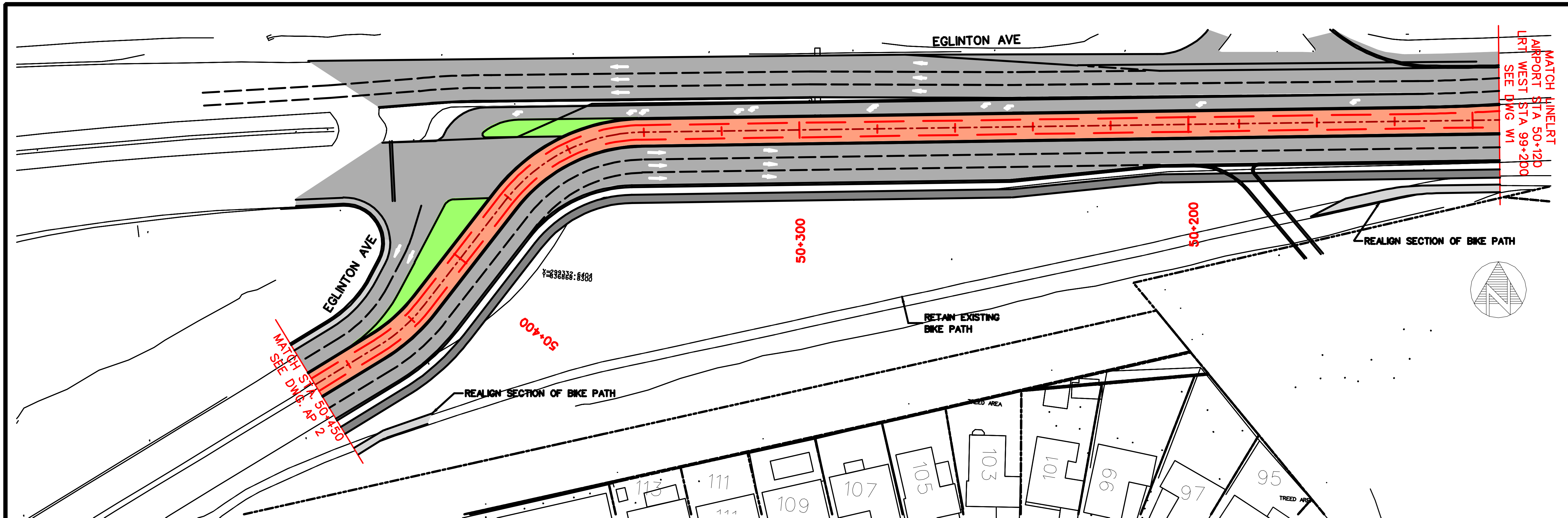
PLAN AND PROFILE STA 50+450 TO STA 50+800

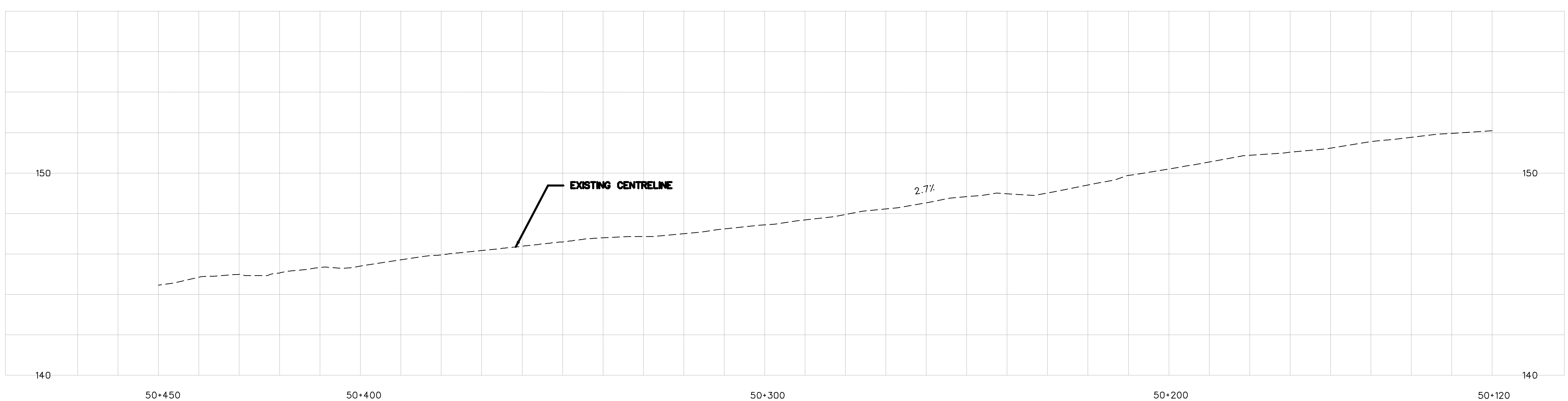
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. AP 2R

Sheet No. 13





HORIZONTAL 1:1000

VERTICAL 1:200

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

AIRPORT SURFACE SECTION

PLAN AND PROFILE STA 50+120 TO STA 50+450

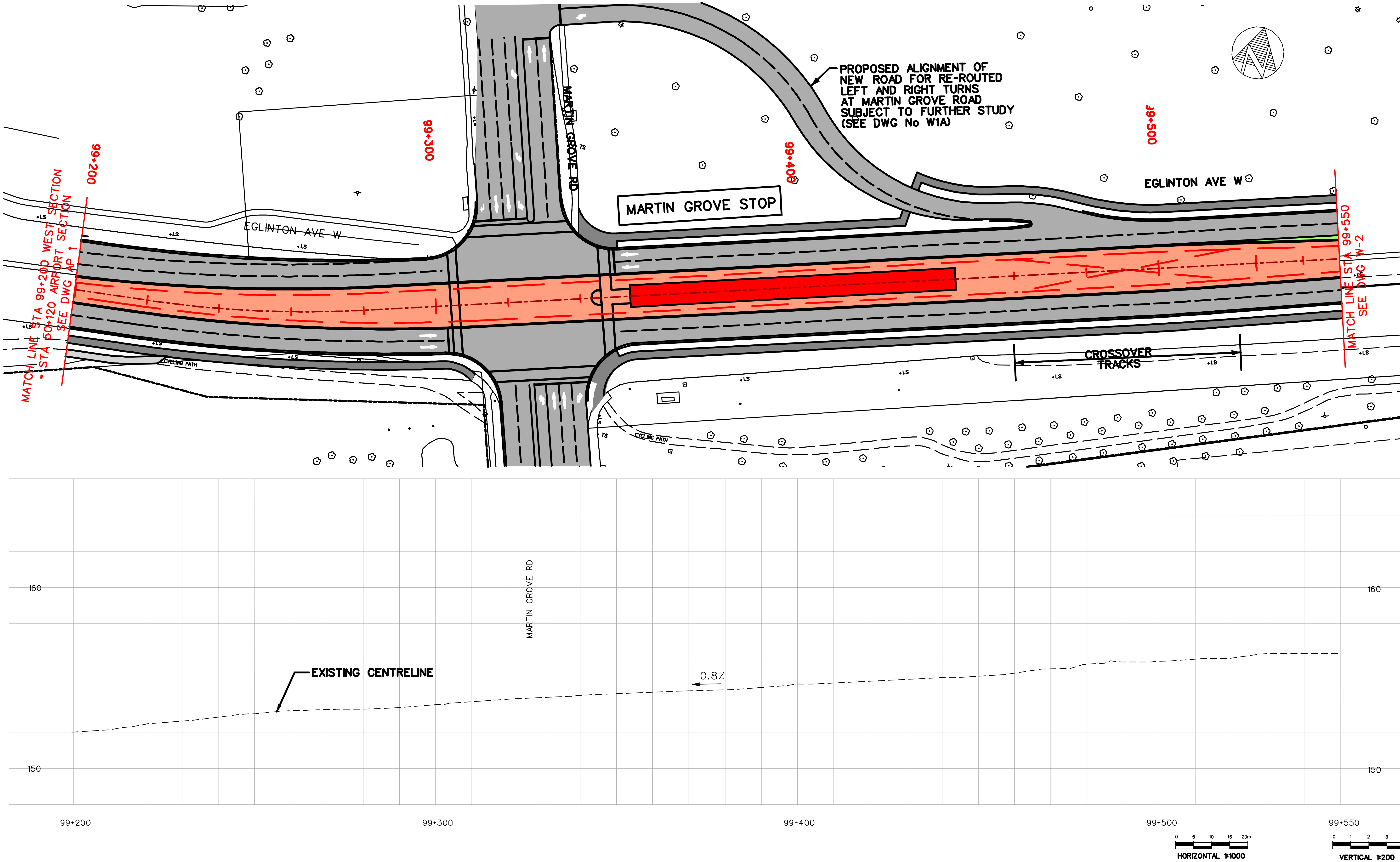
TCG Transit City Group

TORONTO TRANSIT COMMISSION

TRANSIT CITY DEPARTMENT

Dwg. No. AP 1R

Sheet No. 14



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

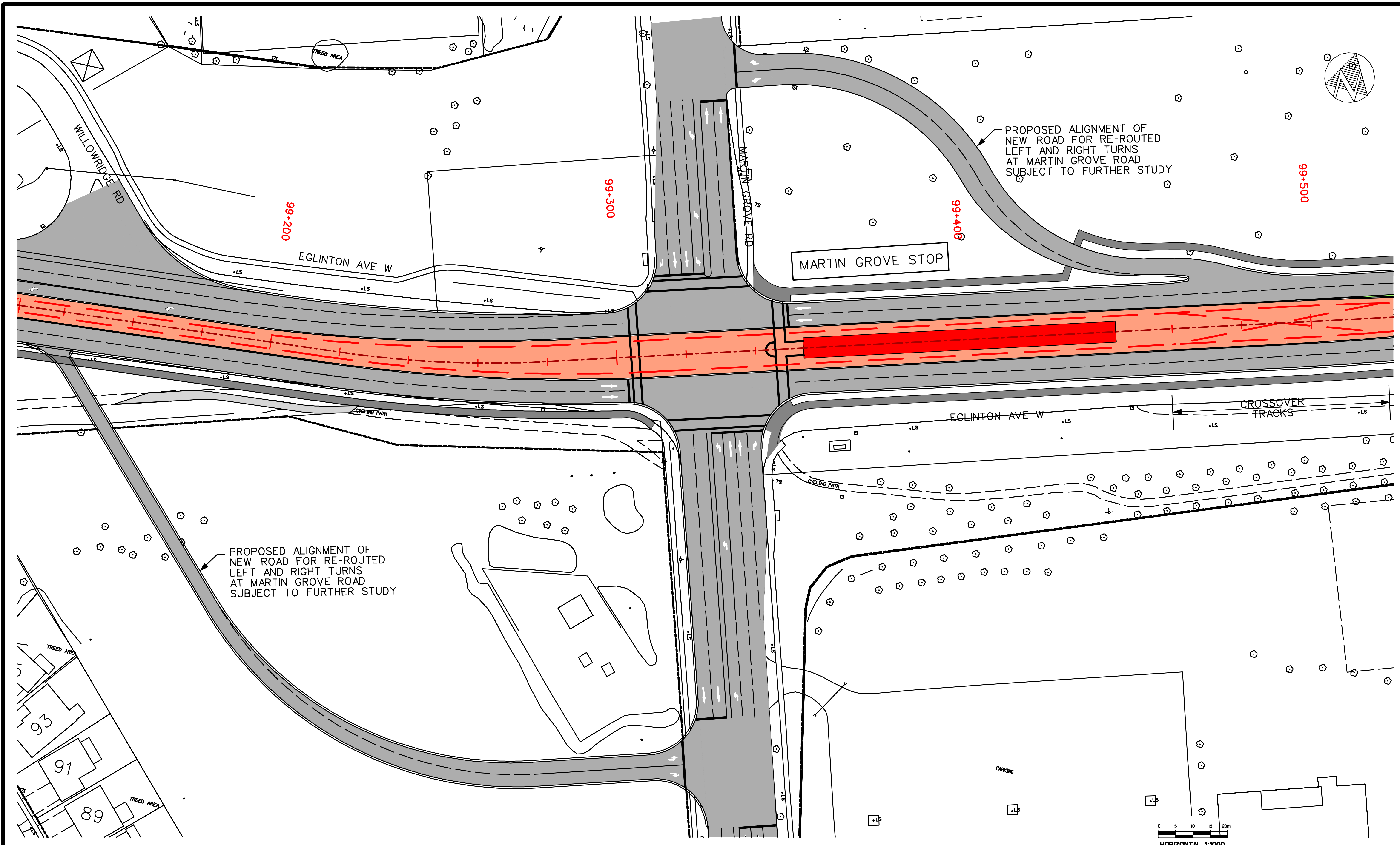
PLAN AND PROFILE STA 99+200 TO STA 99+550

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W1R

Sheet No. 15



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

EGLINTON AVE AND MARTIN GROVE RD INTERSECTION

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W 1AR

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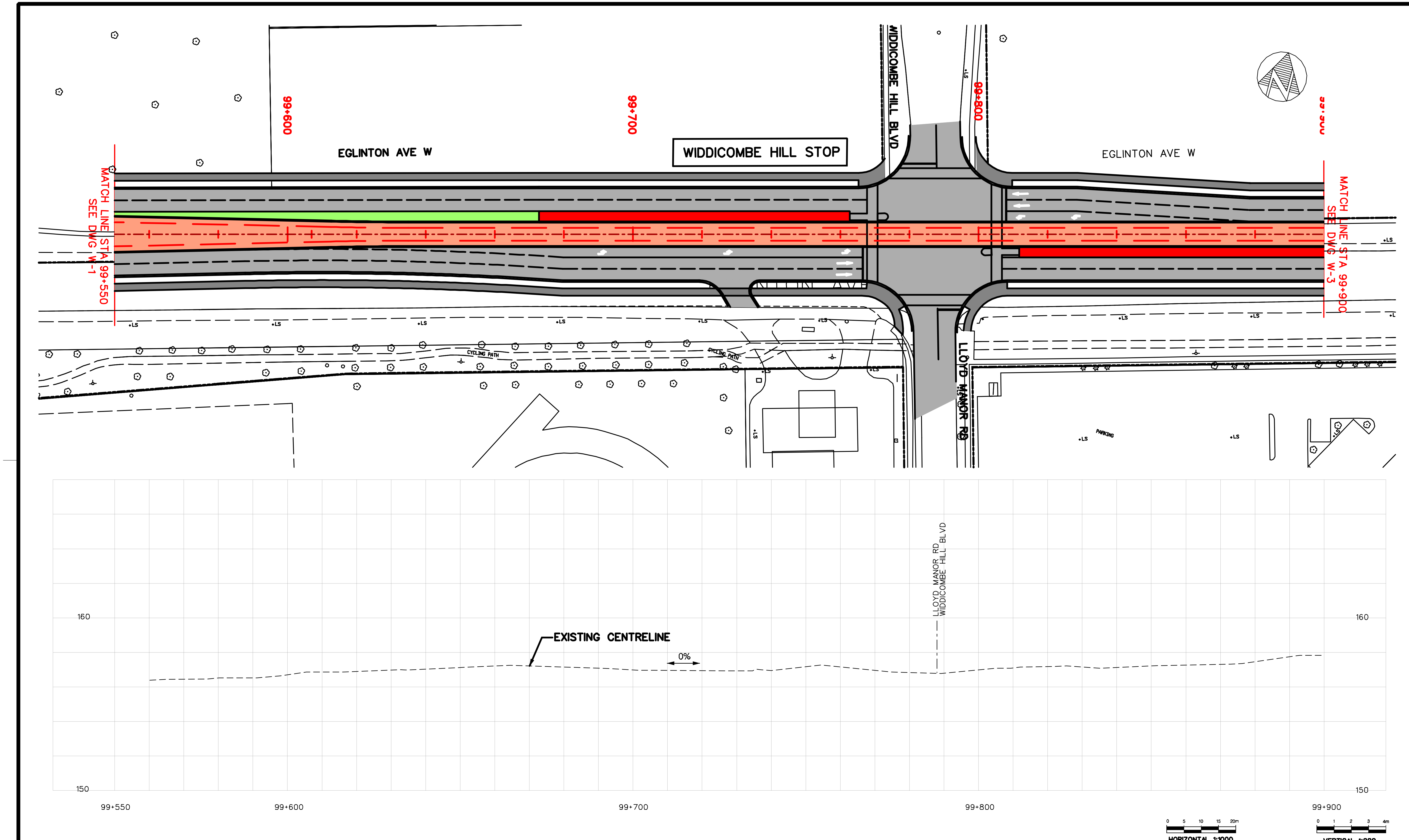


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

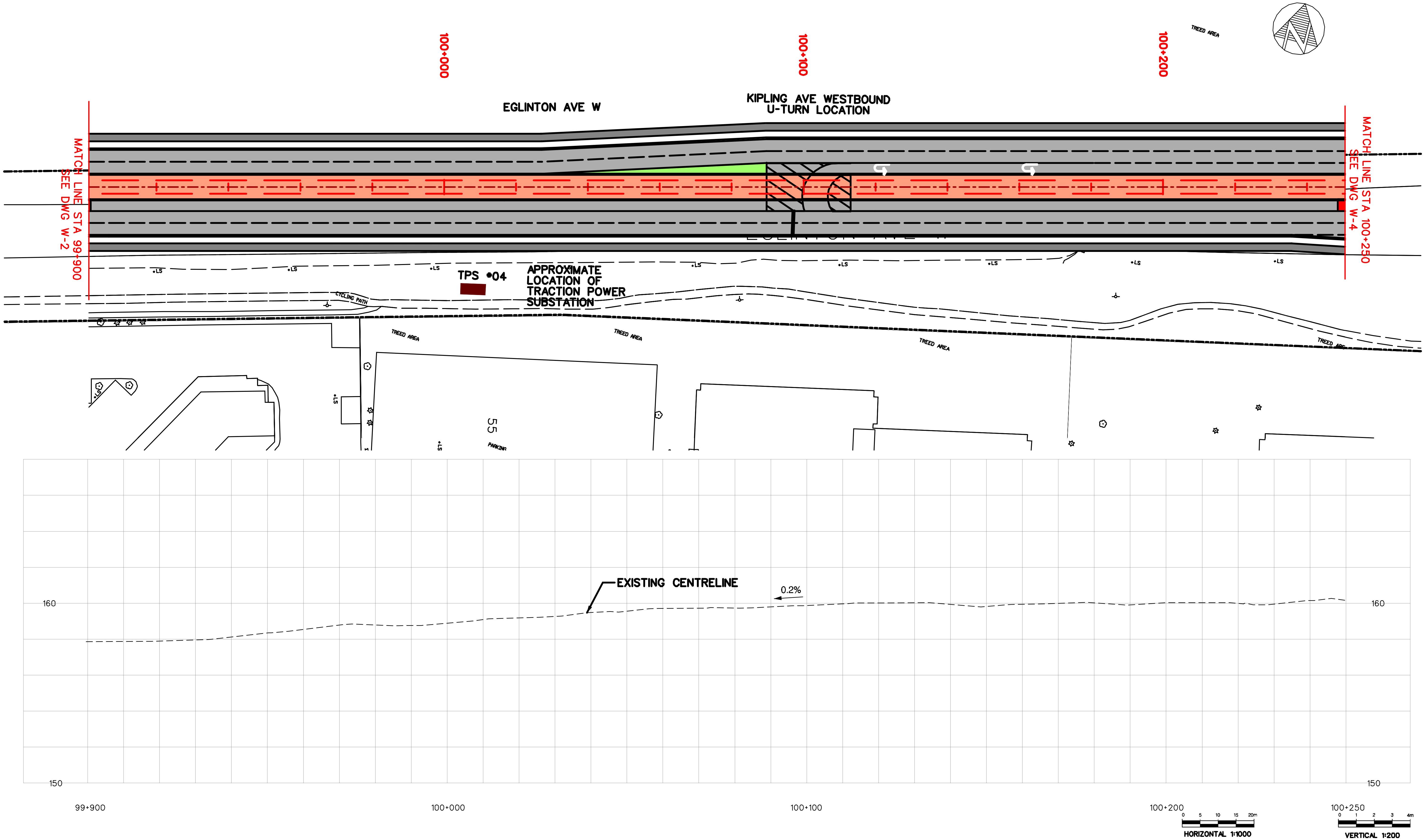
PLAN AND PROFILE STA 99+550 TO STA 99+900

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W2R

Sheet No. 16



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

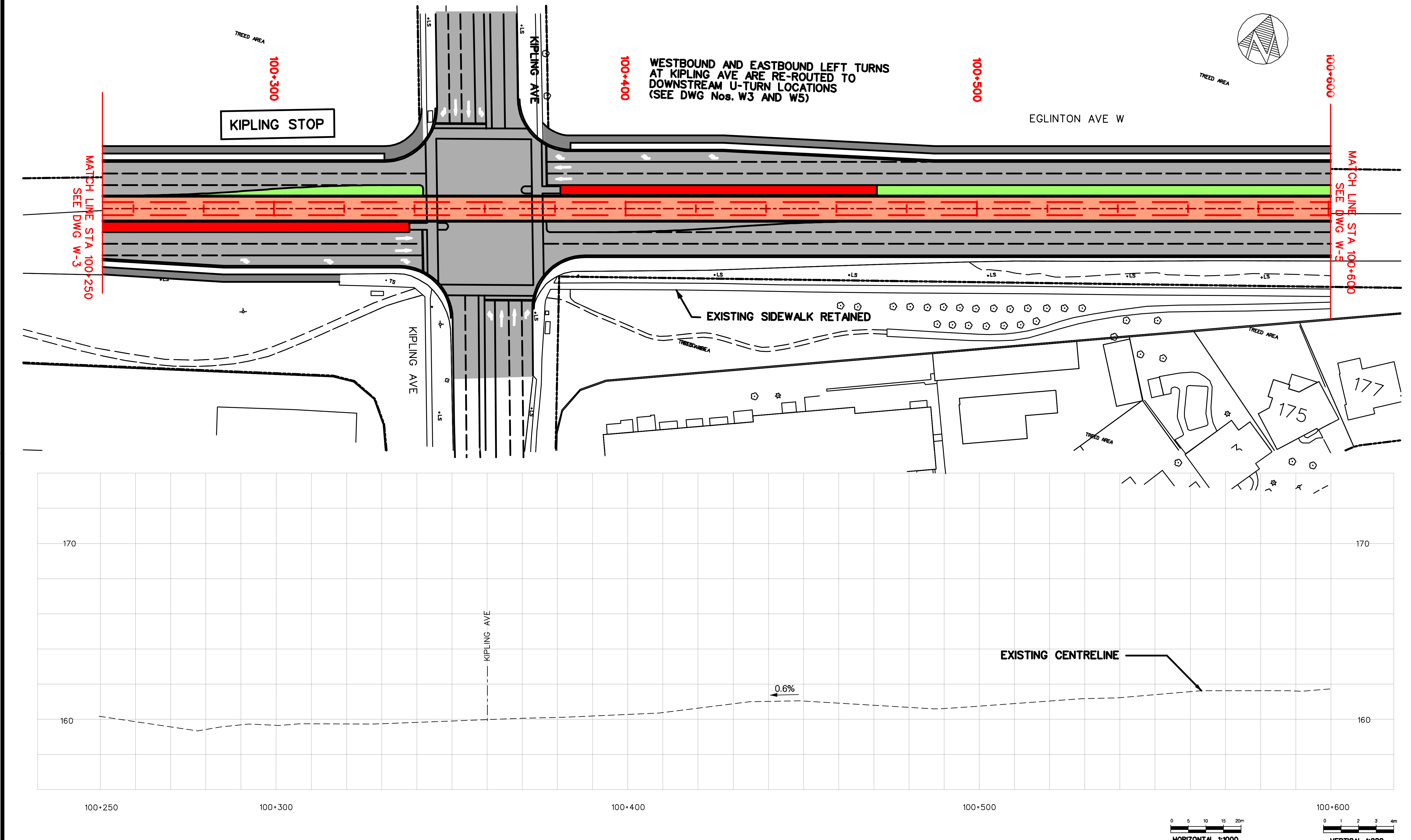
PLAN AND PROFILE STA 99+900 TO STA 100+250

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W3R

Sheet No. 17



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

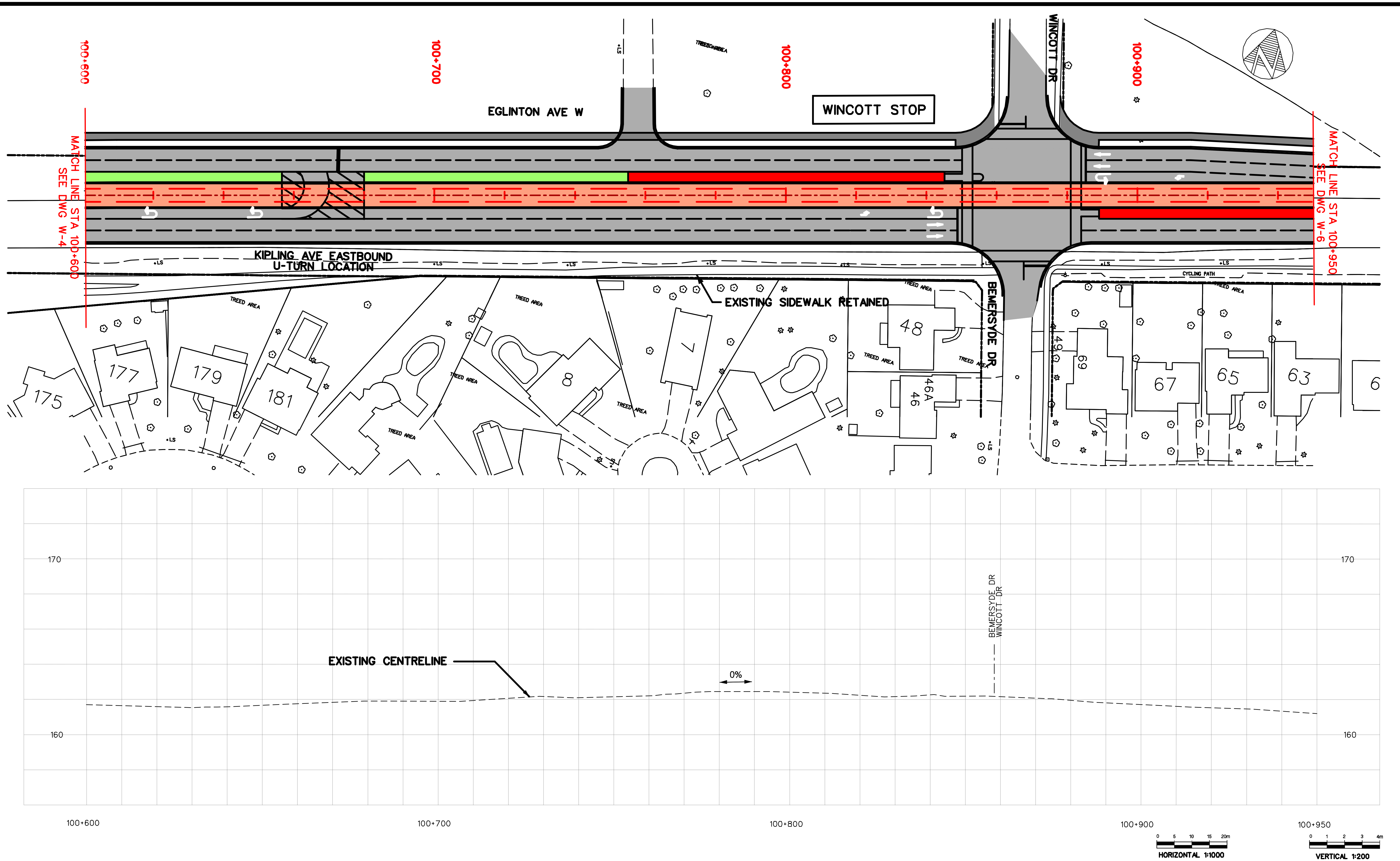
PLAN AND PROFILE STA 100+250 TO STA 100+600

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W4R

Sheet No. 18



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

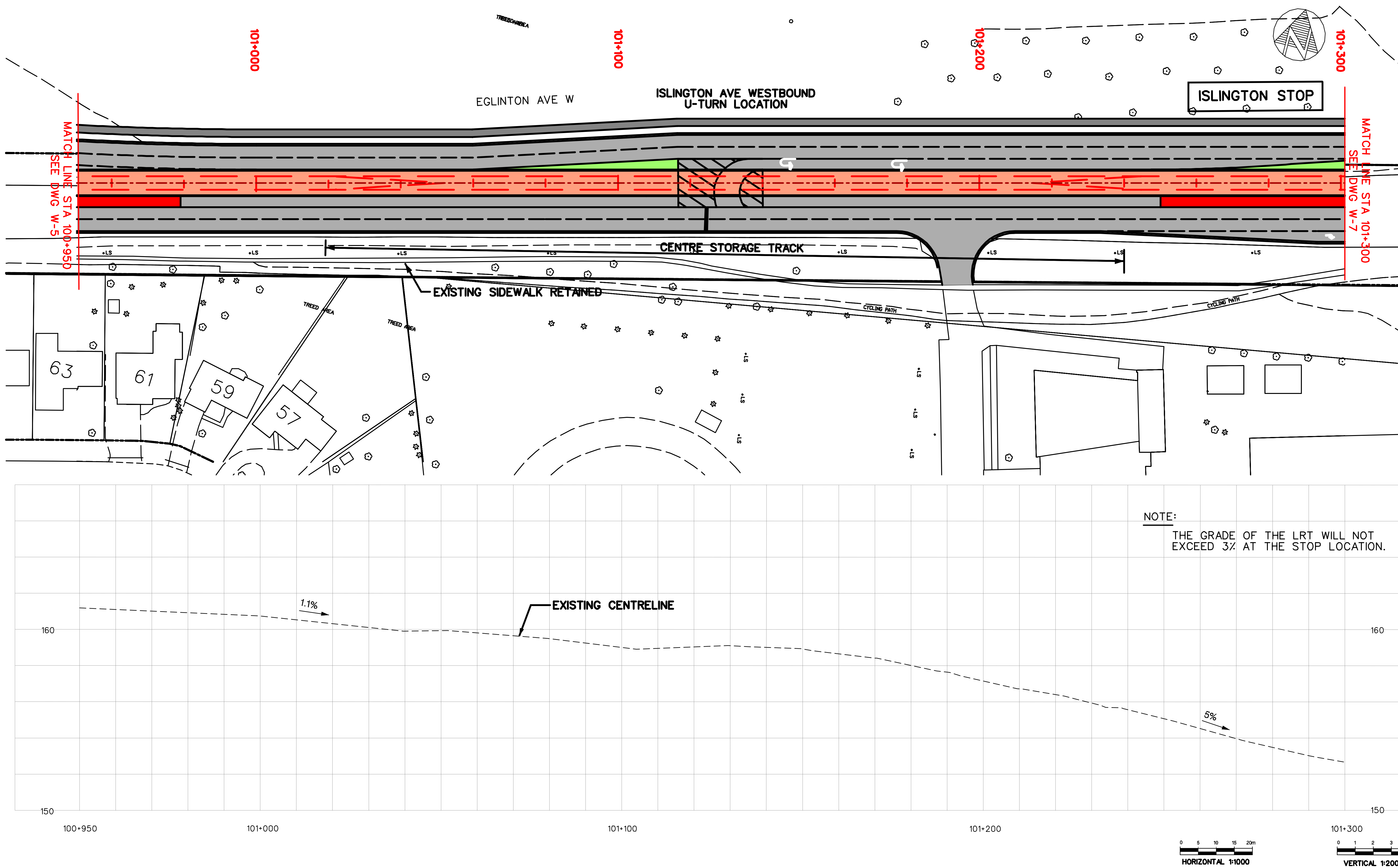
PLAN AND PROFILE STA 100+600 TO STA 100+950

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W5R

Sheet No. 19



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

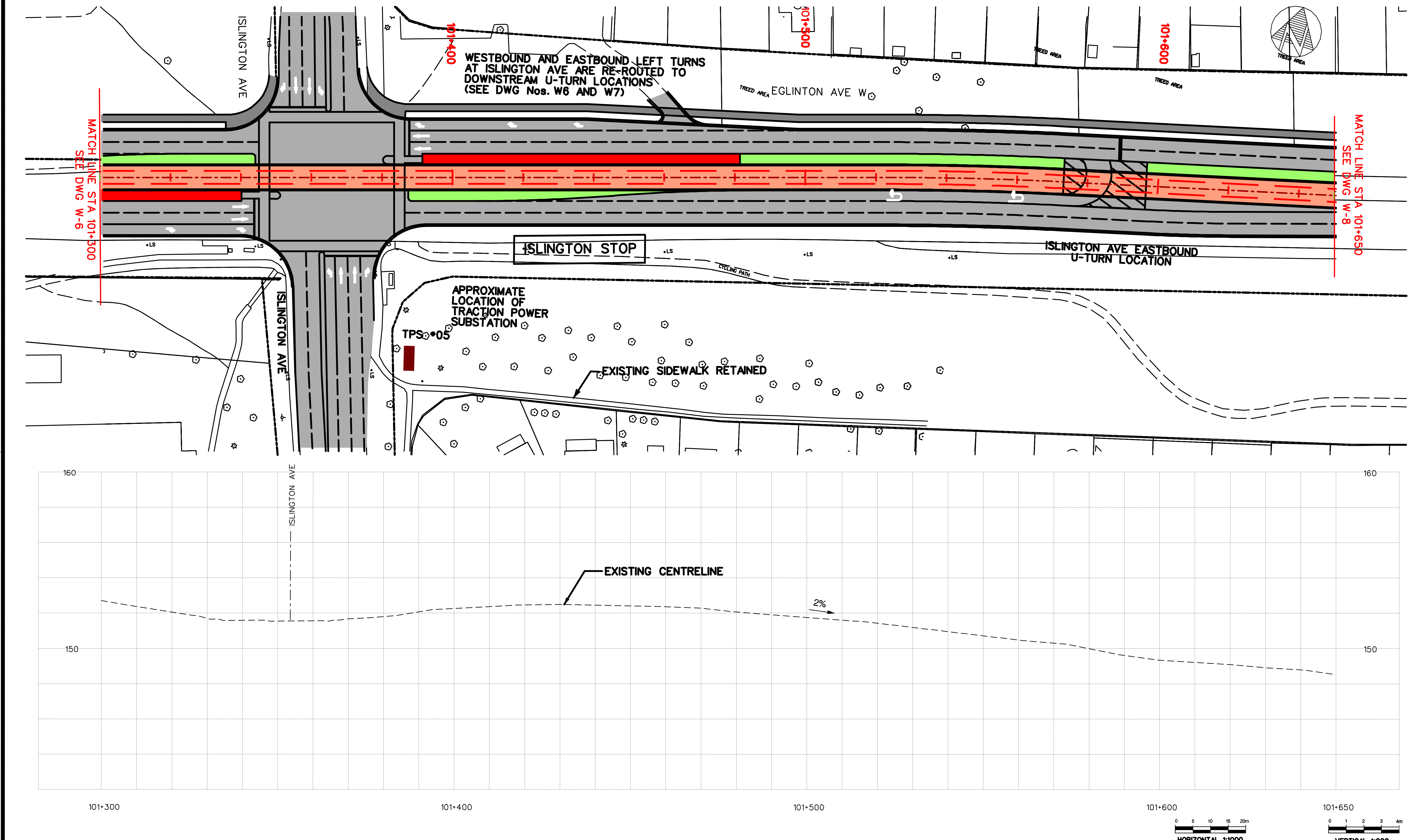
PLAN AND PROFILE STA 100+950 TO STA 101+300

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W6R

Sheet No. 20



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

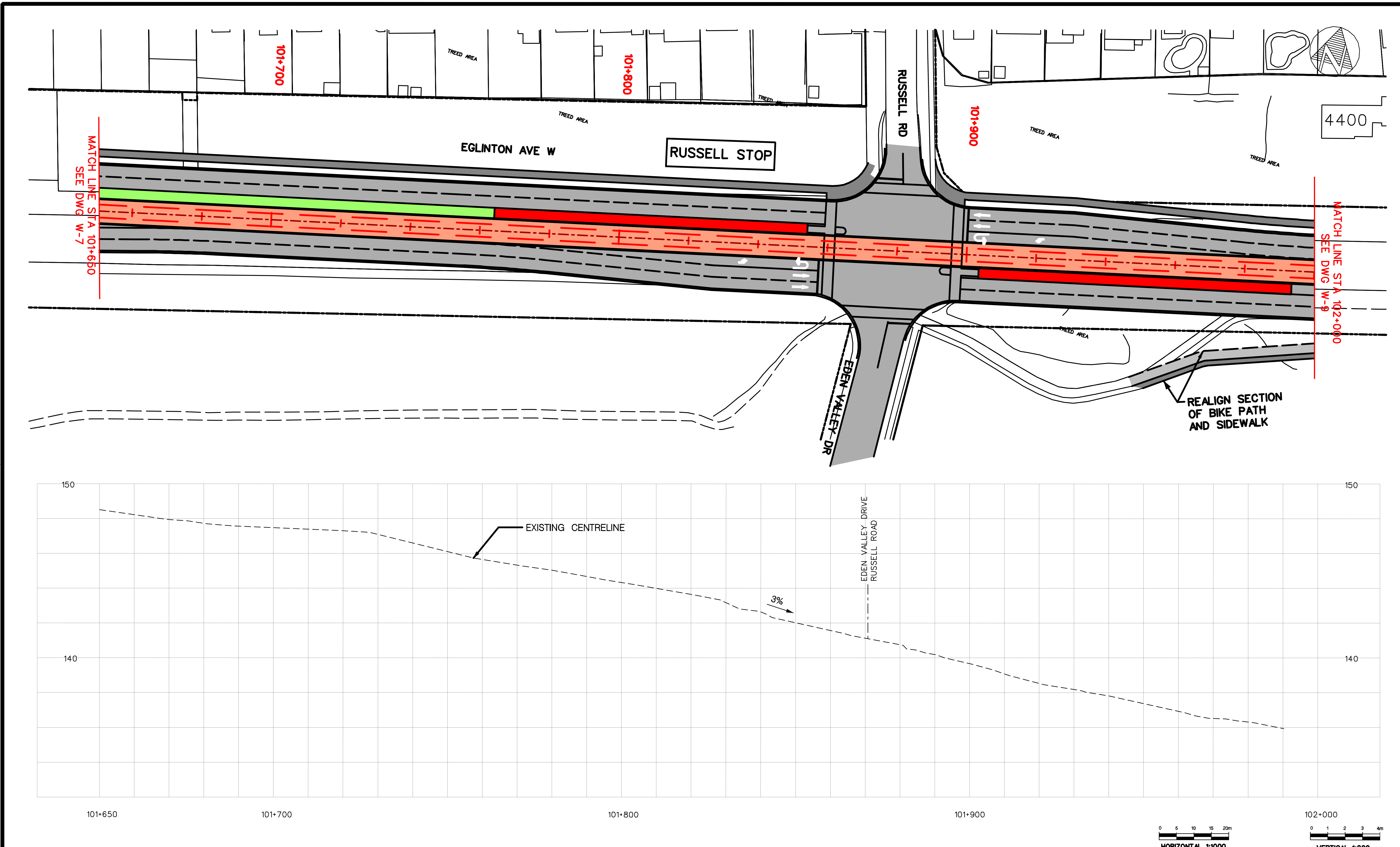
PLAN AND PROFILE STA 101+300 TO STA 101+ +650

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W7R

Sheet No. 21



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

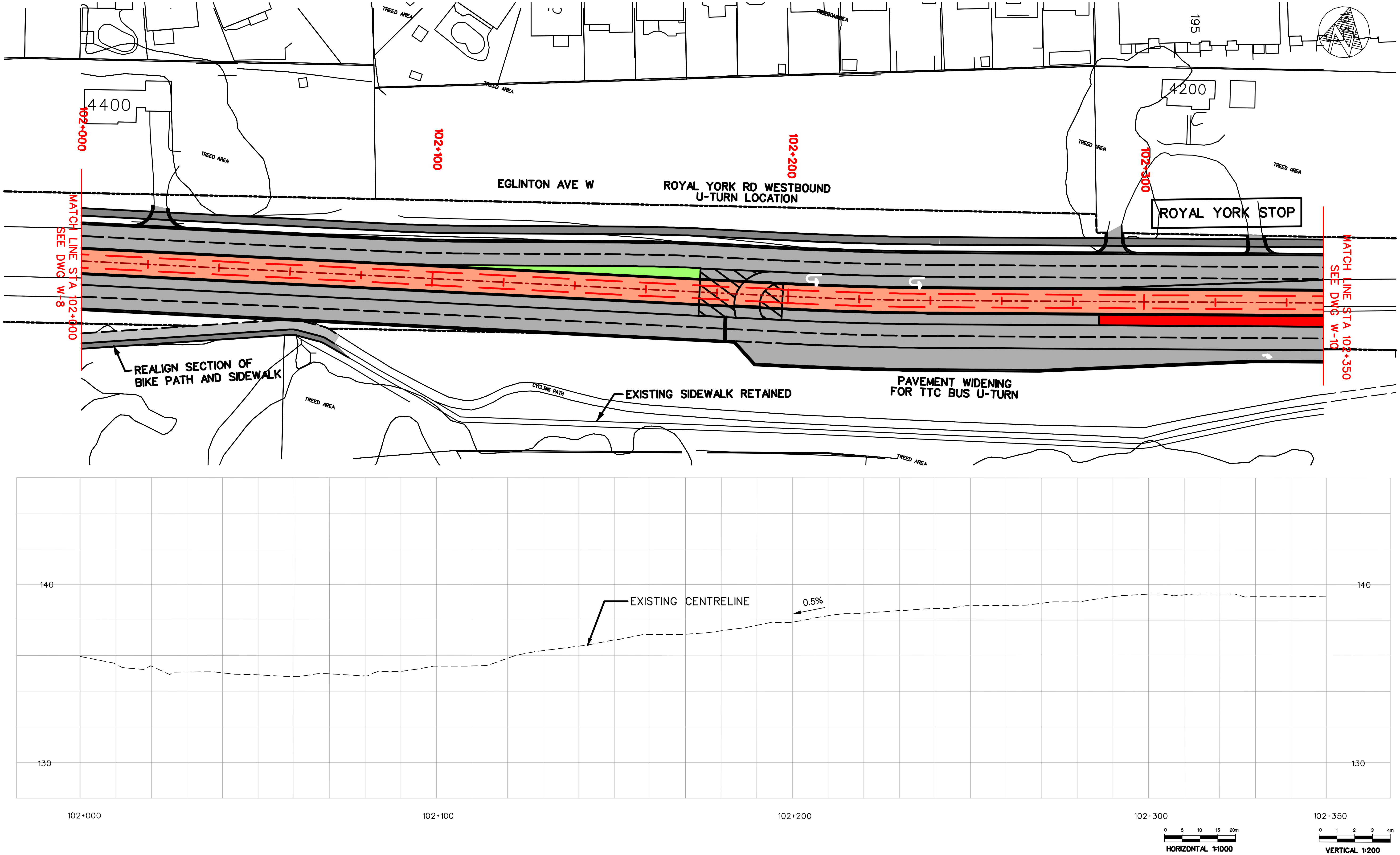
PLAN AND PROFILE STA 101+650 TO STA 102+000

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W8R

Sheet No. 22



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

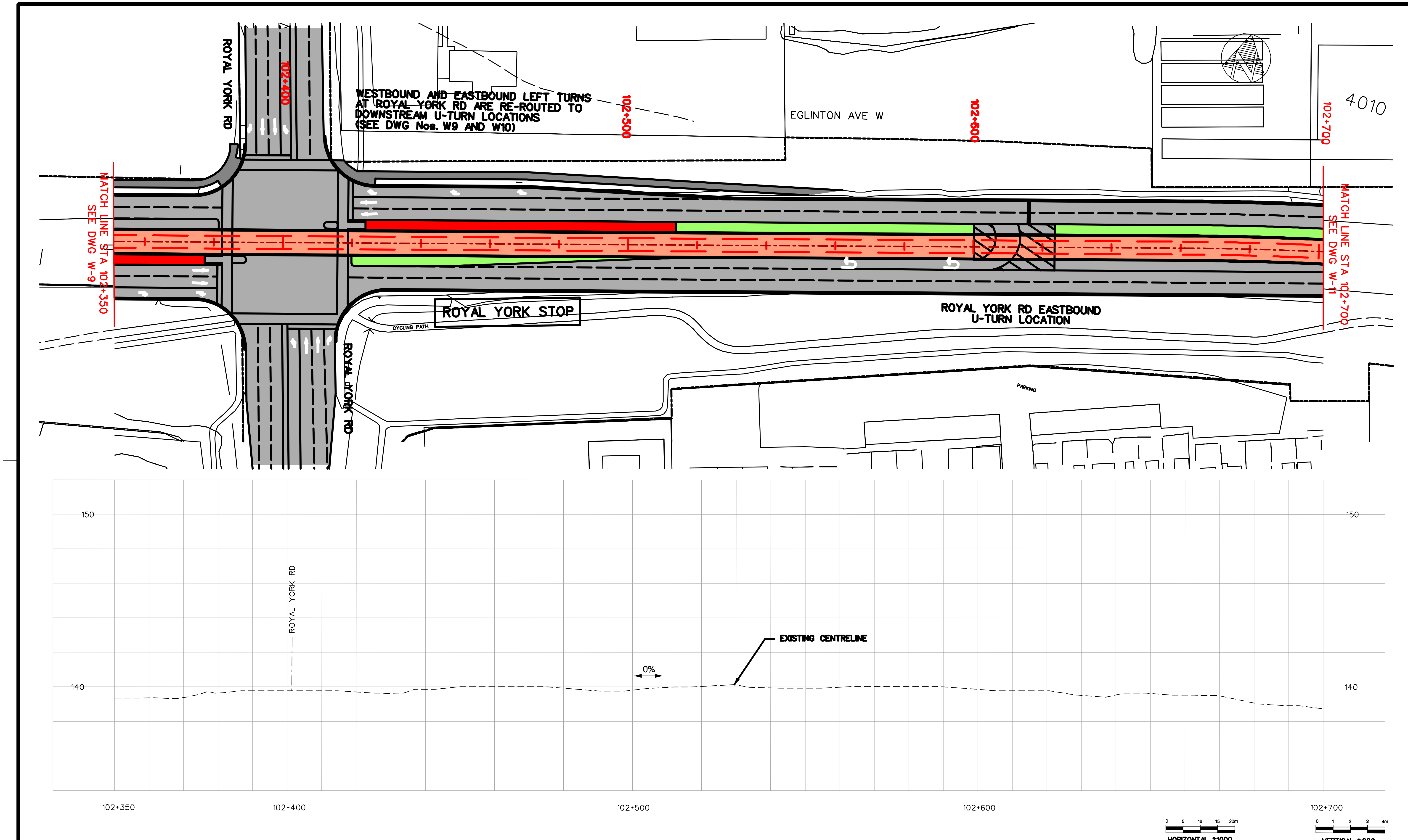
PLAN AND PROFILE STA 102+000 TO STA 102+350

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W9R

Sheet No. 23



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

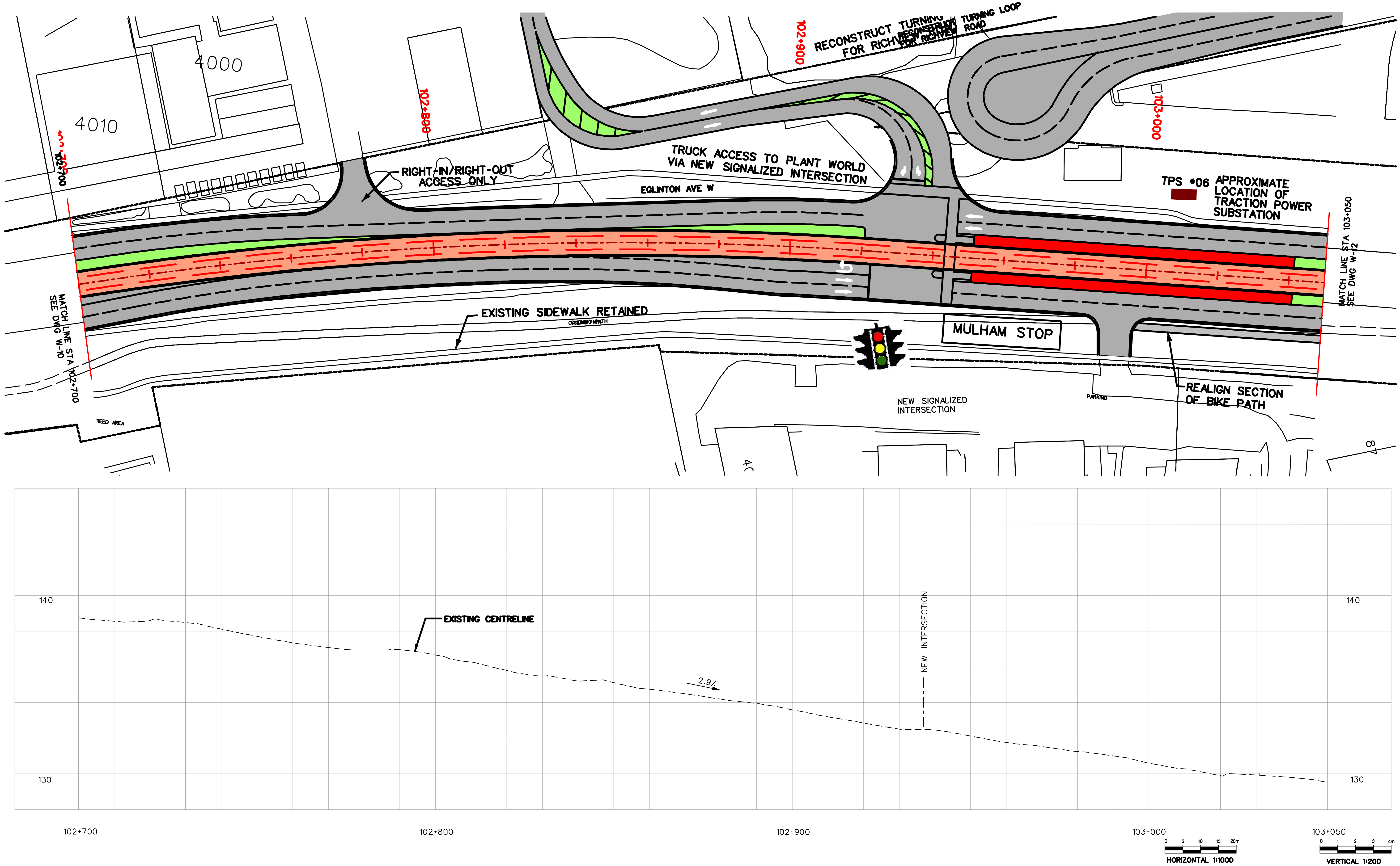
PLAN AND PROFILE STA 102+350 TO STA 102+700

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W10R

Sheet No. 24



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

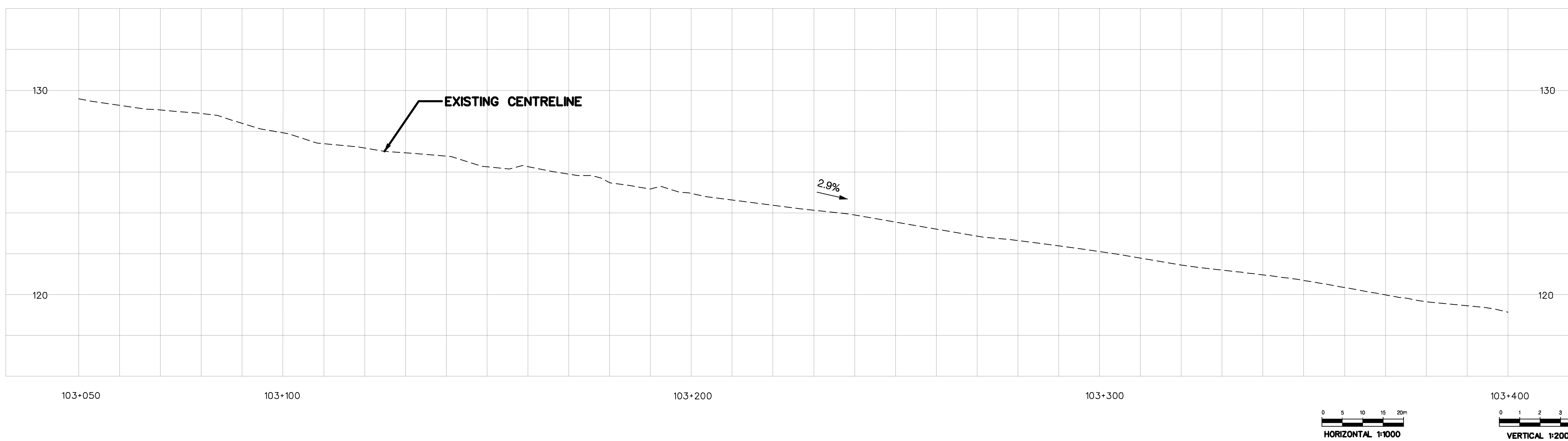
PLAN AND PROFILE STA 102+700 TO STA 103+050

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W11R

Sheet No. 25



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

PLAN AND PROFILE STA 103+050 TO STA 103+400

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W12R

Sheet No. 26

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

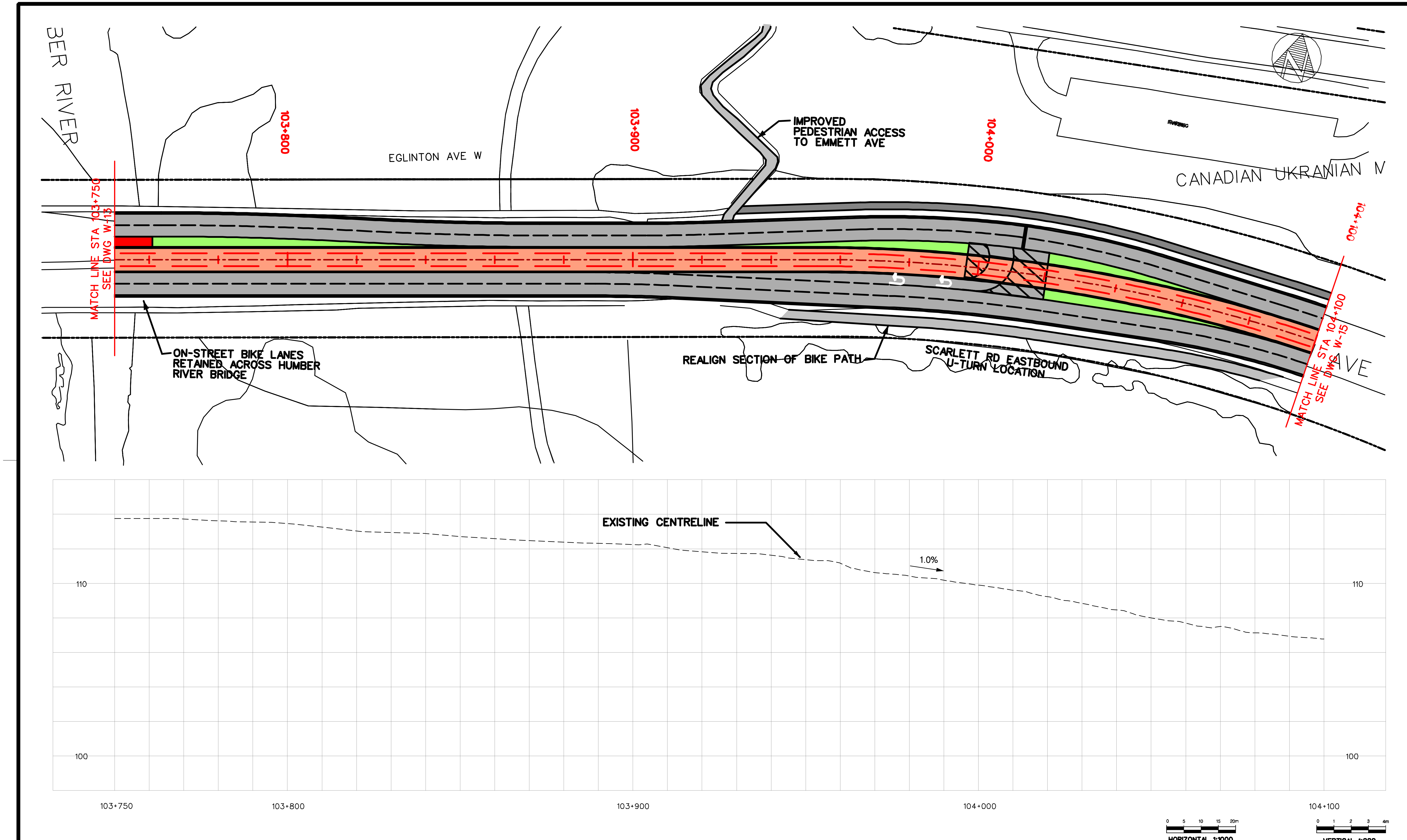
PLAN AND PROFILE STA 103+400 TO STA 103+750

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W13R

Sheet No. 27



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

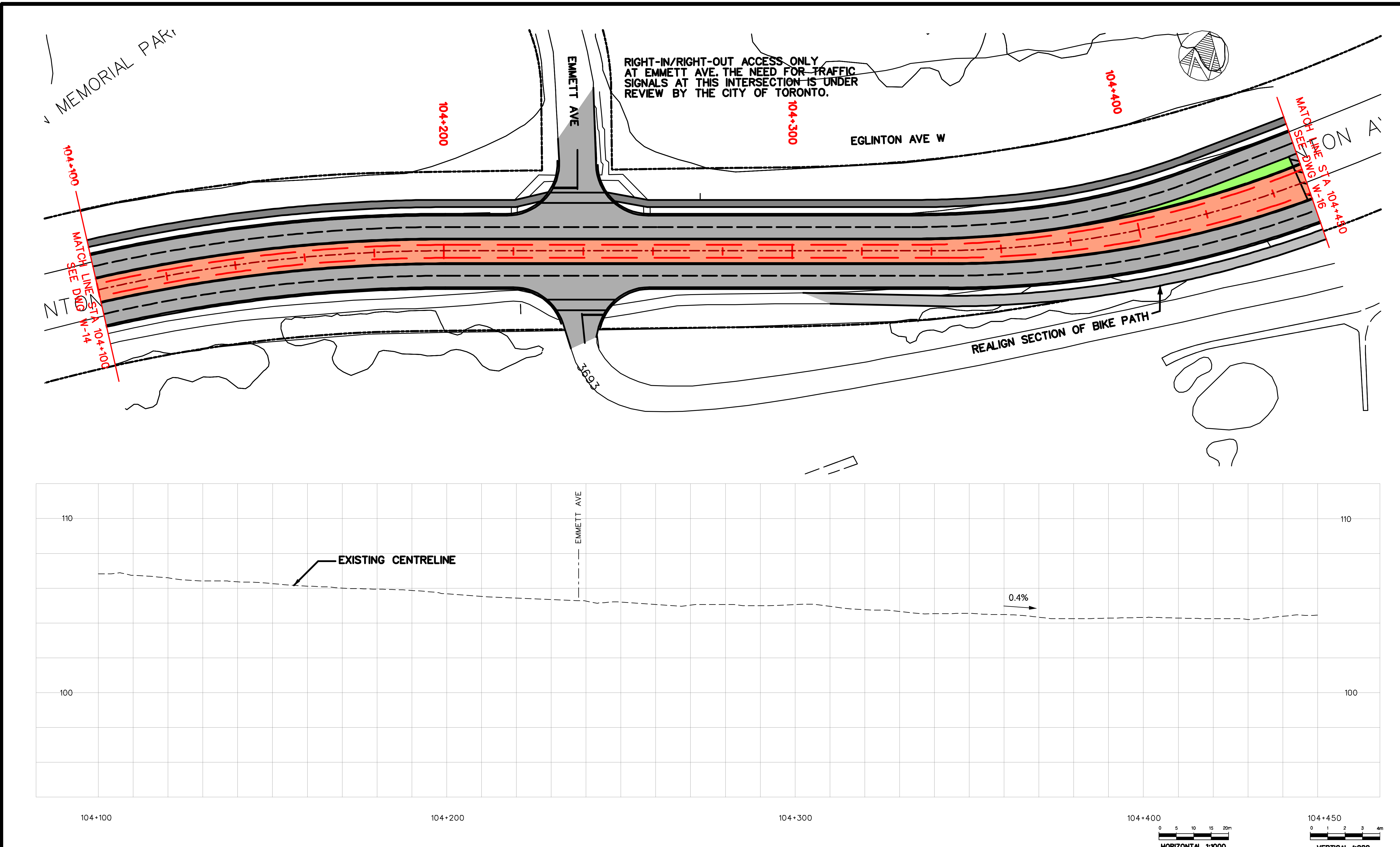
PLAN AND PROFILE STA 103+750 TO STA 104+100

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W14R

Sheet No. 28



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

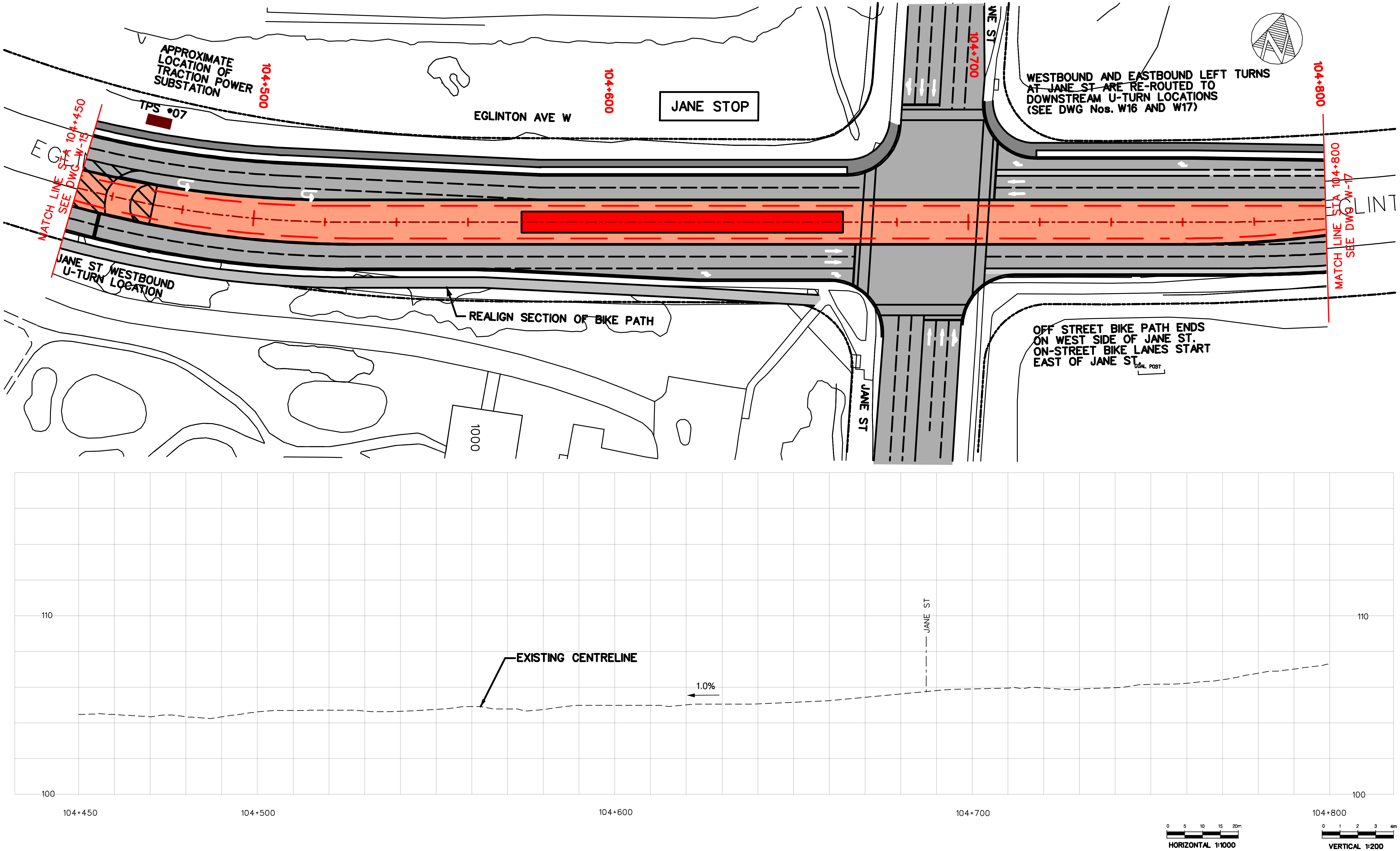
PLAN AND PROFILE STA 104+100 TO STA 104+450

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W15R

Sheet No. 29



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

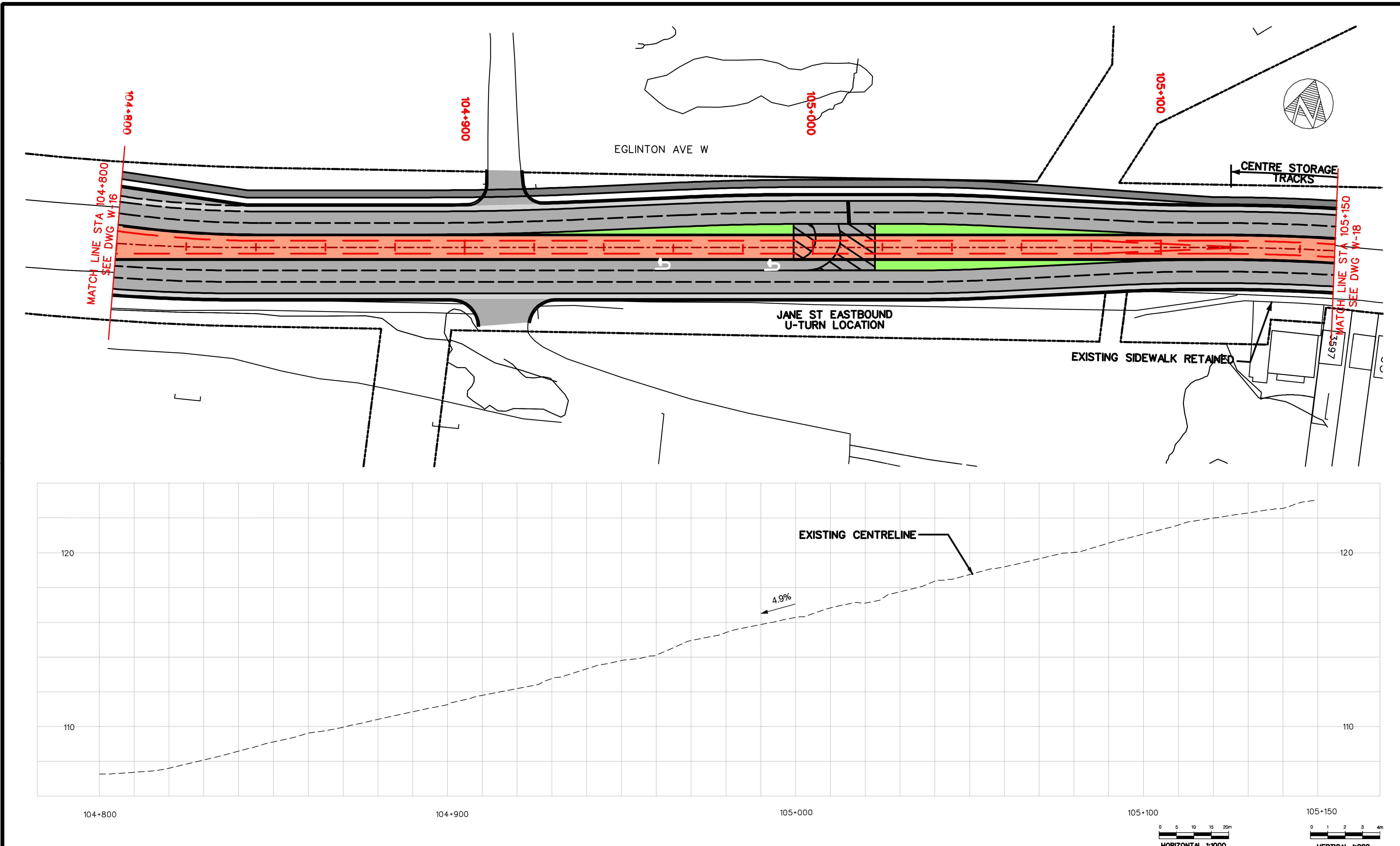
PLAN AND PROFILE STA 104+450 TO STA 104+800

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W16R

Sheet No. 30



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

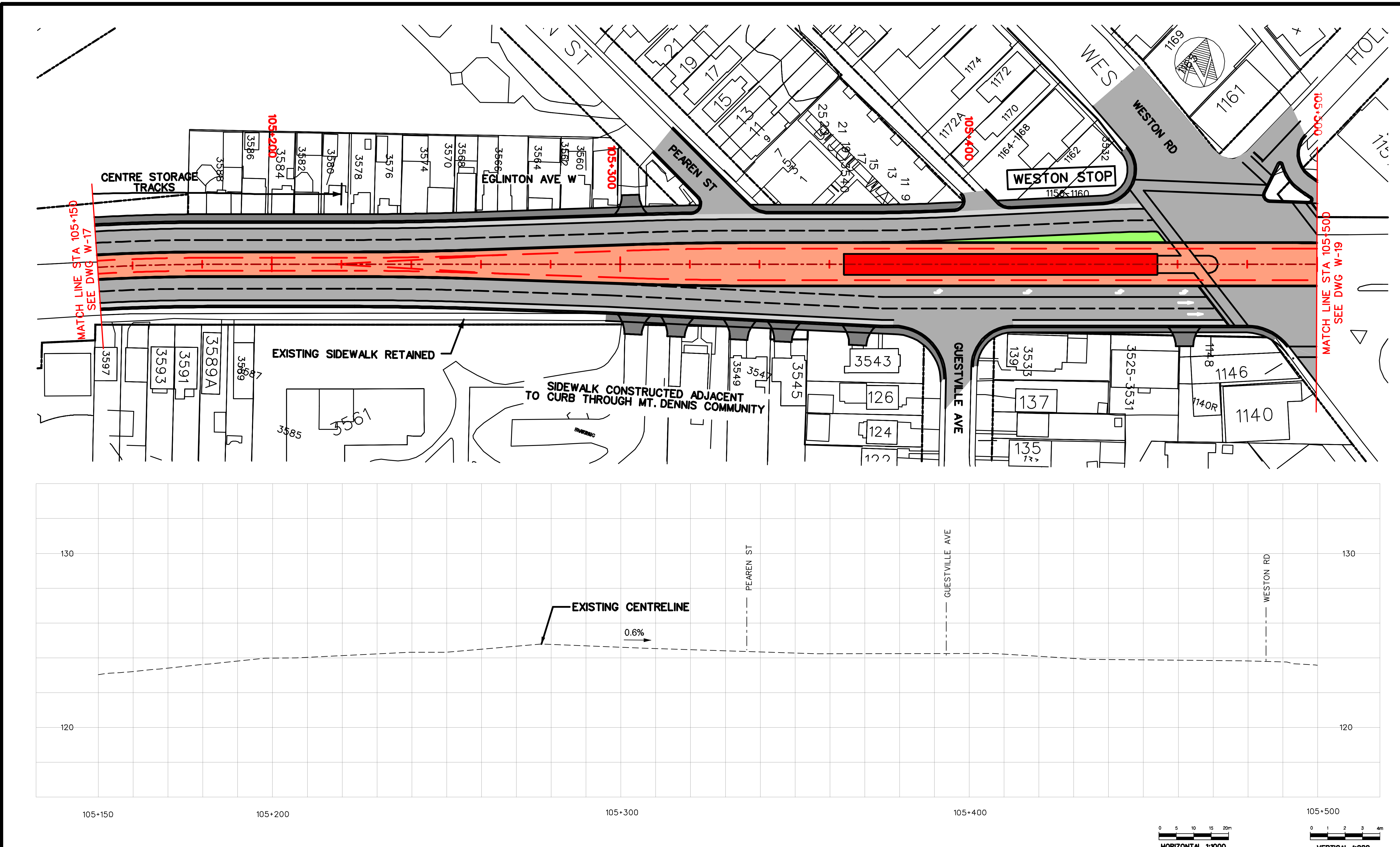
PLAN AND PROFILE STA 104+800 TO STA 105+150

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W17R

Sheet No. 31



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

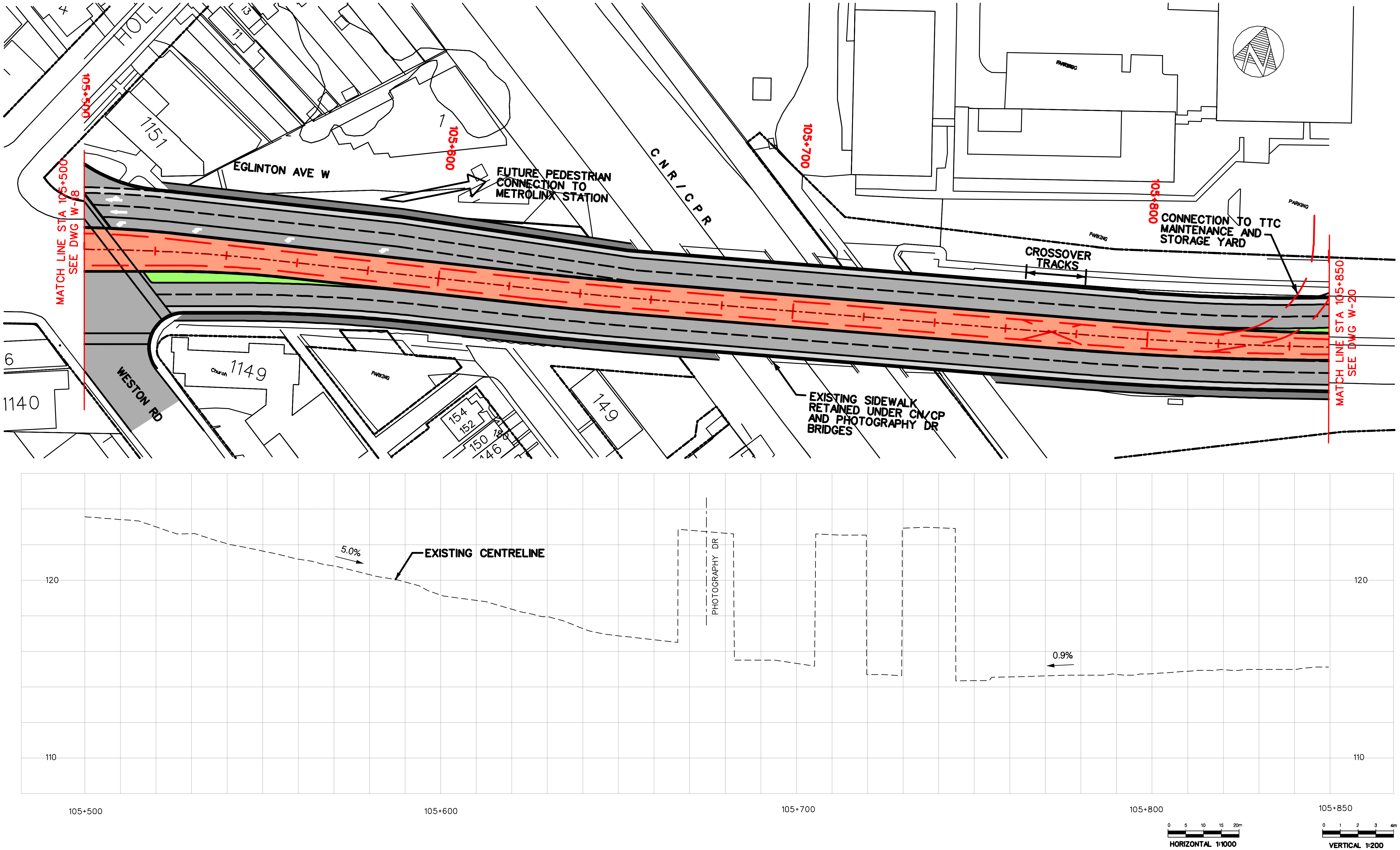
PLAN AND PROFILE STA 105+150 TO STA 105+500

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W18R

Sheet No. 32



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

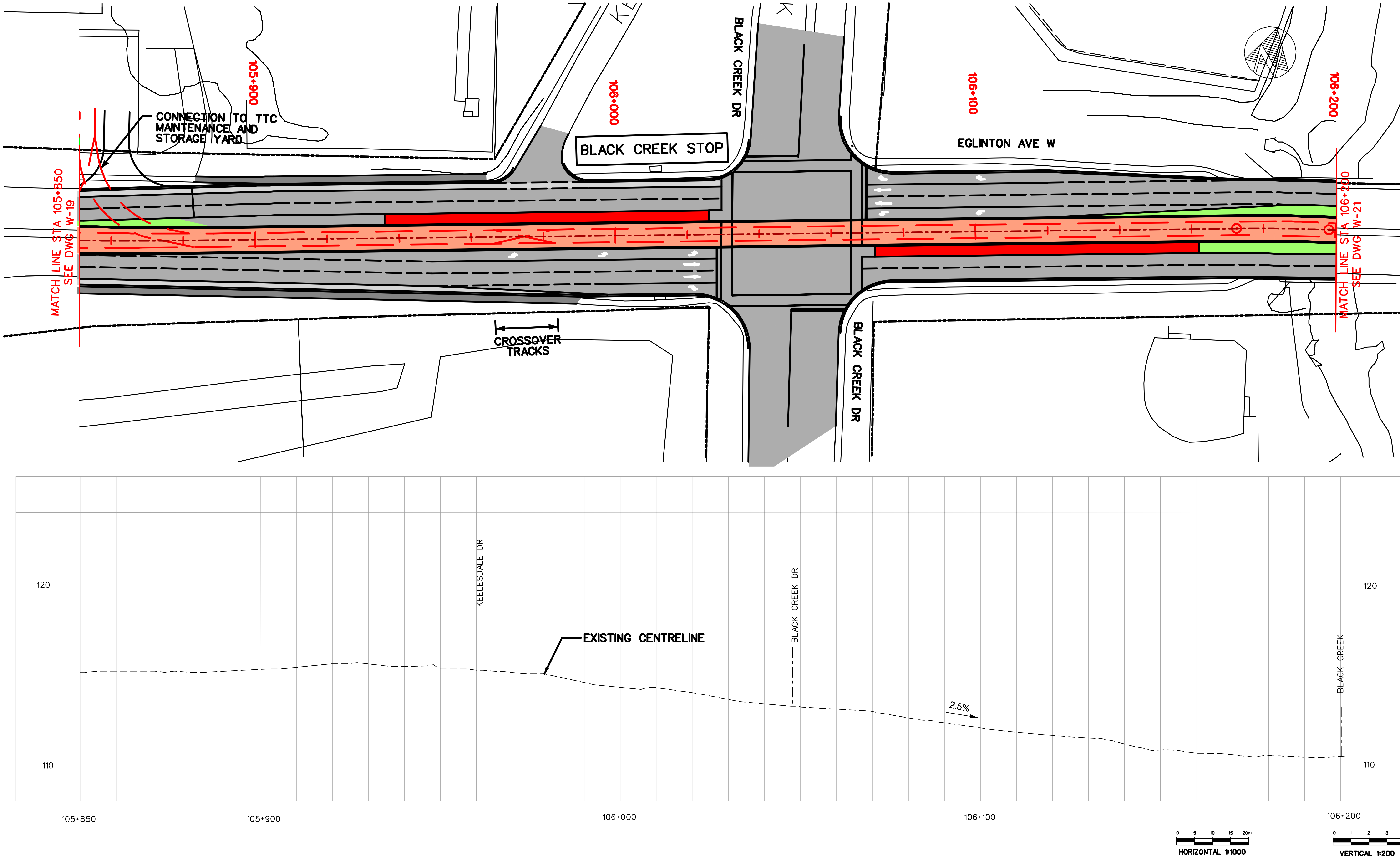
PLAN AND PROFILE STA 105+500 TO STA 105+850

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W19R

Sheet No. 33



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

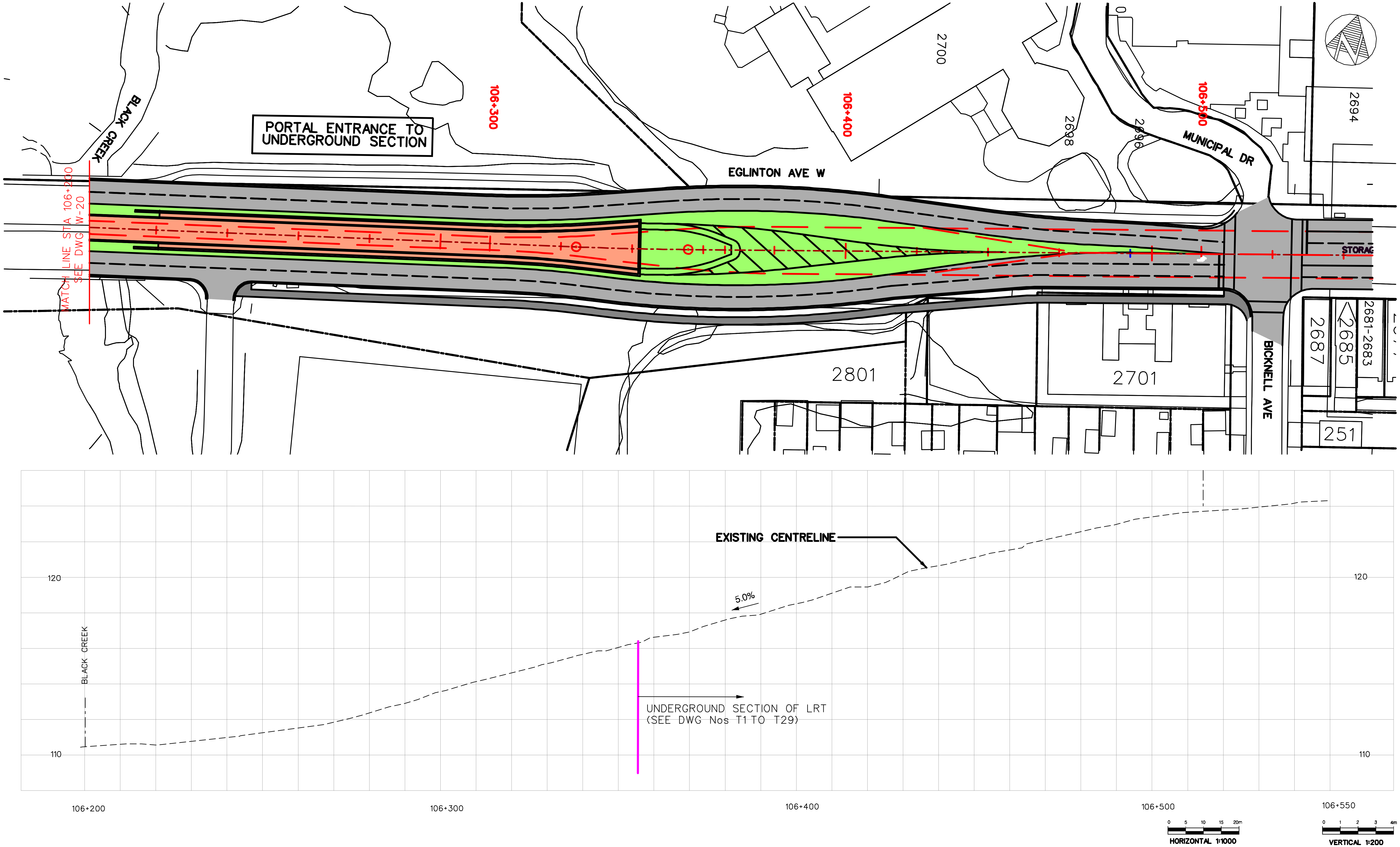
PLAN AND PROFILE STA 105+850 TO STA 106+200

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W20R

Sheet No. 34



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

WEST SURFACE SECTION

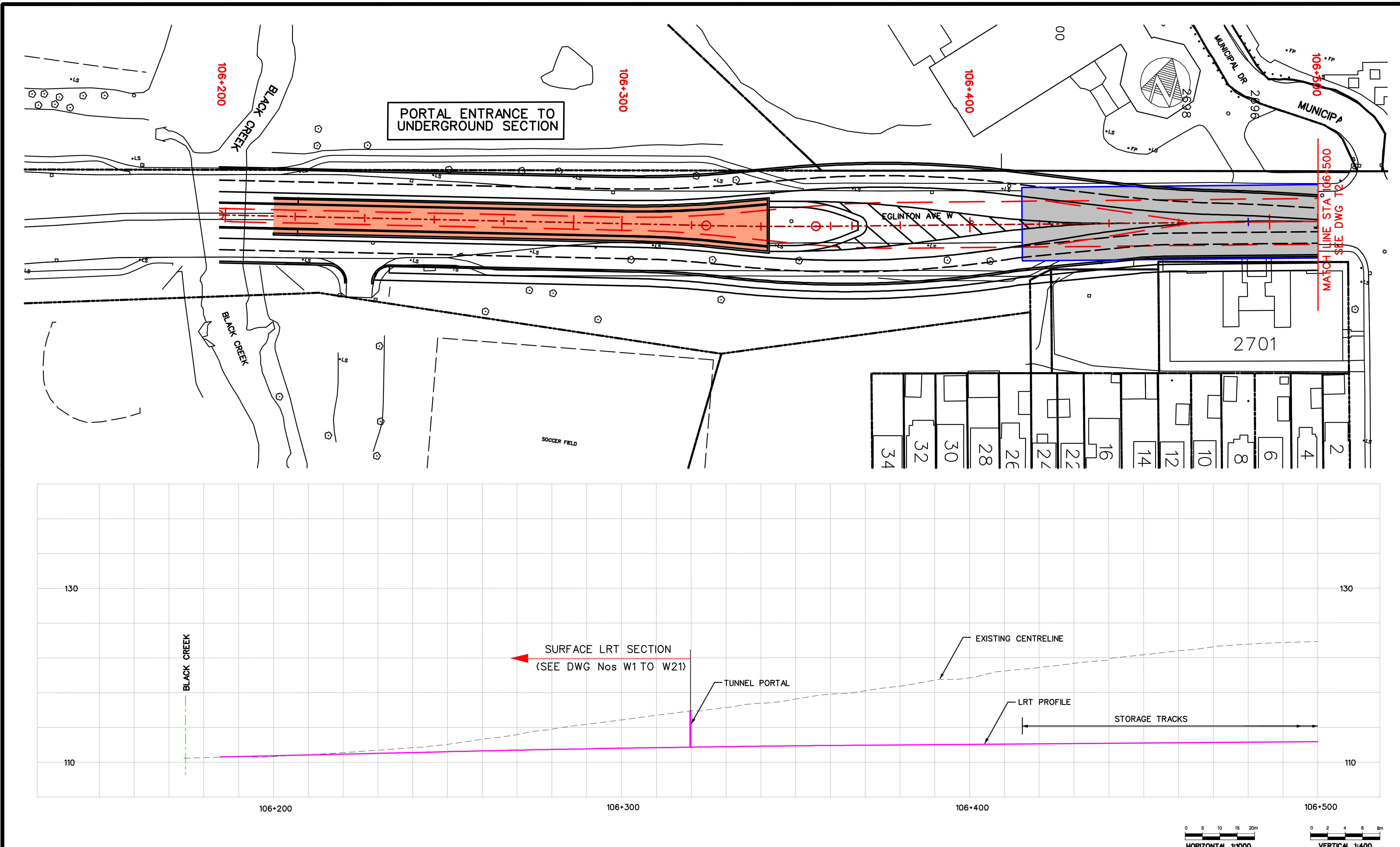
PLAN AND PROFILE STA 106+200 TO STA 106+560

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. W21R

Sheet No. 35



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

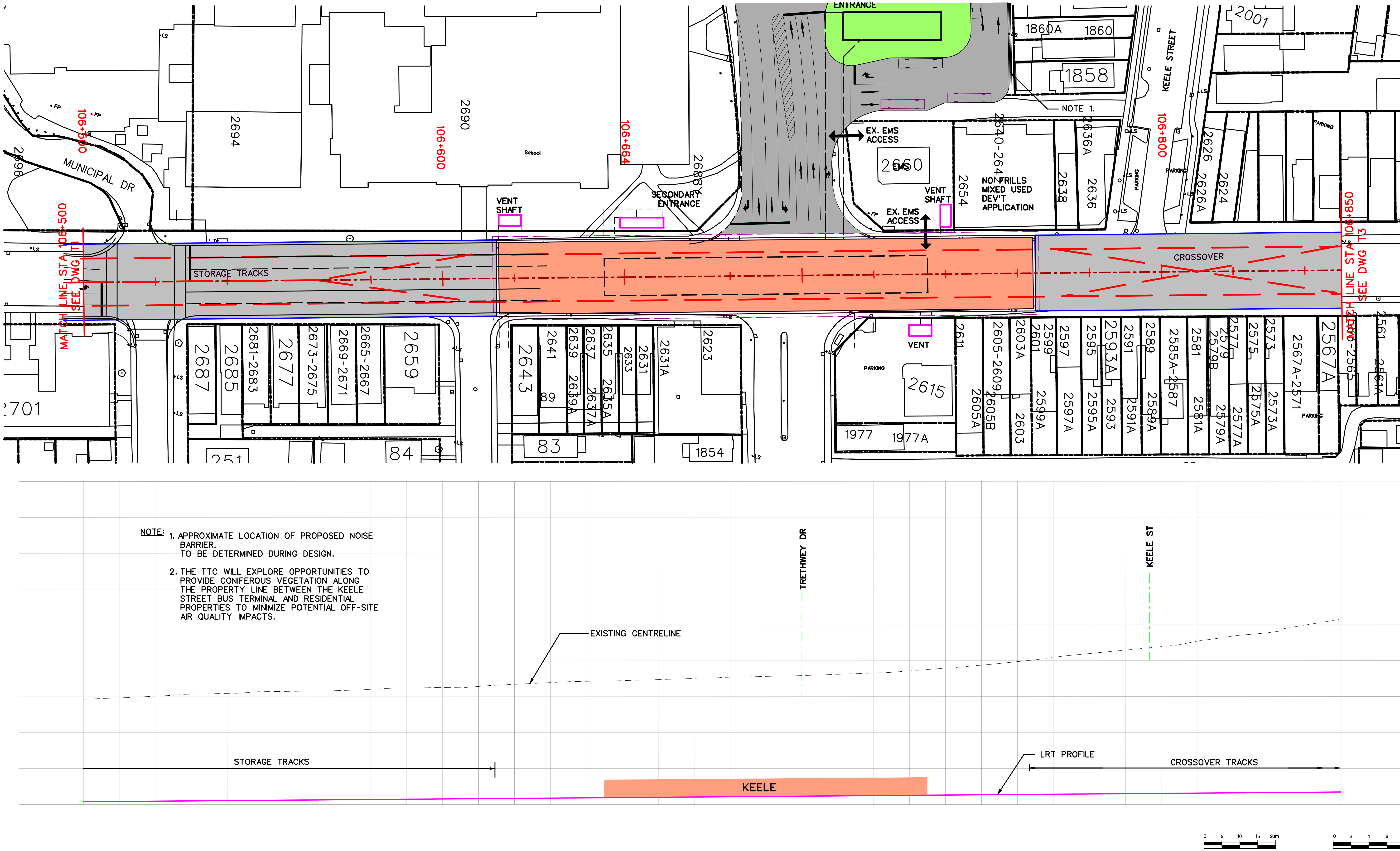
PLAN AND PROFILE STA 106+150 TO STA 106+500

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T1R

Sheet No. 36



NOTE:
1. APPROXIMATE LOCATION OF PROPOSED NOISE BARRIER. TO BE DETERMINED DURING DESIGN.
2. THE TTC WILL EXPLORE OPPORTUNITIES TO PROVIDE CONIFEROUS VEGETATION ALONG THE PROPERTY LINE BETWEEN THE KEELE STREET BUS TERMINAL AND RESIDENTIAL PROPERTIES TO MINIMIZE POTENTIAL OFF-SITE AIR QUALITY IMPACTS.

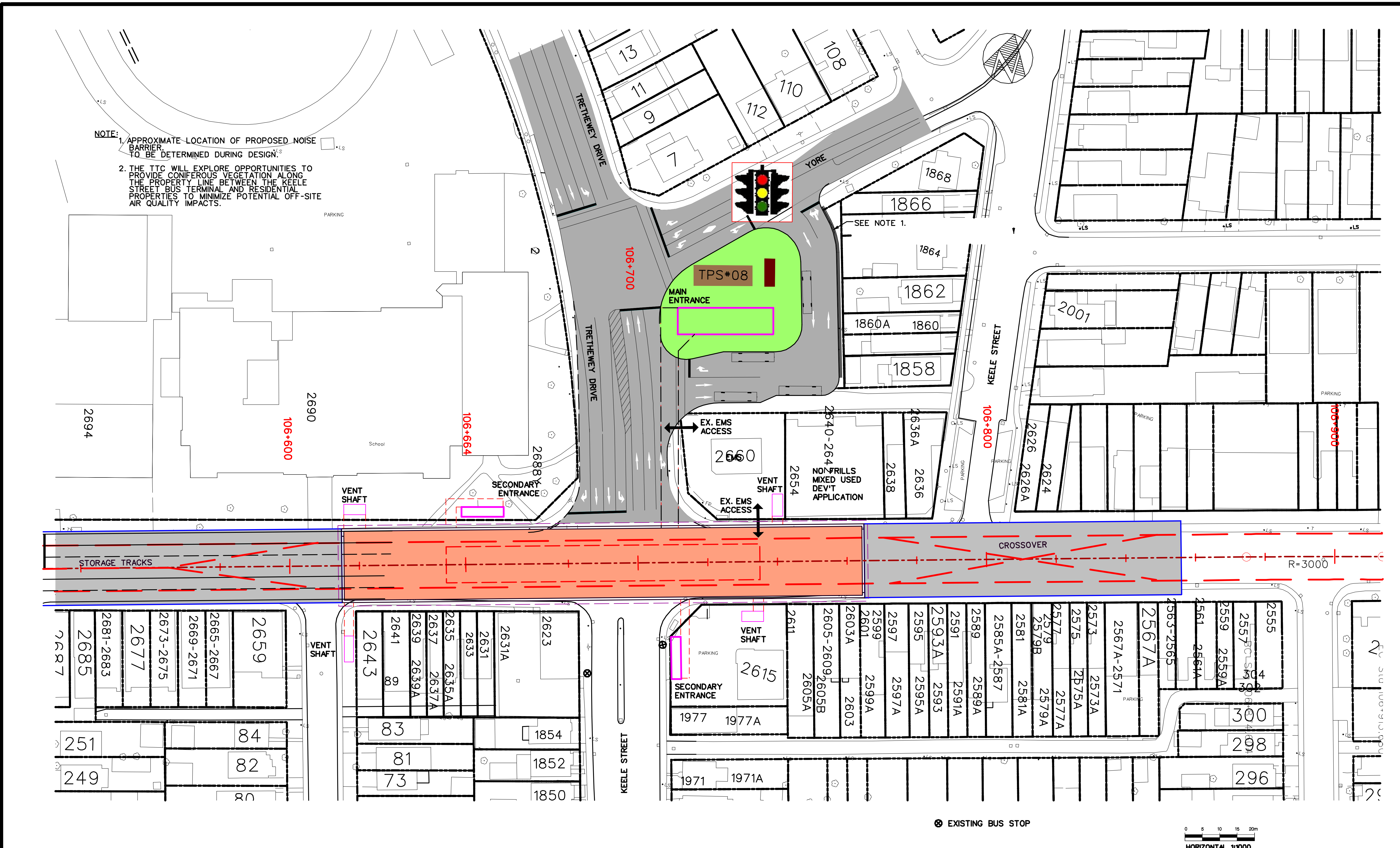
EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T2R

Sheet No. 37



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

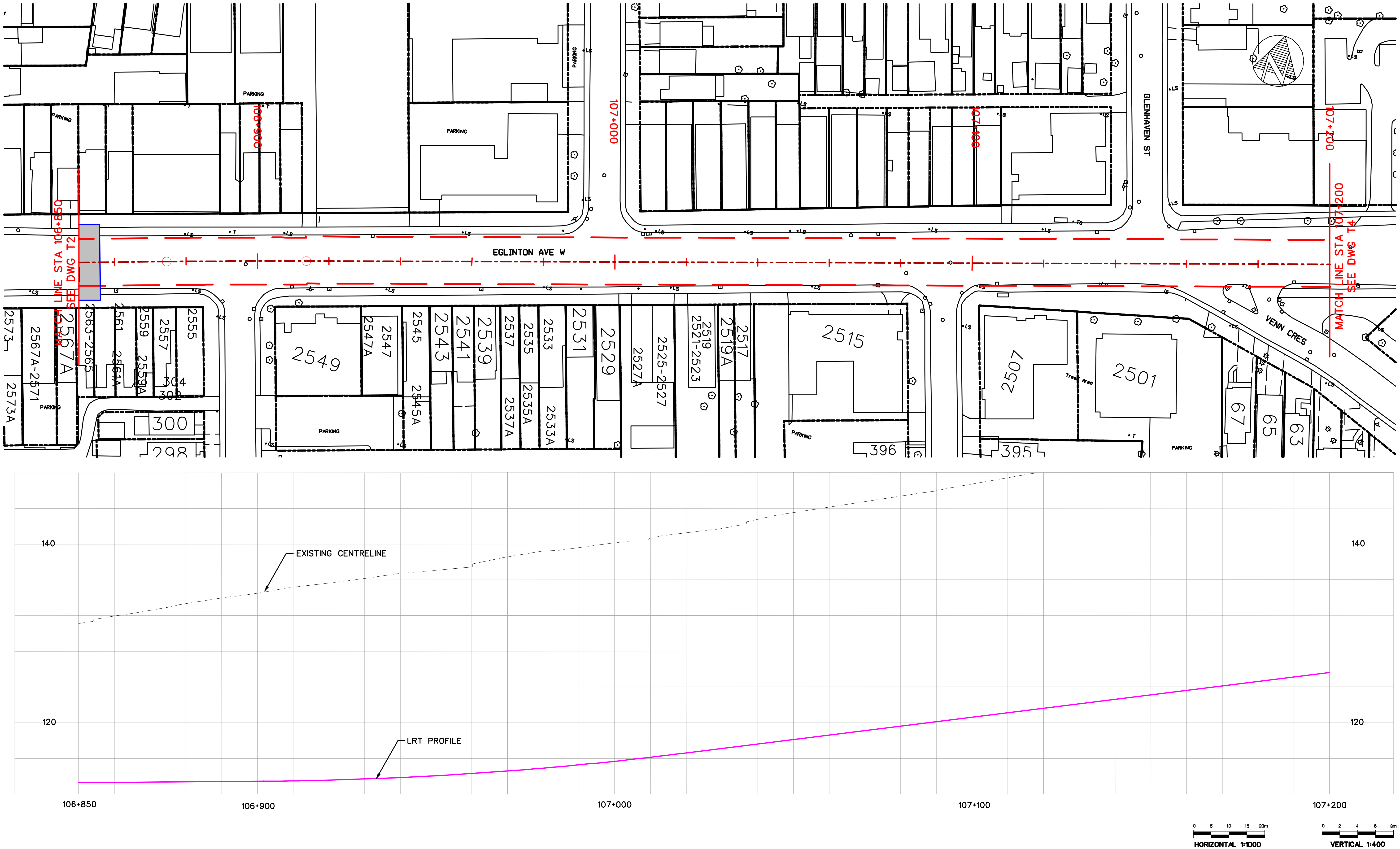
KEELE BUS TERMINAL

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T2A

Sheet No. 37A



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

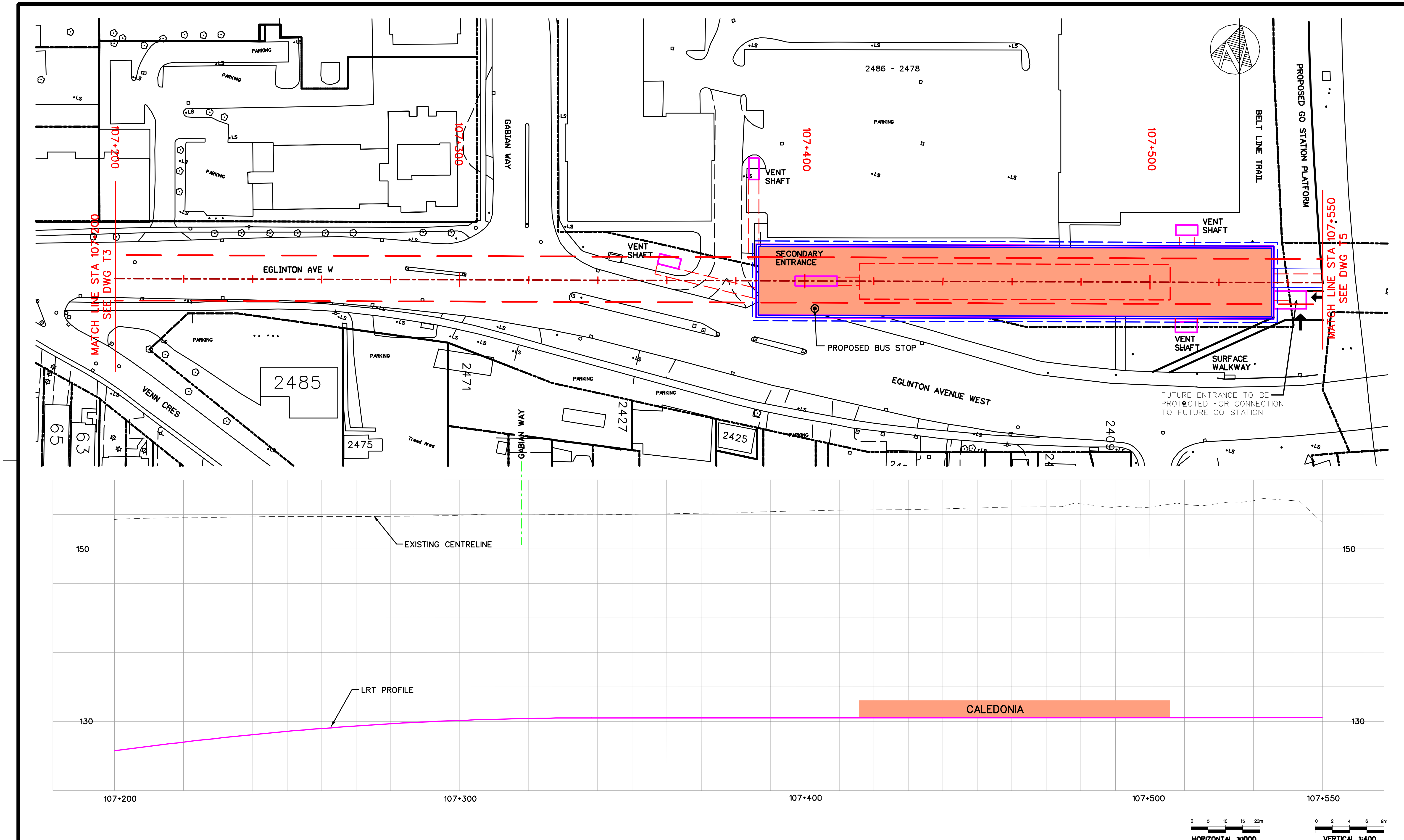
PLAN AND PROFILE STA 106+850 TO STA 107+200

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T3

Sheet No. 38



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

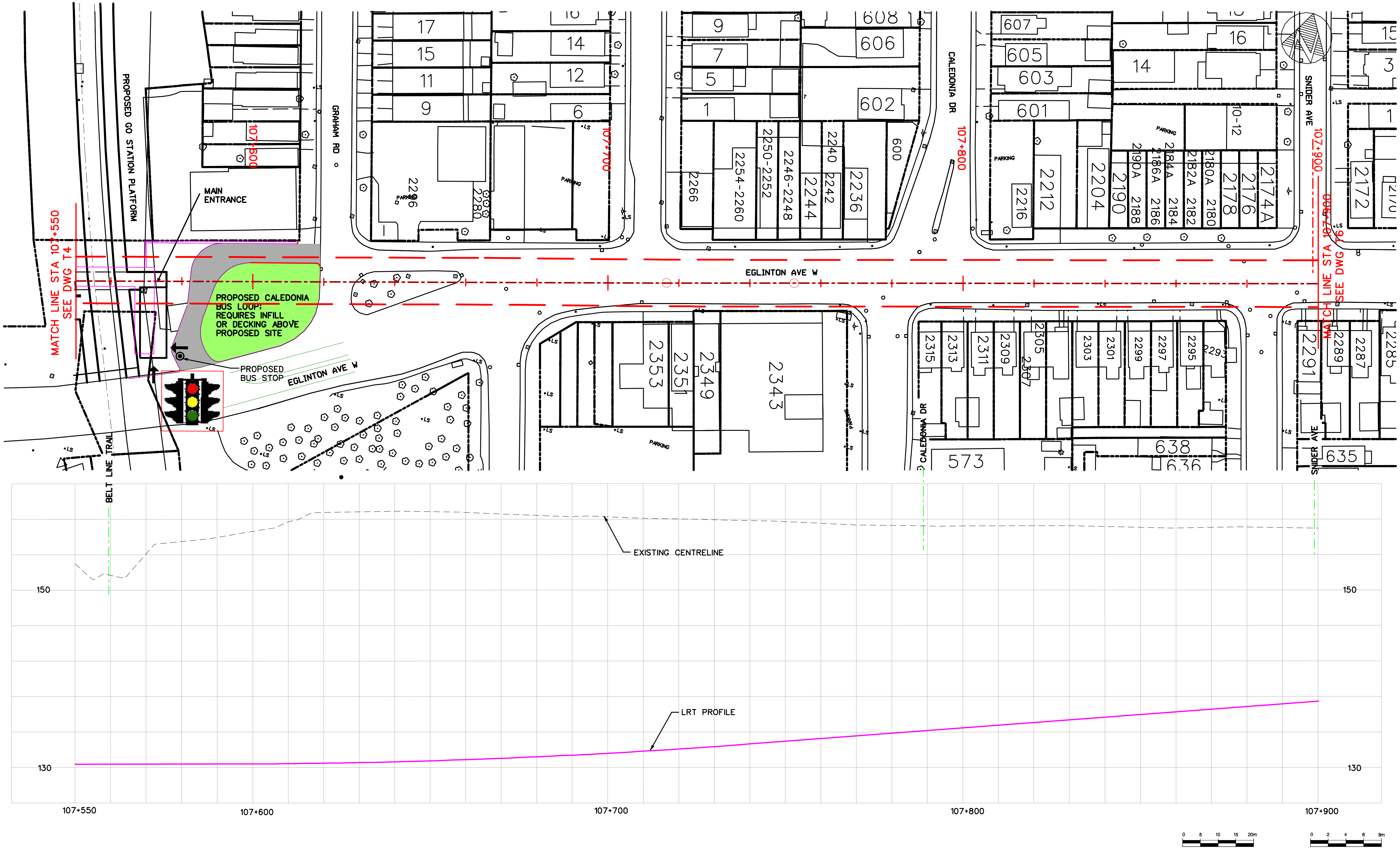
PLAN AND PROFILE STA 107+200 TO STA 107+550

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T4

Sheet No. 39



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

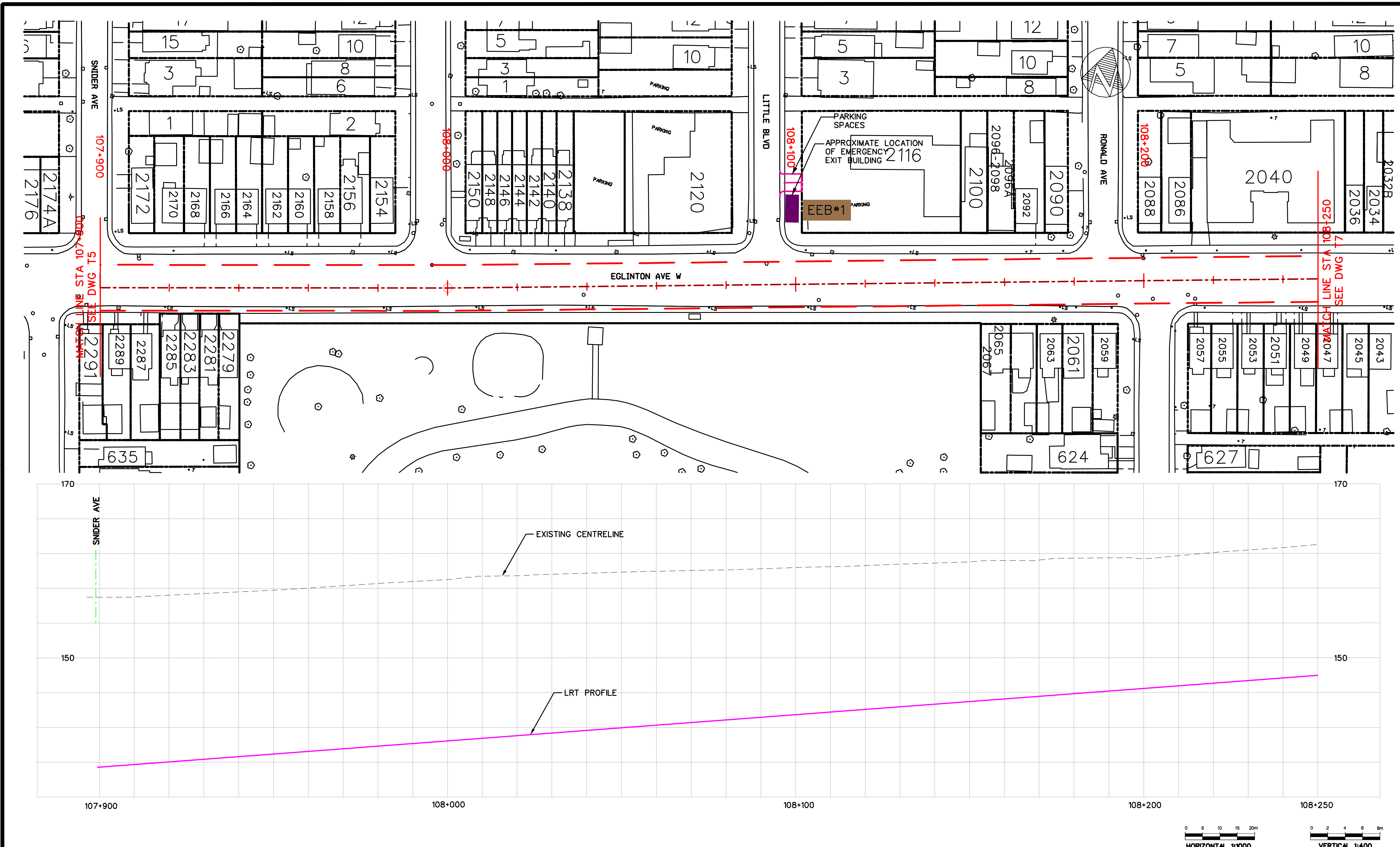
PLAN AND PROFILE STA 107+550 TO STA 107+900

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T5

Sheet No. 40



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

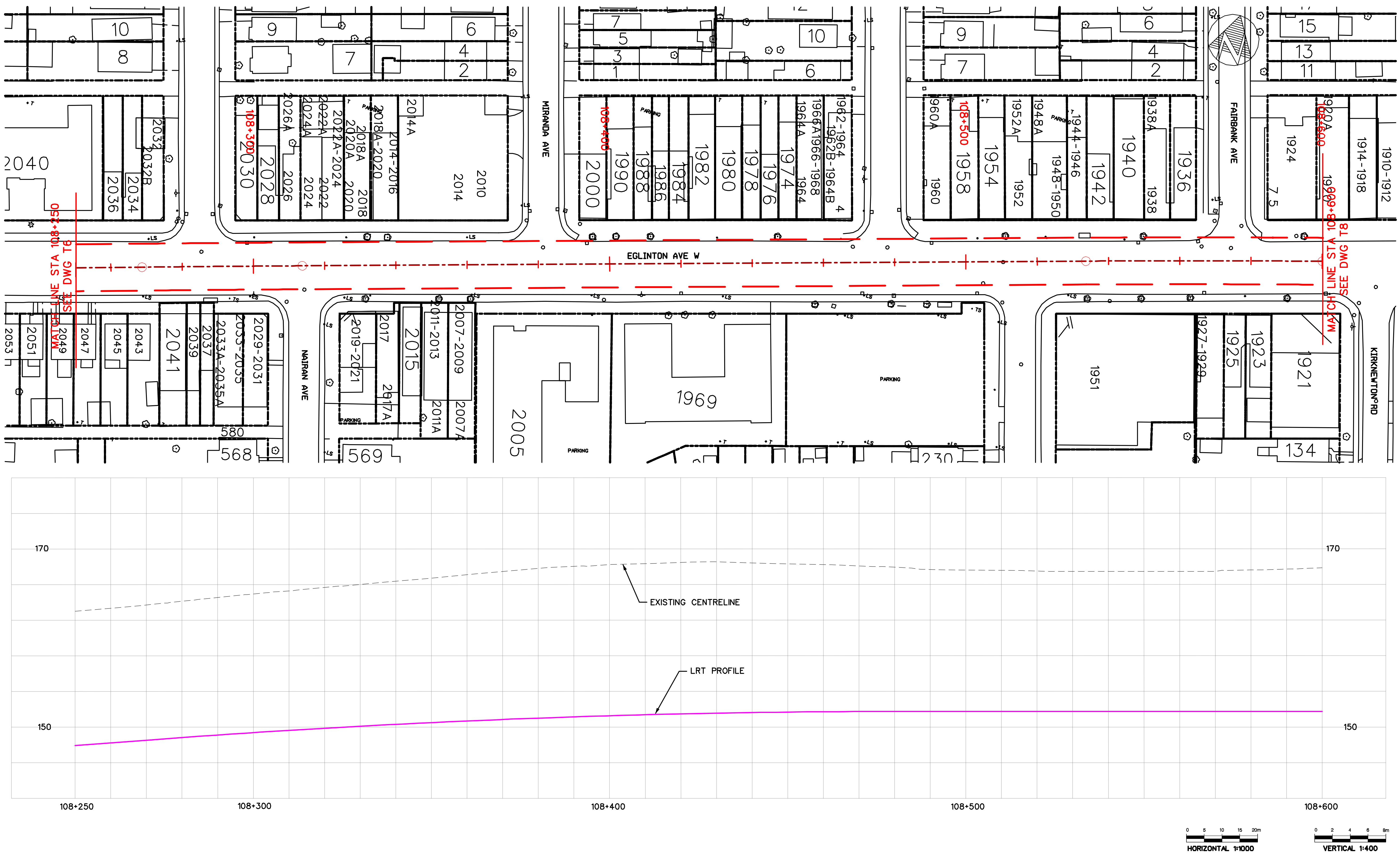
PLAN AND PROFILE STA 107+900 TO STA 108+250

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T6R

Sheet No. 41



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

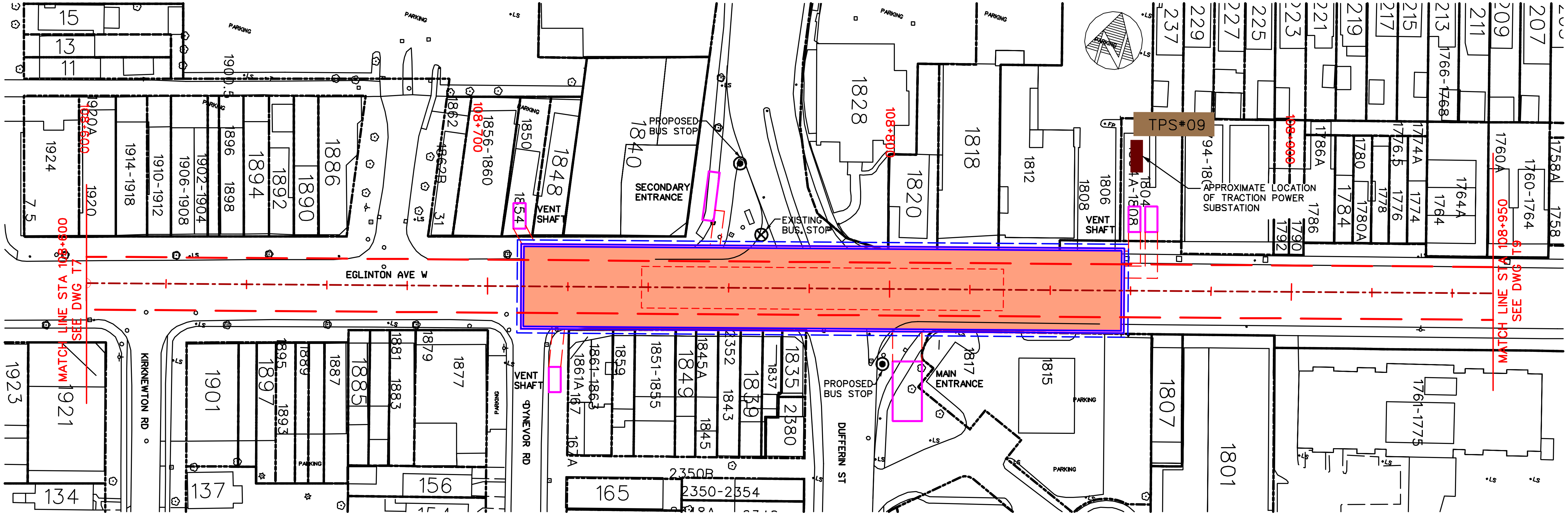
PLAN AND PROFILE STA 108+250 TO STA 108+600

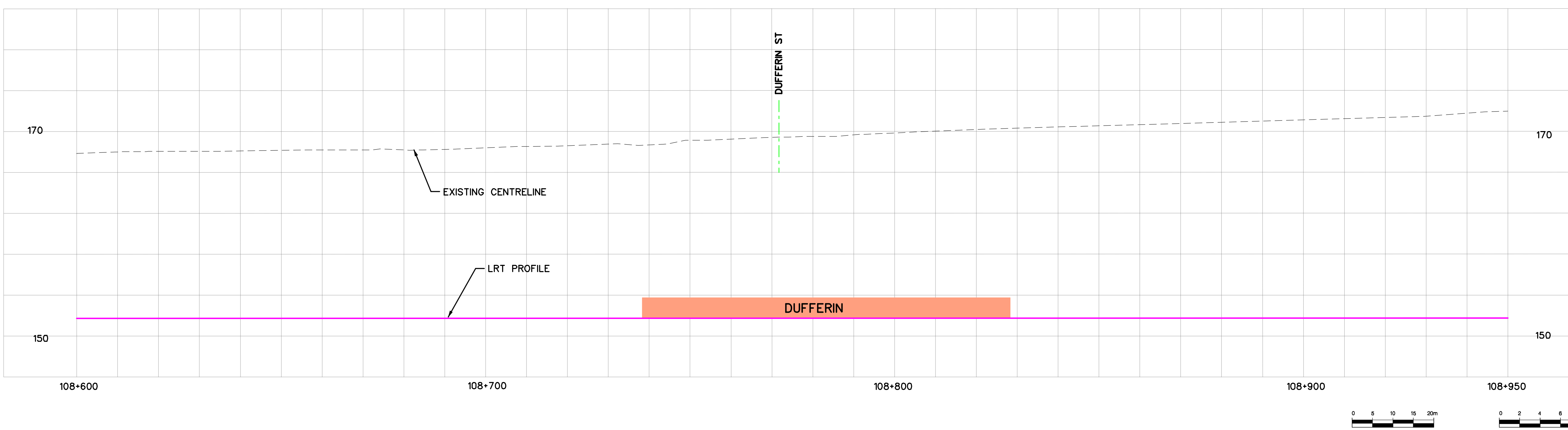
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T7

Sheet No. 42





EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

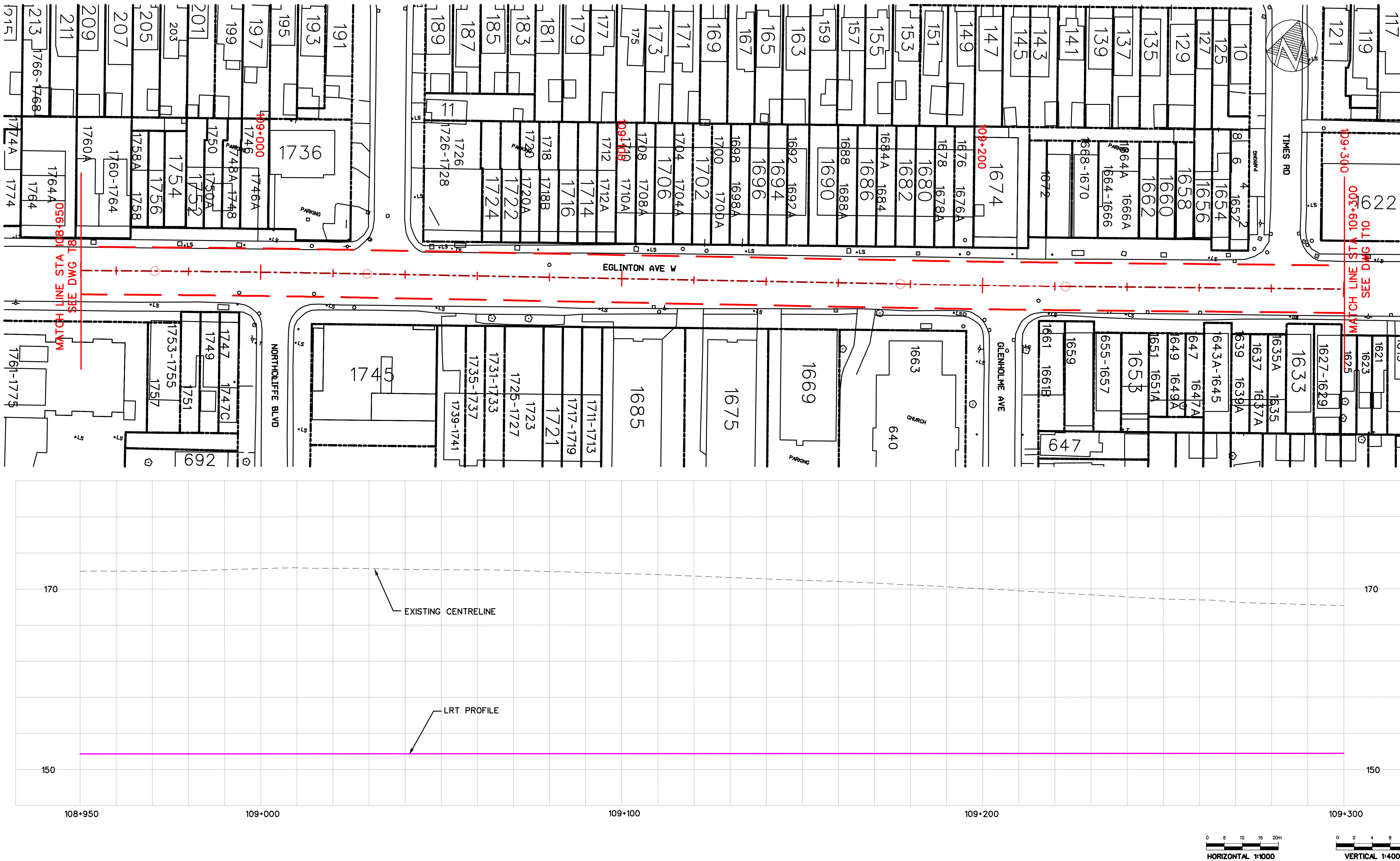
PLAN AND PROFILE STA 108+600 TO STA 108+950

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T8

Sheet No. 43



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

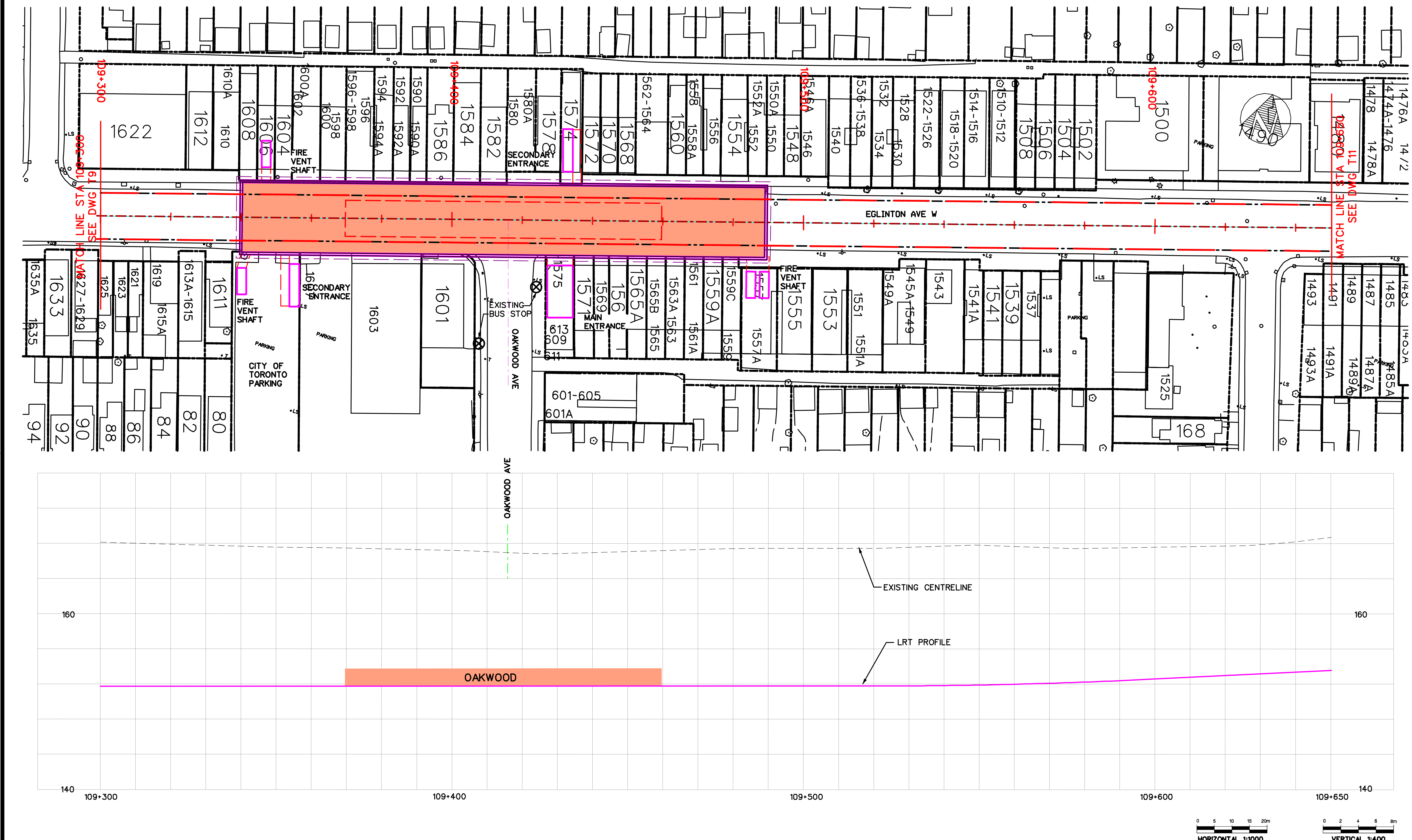
PLAN AND PROFILE STA 108+950 TO STA 109+300

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T9

Sheet No. 44



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

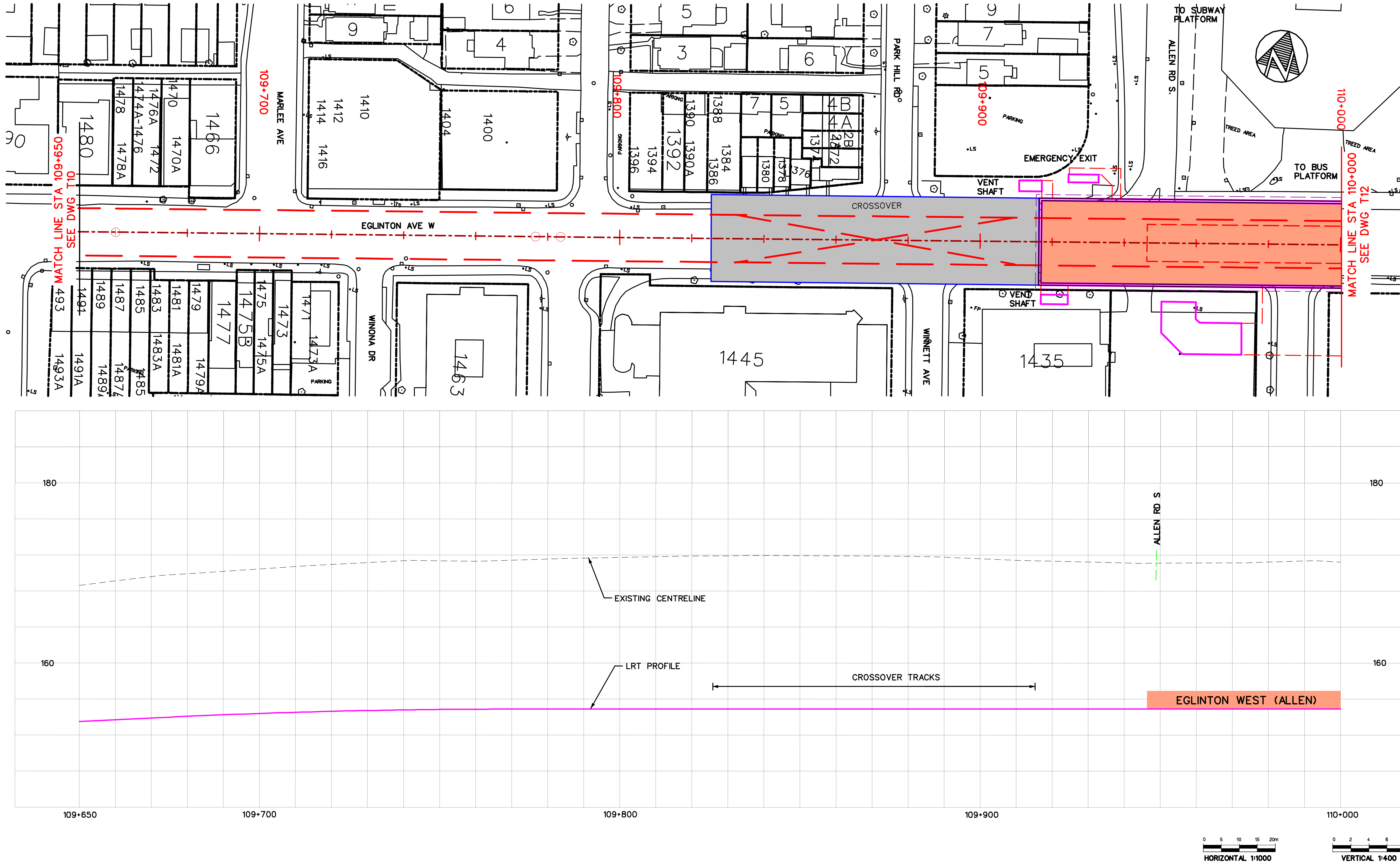
PLAN AND PROFILE STA 109+300 TO STA 109+650

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T10

Sheet No. 45



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 109+650 TO STA 110+000

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T11R

Sheet No. 46

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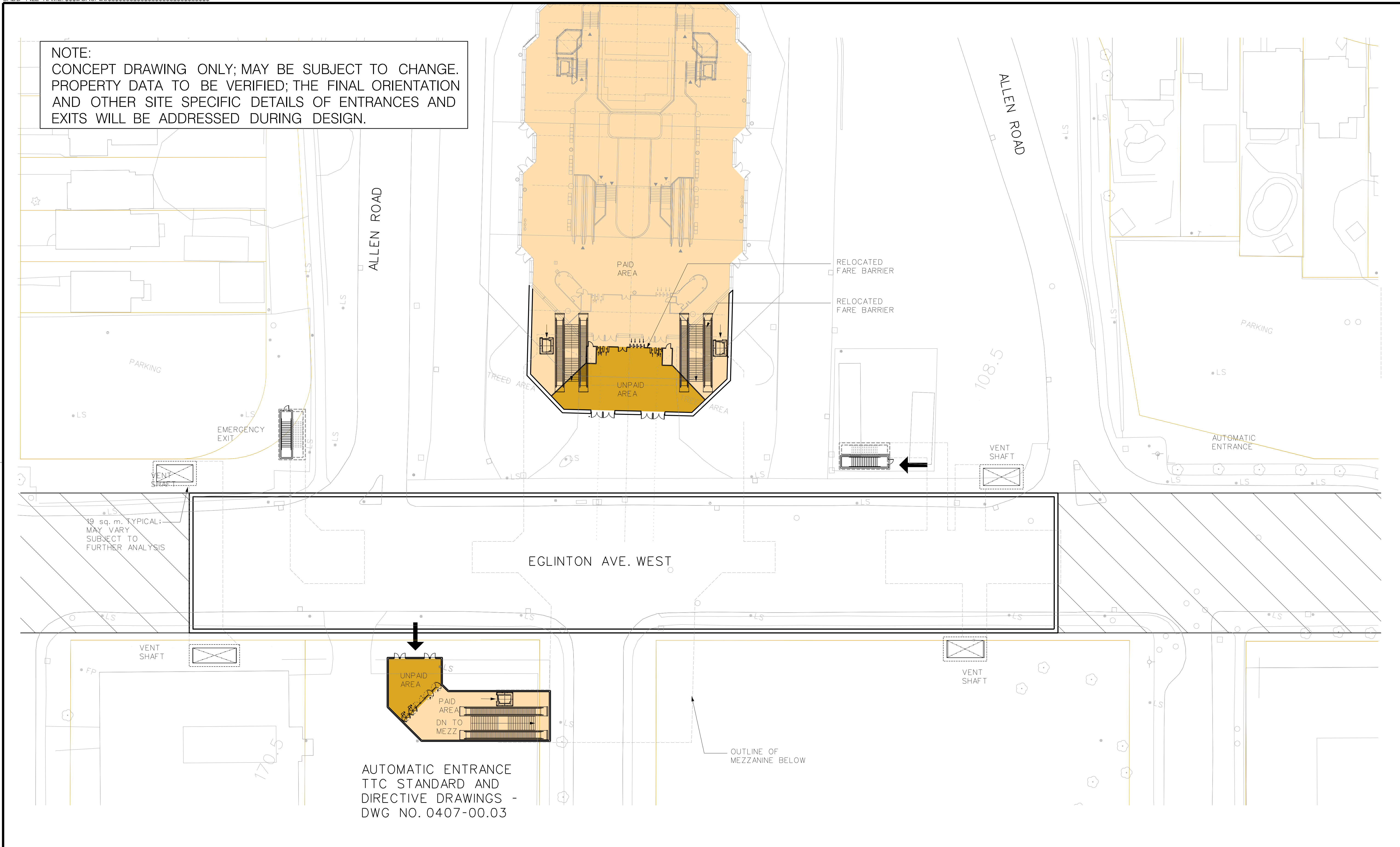


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON WEST (ALLEN) STATION – STREET LEVEL PLAN

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

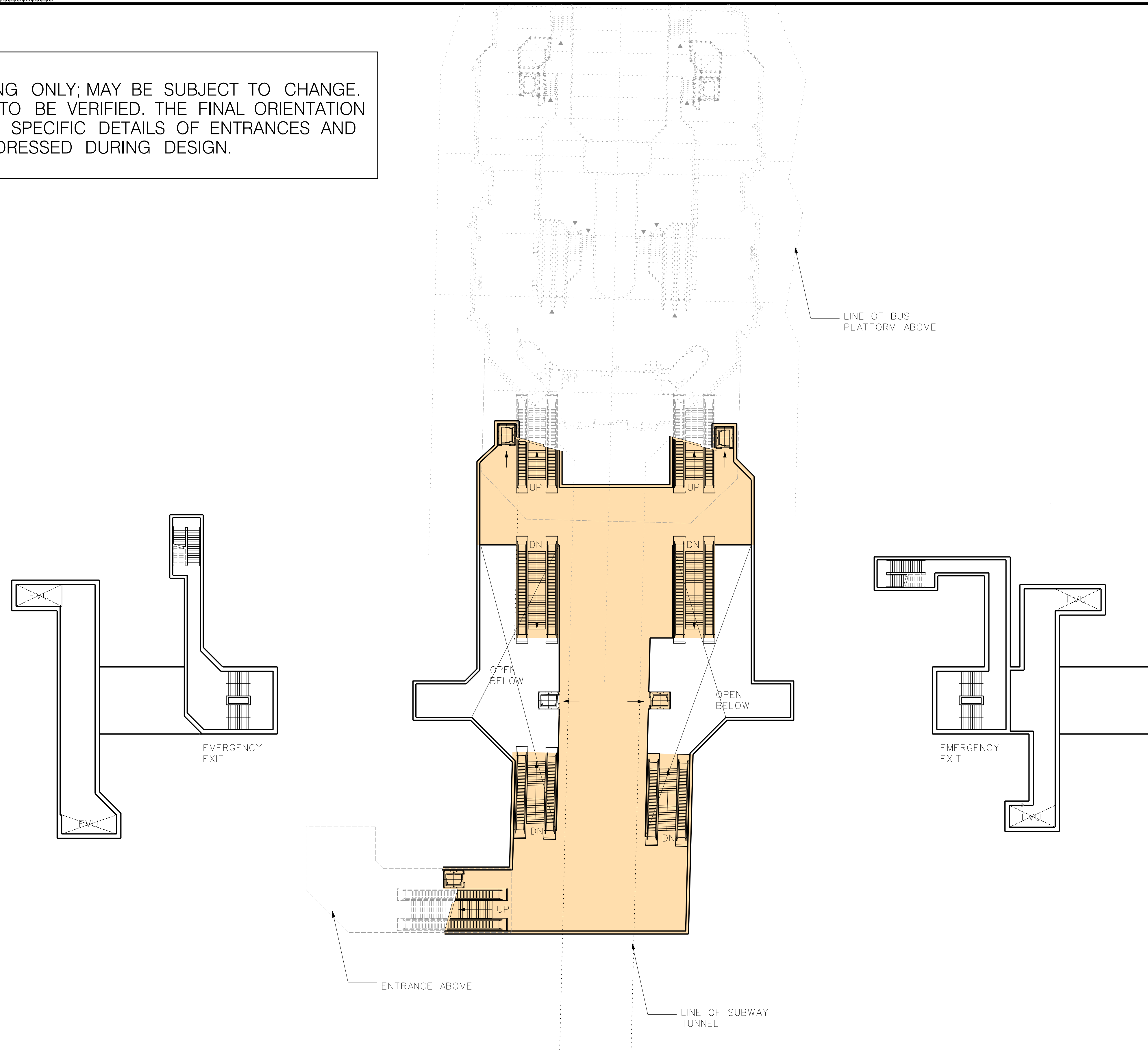
Dwg. No.

Sheet No. 47

BLDG. REF. No.
FILE
SHEET No.
DRAWING No.

CADD FILE NAME: $$$DGNSPEC$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

NOTE:
CONCEPT DRAWING ONLY; MAY BE SUBJECT TO CHANGE. PROPERTY DATE TO BE VERIFIED. THE FINAL ORIENTATION AND OTHER SITE SPECIFIC DETAILS OF ENTRANCES AND EXIT WILL BE ADDRESSED DURING DESIGN.



BLDG. REF. No.
FILE
SHEET No.
DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON WEST (ALLEN) STATION – CONCOURSE LEVEL PLAN

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
47A

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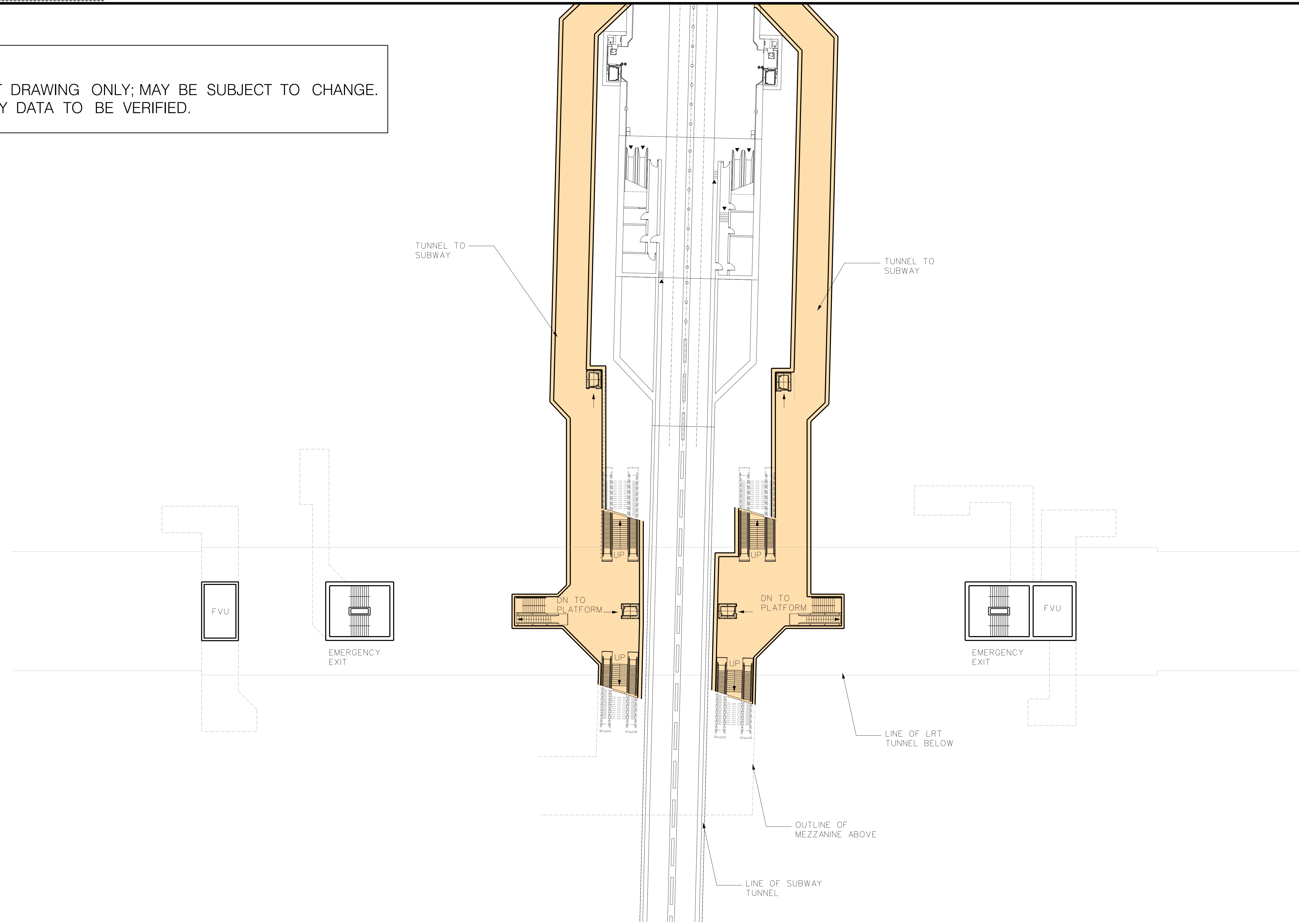
CONCEPT DRAWING ONLY; MAY BE SUBJECT TO CHANGE.
PROPERTY DATA TO BE VERIFIED.



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FILE

SHEET No.

DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON WEST (ALLEN) STATION – LRT MEZZANINE LEVEL / SUBWAY LEVEL PLAN

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
47B

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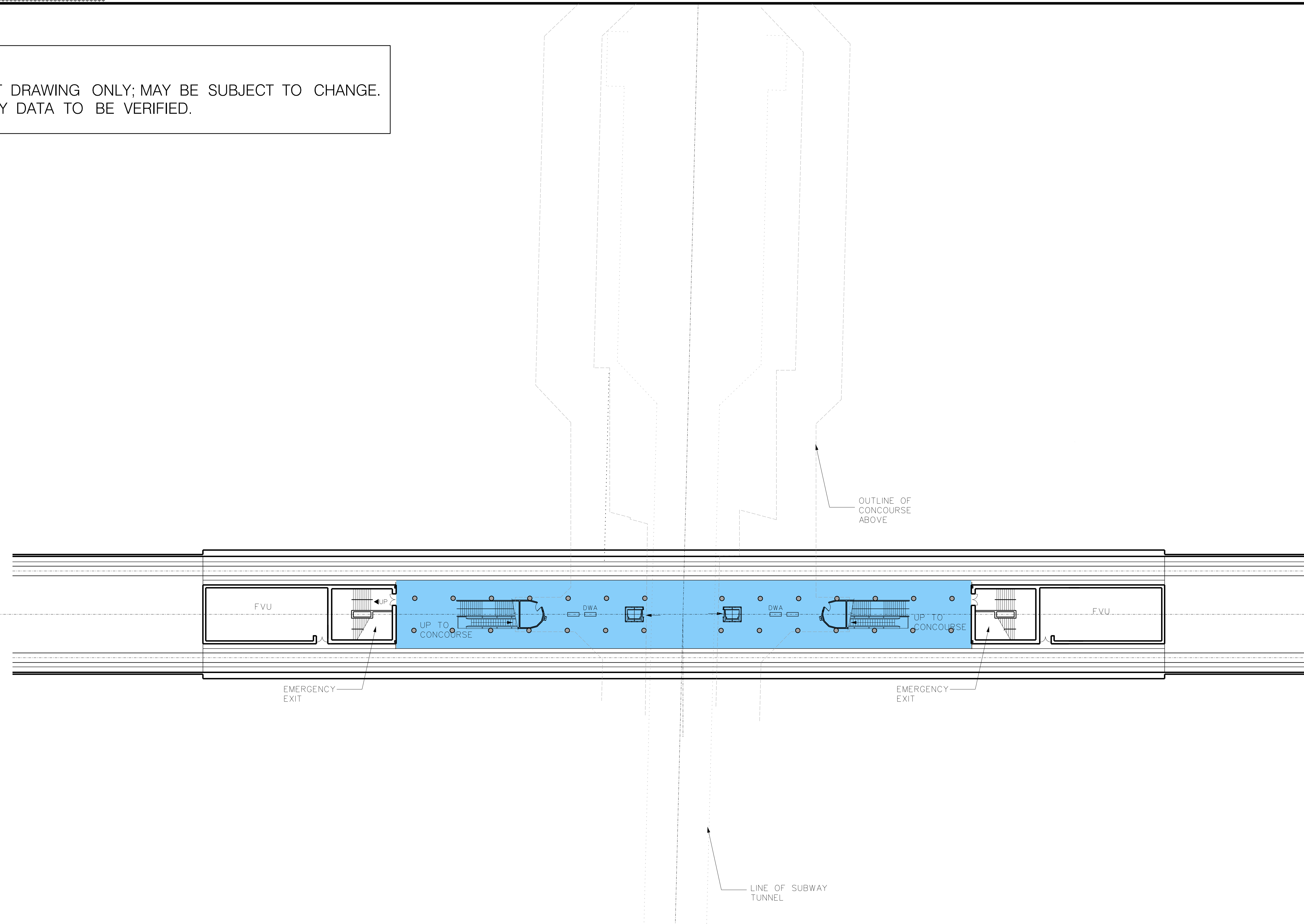

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FILE

SHEET No.

DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON WEST (ALLEN) STATION – PLATFORM LEVEL PLAN

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
47C

CADD FILE NAME: $$$DGNSPEC$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

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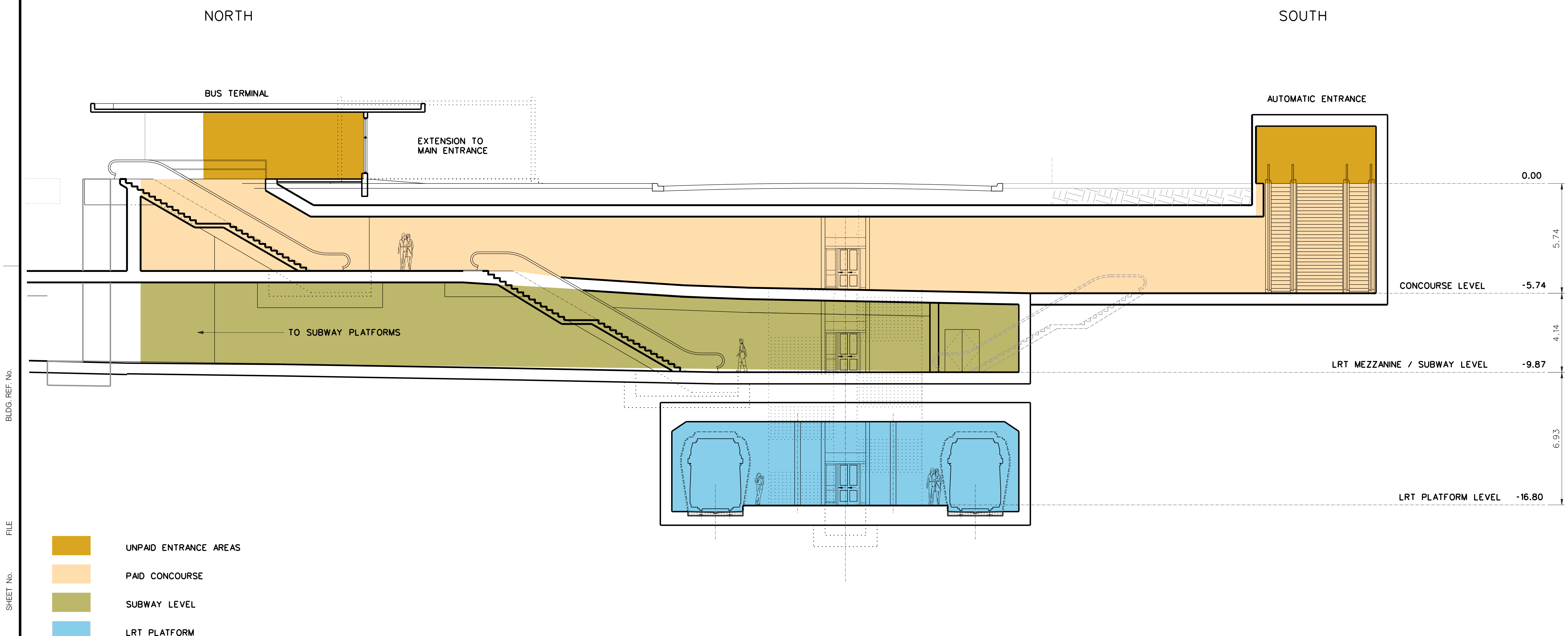


BLDG. REF. No.

FILE

SHEET No.

DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

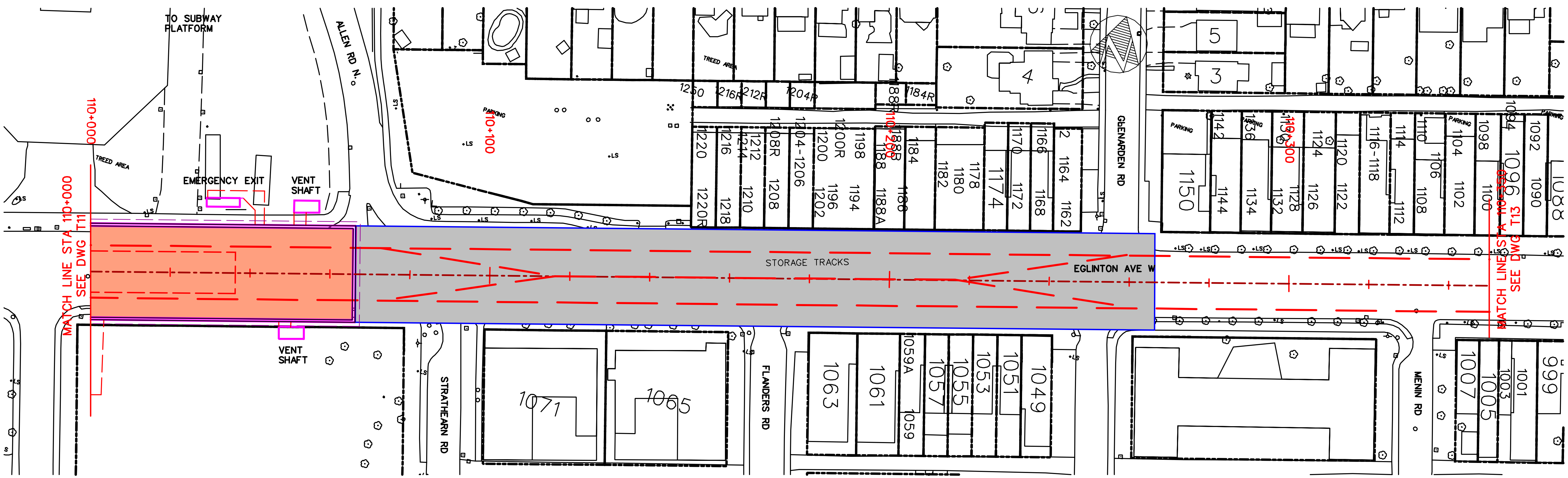
EGLINTON WEST (ALLEN) STATION – LONGITUDINAL SECTION

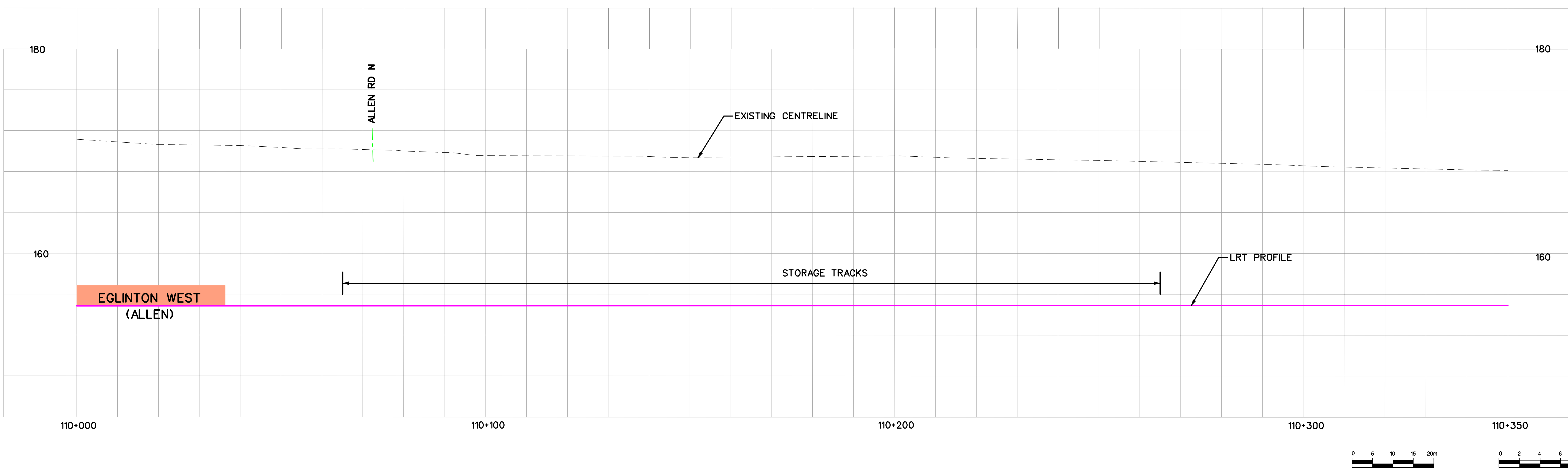
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
47D





EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

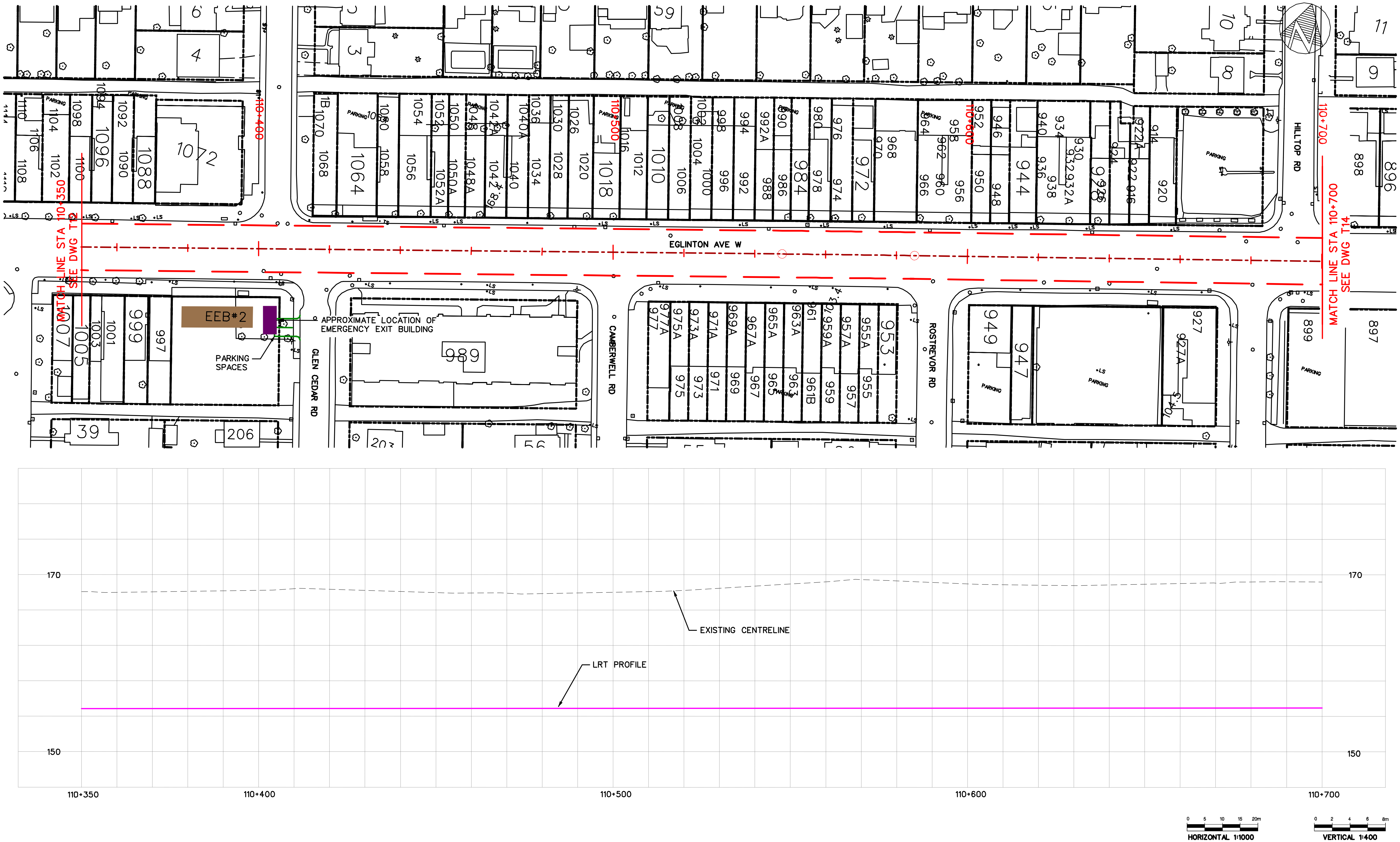
PLAN AND PROFILE STA 110+000 TO STA 110+350

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T12R

Sheet No. 48



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

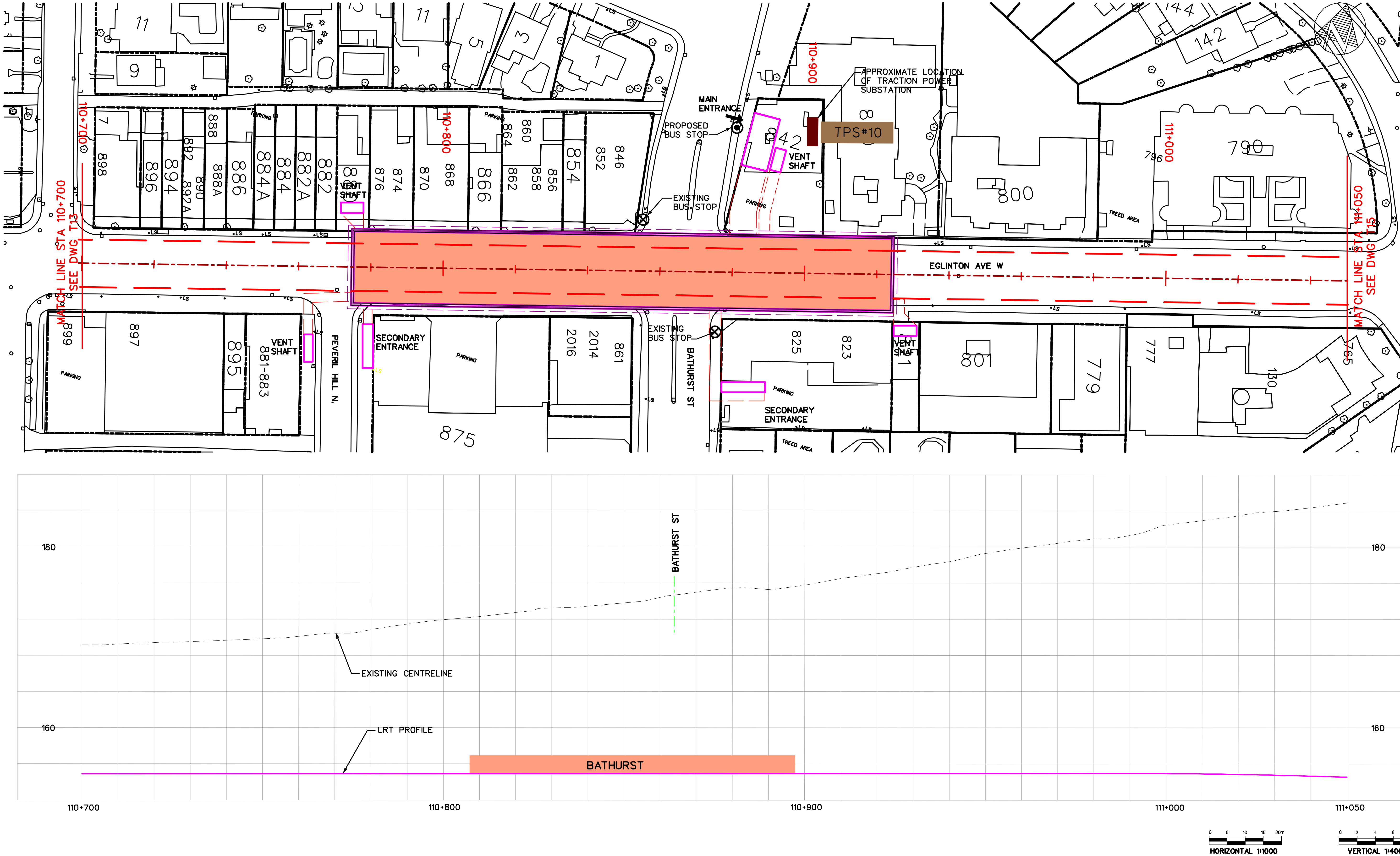
PLAN AND PROFILE STA 110+350 TO STA 110+700

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T13R

Sheet No. 49



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

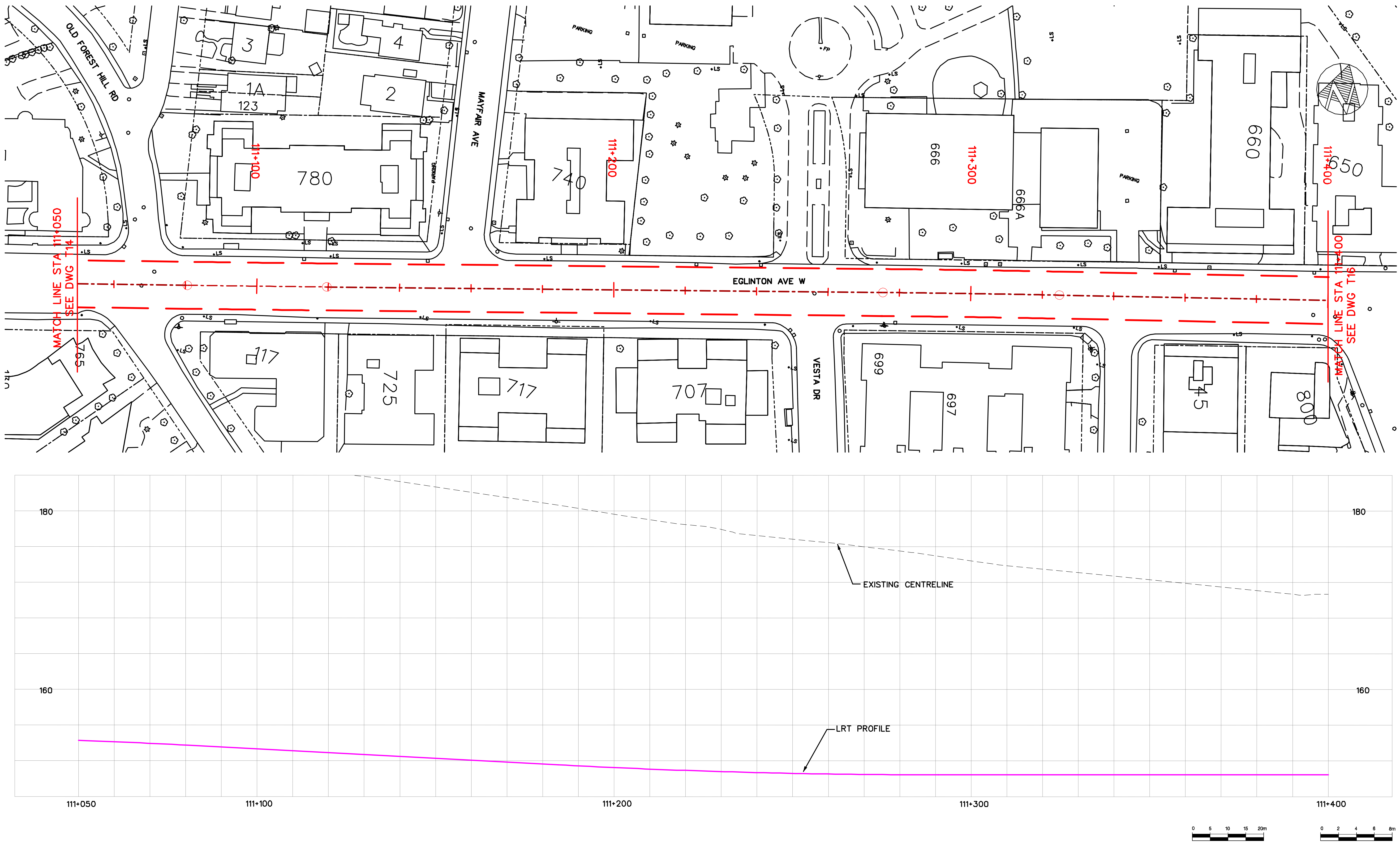
PLAN AND PROFILE STA 110+700 TO STA 111+050

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T14R

Sheet No. 50



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

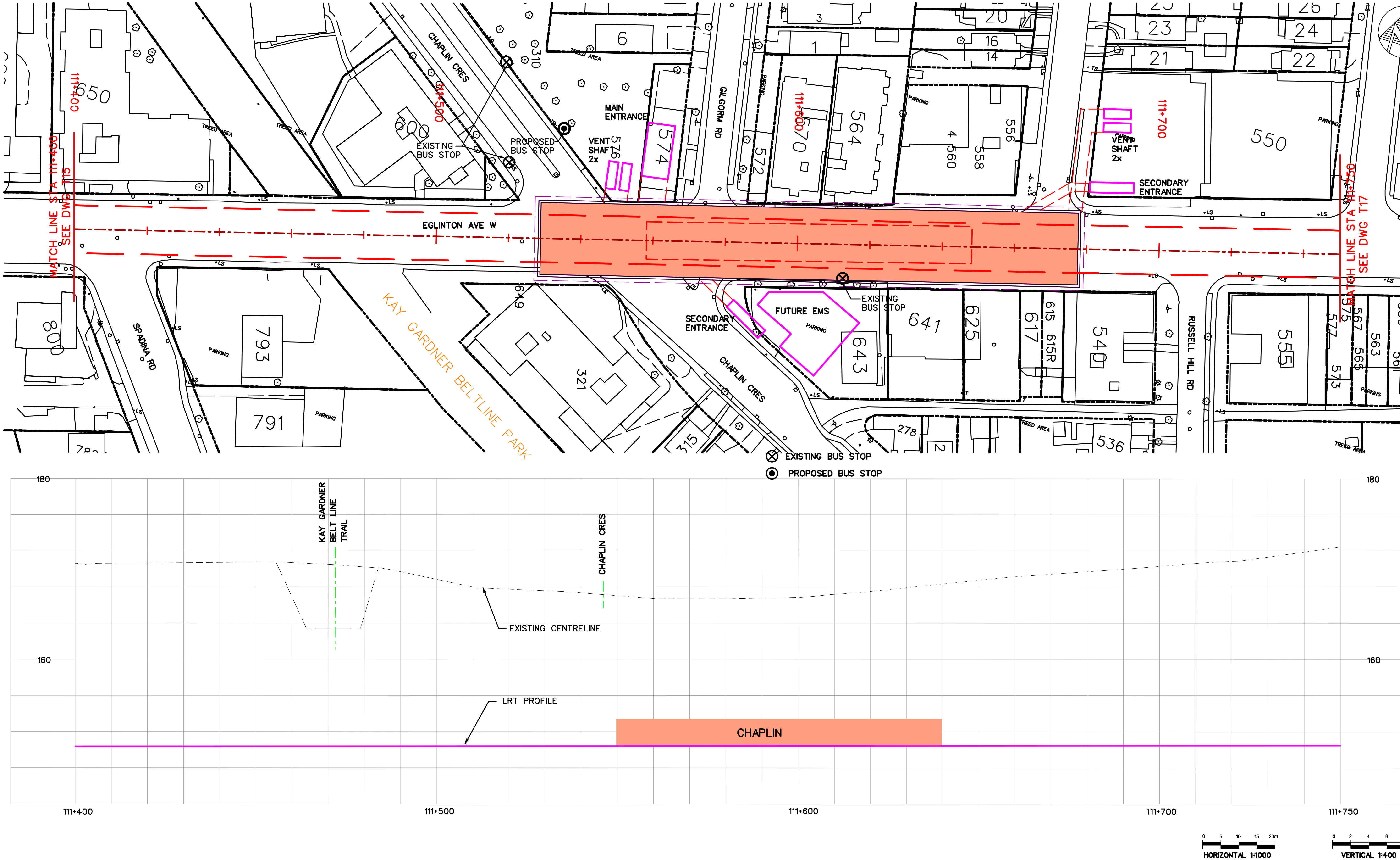
PLAN AND PROFILE STA 111+050 TO STA 111+400

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T15R

Sheet No. 51



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 111+400 TO STA 111+750

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T16R

Sheet No. 52

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

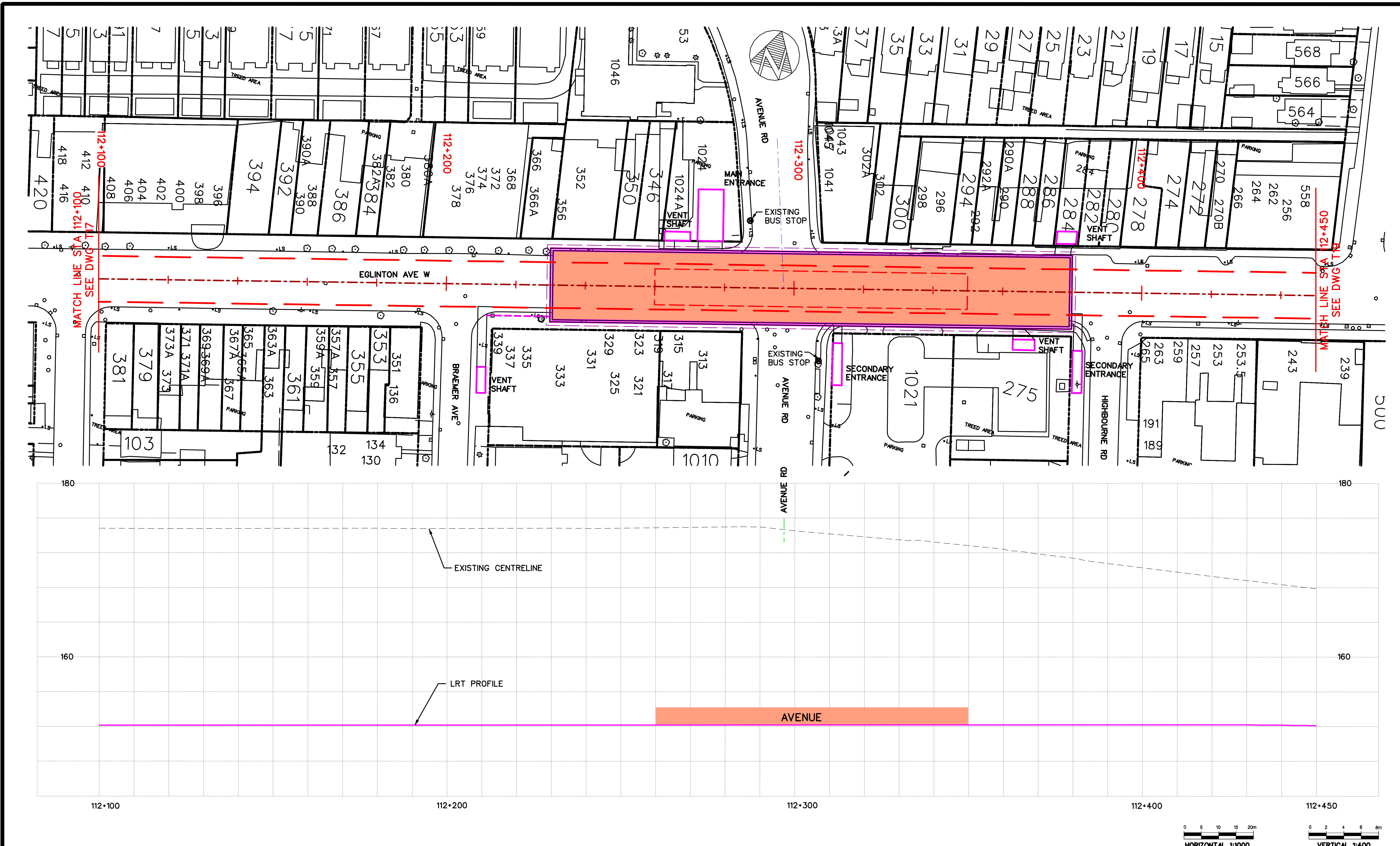
PLAN AND PROFILE STA 111+750 TO STA 112+100

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T17R

Sheet No. 53



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 112+100 TO STA 112+450

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T18R

Sheet No. 54

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

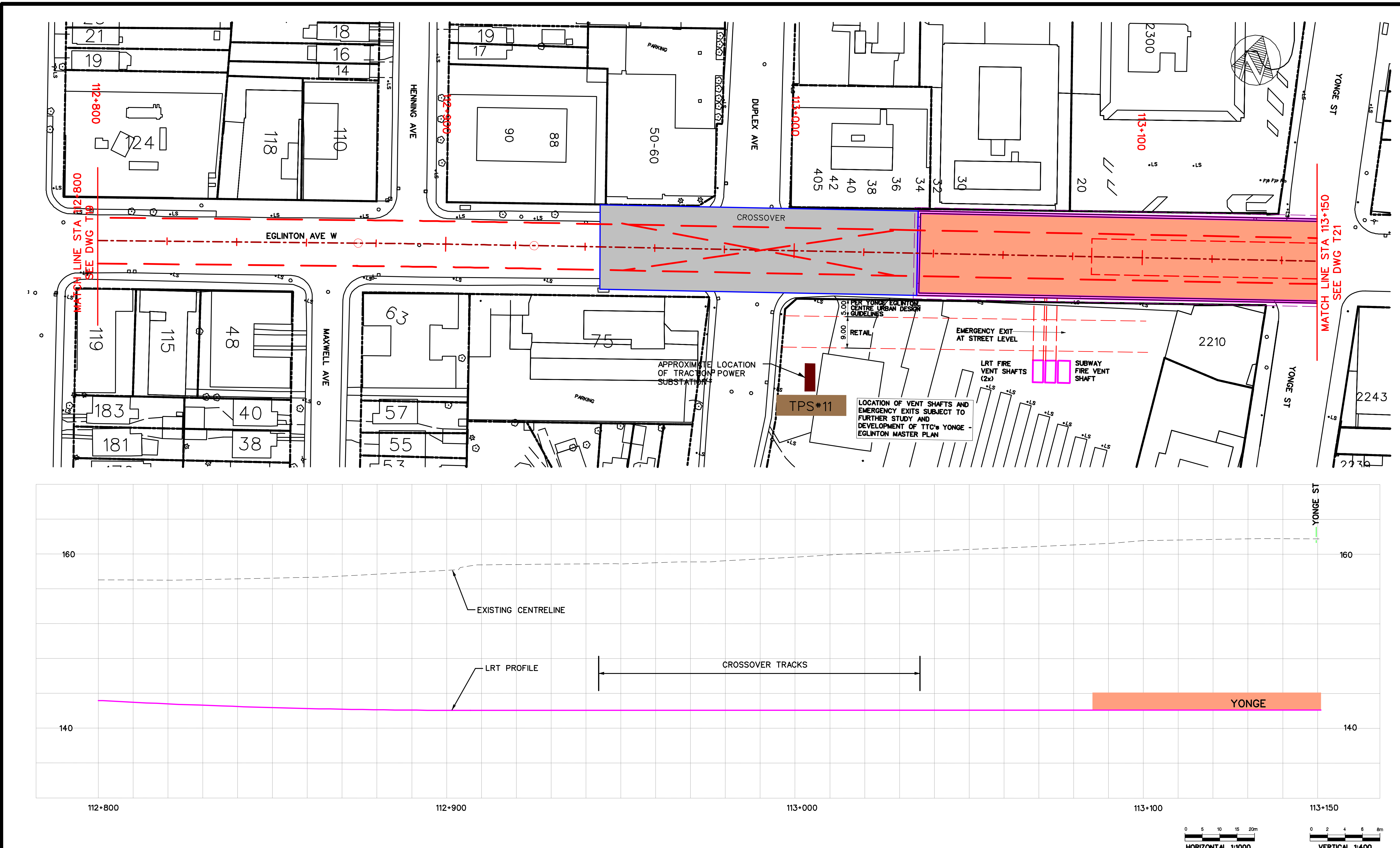
PLAN AND PROFILE STA 112+450 TO STA 112+800

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T19R

Sheet No. 55



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 112+800 TO STA 113+150

TCG Transit City Group

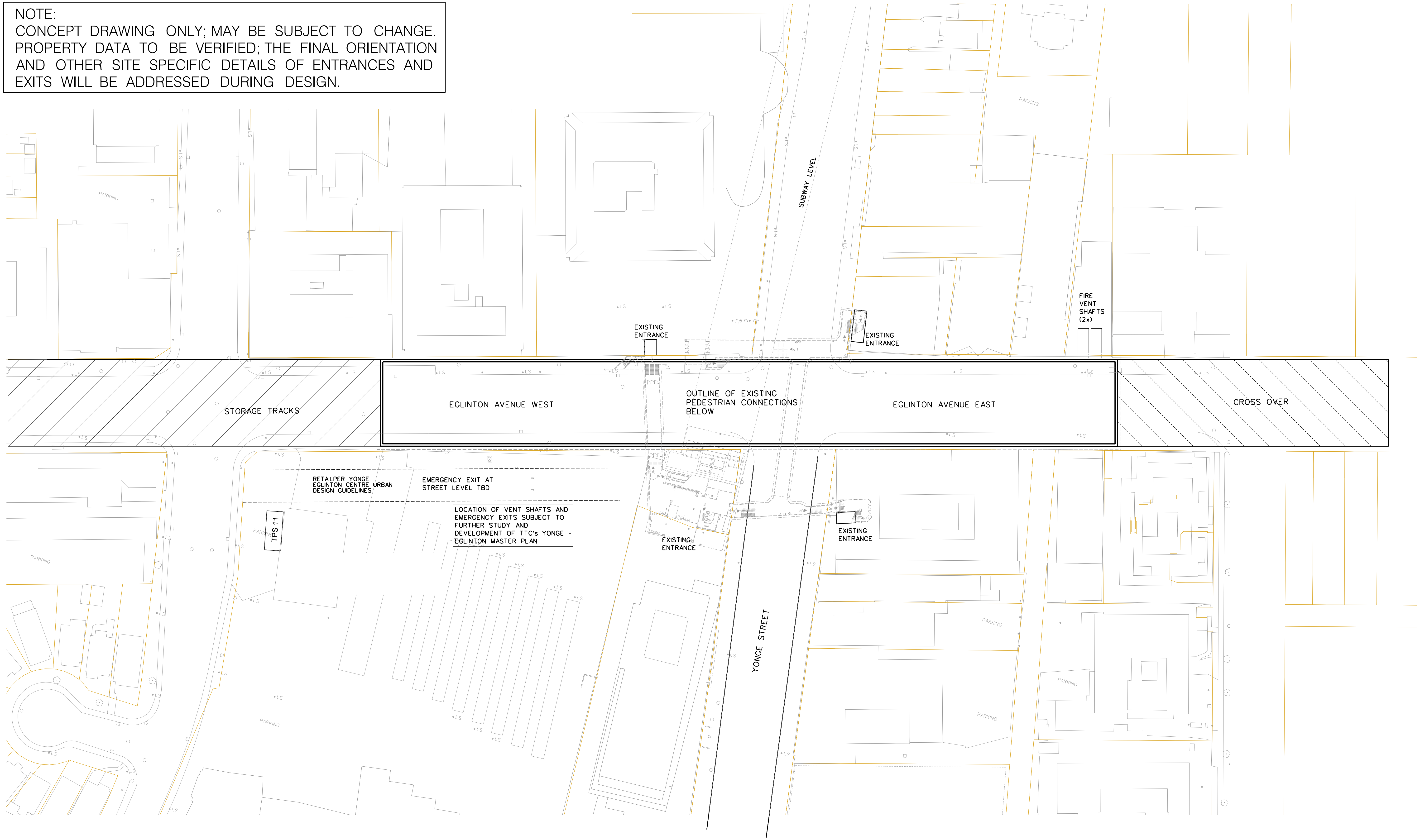
TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T20R

Sheet No. 56

CADD FILE NAME: $$$DGNSPEC$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

NOTE:
CONCEPT DRAWING ONLY; MAY BE SUBJECT TO CHANGE. PROPERTY DATA TO BE VERIFIED; THE FINAL ORIENTATION AND OTHER SITE SPECIFIC DETAILS OF ENTRANCES AND EXITS WILL BE ADDRESSED DURING DESIGN.



BLDG. REF. No.
FILE
SHEET No.
DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON (YONGE) STATION – STREET LEVEL PLAN

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
57

CADD FILE NAME: $$$DGNSPEC$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

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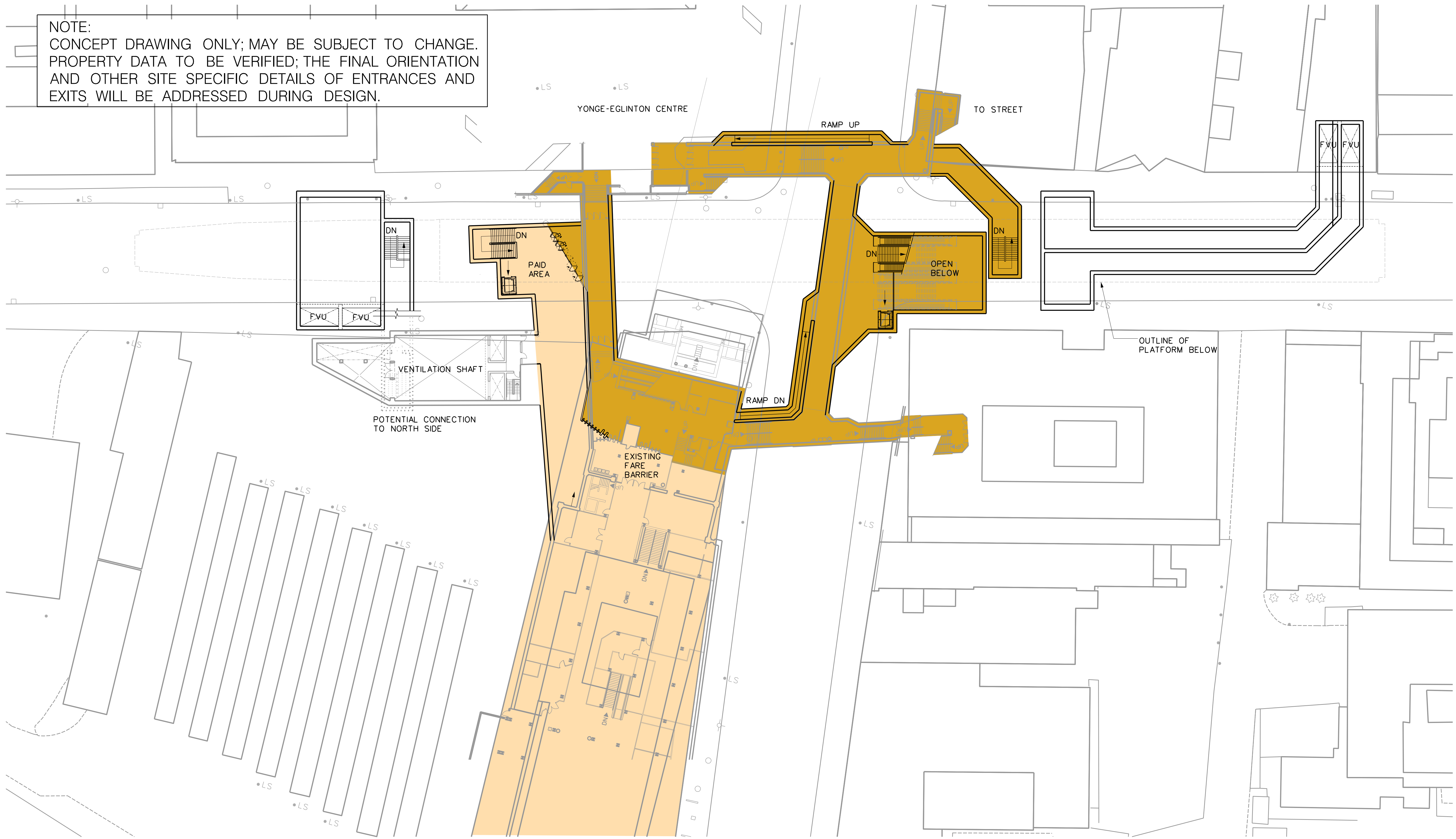

BLDG. REF. No.
FILE
SHEET No.
DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON (YONGE) STATION – CONCOURSE LEVEL PLAN

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No. 57A

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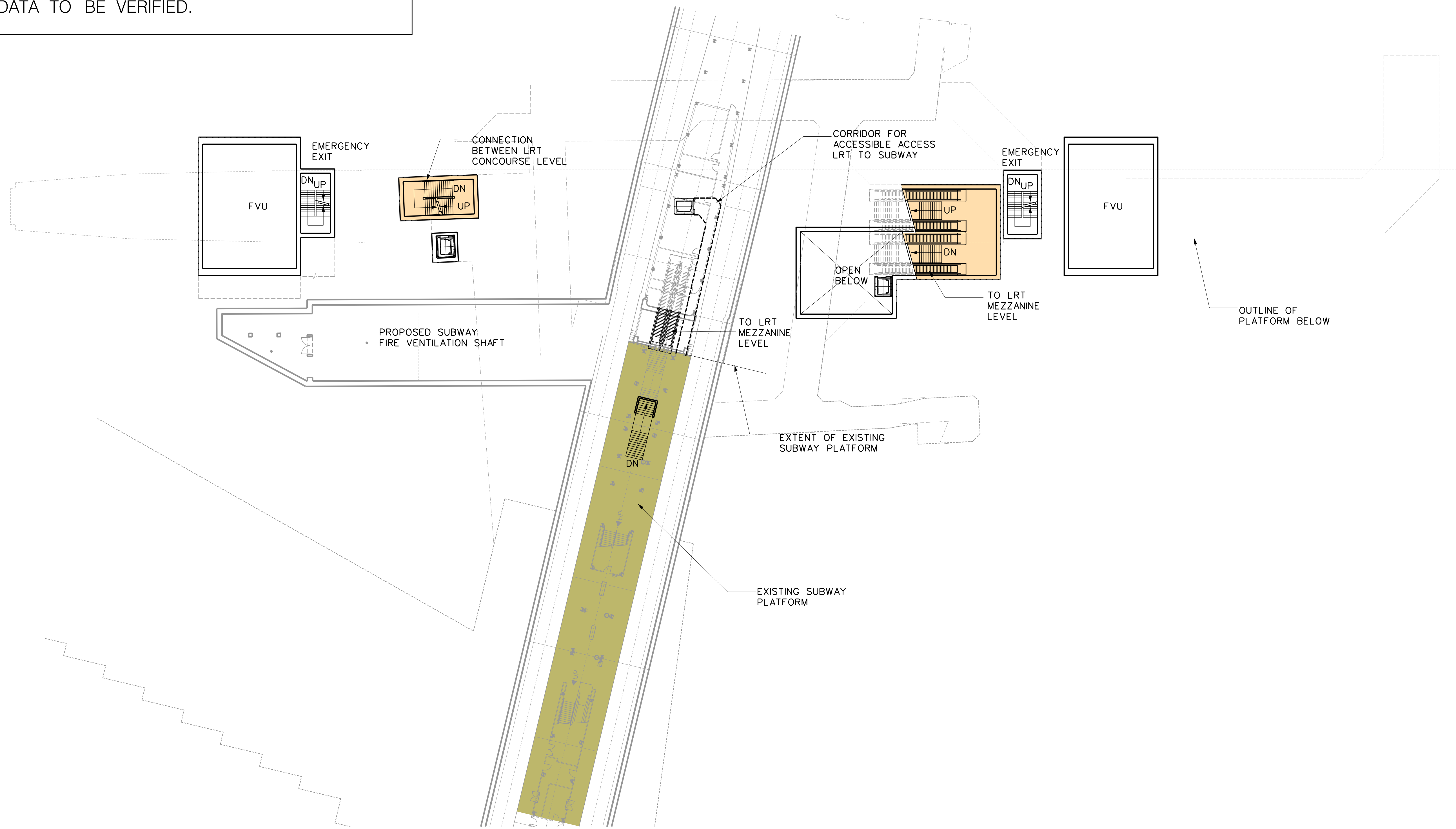
CONCEPT DRAWING ONLY; MAY BE SUBJECT TO CHANGE.
PROPERTY DATA TO BE VERIFIED.



BLDG. REF. No.

FILE

SHEET No.

DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON (YONGE) STATION – SUBWAY LEVEL PLAN

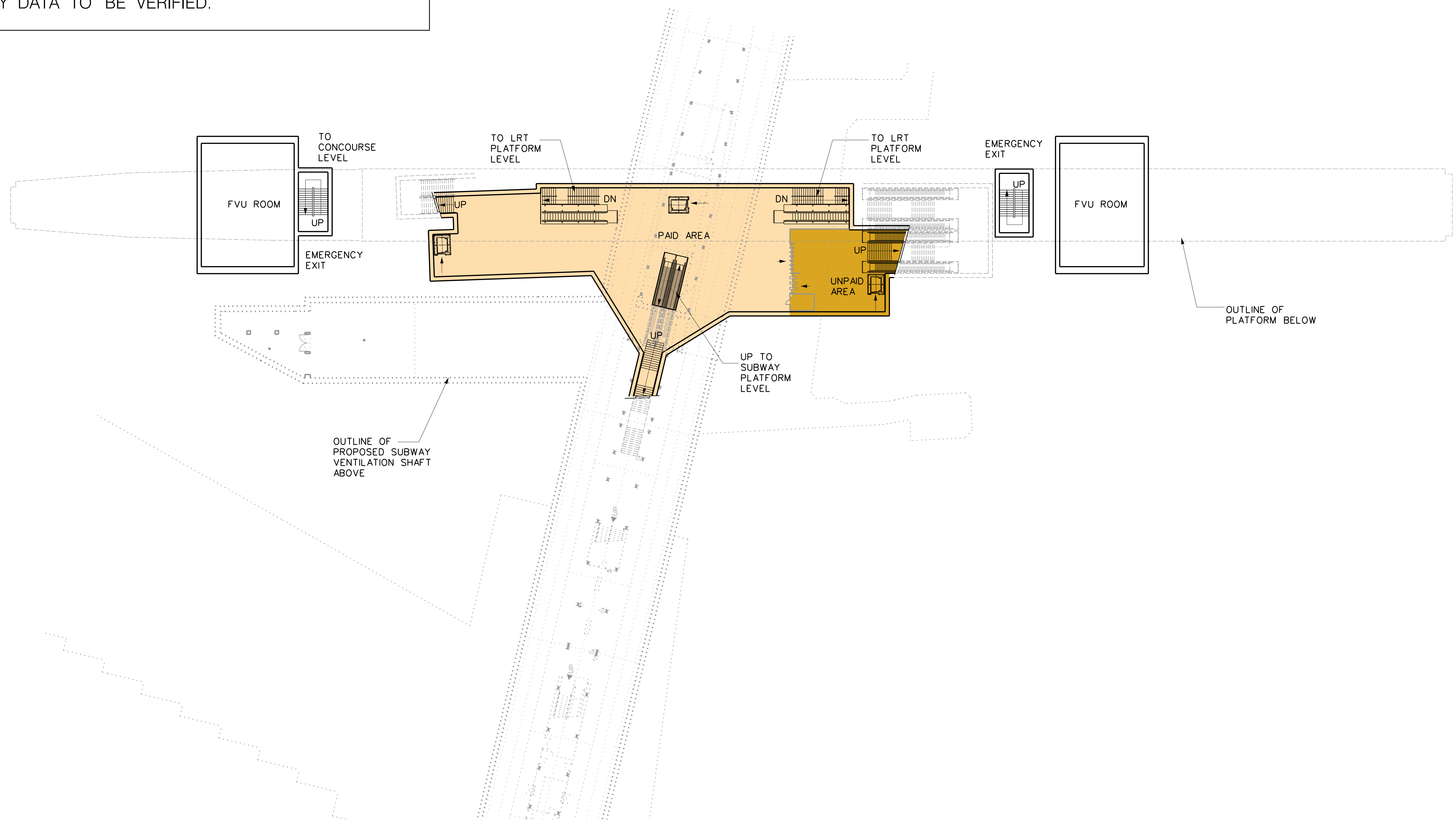
TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
57B

NOTE:
CONCEPT DRAWING ONLY; MAY BE SUBJECT TO CHANGE.
PROPERTY DATA TO BE VERIFIED.



BLDG. REF. No.
FILE
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DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON (YONGE) STATION – MEZZANINE LEVEL PLAN

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
57C

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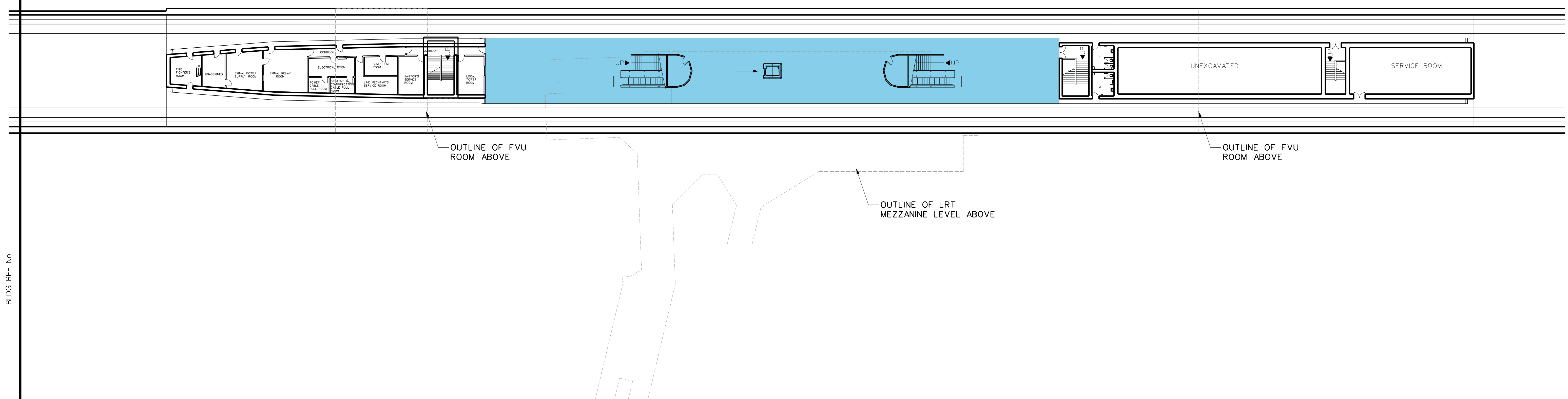


BLDG. REF. No.
FILE
SHEET No.
DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EGLINTON (YONGE) STATION – PLATFORM LEVEL PLAN

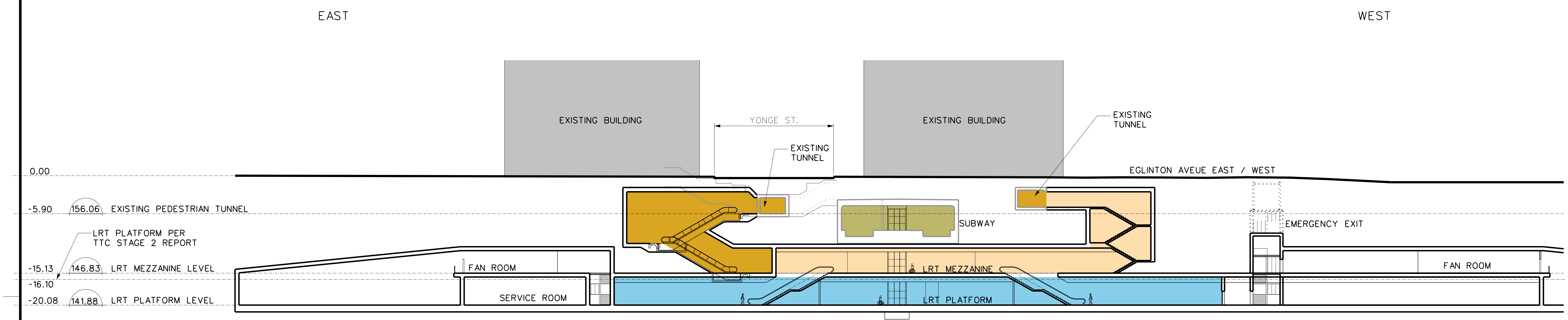
TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
57D

NOTE:
CONCEPT DRAWING ONLY; MAY BE SUBJECT TO CHANGE.
PROPERTY DATA TO BE VERIFIED.



UNPAID AREAS

PAID AREAS

SUBWAY

LRT PLATFORM

BLDG. REF. No.

FILE

SHEET No.

DRAWING No.

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

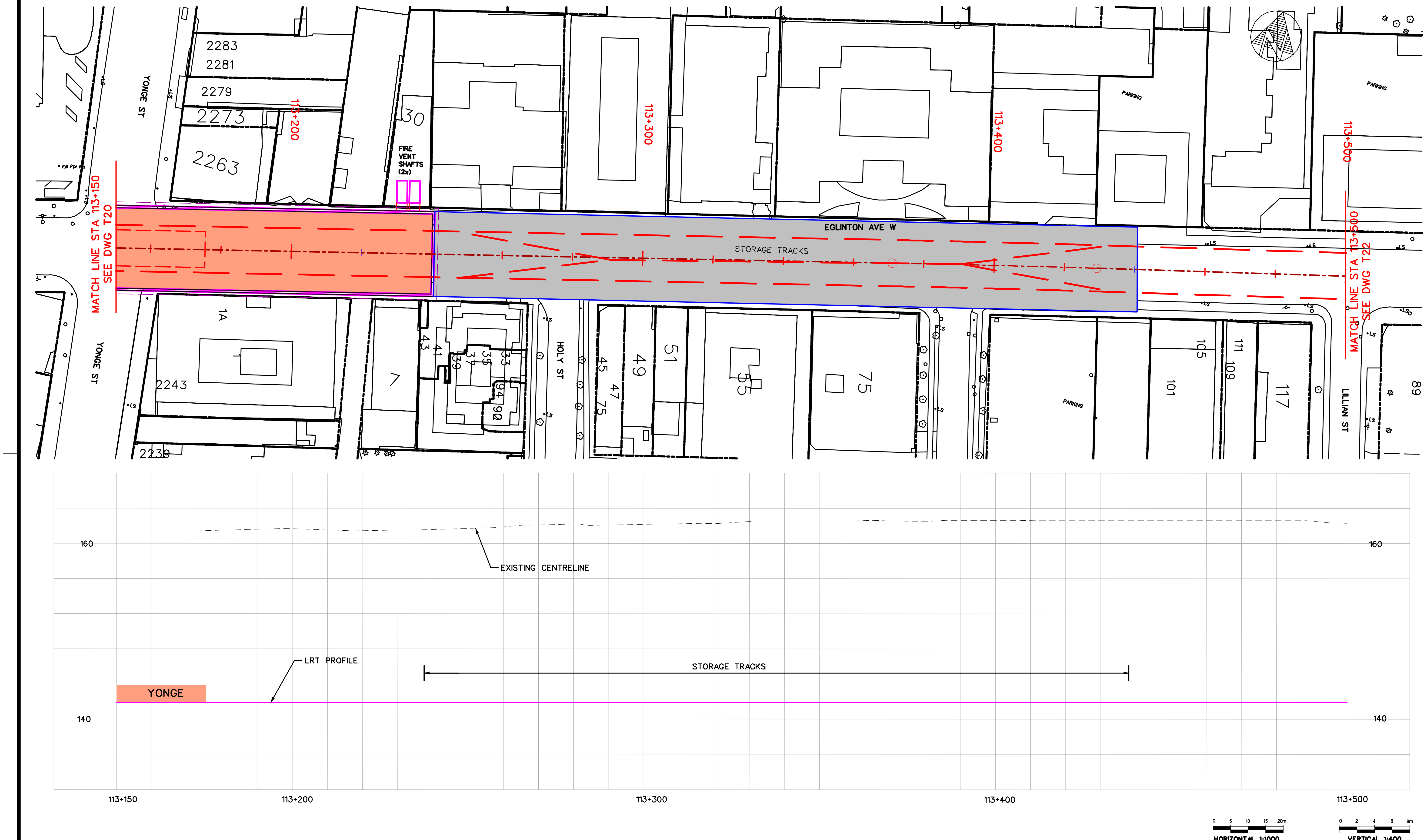
EGLINTON (YONGE) STATION – LONGITUDINAL SECTION

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.

Sheet No.
57E



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

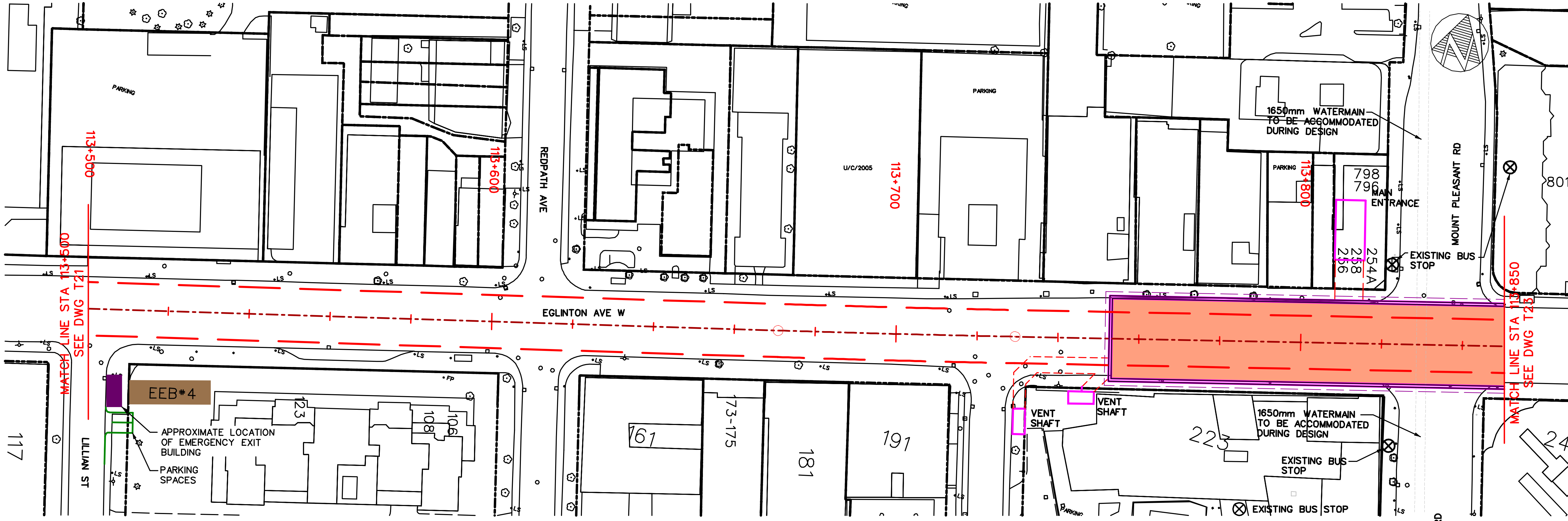
PLAN AND PROFILE STA 113+150 TO STA 113+500

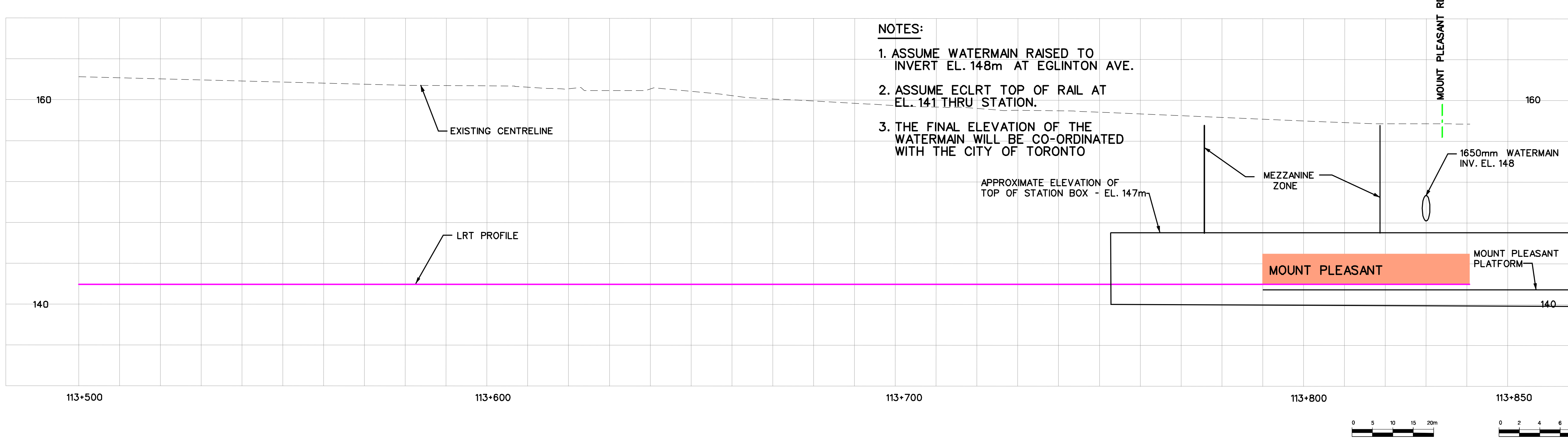
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T21R

Sheet No. 58





NOTES:

1. ASSUME WATERMAIN RAISED TO INVERT EL. 148m AT EGLINTON AVE.
2. ASSUME ECLRT TOP OF RAIL AT EL. 141 THRU STATION.
3. THE FINAL ELEVATION OF THE WATERMAIN WILL BE CO-ORDINATED WITH THE CITY OF TORONTO

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

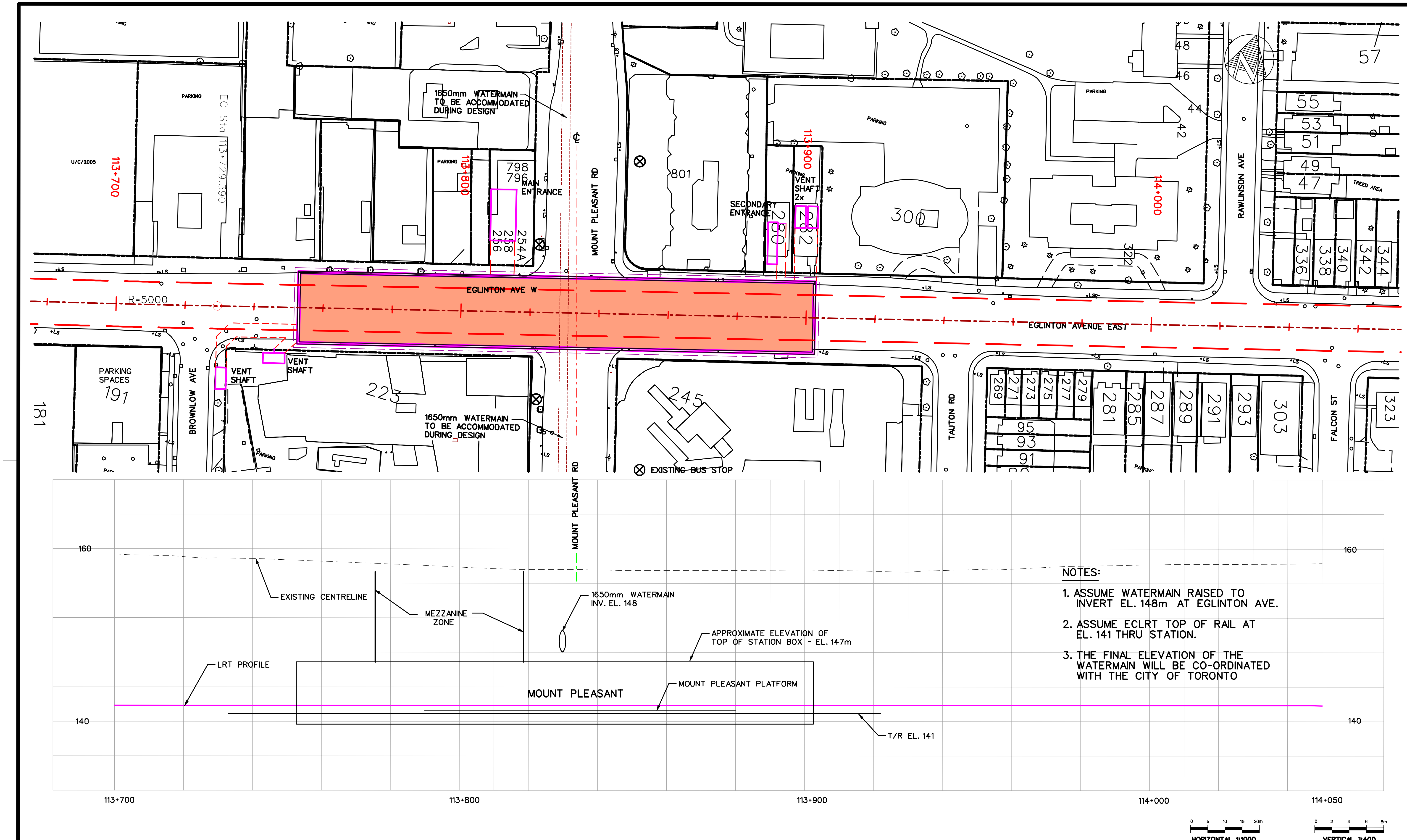
PLAN AND PROFILE STA 113+500 TO STA 113+850

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T22R

Sheet No. 59



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

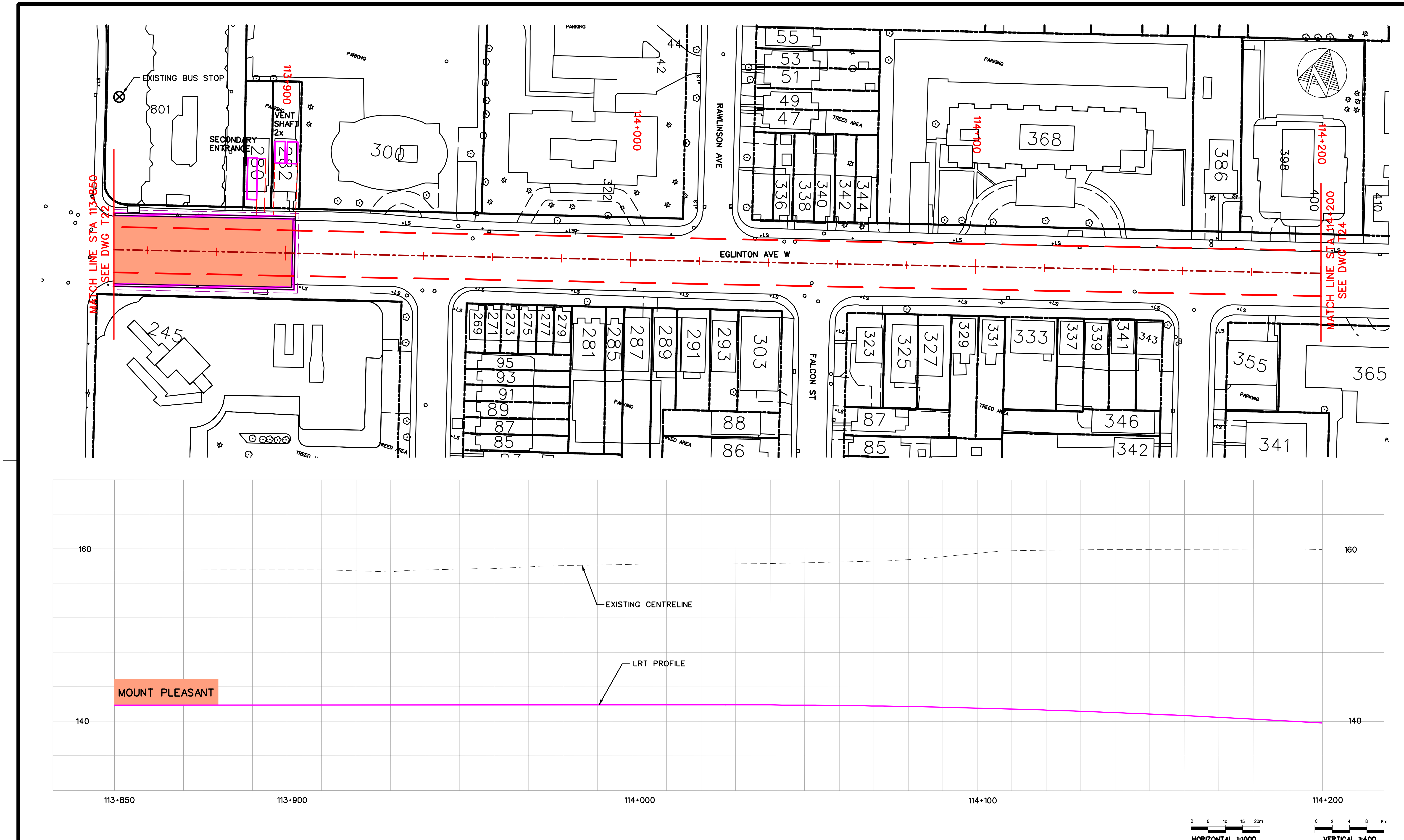
TUNNEL SECTION
PLAN AND PROFILE
MOUNT PLEASANT STATION

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T22AR

Sheet No. 59A



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

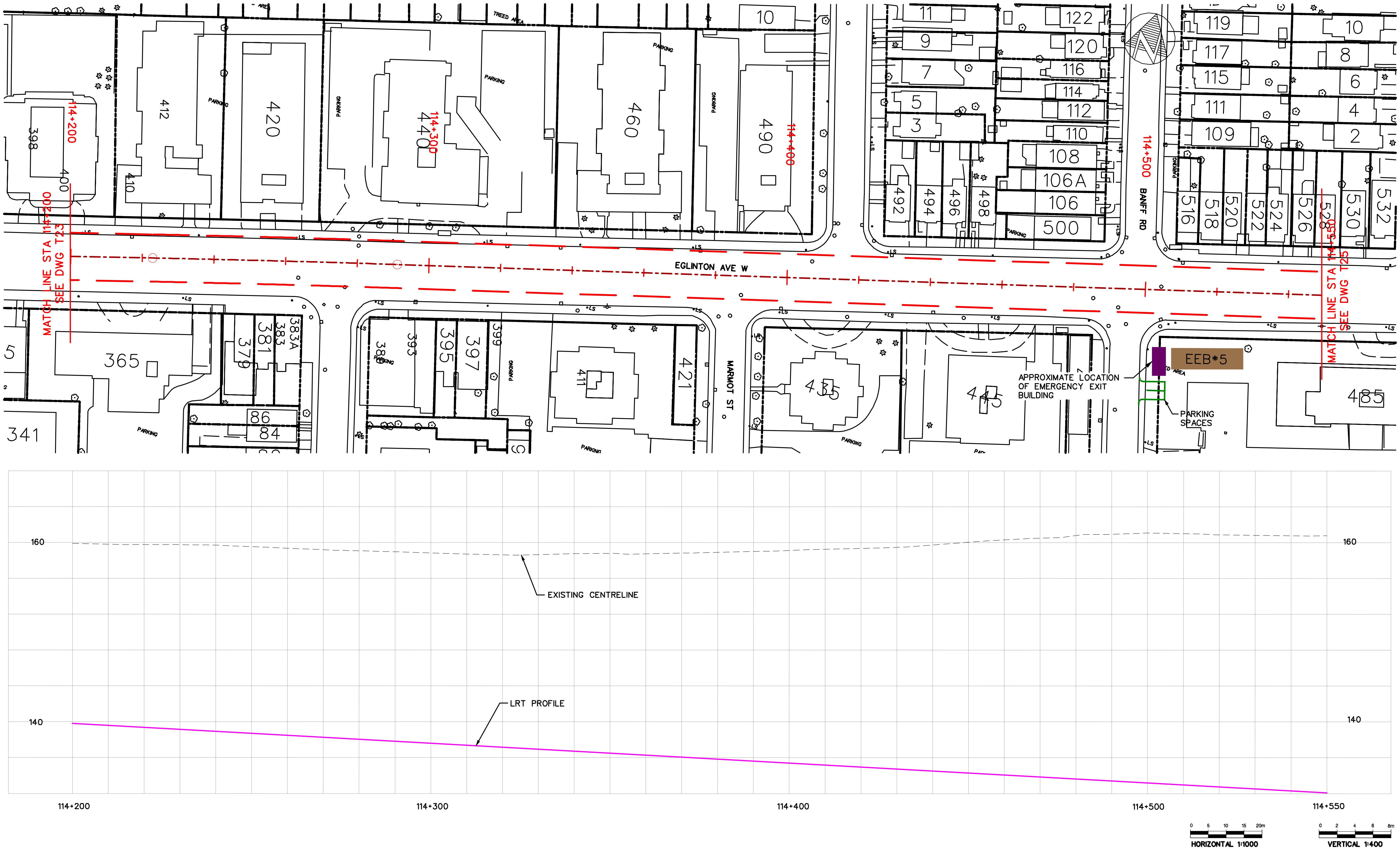
PLAN AND PROFILE STA 113+850 TO STA 114+200

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T23R

Sheet No. 60



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

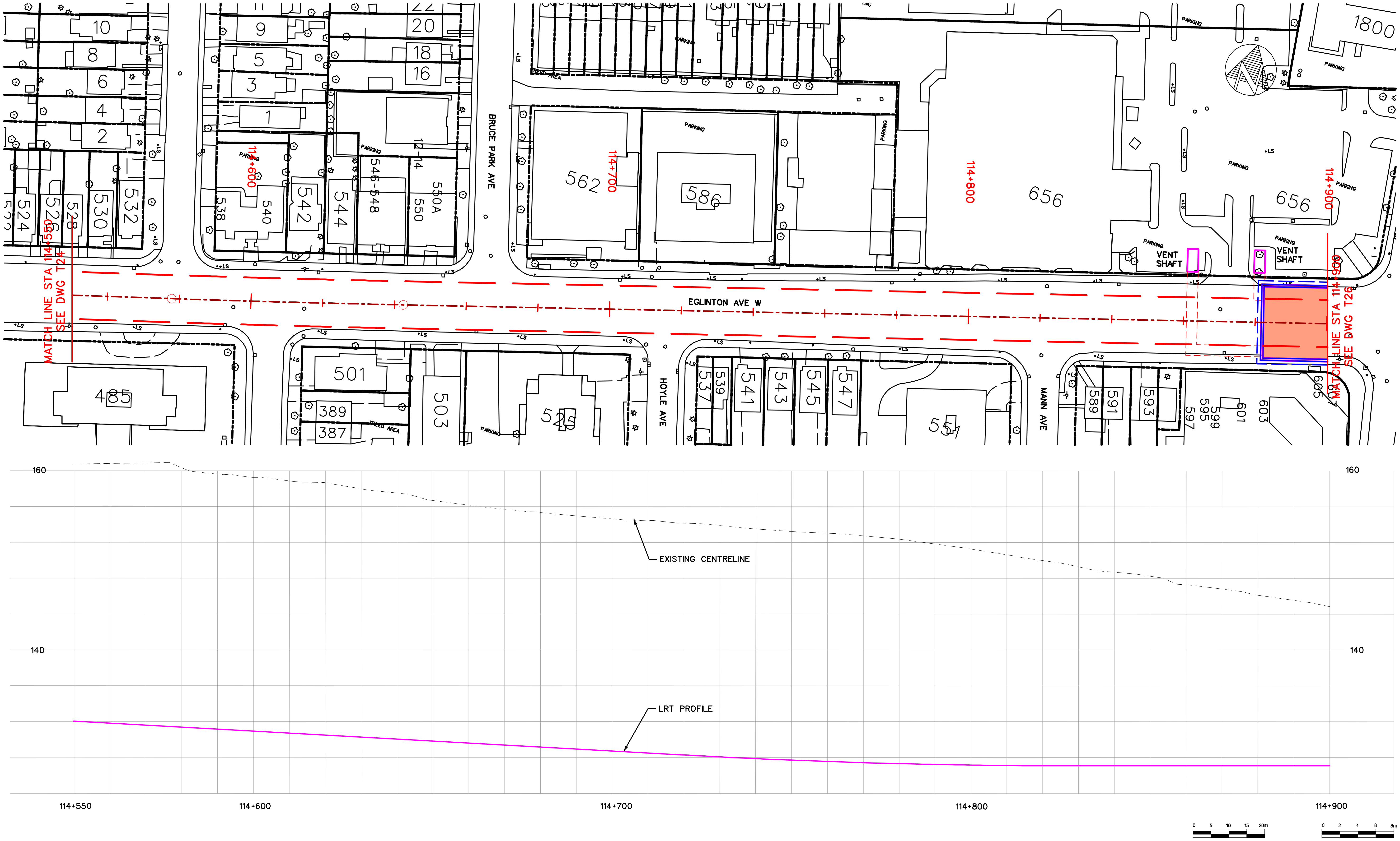
PLAN AND PROFILE STA 114+200 TO STA 114+550

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T24R

Sheet No. 61



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

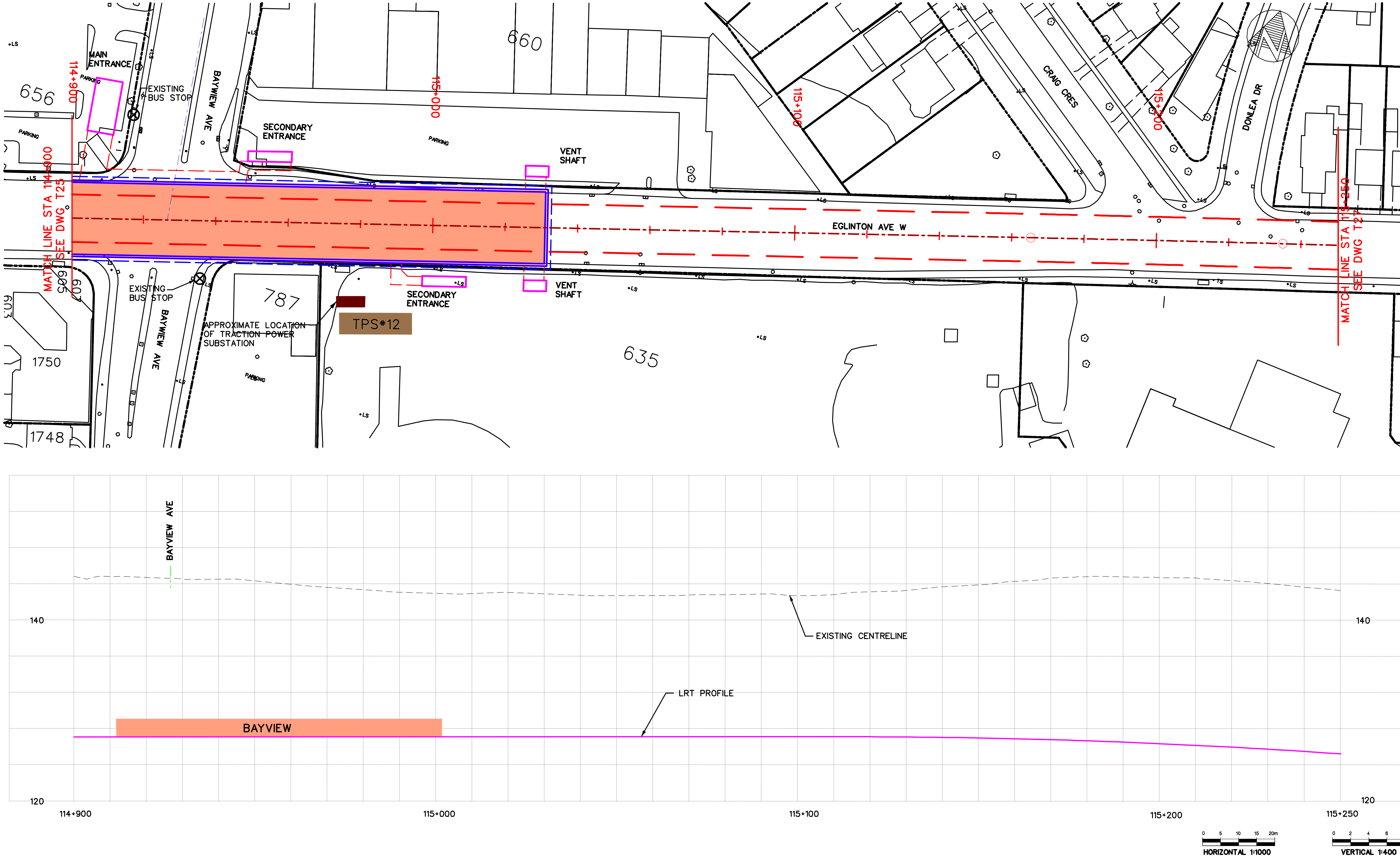
PLAN AND PROFILE STA 114+550 TO STA 114+900

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T25R

Sheet No. 62



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 114+900 TO STA 115+250

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T26R

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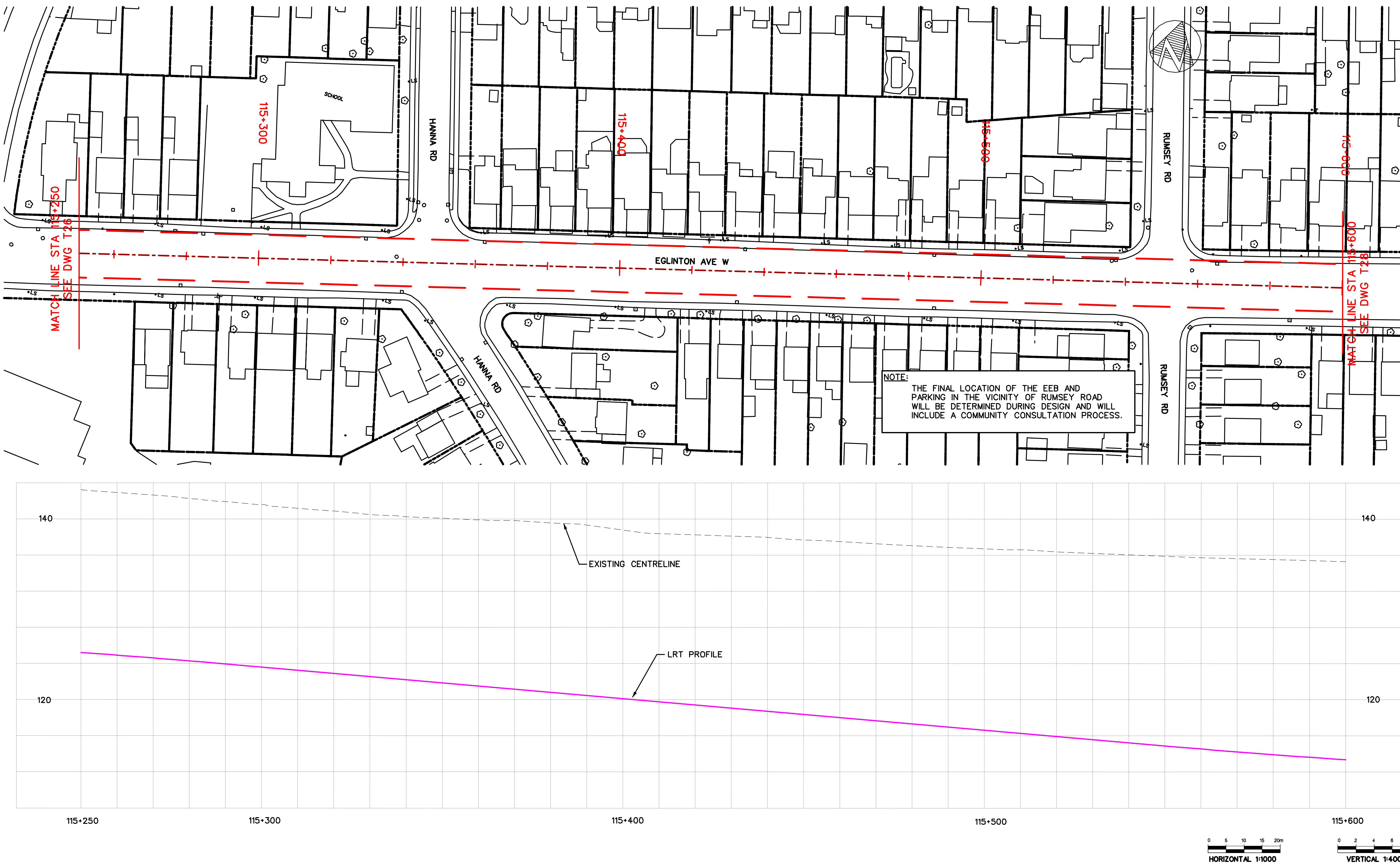

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 115+250 TO STA 115+600

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T27R–1

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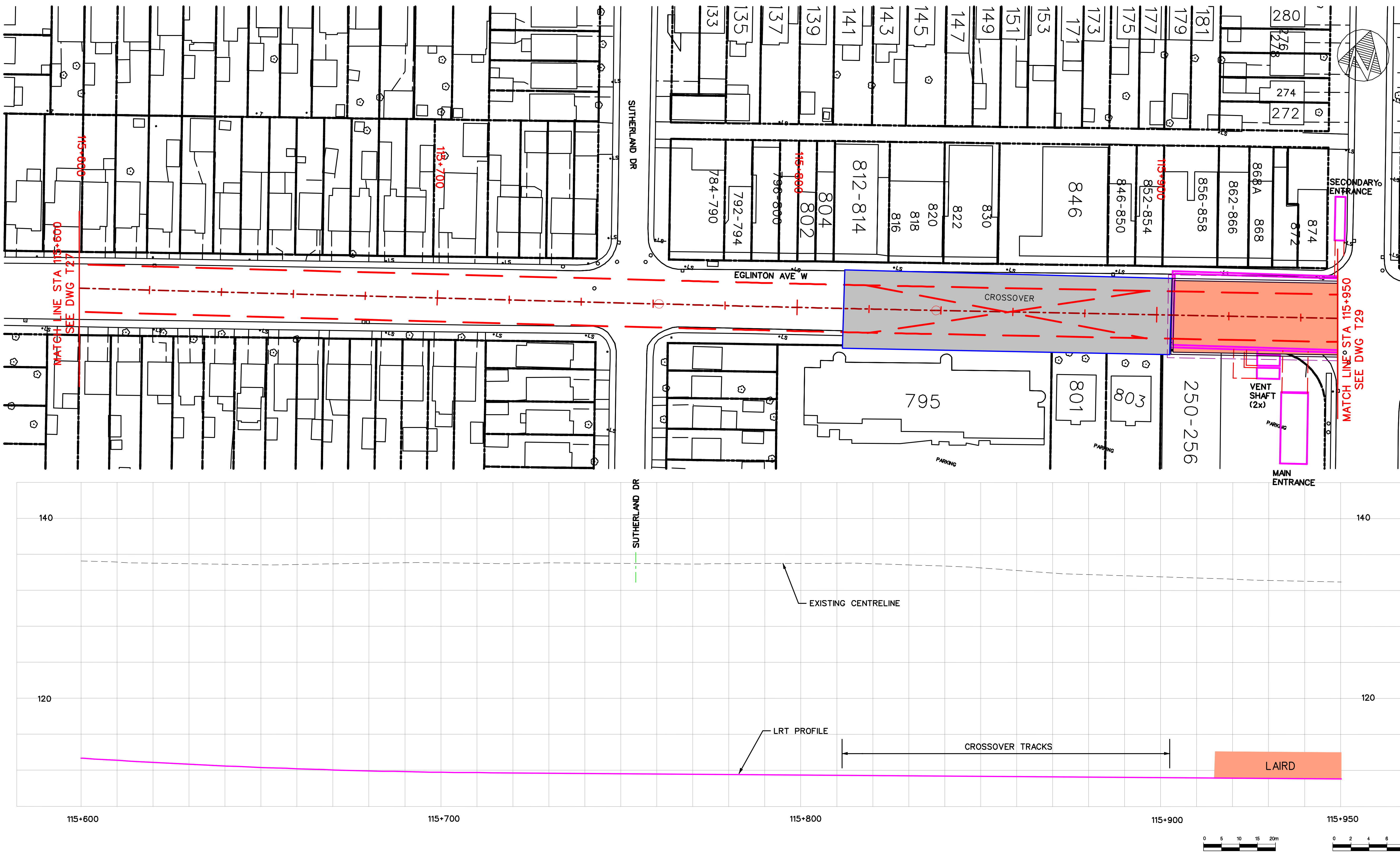

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

PLAN AND PROFILE STA 115+600 TO STA 115+950

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T28R

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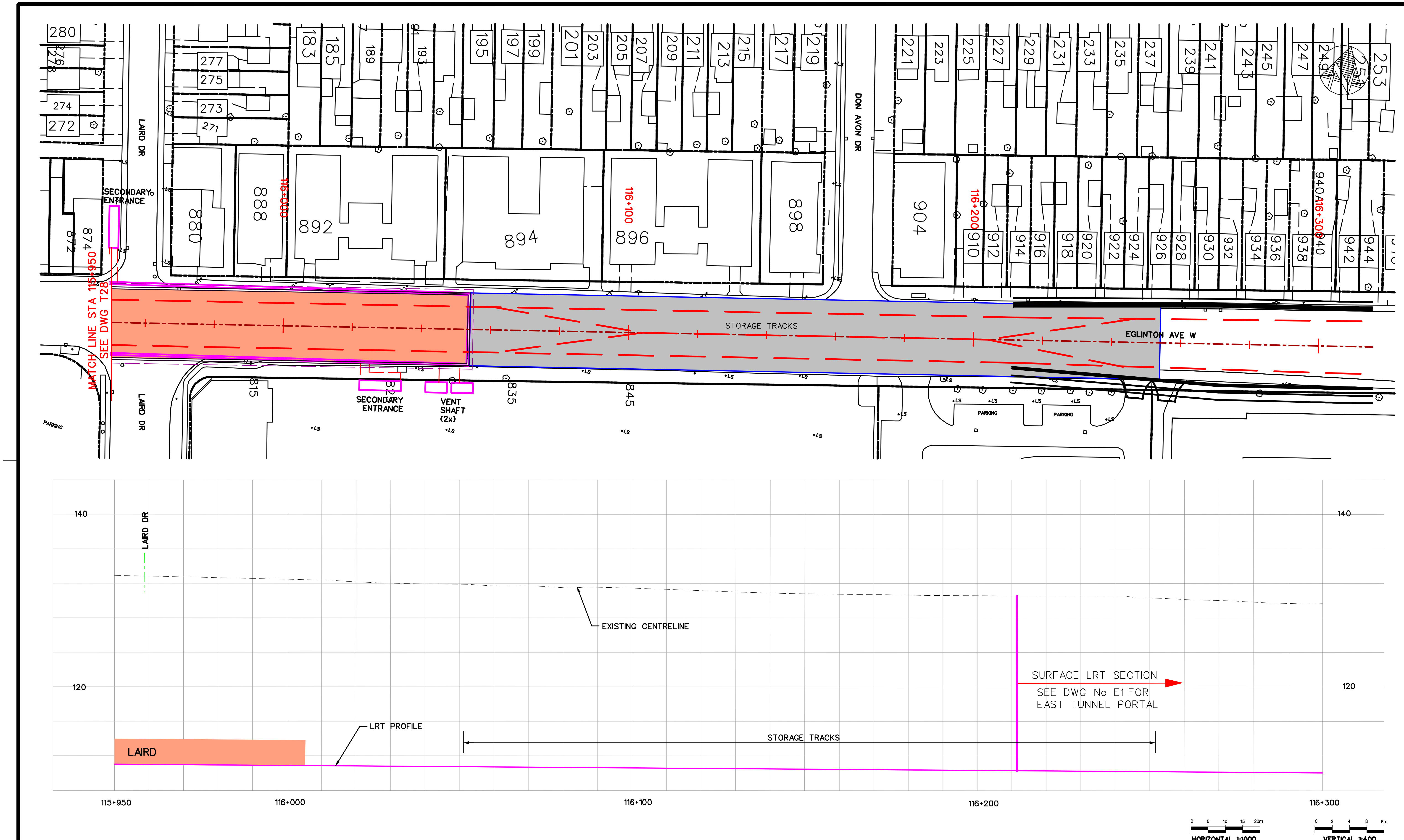


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

TUNNEL SECTION

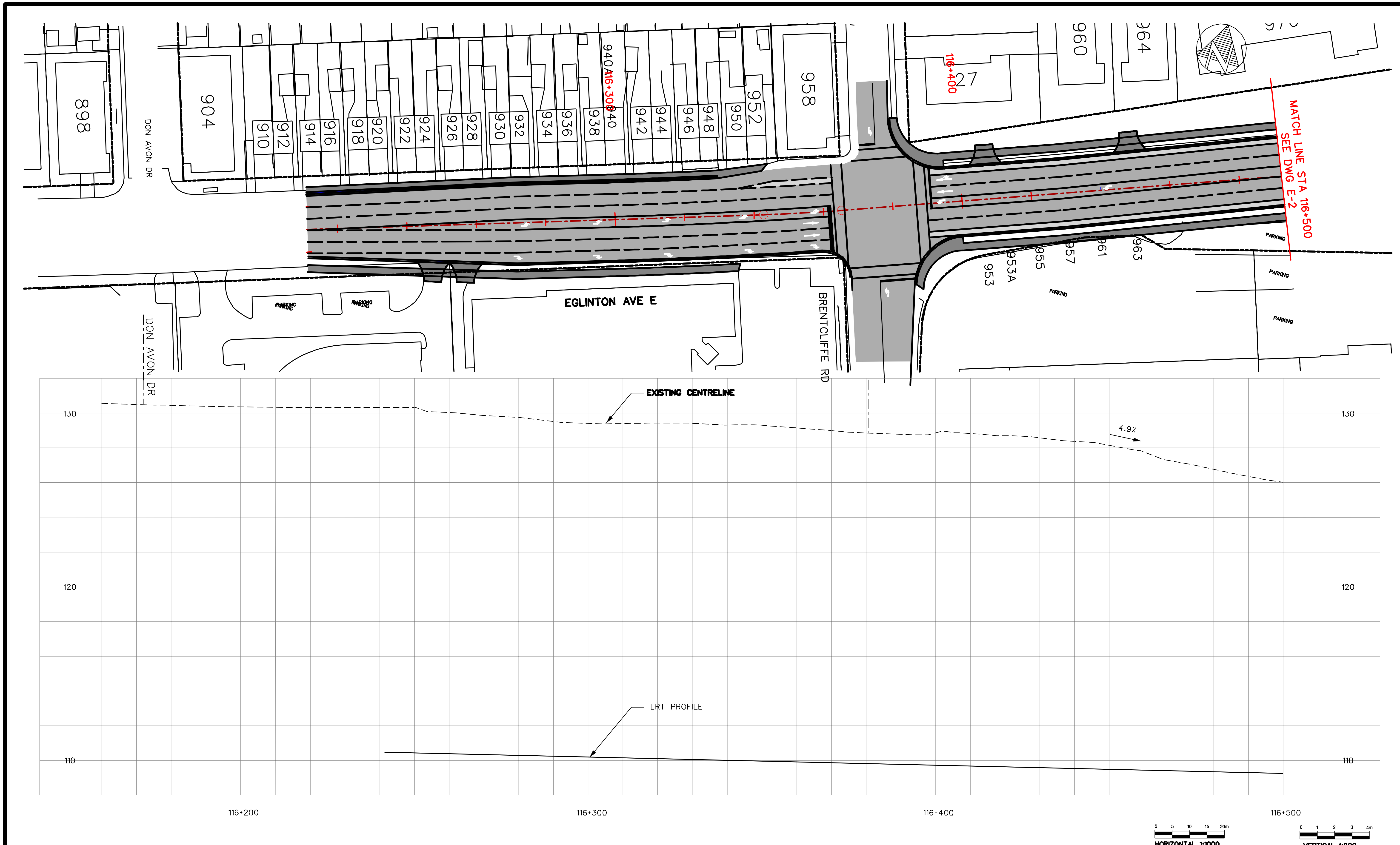
PLAN AND PROFILE STA 115+950 TO STA 116+300

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. T29R

Sheet No. 66



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

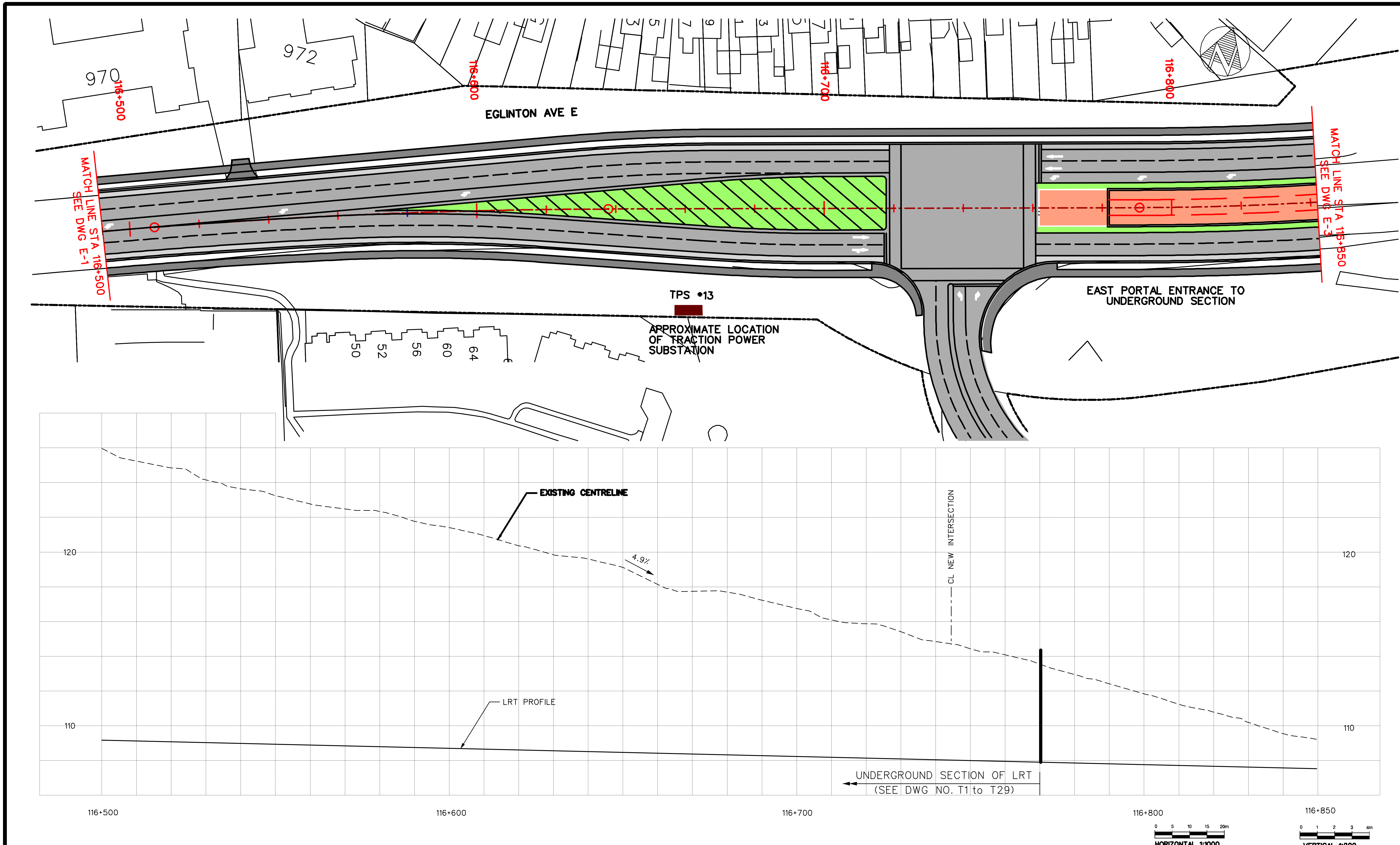
PLAN AND PROFILE STA 116+160 TO STA 116+500

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E1R

Sheet No. 67



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

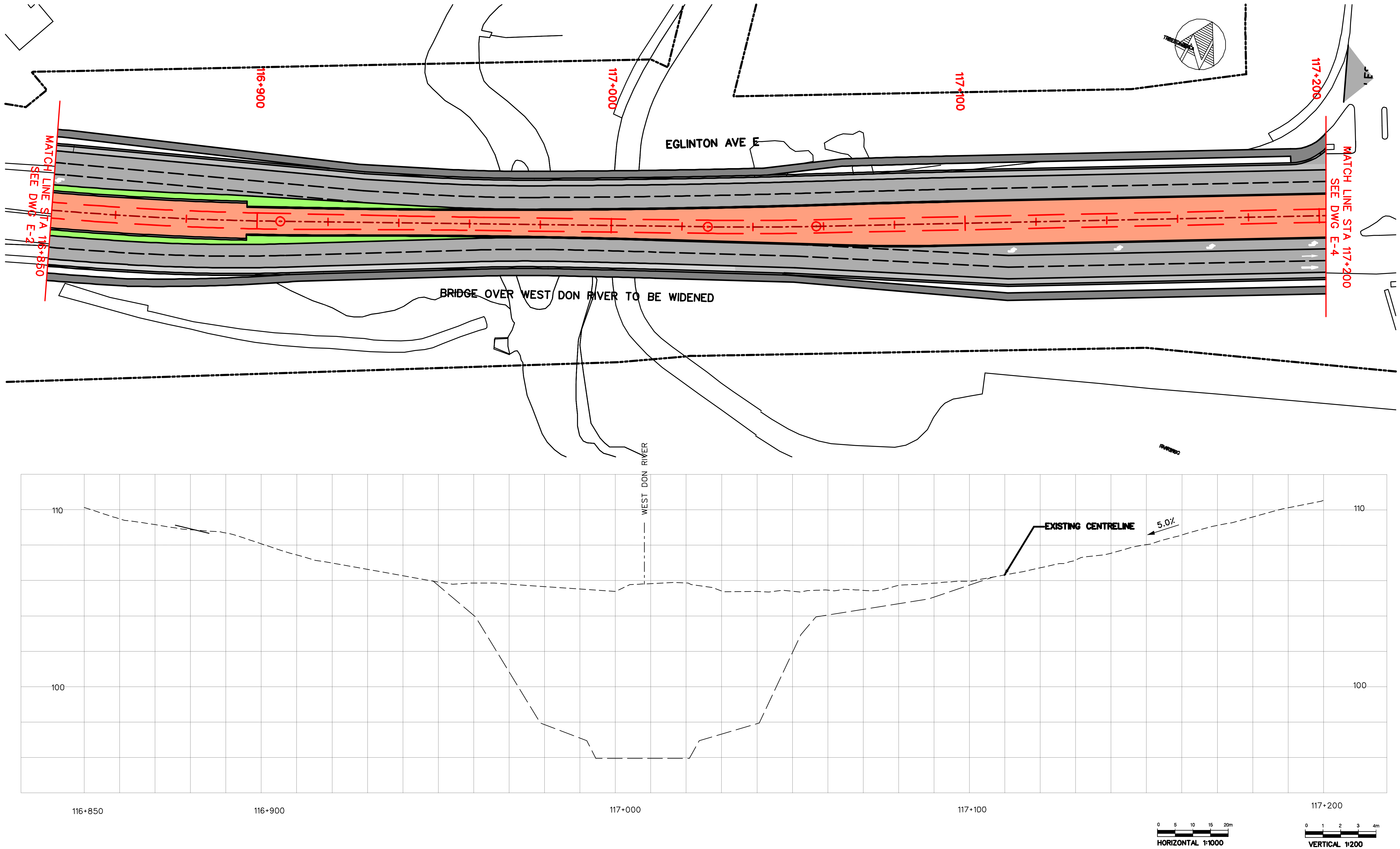
PLAN AND PROFILE STA 116+500 TO STA 116+850

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E2R

Sheet No. 68



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

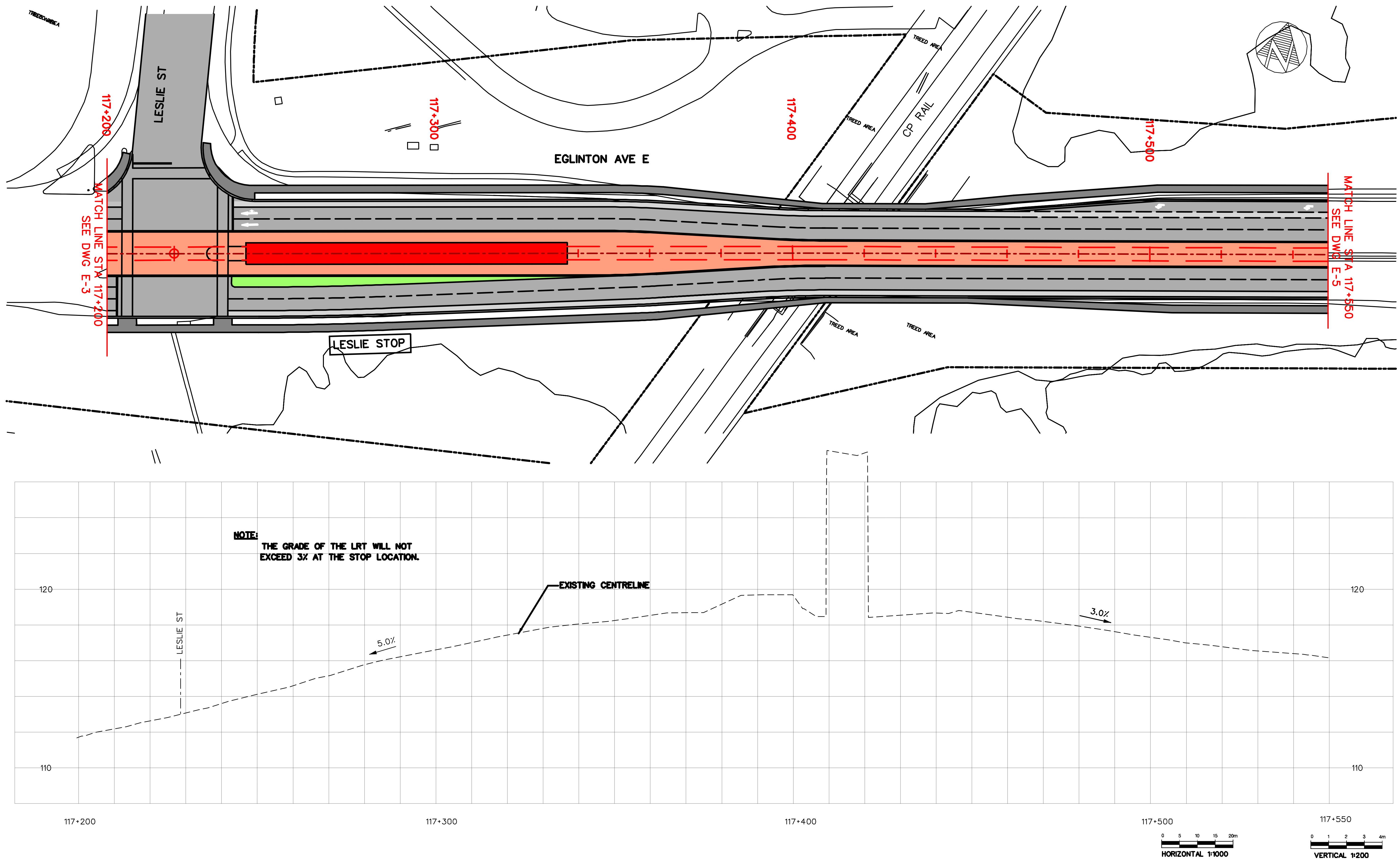
PLAN AND PROFILE STA 116+850 TO STA 117+200

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E3R

Sheet No. 69



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

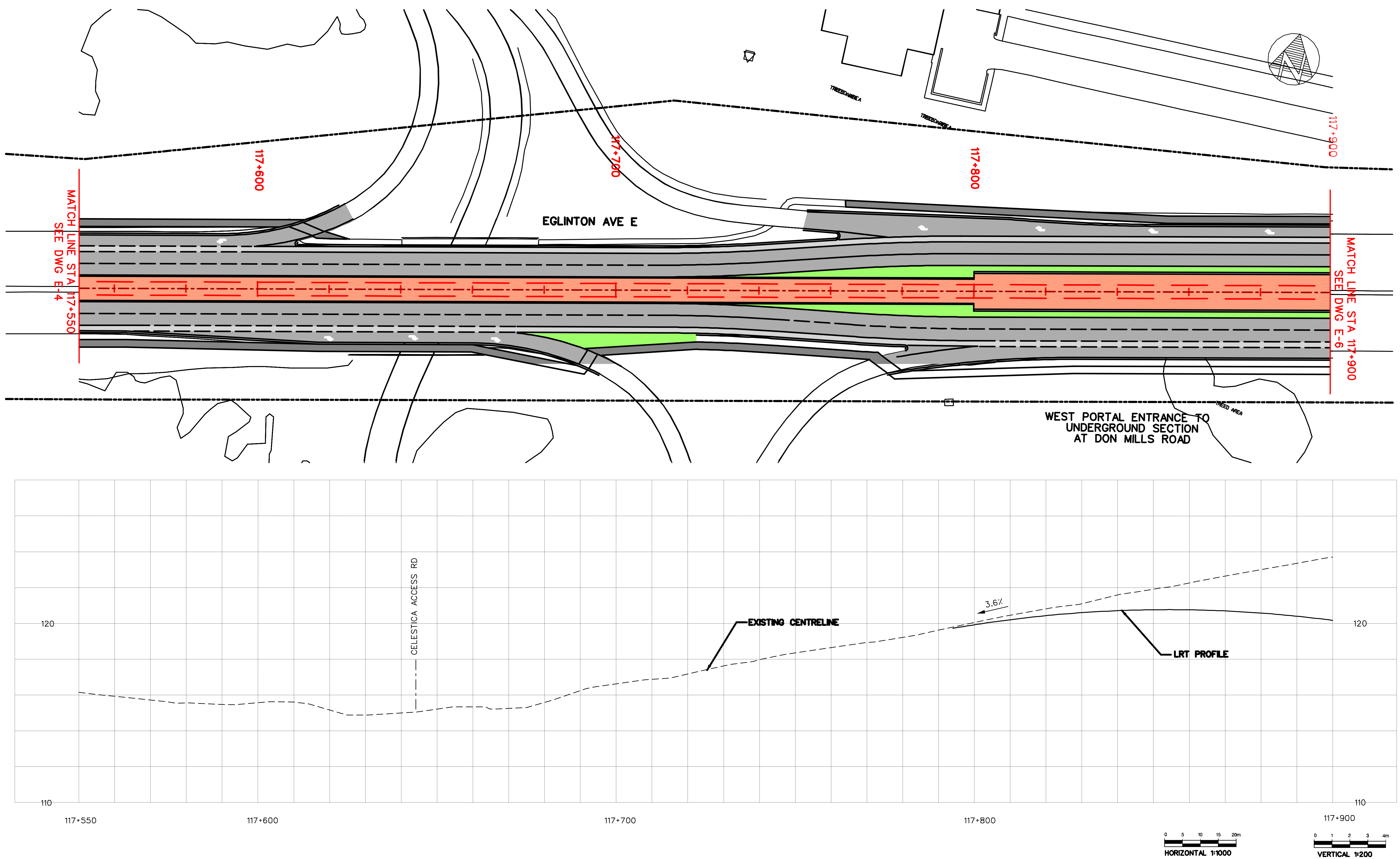
PLAN AND PROFILE STA 117+200 TO STA 117+550

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E4R

Sheet No. 70



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

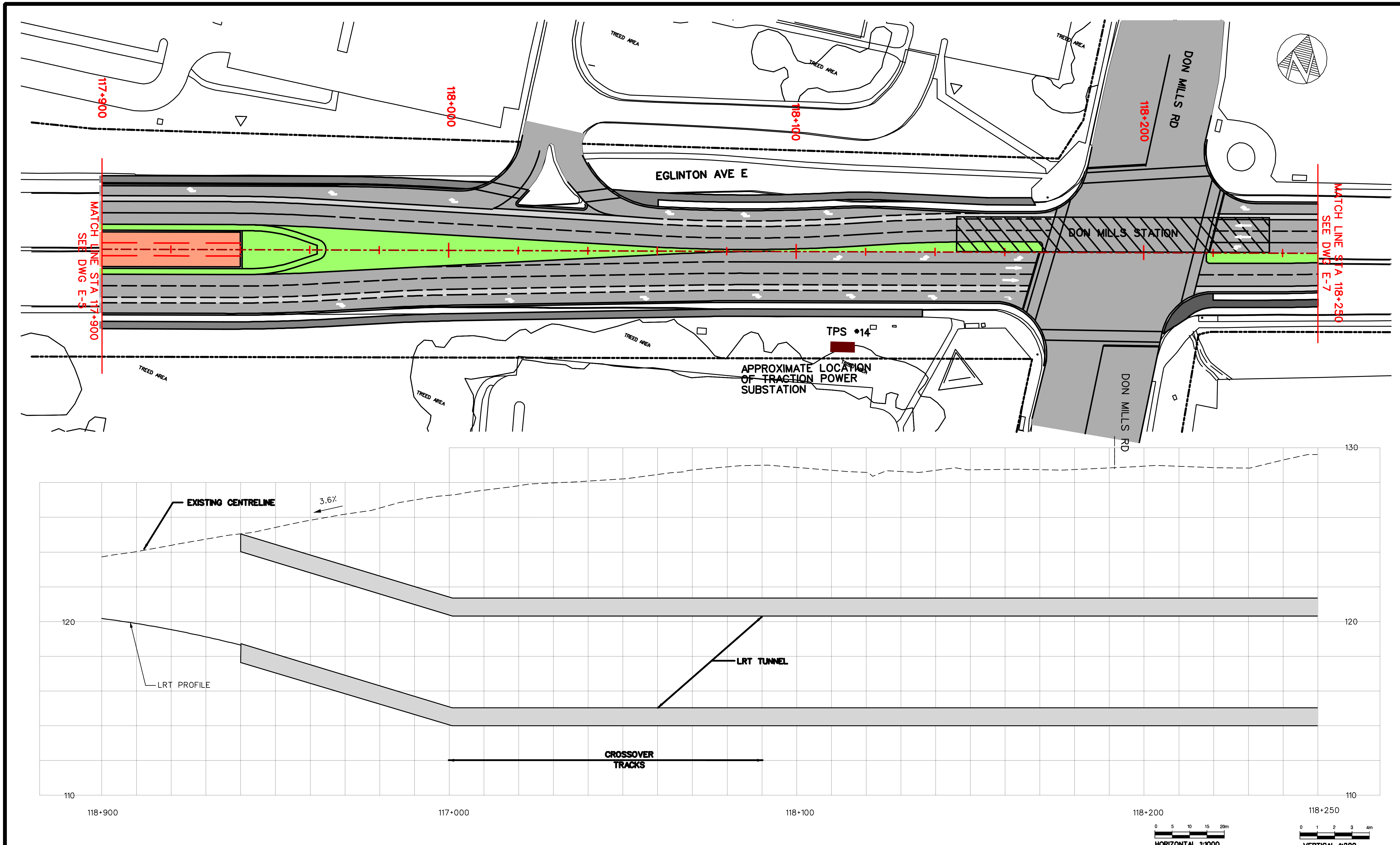
PLAN AND PROFILE STA 117+550 TO STA 117+900

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E5R

Sheet No. 71



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

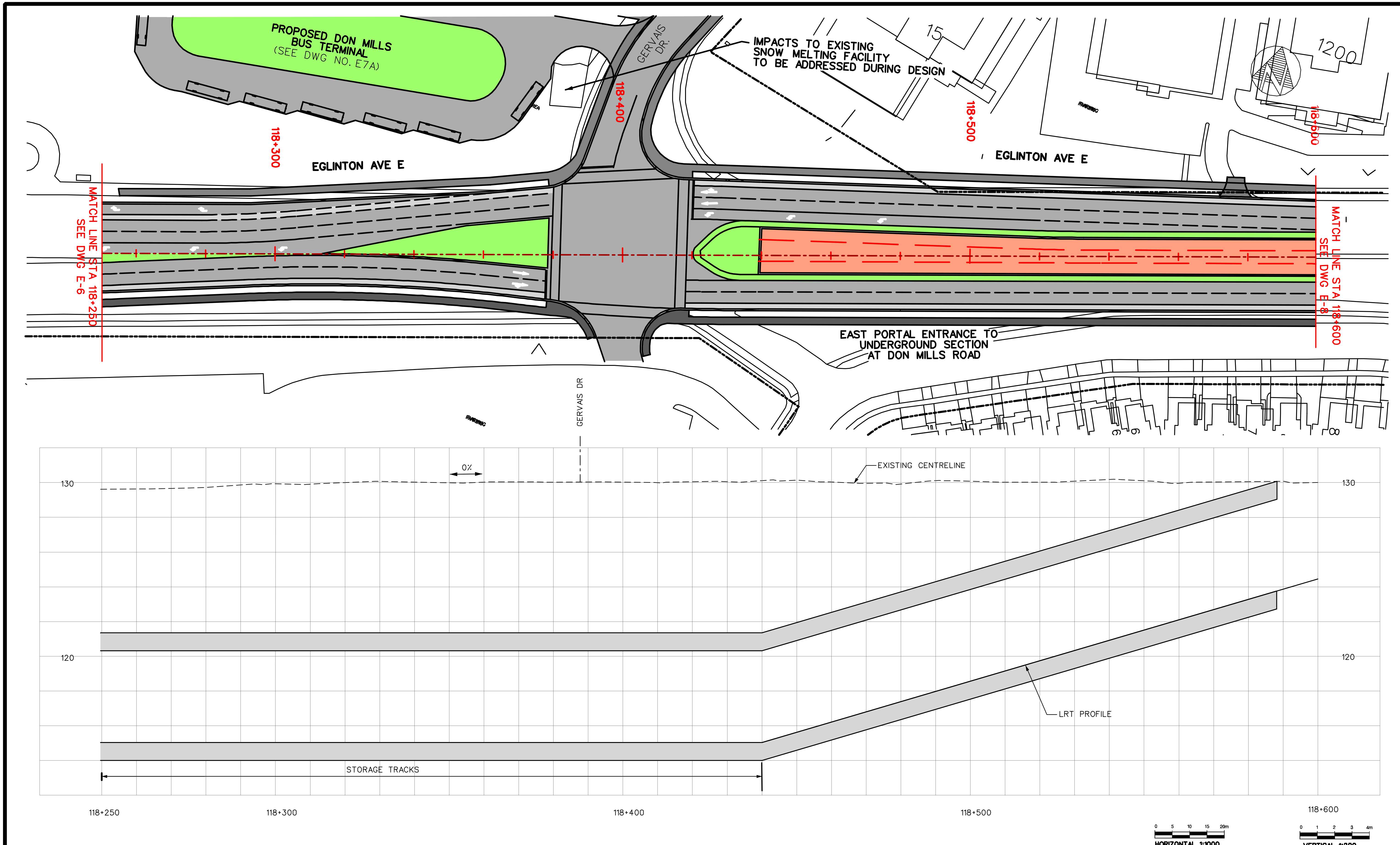
PLAN AND PROFILE STA 117+900 TO STA 118+250

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E6R

Sheet No. 72



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

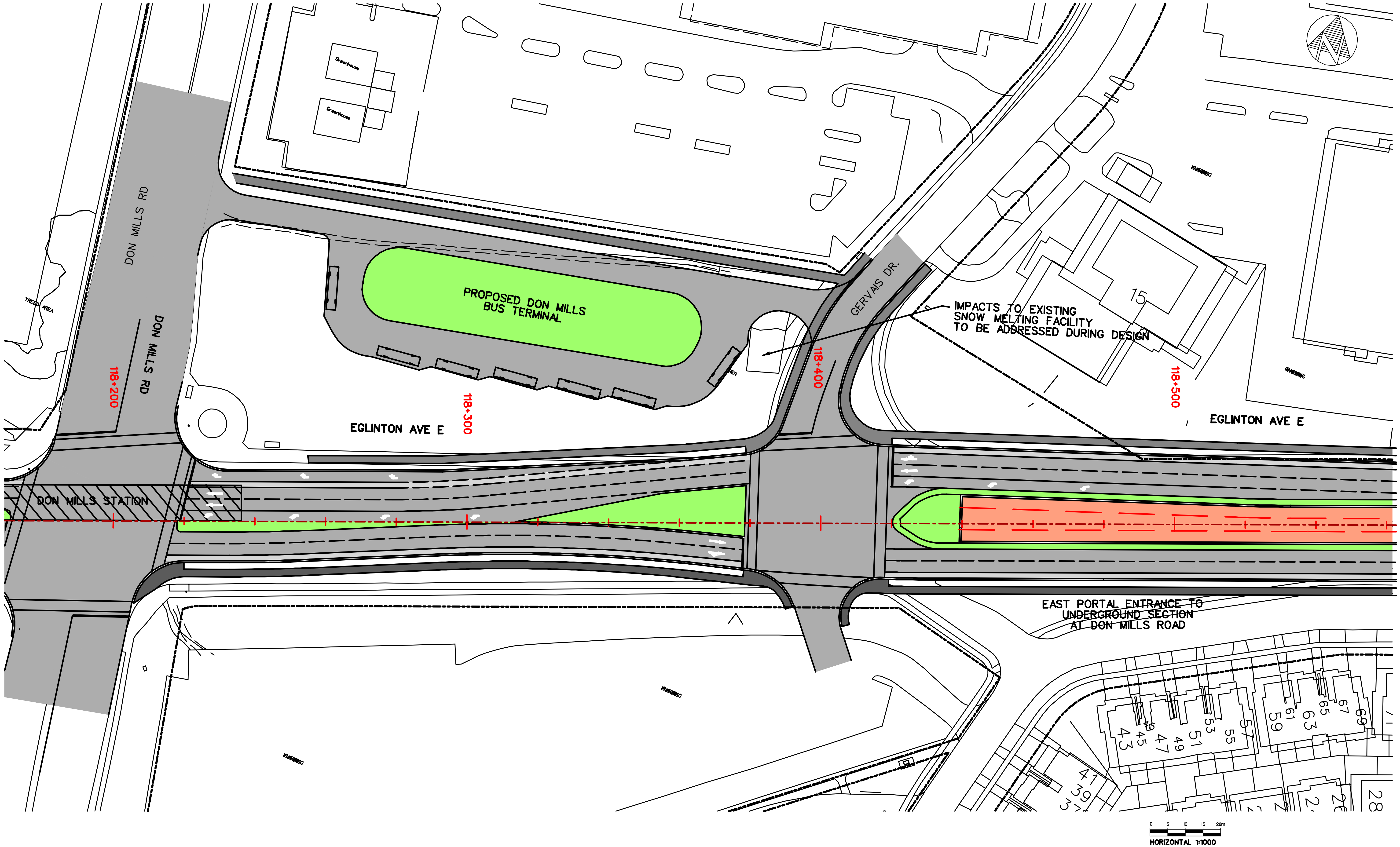
PLAN AND PROFILE STA 118+250 TO STA 118+600

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E7R

Sheet No. 73



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

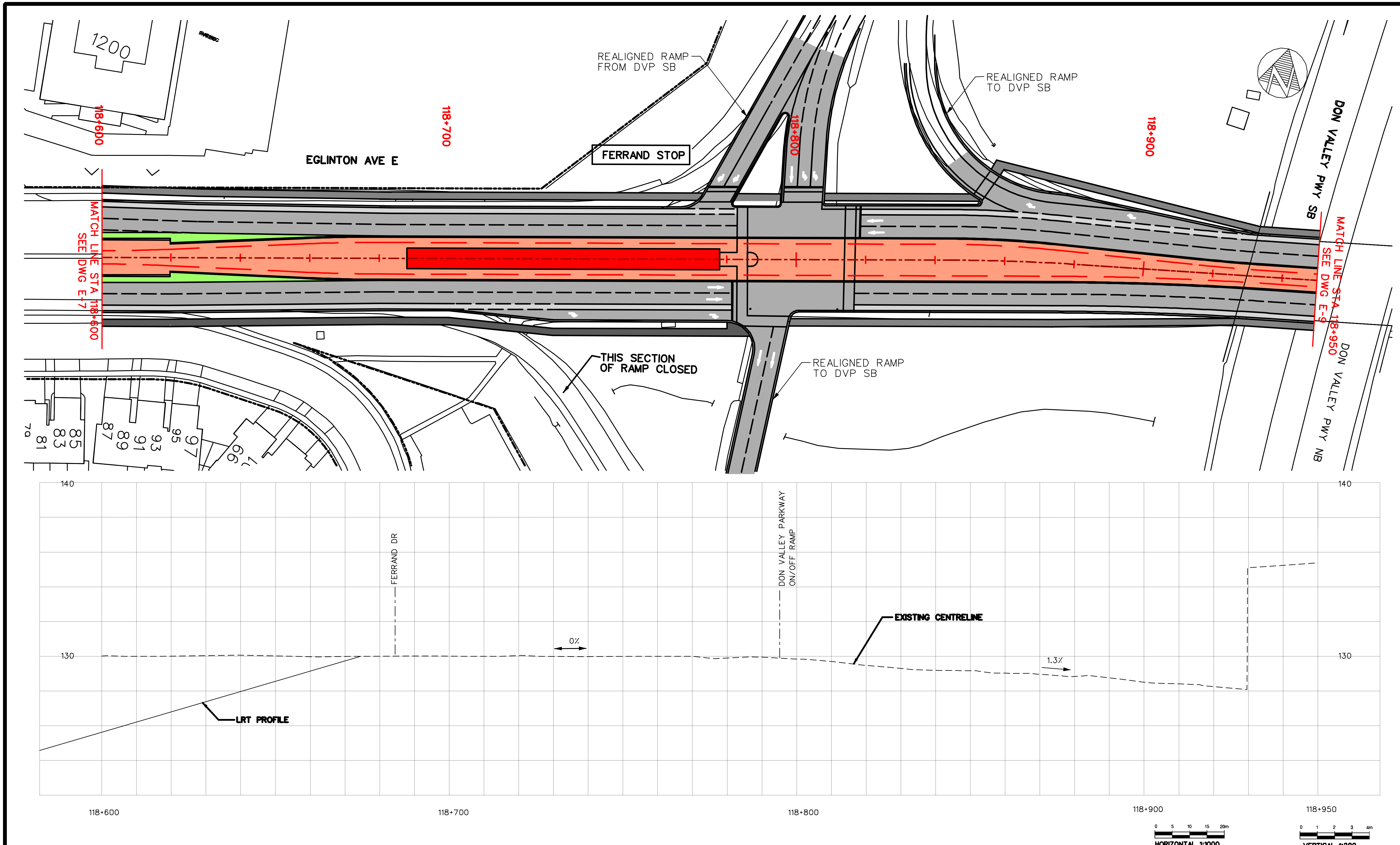
DON MILLS BUS TERMINAL

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E7AR

Sheet No. 73A



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

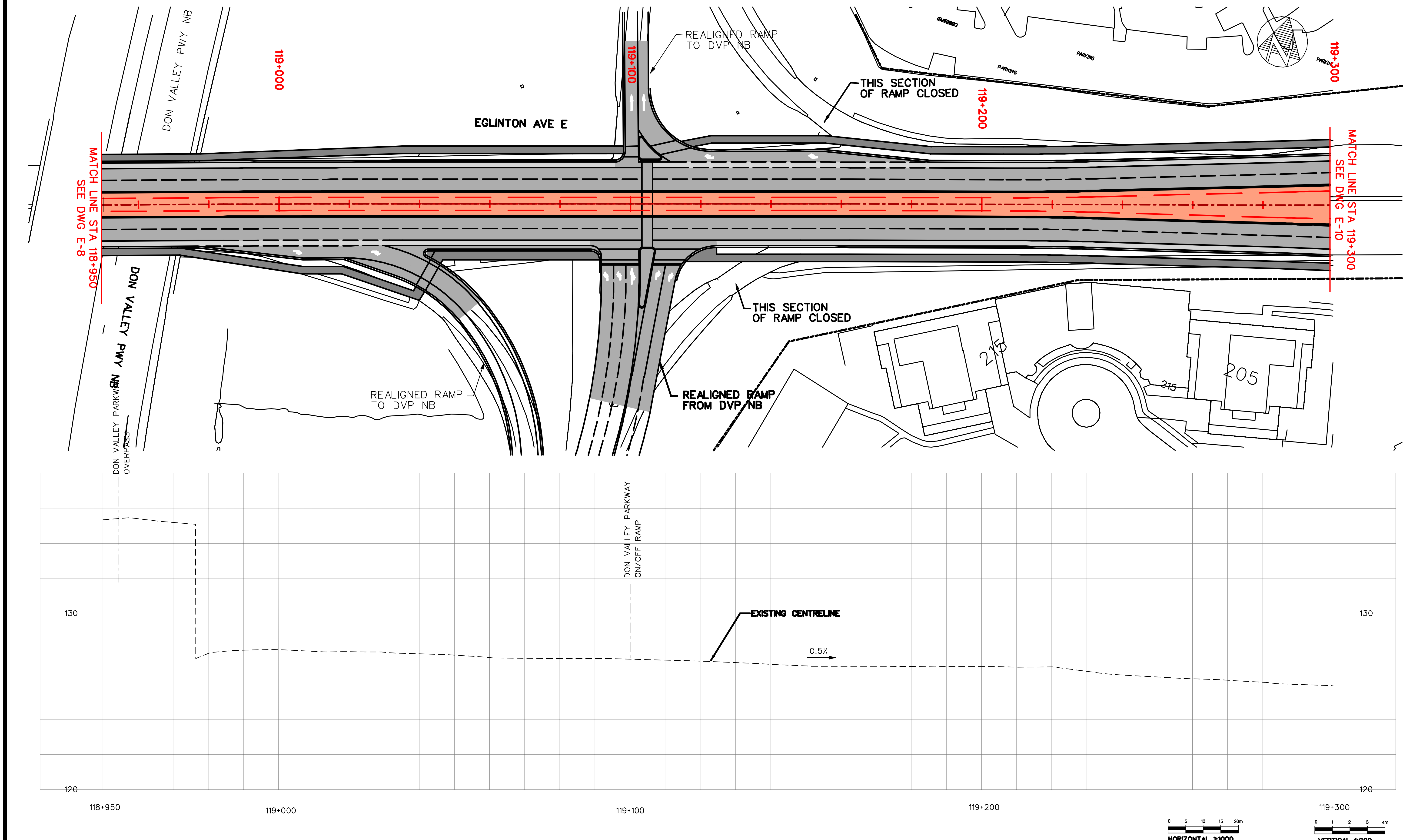
PLAN AND PROFILE STA 118+600 TO STA 118+950

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E8R

Sheet No. 74



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 118+950 TO STA 119+300

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E9R

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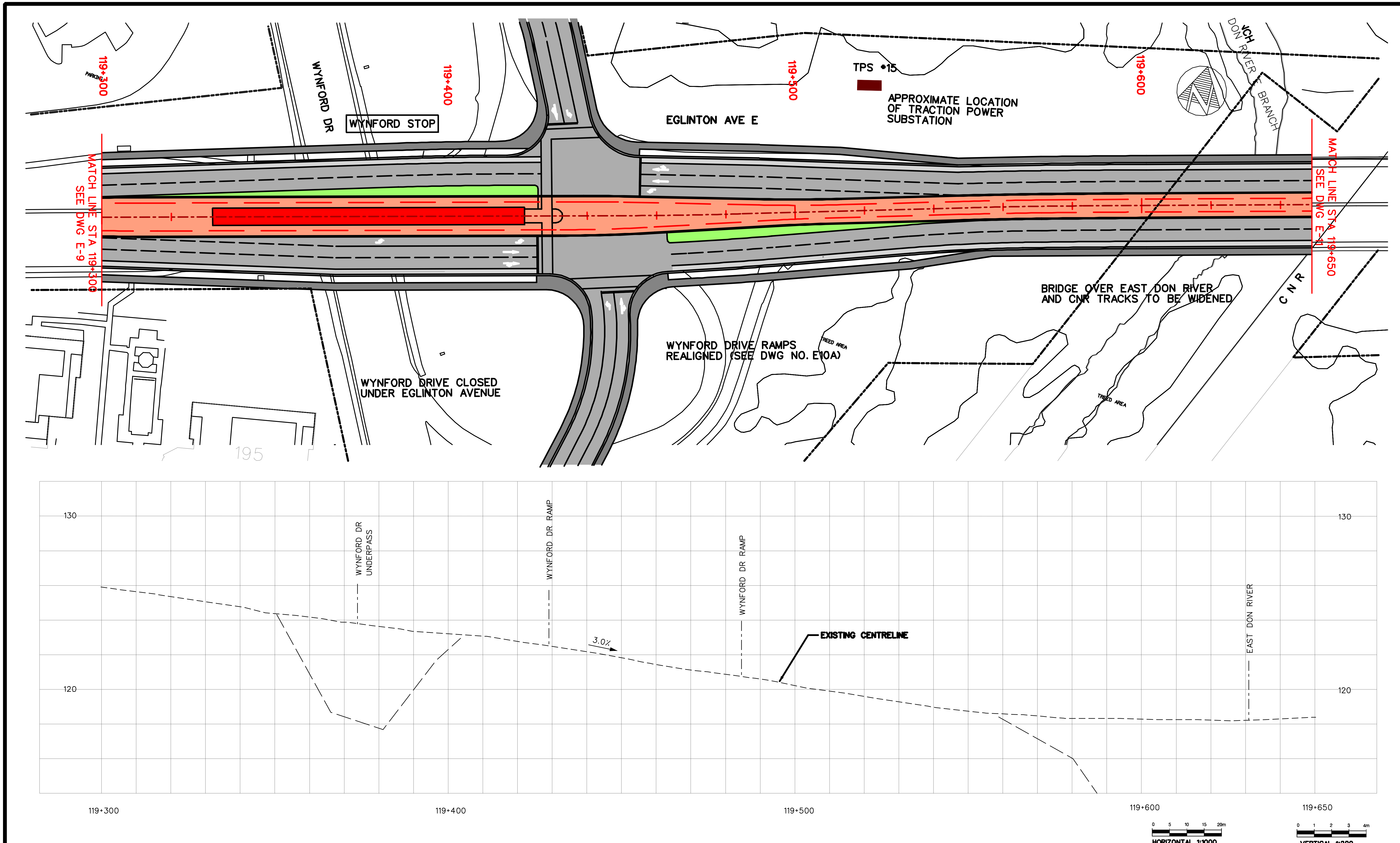


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

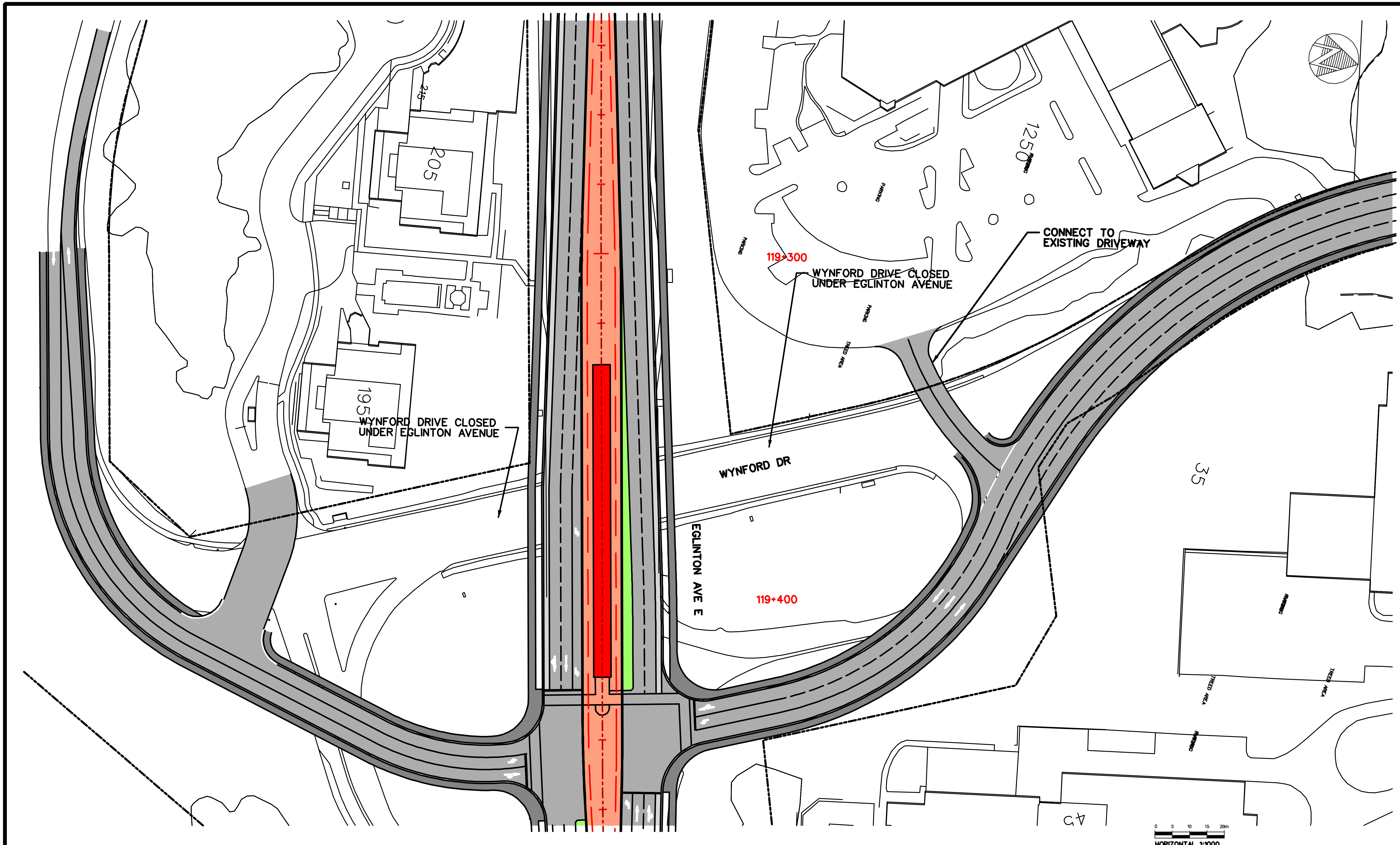
PLAN AND PROFILE STA 119+300 TO STA 119+650

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E10R

Sheet No. 76



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

WYNFORD DRIVE – NORTH AND SOUTH RAMPS

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E10AR

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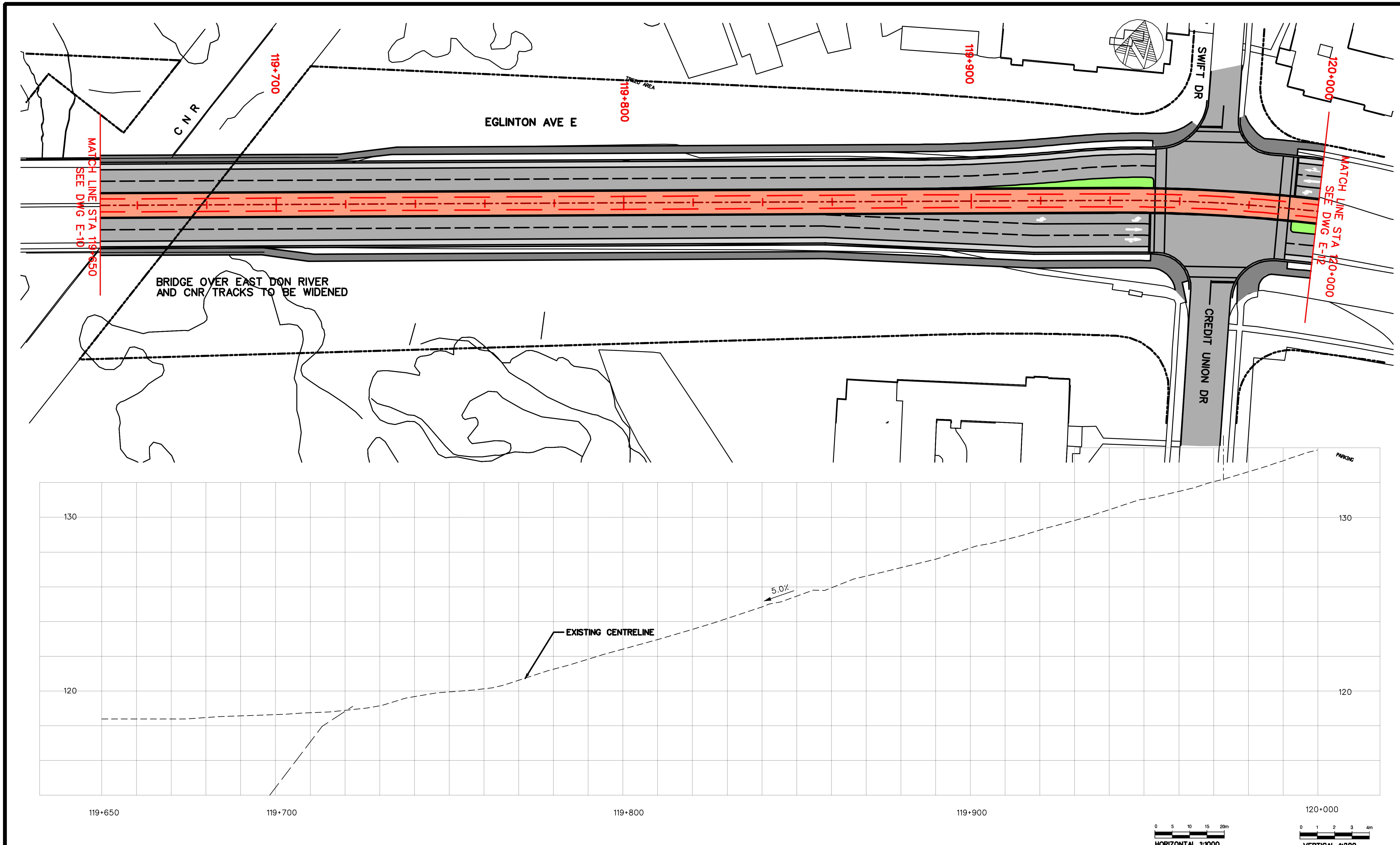


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 119+650 TO STA 120+000

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E11R

Sheet No. 77

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

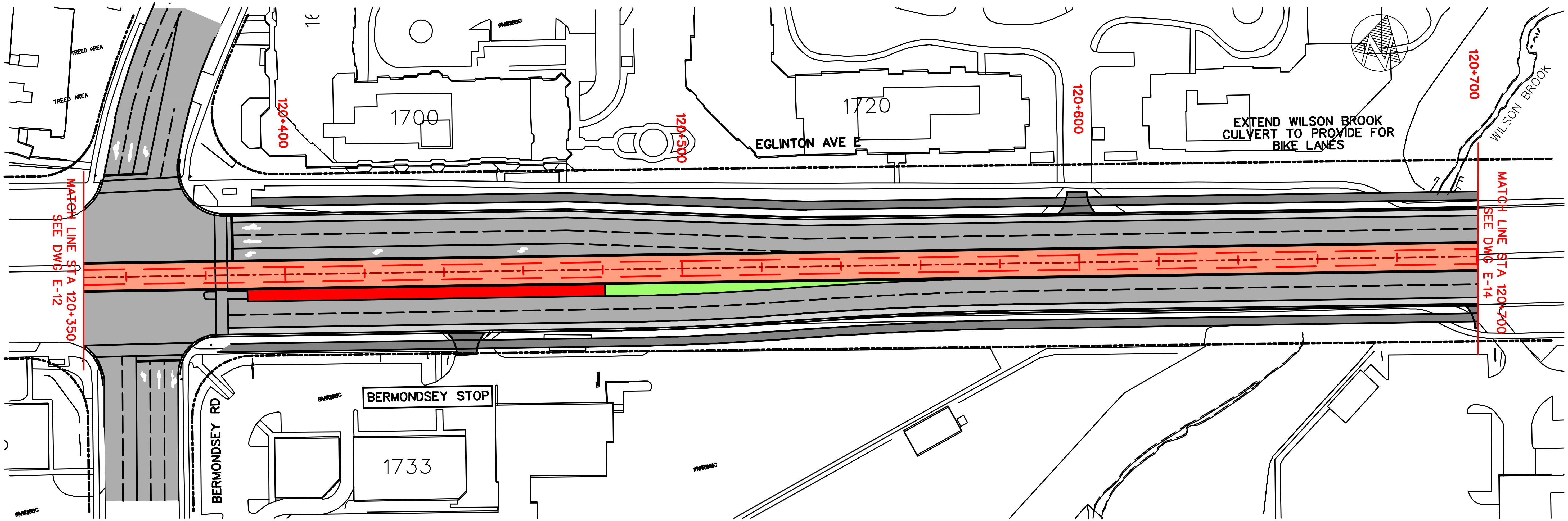
PLAN AND PROFILE STA 120+000 TO STA 120+350

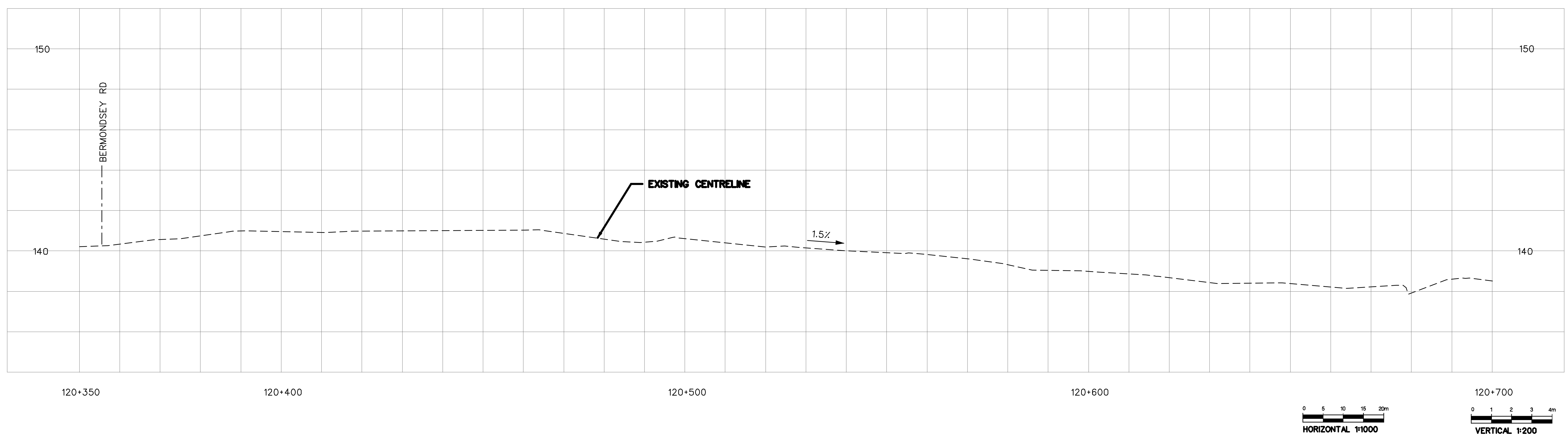
TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E12R

Sheet No. 78





EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 120+350 TO STA 120+700

TCG
Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No.
E13R

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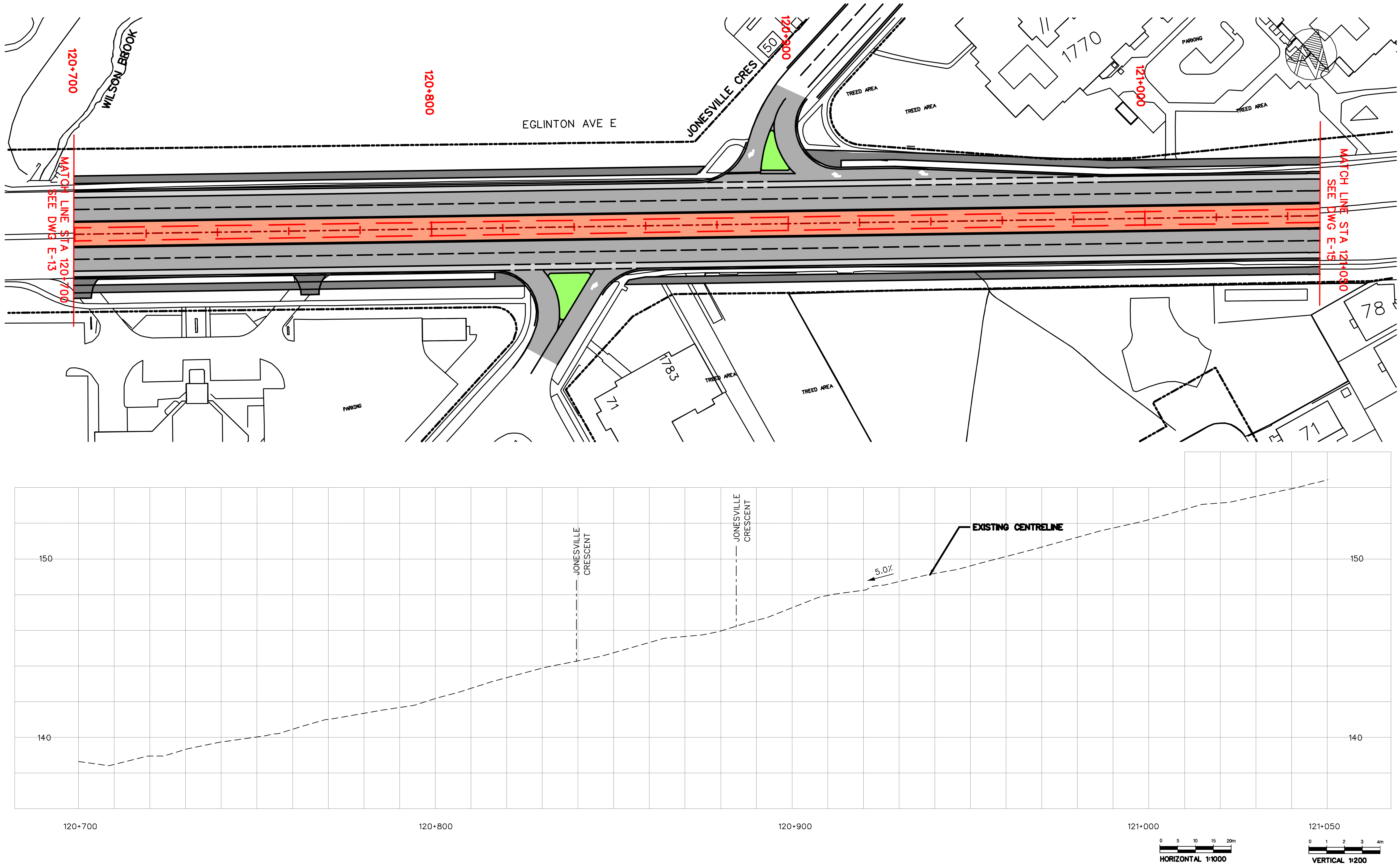
79



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 120+700 TO STA 121+050

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E14R

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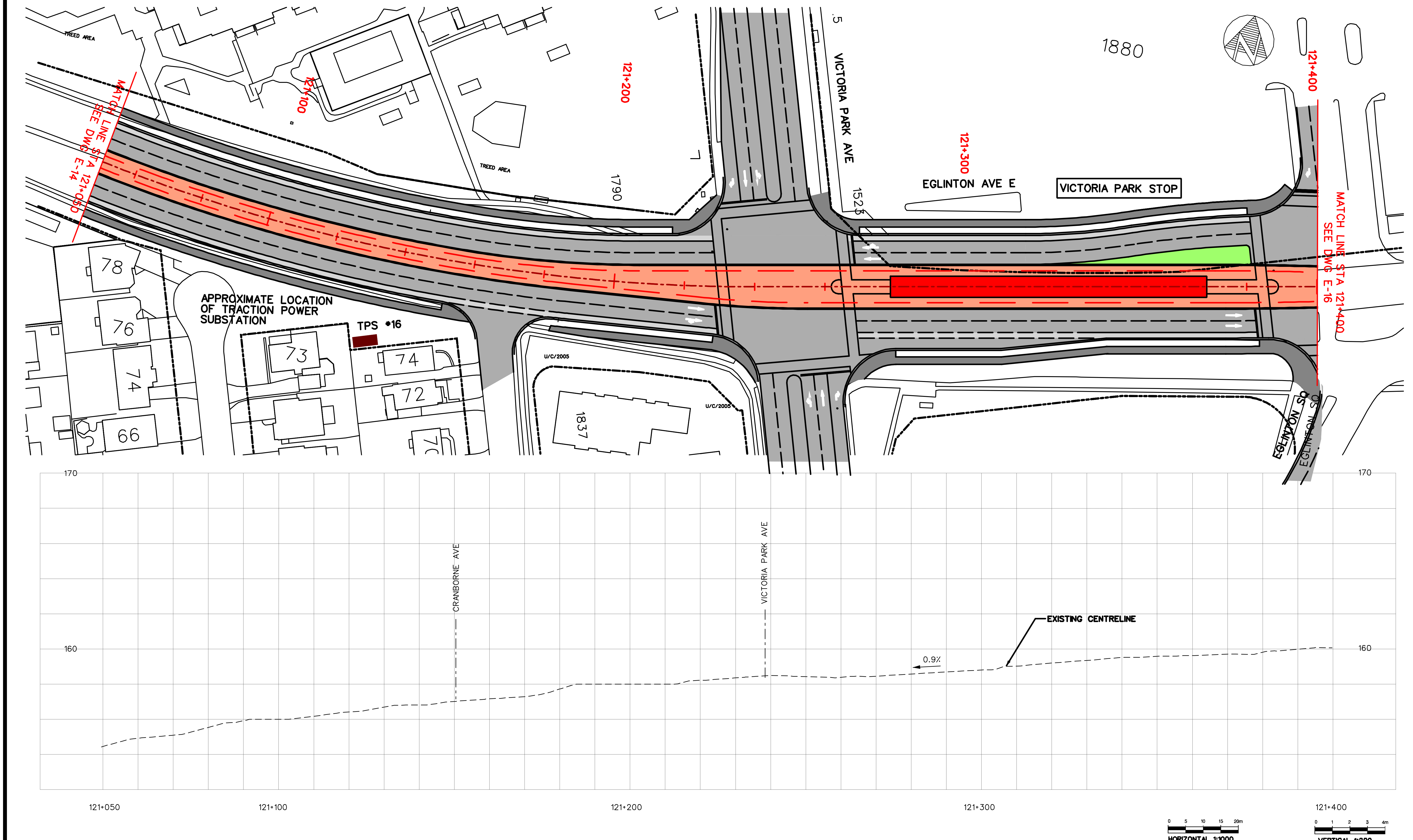


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

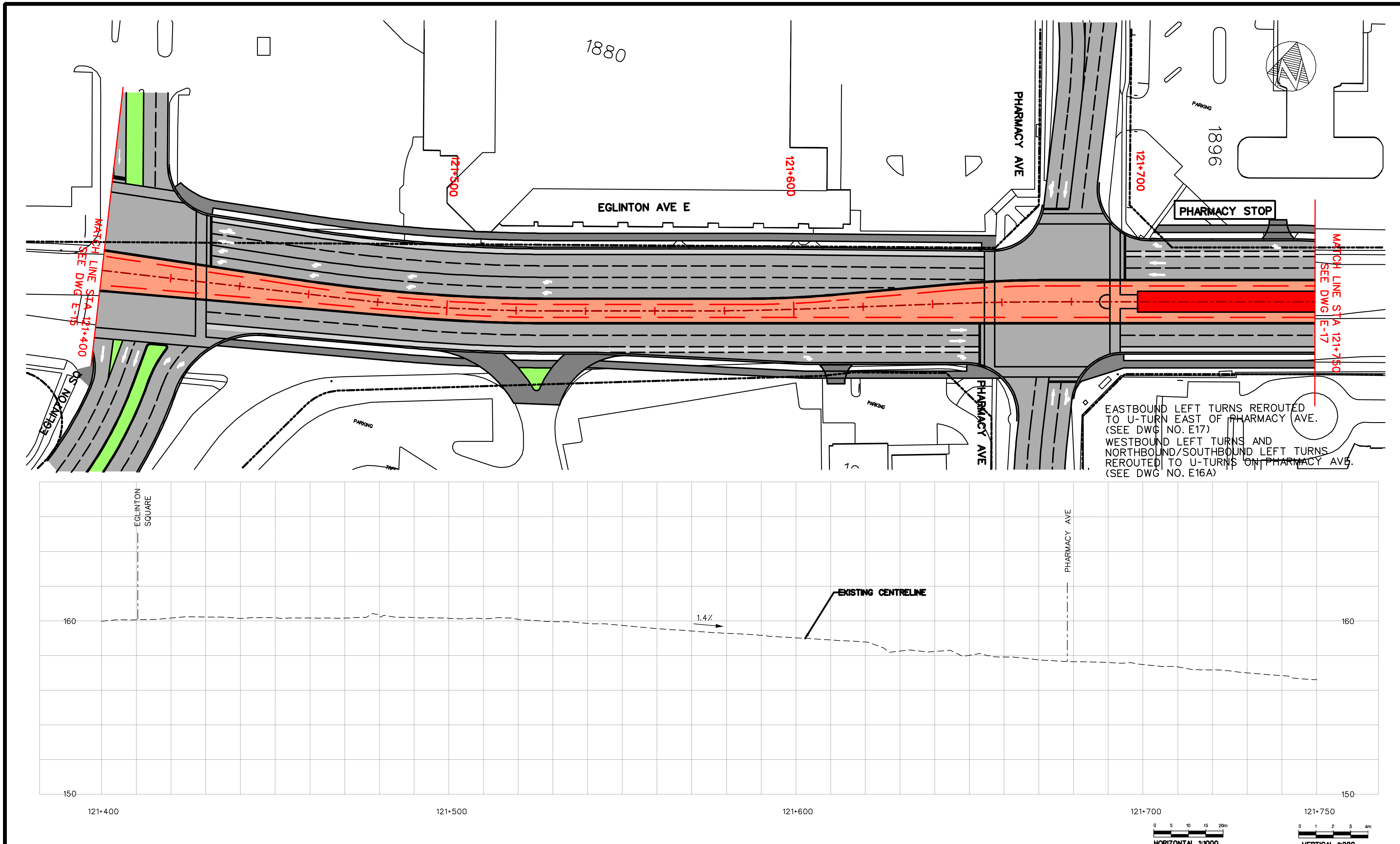
PLAN AND PROFILE STA 121+050 TO STA 121+400

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E15R

Sheet No. 81



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

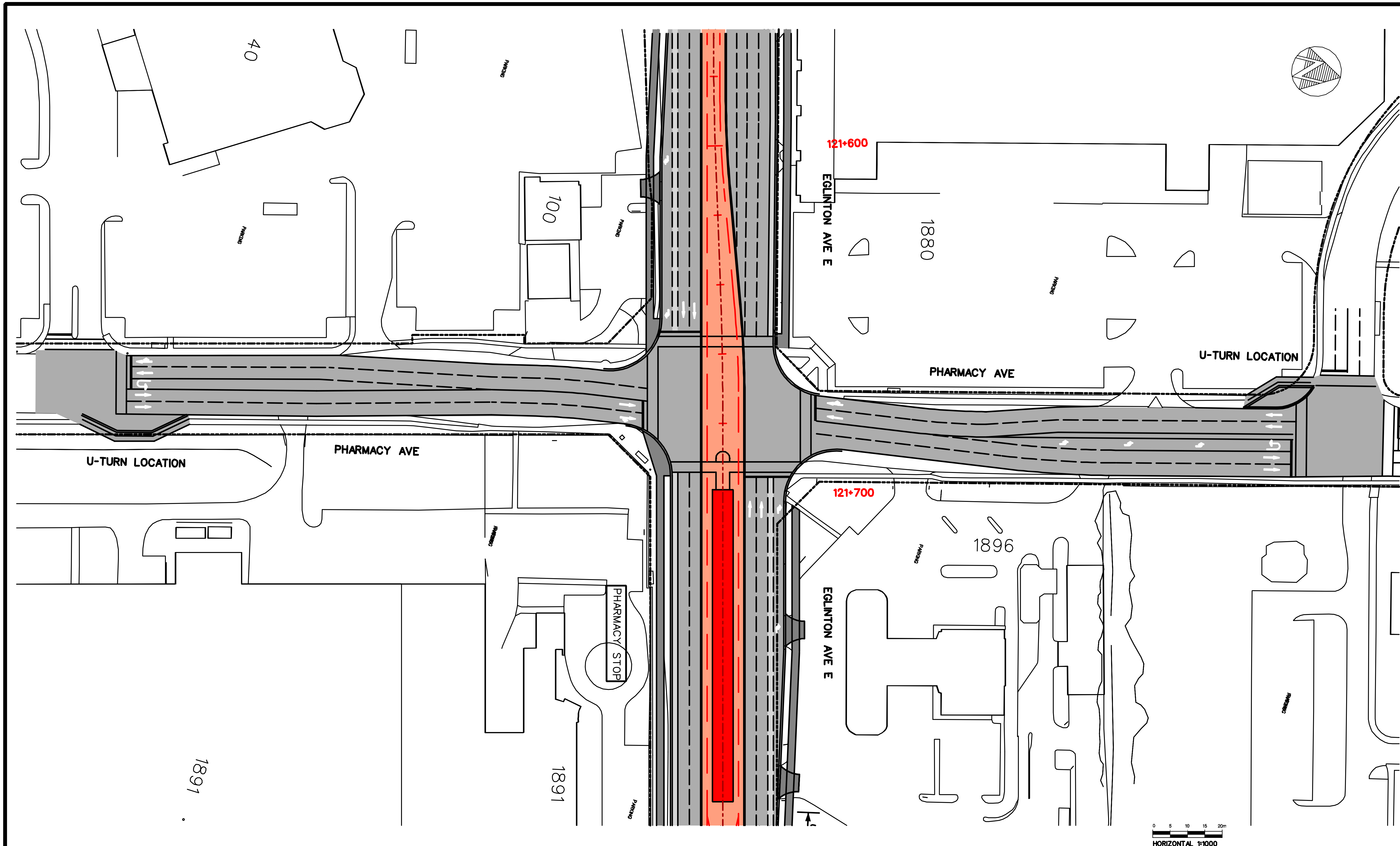
PLAN AND PROFILE STA 121+400 TO STA 121+750

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E16R

Sheet No. 82



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

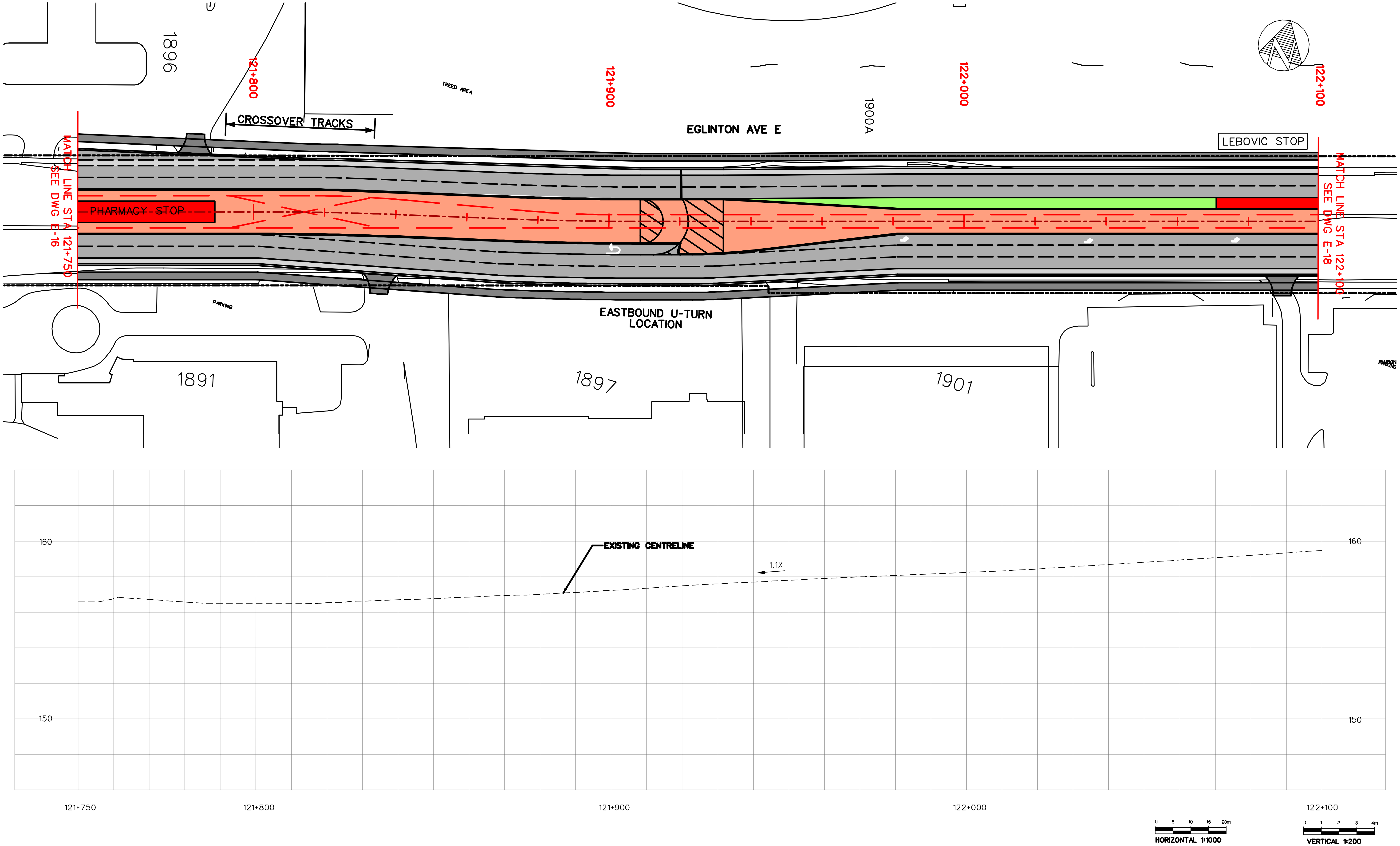
PHARMACY AVENUE NORTH AND SOUTH U-TURNS

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E16AR

Sheet No. 82A



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 121+750 TO STA 122+100

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E17R

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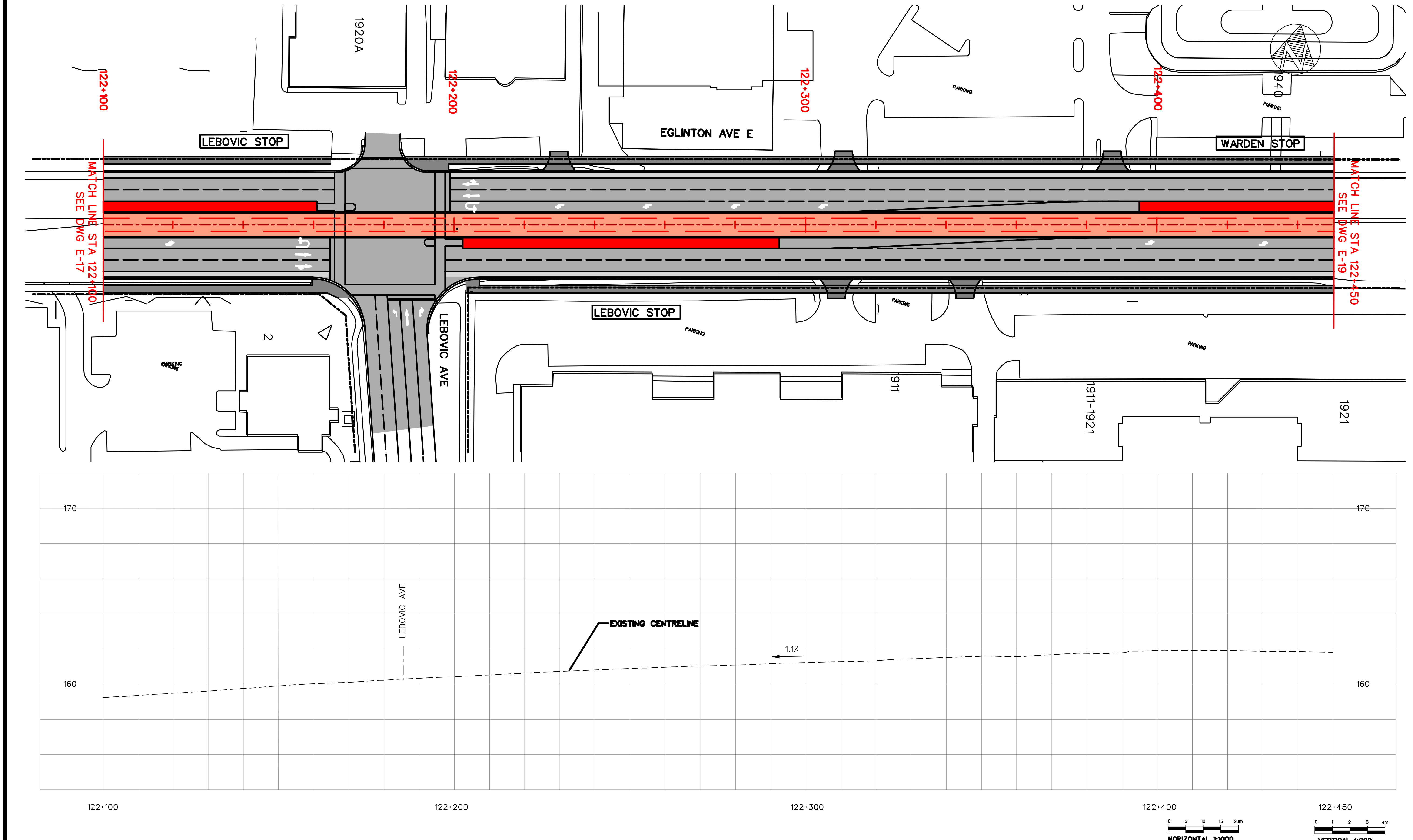

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 122+100 TO STA 122+450

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E18R

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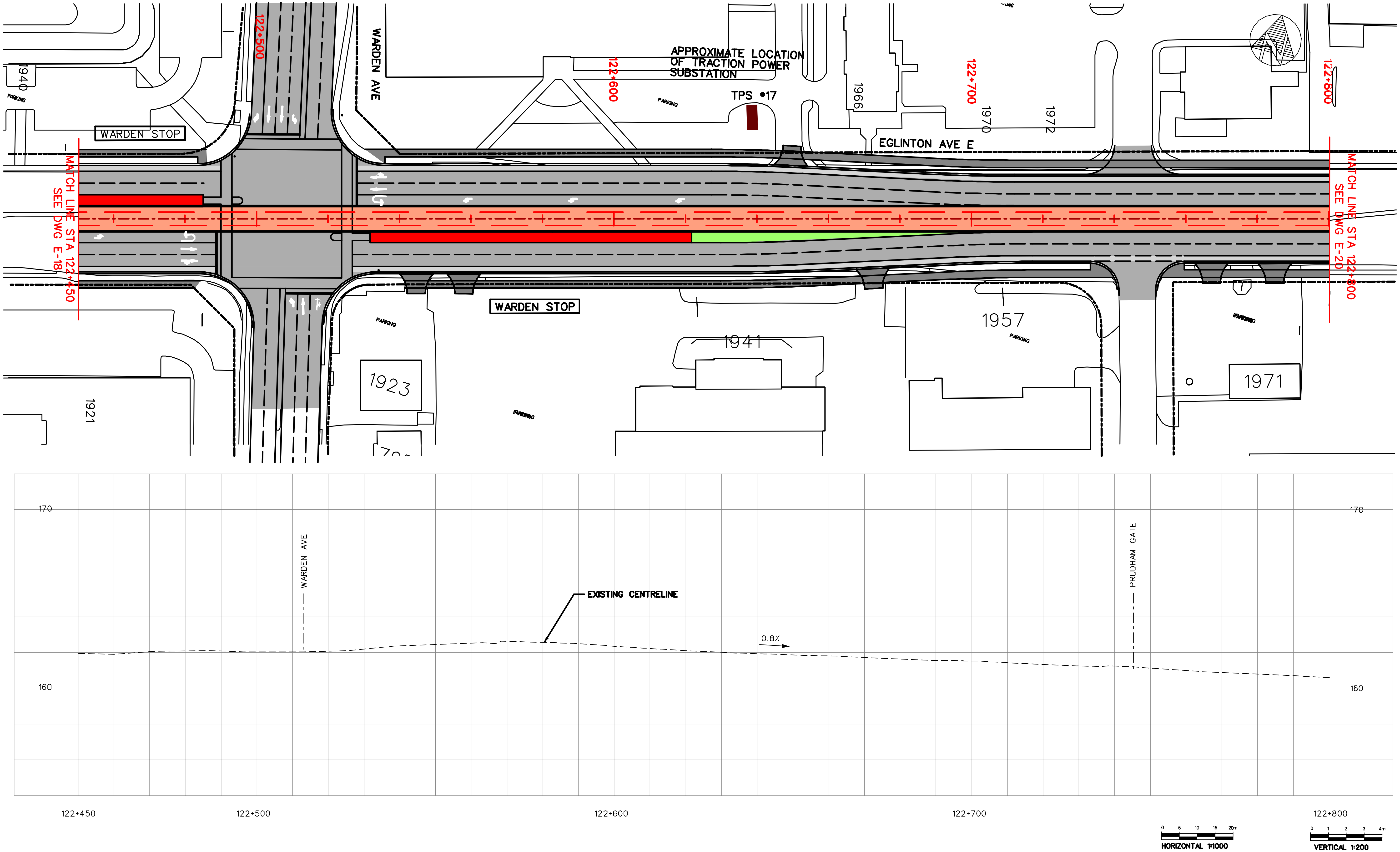

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 122+450 TO STA 122+800

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E19R

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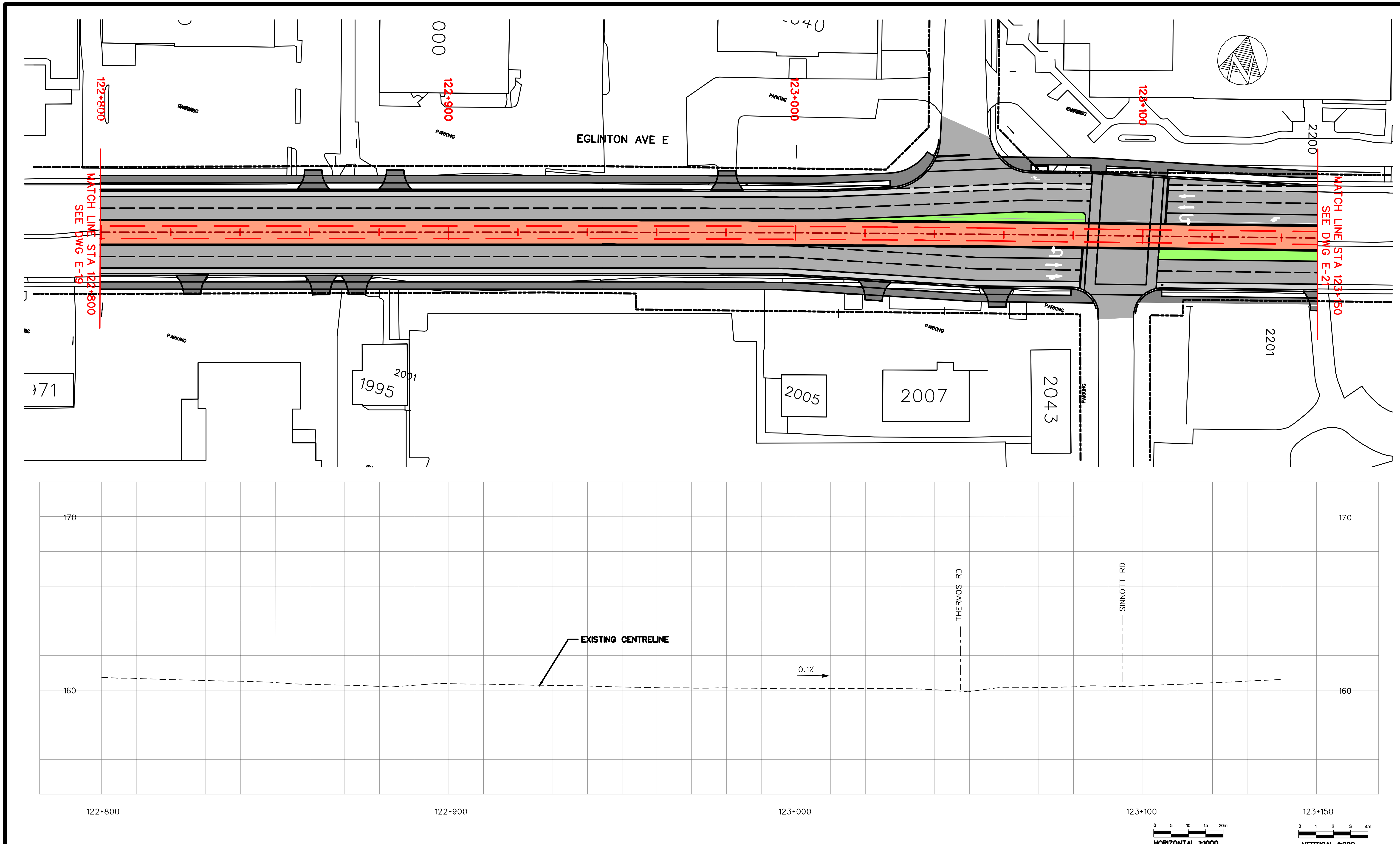


EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

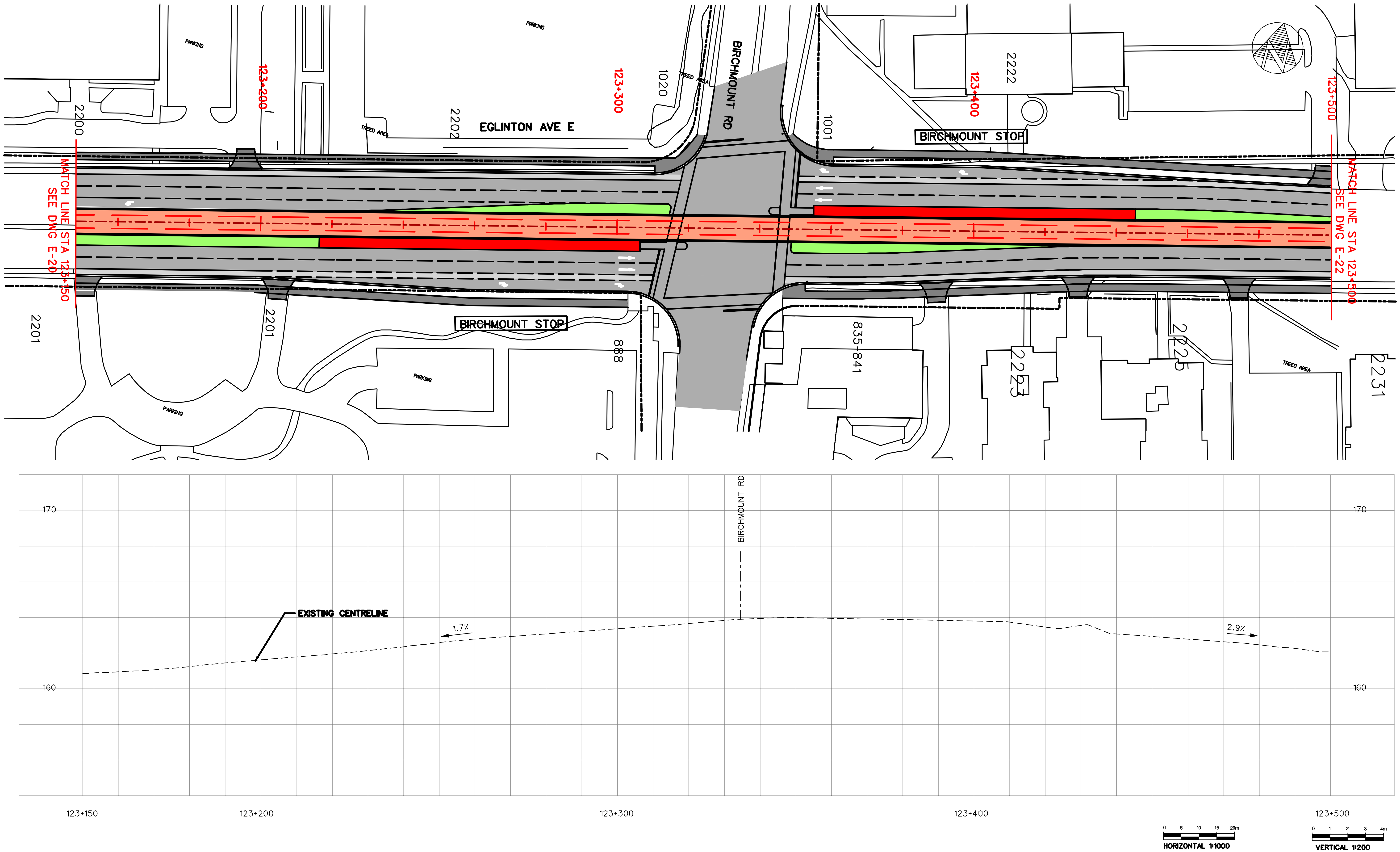
PLAN AND PROFILE STA 122+800 TO STA 123+150

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E20R

Sheet No. 86



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 123+150 TO STA 123+500

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E21R

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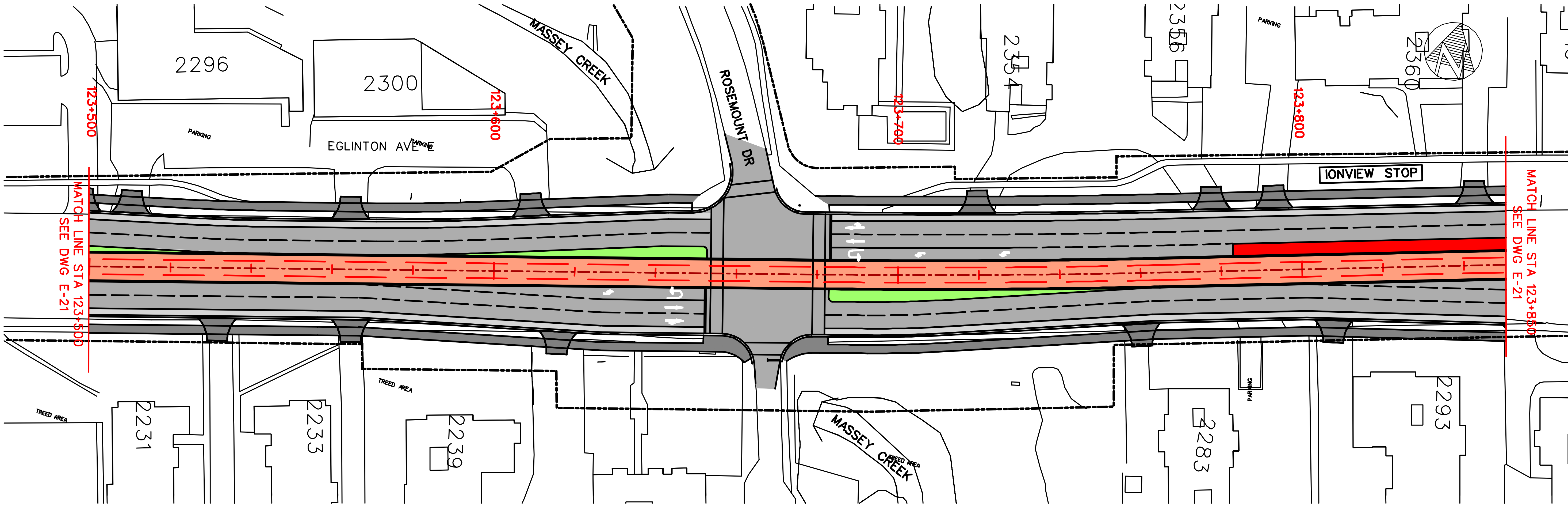
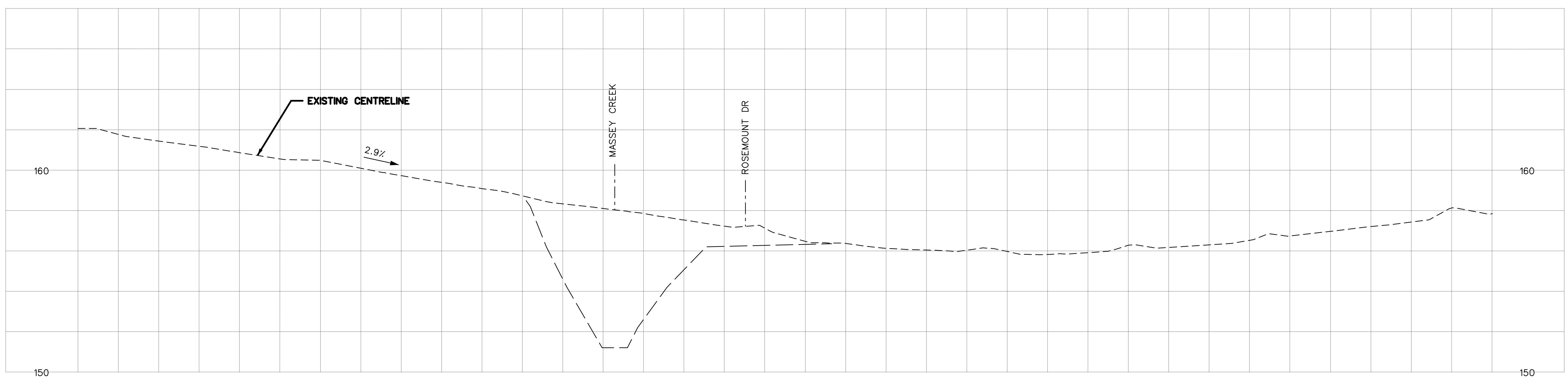




HORIZONTAL 1:1000

VERTICAL 1:200

EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

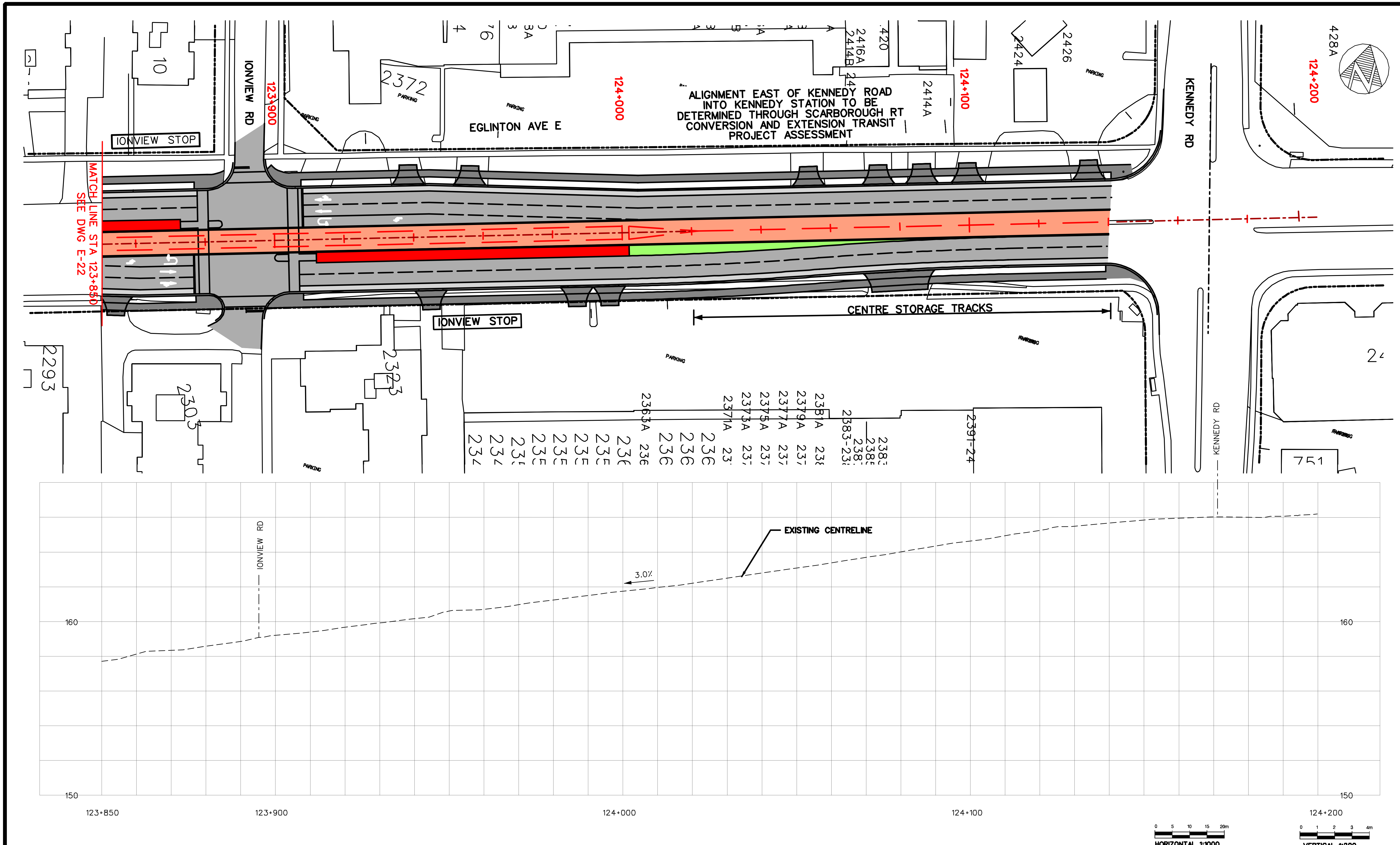
PLAN AND PROFILE STA 123+500 TO STA 123+850

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E22R

Sheet No. 88



EGLINTON CROSSTOWN LRT – ENVIRONMENTAL PROJECT REPORT

EAST SURFACE SECTION

PLAN AND PROFILE STA 123+500 TO STA 124+200

TCG Transit City Group

TORONTO TRANSIT COMMISSION
TRANSIT CITY DEPARTMENT

Dwg. No. E23R

Sheet No. 89

4. EXISTING AND FUTURE CONDITIONS

This chapter describes the existing and future conditions (without the implications of the Eglinton Crosstown LRT) found along the LRT corridor. The description of existing and future conditions provided a baseline for the generation of alternatives, assessment of environmental impacts and the identification of environmental protection measures and a monitoring plan. The identification of the environmental features (i.e. transportation infrastructure, natural, social and cultural environment) involved collection of primary and secondary sourced data including consultation with technical agencies. This was done in two steps, an inventory and analysis of existing conditions and an investigation as to how these conditions might change in the future. In general, the existing and future conditions can be categorized into the following topics and are presented in the associated sections:

- Natural Environment;
- Social Environment;
- Cultural Environment; and
- Transportation System.

4.1 Existing Conditions

4.1.1 Natural Environment

4.1.1.1 Physiography and Drainage

The Eglinton Crosstown LRT corridor is located within the Iroquois Plain and South Slope physiographic region. The Iroquois Plain physiographic region is characterized by shoreline, beach and lake plain deposits associated with the Pleistocene-aged glacial Lake Iroquois. Surficial soil within the corridor is predominantly stratified clays, silt and sand. Deposits of alluvial sand and gravel with minor amounts of clay and silt can be expected in the flood plains of existing rivers and streams, and in the vicinity of glacial lakes and rivers that existed during the Pleistocene. The South Slope physiographic region is underlain by carbonate rich Palaeozoic rock with a variety of glacial deposits overlying the bedrock.

On a regional scale, the topography of the Eglinton Crosstown LRT study area slopes southward towards Lake Ontario. The topography of the study area varies significantly from west to east due to the incision of rivers and streams. For example, the intersection of Eglinton Avenue and Kipling Avenue is at an elevation of approximately 159 metres above sea level (masl) whereas, at the Humber River, ground surface is at an elevation of 108 masl. Further to the east at the intersection of Jane Street, ground surface is about elevation 99 masl. Eastward from that point, ground surface elevations progressively increase to around 180 masl, and then flatten out at that elevation before dropping to around elevation 100 masl at the East Don River; ground surface then progressively rises to about 164 masl at Kennedy Road.

The general direction of drainage and shallow groundwater flow on a local scale is expected to be towards the closest watercourse. Groundwater flow may also be influenced by utility trenches and other subsurface structures that intersect the water table and can only be confirmed by long-term groundwater monitoring data in the study area. There are several suspected former stream channels that are no longer apparent along the LRT corridor. These buried or channelized features may also be areas requiring further attention from a dewatering perspective. The micro drainage system is comprised of ditches in rural sections. Micro drainage in urban sections is comprised of curbs and gutters leading to storm sewers or discharging directly to surface ditches or watercourses. The existing sewer systems are generally designed to accommodate only minor runoff events for the existing level of development.

The Eglinton Crosstown LRT corridor spans three major watersheds, the Mimico Creek, the Humber River and the Don River (east and west branches). The Toronto and Region Conservation Authority (TRCA) Regulation Limit extends along each of the major watercourses found in the study area including Mimico Creek, Silver Creek, Lower Main Humber River, Black Creek, Lower West Don River, Lower East Don River, Wilson Brook and Massey Creek. The Regulation Limit established under Ontario Regulation 166/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) of the *Conservation Authorities Act* allows the TRCA to control development that may affect the control of flooding, erosion, dynamic beaches or pollution of the streams, or the conservation of land.

4.1.1.2 Bedrock and Surficial Geology

The bedrock beneath the study area consists predominantly of blue-grey shale with some limestone, dolostone and siltstone layers or interbeds. Bedrock is expected to be deeper than the maximum depth of excavation/ tunnelling that is proposed. The surficial soil in the study area is predominantly stratified clays, silt and sand. Deposits of alluvial sand and gravel with minor amounts of clay and silt can be expected in the flood plains of existing rivers and streams, and in the vicinity of glacial lakes and rivers that existed during the Pleistocene. Based on the geotechnical information provided for the study area, it appears that the clays, silts and sands may extend to depths of greater than 8 metres.

The naturally deposited soils and fill are typically underlain by hard and very dense clayey and sandy silt till deposits of Wildfield Till and Halton Till. Thin lenses of poorly graded sand and gravel can be found interbedded within these Tills. Glacially derived boulders (generally <1m diameter), originating from igneous and metamorphic rocks of the Canadian Shield, may also be encountered.

Silt and clay deposited in a deep water glacial lake and shallow water sand (Thorncliffe Formation) underlies these sediments to depths of greater than 25 metres. In some areas the total overburden thickness may be in excess of 65 metres. Deposits of beach cobble, sand and gravel, associated with the Pleistocene Lake Iroquois Shoreline, may be encountered along Eglinton Avenue between Royal York and Caledonia Road. Shallow water sand and silty sand deposits associated with Lake Iroquois, can also be found between Royal York Road and Keele Street and between Laird Drive and Bermondsey Road.

In addition to naturally deposited soils, fill has been recorded in geotechnical boreholes at depths of up to 9 metres. The fill has usually been described as sand and silty sand. Fill including industrial and building waste and engineering and landscape fill may also be encountered during excavation in the study area.

A closed landfill is known to be located in the southwest quadrant of the intersection of Eglinton Avenue and Black Creek Drive where silty sand to sand and gravel fill (with variable proportions of foreign material) may be as much as 11 metres deep.

4.1.1.3 Fish and Fish Habitat

Eight watercourses are located along Eglinton Avenue including: the Mimico Creek; the Humber River and two of its tributaries, Silver Creek and Black Creek; the East Don and West Don Rivers and two East Don River tributaries, Wilson Brook and Massey Creek. These watercourses fall under the jurisdiction of TRCA and Ontario Ministry of Natural Resources Aurora District. **Exhibit 150 to 153** presents the location of the watercourses.

Mimico Creek

Mimico Creek flows in a southerly direction across Eglinton Avenue approximately 200 metres east of Highway 427. The watercourse crosses under Eglinton Avenue in a concrete channel, through a bridge. The TRCA characterizes Mimico Creek as a warmwater tolerant fish community.

Silver Creek

Silver Creek, a tributary of the Humber River, flows in a southerly direction across Eglinton Avenue approximately 330 metres west of Royal York Road. The watercourse daylights on the south side of Eglinton Avenue from a 3.5 metre culvert, likely the outflow of an upstream sewershed. The TRCA characterizes Silver Creek as small riverine warmwater habitat and it is located in Management Zone 4 that targets darter species.

Lower Main Humber River

The Lower Main Humber River flows in a southerly direction across Eglinton Avenue approximately 80 metres east of Scarlett Road. It travels under Eglinton Avenue through a concrete bridge. A large riffle is continuous from 100 metres upstream to 60 metres downstream of Eglinton Avenue. The TRCA characterizes the Lower Main Humber River as large riverine warmwater habitat and it is located in Management Zone 9 that targets smallmouth bass and rainbow darter.

Black Creek

Black Creek, a tributary of the Humber River, flows in a southerly direction across Eglinton Avenue approximately 130 metres east of Black Creek Drive. It travels under Eglinton Avenue through a concrete bridge. The TRCA characterizes Black Creek as intermediate riverine warmwater habitat and it is located in Management Zone 4 that targets darter species.

West Don River

The West Don River flows in a south easterly direction across Eglinton Avenue approximately 180 metres west of Leslie Street. It passes under Eglinton Avenue through a concrete bridge. The TRCA characterizes the Lower West Don River as intermediate riverine warmwater habitat and management targets for this habitat category include redside dace, rainbow darter and smallmouth bass.

East Don River

The East Don River flows in a south westerly direction across Eglinton Avenue approximately 250 metres east of Wynford Drive. It travels under Eglinton Avenue through a concrete bridge. The TRCA characterizes the Lower East Don River as intermediate riverine warmwater habitat and management targets for this habitat category include redside dace, rainbow darter and smallmouth bass.

Wilson Brook

Wilson brook crosses Eglinton Avenue in a south westerly direction approximately 530 metres west of Victoria Park Avenue. It enters into a concrete box culvert inlet on the upstream side of Eglinton Avenue and is enclosed for a distance of approximate 750 metres downstream of Eglinton Avenue, with only a remnant ditch. The TRCA characterizes Wilson Brook as small riverine warmwater habitat and management targets for this habitat category include redside dace, johnny darter and brook stickleback.

Massey Creek

Massey Creek flows in a south easterly direction across Eglinton Avenue approximately 280 metres east of Birchmount Road. The watercourse crosses Eglinton Avenue through a concrete box culvert. The TRCA characterizes Massey Creek as small riverine warmwater habitat and management targets for this habitat category include redside dace, johnny darter and brook stickleback.

No formal fish collection was undertaken at any of the watercourses. Historic fisheries data provided by TRCA indicated that the majority of fish species recorded are considered warmwater baitfish, with warmwater sportfish (including centrarchids such as pumpkinseed and largemouth bass) occurring in several of the larger river systems. No cool or coldwater fish species were recorded at the TRCA sampling stations located in proximity to Eglinton Avenue. All species historically recorded within or near the study area are considered to be either very common in Ontario (provincial rank of S5), common (provincial rank of S4) or non-native (provincial rank of SE). According to the Ministry of Natural Resources (MNR), Natural Heritage Information Centre (NHIC) database, no aquatic species at risk have been found in the study area. Redside dace (*Clinostomus elongates)* resides in the Humber River and Don River and several of their tributaries. Redside dace is listed as Endangered by the Committee on the Status of Species at Risk in Ontario and by the Committee on the Status of Endangered Wildlife in Canada. None of the historic records for redside dace occur in the vicinity of Eglinton Avenue. TRCA has advised that the records are historical, and the aquatic habitats associated with the watercourse crossing along the LRT corridor are no longer considered to provide suitable habitat for this species. The implementation of the LRT proposed will not require permits under *Endangered Species Act*, 2007 for this species.

Further details are available in **Appendix G.**

Exhibit 150: Existing Conditions

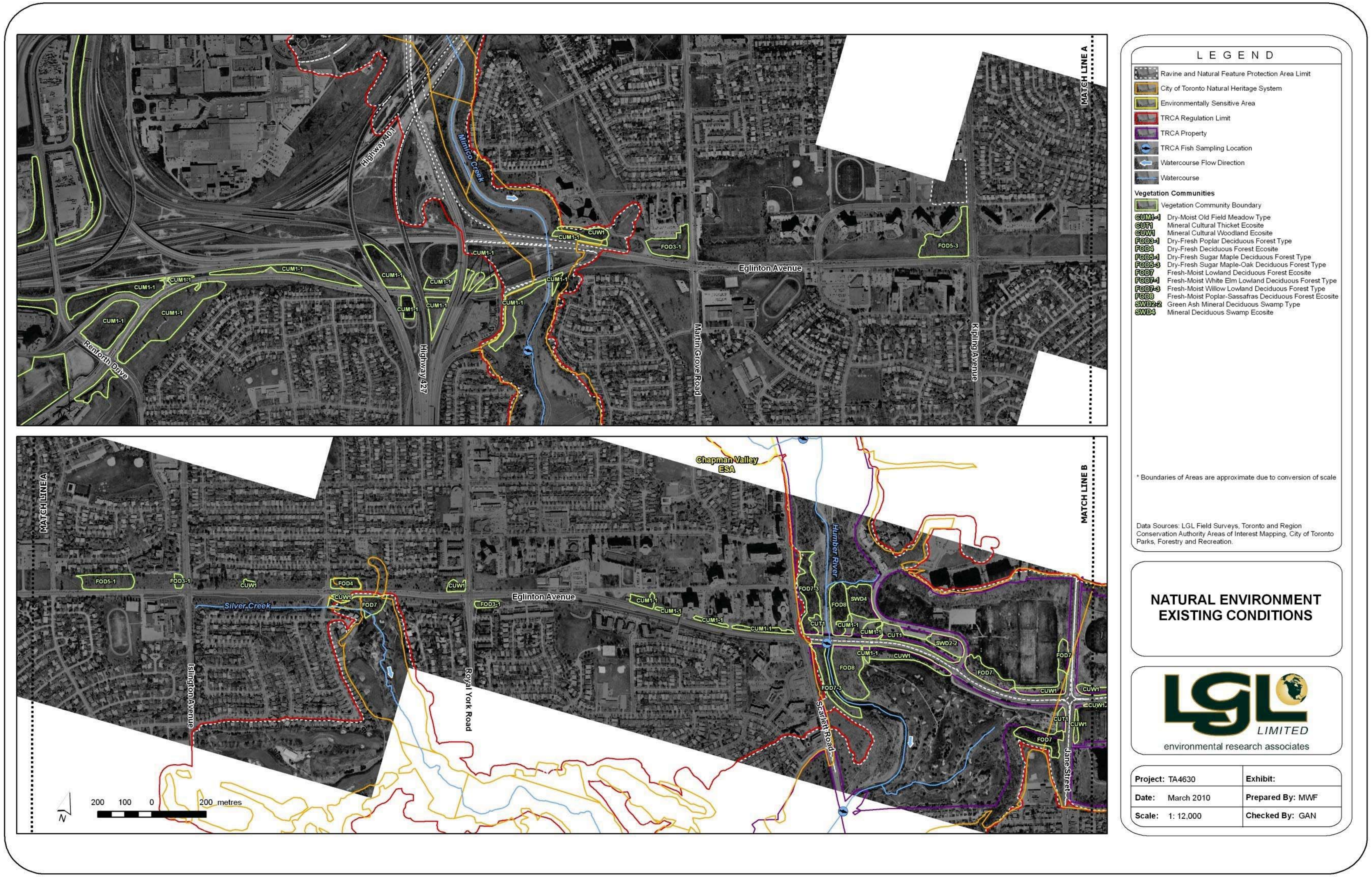


Exhibit 151: Existing Conditions

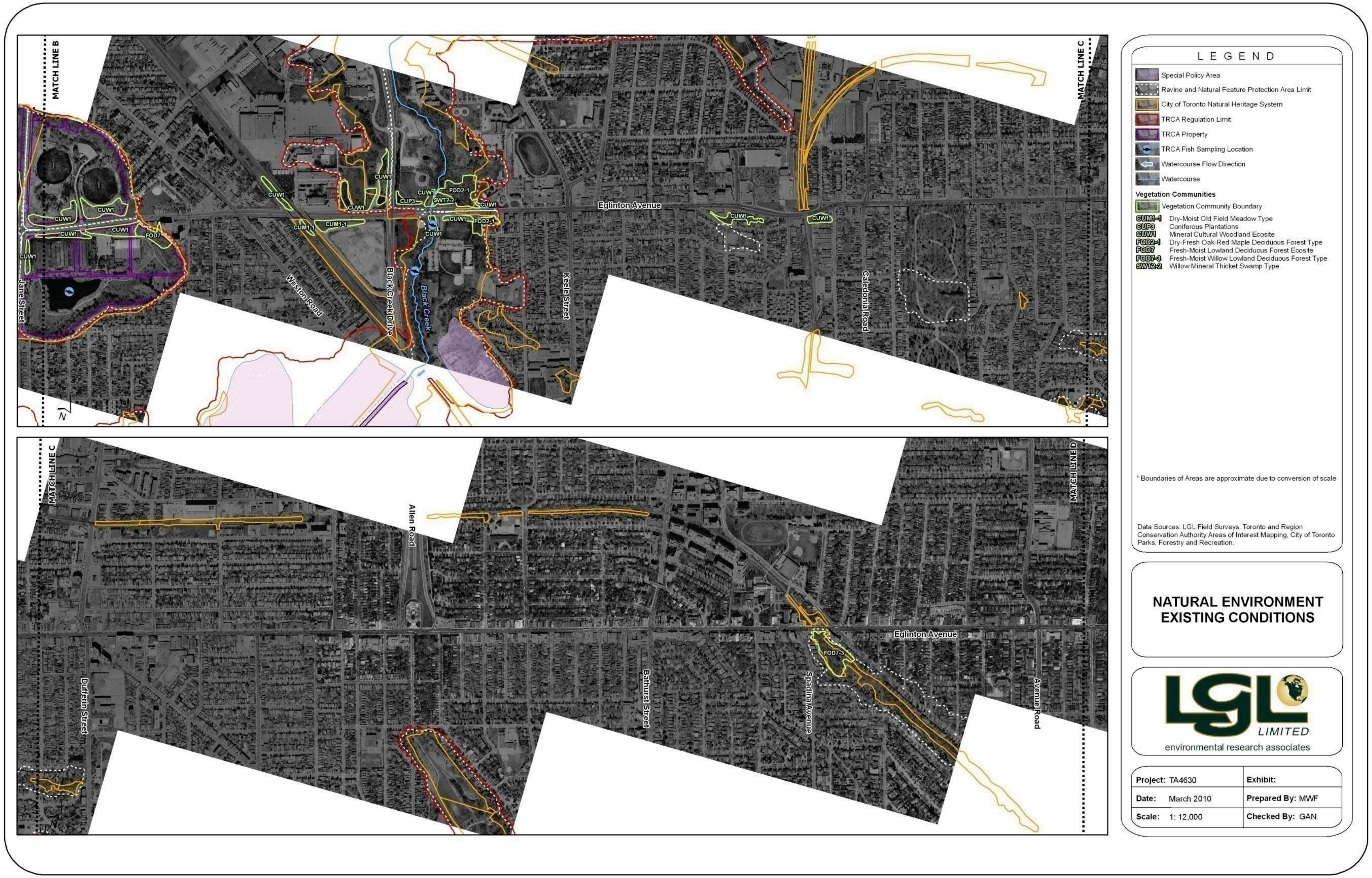


Exhibit 152: Existing Conditions

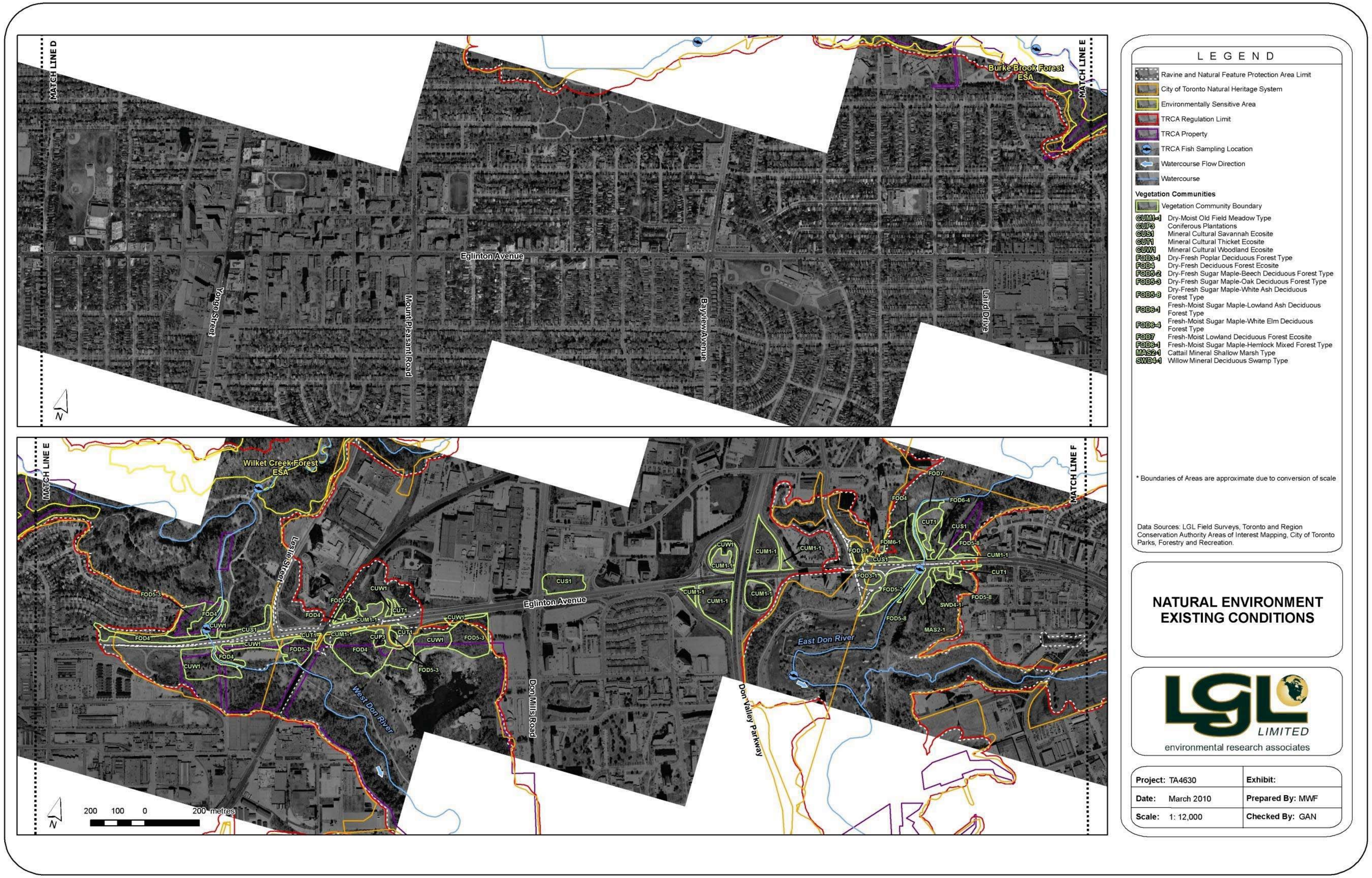


Exhibit 153: Existing Conditions

4.1.1.4 Vegetation and Vegetation Communities

The majority of the vegetation found along the LRT corridor from Martin Grove Road to Pearson International Airport is the result of past and present human disturbances. The most influential of these disturbances was the development of a major arterial road network including freeway corridors for Highways 401 and 427 as well as smaller, yet significant linear alignments associated with Highway 27, Dixon Road and Eglinton Avenue. South of Eglinton Avenue and east of Highway 401 the main land use is residential and small commercial. In contrast to this, on the north side of Eglinton Avenue, between Highways 427 and 27 and Dixon Road, the predominant land use is major industrial and recreational. As a result of these disturbances, almost all of the vegetation communities that are present are culturally influenced and represented by cultural meadows, cultural thickets, cultural savannah and cultural woodlands. Any natural vegetation communities that are present are small, fragmented and isolated pockets found adjacent to a few of the proposed routes and along the stream banks of Mimico Creek.

Vegetation communities found along Eglinton Avenue from Martin Grove Road to Kennedy Road consist of a mix of forest, cultural and wetland communities. The forests are typical of those arising from secondary growth on previously disturbed/cleared areas. Bordering the natural vegetation communities the land has been cleared of all original forest cover to accommodate industrial, commercial and residential land use.

The forest communities associated with the Humber River, Black Creek, and the West and East Don Rivers are natural, contiguous vegetation communities defined by the valley systems of each of the watercourses. These areas exhibit the best quality natural vegetation communities in relation to species composition and diversity. The remaining forested vegetation communities that are dispersed along Eglinton Avenue are generally linear in extent, relatively isolated, and are bordered on their interior side by residential or industrial/commercial development. There are also several pockets of swamp (SWT2-2, SWD2-2 and SWD4-1) and meadow marsh (MAM2 and MAM2-1) wetland communities located in close proximity to Eglinton Avenue. Cultural communities, including meadows, savannahs, thickets, and woodlands, are dominant along Eglinton Avenue; these cultural communities are heavily comprised of non-native species.

A total of twenty-five different ecological land classification (ELC) vegetation community types have been identified by LGL along the Eglinton Avenue corridor. These communities include: mixed forest (FOM6-1); deciduous forest (FOD2-1, FOD3-1, FOD4, FOD5-1, FOD5-2, FOD5-3, FOD5-8, FOD6-1, FOD6-4, FOD7, FOD7-3 and FOD8); cultural plantation (CUP3); cultural meadow (CUM1-1); cultural thicket (CUT1); cultural savannah (CUS1); cultural woodland (CUW1); deciduous swamp (SWD2-2, SWD4 and SWD4-1); swamp thicket (SWT2-2); meadow marsh (MAM2 and MAM2-2); and, shallow marsh (MAS2-1). The above vegetation communities are considered widespread and common in Ontario and secure globally NHIC 1997). These communities are described in **Appendix G** and delineated in **Exhibits 154**.

To date, a total of three-hundred and six vascular plant taxa have been recorded along Eglinton Crosstown LRT corridor. Approximately thirty-nine percent of the recorded species are considered introduced and non-native to Ontario. Introduced species were almost entirely located within the existing right-of-way and in immediately adjacent cultural communities. A list of vascular plant taxa is presented in **Appendix G.**

Two plant species of concern were identified during field observations: Honey locust (*Gleditsia triacanthos*) and Virginia bluebells (*Mertensia virginica*). Honey locust was found within the FOD3-1 vegetation community, in the northwest quadrant of the Islington Avenue/Eglinton Avenue intersection. Honey locust is ranked as S2 (Imperilled) by the Ministry of Natural Resources (MNR). Virginia bluebells was found within a FOD4 vegetation community, south of Eglinton Avenue and Leslie Street. Virginia bluebells is ranked as S3 (Vulnerable) by MNR. However, both honey locust and Virginia bluebells are considered to be non-native in the TRCA watershed consequently their significance is reduced. Field observation determined that these vegetation species will be not be impacted by the LRT.

In addition, thirty-seven plant species that are rare to uncommon in the City of Toronto and in the TRCA watershed are found within the study area, including: balsam fir (*Abies balsamea*), black maple (*Acer nigrum*), smooth juneberry (*Amelanchier laevis*), wild columbine (*Aquilegia canadensis*), Pennsylvania bitter-cress (*Cardamine pensylvanica*), fibrous rooted sedge (*Carex communis*), broad-leaved sedge (*Carex platyphylla*), stellate sedge (*Carex rosea*), blue cohosh (*Caulophyllum thalictroides*), Virginia spring beauty (*Claytonia virginica*), round-leaved hawthorn (*Crataegus chrysocarpa*), Cockspur thorn (*Crataegus crus-galli*), marginal wood fern (*Dryopteris marginalis*), running strawberry-bush (*Euonymus obovata*), woodland strawberry (*Fragaria vesca ssp. americana*), cleavers (*Galium aparine*), spotted crane's-bill (*Geranium maculatum*), witch-hazel (*Hamamelis virginiana*), cow-parsnip (*Heracleum maximum*), common juniper (*Juniperus communis*), eastern red cedar (*Juniperus virginiana*), tamarack (*Larix laricina*), moonseed (*Menispermum canadense*), common evening-primrose (*Oenothera biennis*), ninebark (*Physocarpus opulifolius*), white spruce (*Picea glauca*), red pine (*Pinus resinosa*), old-field cinquefoil (*Potentilla simplex*), white rattlesnake-root (*Prenanthes alba*), white oak (*Quercus alba*), smooth rose (*Rosa blanda*), swamp rose (*Rosa carolina*), marsh rose (*Rosa palustris*), common elderberry (*Sambucus nigra ssp. canadensis*), early goldenrod (*Solidago juncea*), marsh fern (*Thelypteris palustris var. pubescens*), and white trillium (*Trillium grandiflorum*).

4.1.1.5 Wildlife and Wildlife Habitat

Wildlife in the study area is typical of urban settings and comprises species that are tolerant of human activity. Most of the wildlife observations were made in the natural heritage areas generally found along the watercourse crossings under Eglinton Avenue. These areas provided wildlife corridors for birds and mammals and nesting areas for migratory bird species. The Mimico Creek, Humber River, Black Creek, East Don River and West Don River crossings exemplify these types of conditions.

The riparian area along Mimico Creek is the main corridor for mammals from Dixon Road south to Eglinton Avenue as evidence of faecal deposits and tracks indicate. The entire length of riparian vegetation along Mimico Creek also provides a movement corridor for migratory birds. The most significant observations of migratory birds were the colonies of swallow nests found on all of the bridges over Mimico Creek. Field observations found 18 Cliff Swallow nests on the Eglinton Avenue Bridge over Mimico Creek.

The Humber River riparian zone of deciduous forest provides a seasonal north-south corridor for migratory birds. Field observations of Baltimore Oriole (*Icterus galbula*) carrying food to their young and juvenile American Robin (*Turdus migratorius*) indicated the riparian area as a migratory bird breeding area. Many other bird species, such as Gray Catbird (*Dumetella carolinensis*), American Goldfinch (*Carduelis tristis*), Warbling Vireo (*Vireo gilvus*) and Eastern Kingbird (Tyrannus *tyrannus*) observed within the area were probably nesters as well even though direct evidence was not found. Numerous mammal tracks of raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), mink (*Mustela vison*), gray squirrel (*Sciurus carolinensis*) and white-tailed deer (*Odocoileus virginianus*) found along the banks under the bridge indicate the importance of this river as a mammal wildlife corridor.

Black Creek also provided migratory bird corridors and nesting areas around Eglinton Avenue. The Black Creek bridge had three active Barn Swallow (*Hirundo rustica*) nests on three of the ceiling cross beams and a pair of nesting Northern Rough-winged Swallow (Stelgidopteryx *serripennis*) nesting in the bank along the creek about 50 meters northwest of the bridge. Other probable nesting species, observed around the bridge, were Belted Kingfisher (*Ceryle alcyon*), Chimney Swift (*Chaetura pelagica*) and Spotted Sandpiper (*Actitis macularius*). Numerous mammal tracks, found along the banks under the bridge from mink, striped skunk, raccoon and opossum (*Didelphis virginianus*), indicated that the banks of the stream act as an active mammal corridor connecting the habitats on both sides of Eglinton Avenue.

Both the East Don River and West Don River habitats were similar to the ones mentioned above. Both had similar migratory bird species observed and the riparian zones under the bridges were used as corridors for birds and mammals. Evidence for mammal species such as red fox (*Vulpes vulpes*), coyote (*Canis latrans*), mink, skunk and raccoon were found under the bridge of the West Don River. Massey Creek, along the west side of Rosemount Road, is channelized on the north side of Eglinton Avenue but natural on the south side. Track evidence for mink and raccoon indicated that the box culvert under Eglinton Avenue is being used as a mammal corridor.

Other linear crossings of Eglinton Avenue, such as the CN Railway Tracks just east of Blackthorne Avenue, also provided a good migration corridor for both birds and mammals. Both sides of the tracks at this location had riparian thickets that are used for wildlife protection and travel. Species observed in this area that use this habitat for nesting were Mockingbird (*Mimus polyglottos*), American Robin and Gray Catbird.

Seventy-five wildlife species were recorded in the Eglinton Crosstown LRT corridor (see **Exhibit 157**). Three wildlife species are listed by Committee on the Status of Endangered Wildlife in Canada and regulated under the Canadian *Species at Risk Act.* The Chimney Swift (*Chaetura pelagica*) is recognized as a Threatened species, whereas the milk snake (*Lampropeltis triangulum*) and map turtle (*Graptemys geographica*) are listed as Special Concern, Schedule 1. The map turtle and milk snake are also regulated under the Ontario *Endangered Species Act* (ESA) under Schedule 5 (Special Concern). However, the habitats where these three species were observed are not located in areas that will be impacted by this project and as a result, displacement of or disturbance to these species is not anticipated.

The *Fish and Wildlife Conservation Act* (FWCA) protects twenty-one species recorded in the study area including four herpetofauna, three birds and 14 mammal species. Thirty-one of the 45 bird species are also protected under the *Migratory Birds Convention Act* (MBCA). Eleven of the migratory bird species recorded in the study area are also recognized as priority species of conservation concern by Bird Studies Canada for the Toronto region.

Four herpetofauna and three mammal species recorded in the study area are also considered species of concern by TRCA.

4.1.1.6 Designated Natural Ares

Designated natural areas include areas identified for protection by the MNR, TRCA, and upper and lower tier municipalities. There are no Provincially Significant Wetlands (PSWs) or Areas of Natural and Scientific Interest (ANSIs) located in the study area. Several Environmentally Significant/Sensitive Areas (ESAs) are located within 500 metres of Eglinton Avenue, but well beyond the zone of influence of the Eglinton Crosstown LRT including: Chapman Valley ESA (located north of Eglinton Avenue along a tributary of the Humber River); Burke Brook Forest ESA (located north of Eglinton Avenue along Burke Brook, a tributary of the West Don River); and, Wilket Creek Forest ESA (located north of Eglinton Avenue along Wilket Creek, a tributary of the West Don River).

The City of Toronto Official Plan Land Use Plan (Map 12) designates “Natural Areas” located along Mimico Creek, Humber River, Black Creek, West Don River, East Don River and Massey Creek. The Natural Heritage Overlay (Map 9) identifies Mimico Creek, Silver Creek, Humber River, Black Creek, West Don River, East Don River and Massey Creek as components of the City of Toronto Natural Heritage System.

The policy for these “natural areas” is to maintain them primarily in a natural state, while allowing for compatible uses and conservation projects. An overall objective of the City of Toronto Official Plan is to increase tree canopy in the City. In an effort to help maintain these areas in a natural state, the limits of the Ravine & Natural Feature Protection areas have been identified by Toronto Parks, Forestry and Recreation; Urban Forestry section (RNFP).

Exhibit 154: List of Terrestrial Vertebrates Recorded by LGL Limited and Others

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others
Herpetofauna	*Plethodon cinereus*	Eastern Red-backed Salamander					*
	Bufo americanus	American Toad					*
	Rana pipiens	Northern Leopard Frog			TRCA(L3)		*
	Rana clamitans	Green Frog					*
	Chelydra serpentine	Snapping Turtle			TRCA(L3)	FWCA(G)	*
	Chrysemys picta marginata	Midland Painted Turtle				FWCA(P)	*
	Graptemys geographica	Northern Map Turtle	SC	SC		SARA(1)	*
	Thamnophis sirtalis	Eastern Gartersnake					*
	Storeria dekayi	Dekay's Brown Snake					*
	Storeria occipitomaculata	Northern Red-bellied Snake			TRCA(L3)		*
	Opheodrys vernalis	Smooth Greensnake			TRCA(L3)	FWCA(P)	*
	Lampropeltis triangulum	Milk Snake	SC	SC		SARA(1) / FWCA(P)	*
Birds	*Branta canadensis*	Canada Goose				MBCA	
	Anas platyrhynchos	Mallard				MBCA	
	Ardea alba	Great Egret				MBCA	
	Buteo jamaicensis	Red-tailed Hawk				FWCA(P)	
	Charadrius vociferous	Killdeer				MBCA	
	Actitis macularius	Spotted Sandpiper			BSC	MBCA	
	Columba livia	Rock Pigeon					
	Zenaida macroura	Mourning Dove				MBCA	
	Chaetura pelagica	Chimney Swift	THR			MBCA	
	Ceryle alcyon	Belted Kingfisher				FWCA(P)	
	Picoides pubescens	Downy Woodpecker				MBCA	
	Picoides villosus	Hairy Woodpecker				MBCA	
	Colaptes auratus	Northern Flicker				MBCA	
	Empidonax traillii	Willow Flycatcher				MBCA	*
	Sayornis phoebe	Eastern Phoebe			BSC	MBCA	
	Tyrannus tyrannus	Eastern Kingbird			BSC	MBCA	

* Species recorded in the study area by others.

<u>COSEWIC - Committee on the Status of Endangered Wildlife in Canada</u>

END – Endangered
THR – Threatened
SC - Special Concern

<u>OMNR - Ontario Ministry of Natural Resources</u>

END – Endangered
THR – Threatened
SC - Special Concern

<u>Local:</u>

BSC - Bird Studies Canada Species of Conservation Priority
TRCA - Toronto and Region Conservation Authority Species of Concern - L1 - L3 Ranking - 2003

<u>Legal Status:</u>

MBCA - Migratory Birds Convention Act
ESA - Endangered Species Act
SARA - Species at Risk Act
FWCA - Fish and Wildlife Conservation Act
(P) Protected Species
(G) Game species
(F) Furbearing mammals

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others
	Vireo gilvus	Warbling Vireo				MBCA	
	Vireo olivaceus	Red-eyed Vireo				MBCA	
	Vireo philadelphicus	Philadelphia Vireo				MBCA	
	Cyanocitta cristata	Blue Jay				FWCA(P)	
	Corvus brachyhrynchos	American Crow					
	Stelgidopteryx serripennis	Northern Rough-winged Swallow			BSC	MBCA	
	Tachycineta bicolor	Tree Swallow				MBCA	*
	Petrochelidon pyrrhonota	Cliff Swallow			BSC	MBCA	
	Hirundo rustica	Barn Swallow			BSC	MBCA	
	Poecile atricapillus	Black-capped Chickadee			BSC	MBCA	
	Troglodytes aedon	House Wren				MBCA	
	Polioptila caerulea	Blue-gray Gnatcatcher			BSC	MBCA	
	Turdus migratorius	American Robin				MBCA	
	Dumetella carolinensis	Gray Catbird				MBCA	
	Mimus polyglottos	Northern Mockingbird			BSC	MBCA	
	Sturnus vulgaris	European Starling					
	Bombycilla cedrorum	Cedar Waxwing				MBCA	
	Dendroica petechia	Yellow Warbler				MBCA	
	Spizella passerine	Chipping Sparrow				MBCA	
	Melospiza melodia	Song Sparrow				MBCA	
	Cardinalis cardinalis	Northern Cardinal				MBCA	
	Agelaius phoeniceus	Red-winged Blackbird					
	Sturnella magna	Eastern Meadowlark			BSC	MBCA	*
	Quiscalus quiscula	Common Grackle					
	Molothrus ater	Brown-headed Cowbird					
	Icterus galbula	Baltimore Oriole				MBCA	
	Carpodacus mexicanus	House Finch				MBCA	
	Carduelis tristis	American Goldfinch			BSC	MBCA	

* Species recorded in the study area by others.

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

END – Endangered

THR – Threatened

SC - Special Concern

OMNR - Ontario Ministry of Natural Resources

END – Endangered

THR – Threatened

SC - Special Concern

Local:

BSC - Bird Studies Canada Species of Conservation Priority

TRCA - Toronto and Region Conservation Authority

Wildlife	Scientific Name	Common Name	COSEWIC	OMNR	Local	Legal Status	Others
	Passer domesticus	House Sparrow					
Mammals	*Didelphis virginiana*	Virginia Opossum				FWCA(F)	
	Blarina brevicauda	N. Short-tailed Shrew				FWCA(P)	*
	Sylvilagus floridanus	Eastern Cottontail				FWCA(G)	
	Marmota monax	Groundhog					
	Tamias striatus	Eastern Chipmunk				FWCA(P)	*
	Marmota monax	Woodchuck					
	Sciurus carolinensis	Gray Squirrel				FWCA(G)	
	Castor canadensis	Beaver			TRCA(L3)	FWCA(F)	
	Peromyscus sp.	White-footed (Deer) Mouse					*
	Microtus pennsylvanicus	Meadow Vole					
	Ondatra zibethica	Muskrat				FWCA(F)	
	Canis latrans	Coyote				FWCA(F)	
	Vulpes vulpes	Red Fox				FWCA(F)	
	Procyon lotor	Raccoon				FWCA(F)	
	Mustela vison	American Mink			TRCA(L3)	FWCA(F)	
	Mustela ermine	Short-tailed weasel			TRCA(L3)	FWCA(F)	*
	Mephitis mephitis	Striped Skunk				FWCA(F)	
	Odocoileus virginianus	White-tailed Deer				FWCA(G)	

Species of Concern - L1 - L3 Ranking - 2003

Legal Status:

MBCA - Migratory Birds Convention Act

ESA - Endangered Species Act

SARA - Species at Risk Act

FWCA - Fish and Wildlife Conservation Act

(P) Protected Species

(G) Game species

(F) Furbearing mammals

4.1.1.7 Air Quality

Air flows coming into the City of Toronto area frequently pass over the Ohio Valley and other heavily industrialized areas of the United States and southern Ontario. This contributes as much as 50% of the air pollution burden seen in communities. Other contributors include local industrial operations, fossil fuelled power generation facilities, and the high numbers of vehicles using roads in and around the city. In the middle of the Windsor-Quebec transportation corridor, the City of Toronto is a hub of one of the most heavily travelled corridors in North America. Overall, compared to other communities in southern Ontario, the Toronto area has less frequent poor air quality than Windsor, London or Waterloo; but, with its higher population, Toronto has more people potentially affected by poor air quality. (See **Appendix A** for further details.)

Within the context of this study, the potential to reduce the emissions of “toxic contaminants” such as a range of organic pollutants and metallic compounds is small compared to the impacts that are made through the reduction of criteria pollutants. For this reason these contaminants are not explicitly addressed in terms of air quality benefits of the project. Particularly pertinent to this study are priority contaminants such as ozone and fine particulate matter ($PM_{2.5}$).

$PM_{2.5}$ includes all particles that could remain suspended in the air for any length of time, especially those that are less than 2.5 micrometres in size. The Canada-Wide Standards (CWS) for particulate matter is 30 micrograms per cubic metre (ug/m^3). It requires daily 24 hour averages be calculated from hourly values recorded by instruments. Meeting the CWS standard of 30 ug/m^3 requires evaluation of the 98th percentile of the 24 hour averages recorded over the three years. In 2007, the Ministry of the Environment presented the average values of six monitoring locations within the City of Toronto for the three year period, 2004 to 2006. The average value for $PM_{2.5}$ is just above the 30 ug/m^3. (See **Appendix A** for further details).

The formation and transport of ground-level ozone are dependent on meteorological conditions. In most areas where ozone levels are notable, elevated concentrations of ground-level ozone are generally recorded on hot and sunny days. In Ontario, these occur between May and September. Furthermore, there is a diurnal variation in levels which tend to peak in the afternoon and early evening period. Vehicular traffic is responsible for a large portion of nitrogen compounds (NO_X) released into the atmosphere. The CWS standard for ozone is the average of the fourth highest 8 hour rolling average value of ozone for each of the last three years. The Ministry of the Environment presented that the average value for the Toronto area was approximately 75 parts per billion (ppb) or about 10 ppb over the standard.

The Ministry of the Environment suggests that carbon monoxide and sulphur dioxide concentrations in the city have declined in recent years while total suspended particle levels show little change. However, the rate of decline of most airborne contaminants is slowing because traffic volumes continue to increase year over year. A detailed emissions inventory for criteria air contaminants and greenhouse gas emissions based on 2004 data was prepared for the City of Toronto. These data show that mobile traffic related sources are a major component in the inventory. Mobile sources, road vehicles, account for 35% of the greenhouse gas emissions in 2004 with 74% of the emissions arising from passenger and other light vehicles. Further details are available in **Appendix A.**

4.1.1.8 Noise and Vibration

The Eglinton Crosstown LRT will pass through commercial, industrial, and residential neighbourhoods. The setbacks to the nearest noise sensitive receptor in the west portion of the LRT corridor, between Renforth Drive and Keele Street on Eglinton Avenue, range from 10 to 52 metres. The setbacks from the road to the nearest noise sensitive receptor in the east portion of the LRT corridor, between Leslie Street and Kennedy Road range from 19 to 40 metres. The underground portion of the LRT alignment has setbacks that range from 10 to 16 metres. It should be noted that, especially between Avenue Road and Keele Street, the receptors immediately adjacent to Eglinton Avenue are primarily commercial/residential development, with the commercial component on the first floor and the residential component (if present) on the second and sometimes third floors.

As part of this study, a noise analysis between future conditions with and without the LRT was conducted to identify any impacts and determine any mitigation measures required due to the LRT operations. Future predicted sound levels without the LRT are presented in **Section 4.2.1.2.**

4.1.2 Socio-Economic Environment

4.1.2.1 Land Use

The predominant land uses along the Eglinton Crosstown LRT corridor are high and low-rise residential and commercial with greater concentration of: office and industrial use in the west; low-rise residential between Bayview Avenue and Laird Drive; commercial and industrial between Victoria Park Avenue and Birchmount Road. Institutional uses (e.g. schools and libraries) and Open Space uses (e.g. parks and recreation centres) are found distributed throughout the corridor.

Commerce Boulevard – Convair Drive – Silver Dart Drive

This section of the Eglinton Crosstown LRT corridor is within the City of Mississauga’s Airport Corporate Centre planning district, which is home to approximately ten head offices of Fortune 500 companies. The predominant land use is office and industrial. Pearson International Airport is located immediately west of Silver Dart Drive.

Eglinton Avenue from Commerce Boulevard to Jane Street

The study area between Commerce Boulevard and Jane Street is predominantly low-rise residential with significant concentrations of high-rise residential adjacent to Eglinton Avenue near the intersections of Martin Grove Road, Kipling Avenue, Royal York Road and Scarlett Road. There are a number of large parcels of land devoted to schools and other institutional facilities throughout the area with a large concentration located between Martin Grove Road and Kipling Avenue. The area between Scarlett Road and Jane Street is almost entirely devoted to open space use/recreational purposes but includes a major healthcare facility as well as a pocket of high-rise residential at the north end. Commercial development is limited to a few small locations along Eglinton Avenue.

Eglinton Avenue from Jane Street to Yonge Street

The study area from Jane Street to Yonge Street is predominantly low-rise residential with numerous mid to high-rise residential sites distributed along this section of Eglinton Avenue. In particular, there are concentrations of high-rise residential located between Bathurst Street and Spadina Road, Gabian Way, Trethewey Drive and near Yonge Street. There are major concentrations of commercial and industrial uses on the north side of Eglinton Avenue West between Keele Street and Weston Road, as well as the Caledonia Road area. There is a considerable amount of smaller scale commercial development found along the north and south sides of many sections of this segment of Eglinton Avenue West and there are a number of institutional uses distributed evenly throughout. There is a significant concentration of commercial uses at the intersection of Eglinton Avenue and Yonge Street.

4.1.1.7 Air Quality

Air flows coming into the City of Toronto area frequently pass over the Ohio Valley and other heavily industrialized areas of the United States and southern Ontario. This contributes as much as 50% of the air pollution burden seen in communities. Other contributors include local industrial operations, fossil fuelled power generation facilities, and the high numbers of vehicles using roads in and around the city. In the middle of the Windsor-Quebec transportation corridor, the City of Toronto is a hub of one of the most heavily travelled corridors in North America. Overall, compared to other communities in southern Ontario, the Toronto area has less frequent poor air quality than Windsor, London or Waterloo; but, with its higher population, Toronto has more people potentially affected by poor air quality. (See **Appendix A** for further details.)

Within the context of this study, the potential to reduce the emissions of “toxic contaminants” such as a range of organic pollutants and metallic compounds is small compared to the impacts that are made through the reduction of criteria pollutants. For this reason these contaminants are not explicitly addressed in terms of air quality benefits of the project. Particularly pertinent to this study are priority contaminants such as ozone and fine particulate matter ($PM_{2.5}$).

$PM_{2.5}$ includes all particles that could remain suspended in the air for any length of time, especially those that are less than 2.5 micrometres in size. The Canada-Wide Standards (CWS) for particulate matter is 30 micrograms per cubic metre (ug/m^3). It requires daily 24 hour averages be calculated from hourly values recorded by instruments. Meeting the CWS standard of 30 ug/m^3 requires evaluation of the 98^{th} percentile of the 24 hour averages recorded over the three years. In 2007, the Ministry of the Environment presented the average values of six monitoring locations within the City of Toronto for the three year period, 2004 to 2006. The average value for $PM_{2.5}$ is just above the 30 ug/m^3. (See **Appendix A** for further details).

The formation and transport of ground-level ozone are dependent on meteorological conditions. In most areas where ozone levels are notable, elevated concentrations of ground-level ozone are generally recorded on hot and sunny days. In Ontario, these occur between May and September. Furthermore, there is a diurnal variation in levels which tend to peak in the afternoon and early evening period. Vehicular traffic is responsible for a large portion of nitrogen compounds (NO_X) released into the atmosphere. The CWS standard for ozone is the average of the fourth highest 8 hour rolling average value of ozone for each of the last three years. The Ministry of the Environment presented that the average value for the Toronto area was approximately 75 parts per billion (ppb) or about 10 ppb over the standard.

The Ministry of the Environment suggests that carbon monoxide and sulphur dioxide concentrations in the city have declined in recent years while total suspended particle levels show little change. However, the rate of decline of most airborne contaminants is slowing because traffic volumes continue to increase year over year. A detailed emissions inventory for criteria air contaminants and greenhouse gas emissions based on 2004 data was prepared for the City of Toronto. These data show that mobile traffic related sources are a major component in the inventory. Mobile sources, road vehicles, account for 35% of the greenhouse gas emissions in 2004 with 74% of the emissions arising from passenger and other light vehicles. Further details are available in **Appendix A.**

4.1.1.8 Noise and Vibration

The Eglinton Crosstown LRT will pass through commercial, industrial, and residential neighbourhoods. The setbacks to the nearest noise sensitive receptor in the west portion of the LRT corridor, between Renforth Drive and Keele Street on Eglinton Avenue, range from 10 to 52 metres. The setbacks from the road to the nearest noise sensitive receptor in the east portion of the LRT corridor, between Leslie Street and Kennedy Road range from 19 to 40 metres. The underground portion of the LRT alignment has setbacks that range from 10 to 16 metres. It should be noted that, especially between Avenue Road and Keele Street, the receptors immediately adjacent to Eglinton Avenue are primarily commercial/residential development, with the commercial component on the first floor and the residential component (if present) on the second and sometimes third floors.

As part of this study, a noise analysis between future conditions with and without the LRT was conducted to identify any impacts and determine any mitigation measures required due to the LRT operations. Future predicted sound levels without the LRT are presented in **Section 4.2.1.2.**

4.1.2 Socio-Economic Environment

4.1.2.1 Land Use

The predominant land uses along the Eglinton Crosstown LRT corridor are high and low-rise residential and commercial with greater concentration of: office and industrial use in the west; low-rise residential between Bayview Avenue and Laird Drive; commercial and industrial between Victoria Park Avenue and Birchmount Road. Institutional uses (e.g. schools and libraries) and Open Space uses (e.g. parks and recreation centres) are found distributed throughout the corridor.

Commerce Boulevard – Convair Drive – Silver Dart Drive

This section of the Eglinton Crosstown LRT corridor is within the City of Mississauga’s Airport Corporate Centre planning district, which is home to approximately ten head offices of Fortune 500 companies. The predominant land use is office and industrial. Pearson International Airport is located immediately west of Silver Dart Drive.

Eglinton Avenue from Commerce Boulevard to Jane Street

The study area between Commerce Boulevard and Jane Street is predominantly low-rise residential with significant concentrations of high-rise residential adjacent to Eglinton Avenue near the intersections of Martin Grove Road, Kipling Avenue, Royal York Road and Scarlett Road. There are a number of large parcels of land devoted to schools and other institutional facilities throughout the area with a large concentration located between Martin Grove Road and Kipling Avenue. The area between Scarlett Road and Jane Street is almost entirely devoted to open space use/recreational purposes but includes a major healthcare facility as well as a pocket of high-rise residential at the north end. Commercial development is limited to a few small locations along Eglinton Avenue.

Eglinton Avenue from Jane Street to Yonge Street

The study area from Jane Street to Yonge Street is predominantly low-rise residential with numerous mid to high-rise residential sites distributed along this section of Eglinton Avenue. In particular, there are concentrations of high-rise residential located between Bathurst Street and Spadina Road, Gabian Way, Trethewey Drive and near Yonge Street. There are major concentrations of commercial and industrial uses on the north side of Eglinton Avenue West between Keele Street and Weston Road, as well as the Caledonia Road area. There is a considerable amount of smaller scale commercial development found along the north and south sides of many sections of this segment of Eglinton Avenue West and there are a number of institutional uses distributed evenly throughout. There is a significant concentration of commercial uses at the intersection of Eglinton Avenue and Yonge Street.

Eglinton Avenue from Yonge Street to Leslie Street

The study area between Yonge Street and Leslie Street is predominantly residential. The majority of the residential lands between Yonge Street and Mount Pleasant Road are used for high-rise residential. This high-rise residential use continues on lands adjacent to both sides of Eglinton Avenue from Mount Pleasant Road to Bayview Avenue. The balance of the residential lands between Mount Pleasant Road and Bayview Avenue are used for low and medium-rise residential buildings. There are significant concentrations of commercial uses at Yonge Street, Mount Pleasant Road and Bayview Avenue with a number of major parcels devoted to commercial and industrial uses on the south side of Eglinton Avenue between Laird Drive and Leslie Street. A number of institutional uses are located throughout the area and there is a major concentration of open space use along the Don River valley.

Leslie Street to Kennedy Road

The study area between Leslie Street and Kennedy Road is generally divided between residential and non-residential uses. The north side of Eglinton Avenue between Leslie Street and Don Mills Road, is predominantly industrial with a few pockets of commercial and high-rise residential, while the south side is primarily open space and institutional. Between Don Mills Road and the Don Valley Parkway, on the north side of Eglinton Avenue, the majority of the lands are used for commercial and industrial purposes, with one large pocket of high-rise residential, while on the south side the majority of the lands are a mix of low, medium and high-rise residential with some commercial areas as well. The lands between the Don Valley Parkway and Victoria Park Avenue are predominantly residential with significant concentrations of higher rise residential adjacent to the north side of Eglinton Avenue East particularly the Wynford Drive area. On the south side of Eglinton Avenue, between the Don Valley Parkway and Victoria Park Avenue, the predominant land use is non-residential with a significant amount of land devoted to open space uses along the Don River valley, as well as industrial and commercial uses. The lands between Victoria Park Avenue and Pharmacy Avenue are almost evenly split between residential and non-residential uses with commercial uses fronting onto both sides of Eglinton Avenue and the balance of the lands being used for residential purposes. From Pharmacy Avenue to Birchmount Road, the lands on both sides of Eglinton Avenue are used for commercial and industrial purposes with some institutional uses as well. The lands between Birchmount Road and Kennedy Road are predominantly residential with significant concentrations of high-rise residential adjacent to both sides of Eglinton Avenue. There is a small amount of commercial development at the intersection of Eglinton Avenue and Kennedy Road.

There are a large number of parks and open spaces of various sizes, throughout the study area, including 41 parks and parkettes, as well as two golf courses. Also, the study area contains numerous educational facilities, including; 21 public and eight elementary schools: nine public and two catholic secondary schools; two colleges, and; three private schools. In addition numerous community facilities which include: nine libraries; three medical institution campuses; eight community recreation centres; 52 places of worship, and: the York Civic Centre. The locations of these facilities are identified **Exhibit 155-158.**

4.1.2.2 Contaminated Property and Waste

Most of Eglinton Avenue has been urbanized for many years with commercial and industrial land uses. Therefore, there is potential for encountering impacted soil and/or groundwater in many locations along Eglinton Avenue. A review of historical records identified several areas to have known soil or groundwater impacts from previous and current operations:

- Eglinton Avenue and Black Creek Drive, Former Kodak Manufacturing Plant (now vacant);
- Eglinton Avenue and Gabian Way (east of Keele Street);
- Eglinton Avenue, east of Allen Road; and
- Eglinton Avenue and Yonge Street, including the TTC Yard, Bus Terminal and Eglinton Subway Station.

Two intersections have or have had a high concentration of gas stations and are consequently regarded as having high potential for environmental impact:

- Eglinton Avenue and Avenue Road; and
- Eglinton Avenue and Oriole Parkway, west of Yonge Street.

Further details are available in **Appendix I.**

Exhibit 155: Existing Conditions – Cultural Environment

Exhibit 156: Existing Conditions – Cultural Environment

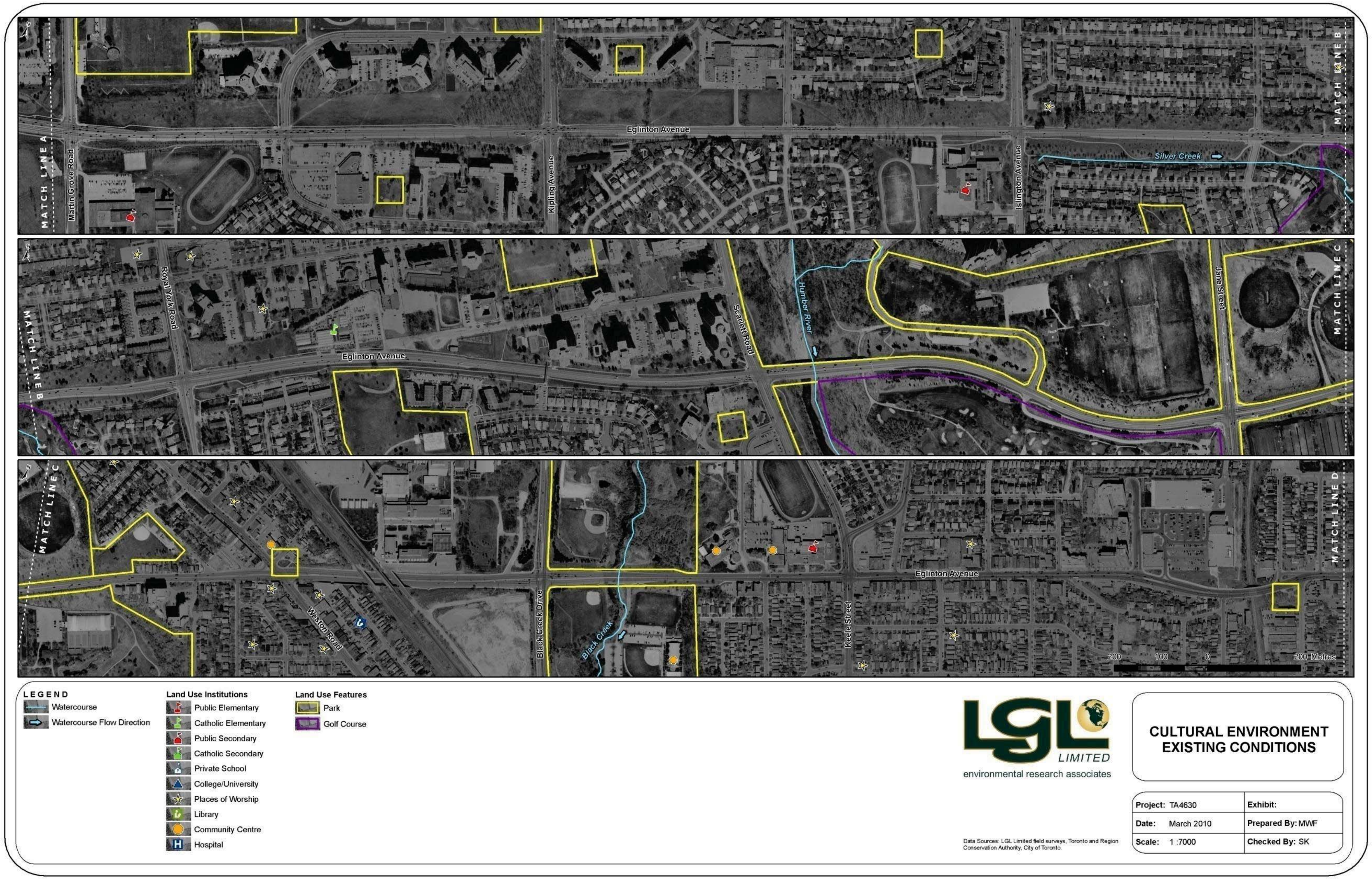
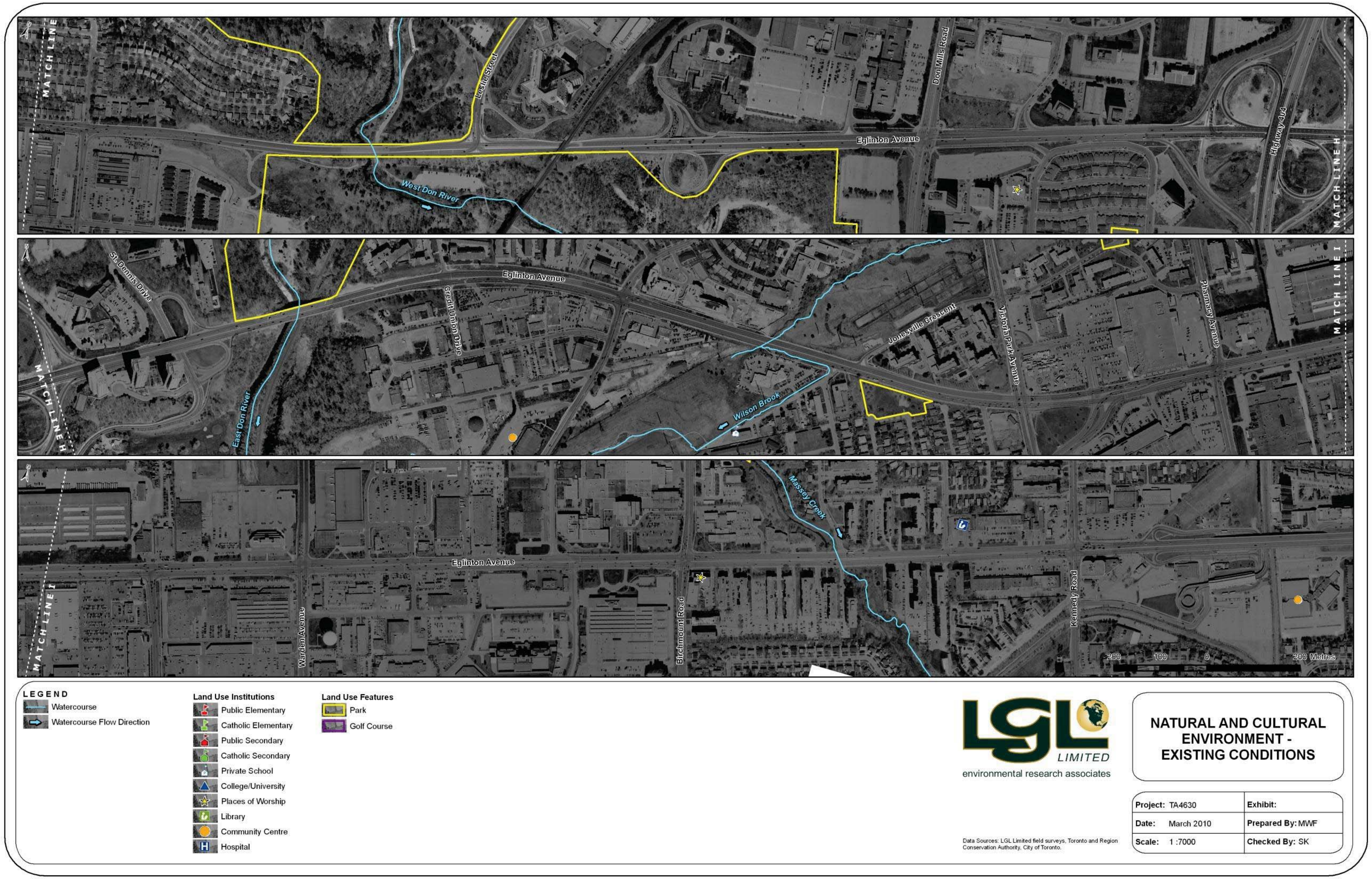


Exhibit 157: Existing Conditions – Cultural Environment

Exhibit 158: Existing Conditions – Cultural Environment



4.1.2.3 Utilities

There are a number of large diameter utilities and pipelines located within the Eglinton Avenue right-of-way. There are also numerous large chambers throughout, with the majority located at the major intersections. In addition, there is an extensive system of minor storm sewers and combination storm/sanitary sewers along Eglinton Avenue. Similarly, there are watermains located along Eglinton Avenue from 150 millimetre diameter up to 600 millimetre diameter. Recently, portions of the 600 mm diameter watermains are being replaced with new 750 mm diameter watermains.

Along the north and south sides of Eglinton Avenue, there are Hydro towers west of Martin Grove Road and west of the Highway 427 overpass. Toronto Hydro has poles located along the roads within the LRT corridor and has an extensive system of buried conduit throughout, with large underground chambers at numerous major intersections. Hydro One Networks Inc (Ontario Hydro) has a 115 kV transmission line crossing Eglinton Avenue just east of Yonge Street. Rogers and Telus utility plants are located in shared buried conduit and Enbridge Gas has 100 millimetres and 150 millimetres gas mains throughout the LRT corridor. There are also gas mains crossing Eglinton Avenue at various intersections. Bell Canada has an extensive conduit system along Eglinton Avenue, with double conduit systems at a number of locations as well as crossing ducts at intersections.

4.1.2.4 Structural Inventory

City of Toronto structures are generally in good condition with no significant structural defects evident. Structure construction dates range from 1947 to 1998. An inventory of the structures located along Eglinton Avenue is presented in **Exhibit 159.**

Exhibit 159: Inventory of Structures

No.	Site/ Structure No.	Title	Owner	Date of Construction (loading)	Superstructure	Foundation
1	37-823	Highway 427 over Renforth Dr	MTO	Const. 1978	RC deck on structural steel girders. Parallel spans. Both spans are generally in good condition.	Spread footings
2	S-3134	Renforth under Matheson Blvd	City of Toronto	Const. 1995	RC Deck on Pre-cast Girders. Condition: Very good	Piles
3	37-807, 863, 830, 806, 829, 805, 804, 803	Eglinton under 8 Highway Bridges (427, 27, 401, etc.)	MTO	Const. 1968	Various. Mainly post tensioned concrete decks with voids. All structures generally in good condition.	Piles and/or spread footings.
4	S-761	Eglinton over Mimico Creek	City of Toronto	Const. 1971 Rehab. 2001	Single span, RC deck on pre-stressed, pre-cast girders. Condition: Good	Spread footings
5	S-797	Pedestrian Bridge over Eglinton West of Scarlett Rd.	City of Toronto	1998 (pedestrian)	Steel through truss, incl. steel deck	Spread footings
6	S-519	Eglinton over Humber River	City of Toronto	1971 (H25-S20)	5 span circular voided post-tensioned concrete deck	Abutments piled, piers spread footings
7	S-472	Eglinton under CN Rail (between Black Creek Dr and Weston)	City of Toronto	1969 (Rail loading)	Steel girder plus RC slab deck	Spread footings
8	S-472	Eglinton under CP Rail (between Black Creek Dr and Weston)	City of Toronto	1969 (rail loading)	Steel girder plus RC slab deck	Spread footings
9	S-472	Eglinton under Photography Drive	City of Toronto	1969 Rehab. 2002 (Additional required) (H25-S20)	Steel girder plus RC slab deck	Spread footings
10	S-486	Eglinton over Black Creek	City of Toronto	Const.1966 Rehab 2005 (Deck overlay and parapets)	Single span, RC deck on pre-stressed girders	Piled
11	S-211	Eglinton over CN Rail (between Croham and Blackthorn)	City of Toronto	1965	Single span RC slab and RC girder	Spread footings
12	S-212	Eglinton over the Belt Line Trail (between Chaplin and Spadina)	City of Toronto	1947 Rehab. currently underway (BridgCon / SNC Lavalin)	Single span RC rigid frame, ribbed deck	Spread footings
13	S-244	Eglinton over West Don River	City of Toronto	1957 (Rehab. 1994)	5 span (3 steel girder +2 RC slab on concrete girder approach spans)	Spreads footings with deep sheet pile protection

No.	Site/ Structure No.	Title	Owner	Date of Construction (loading)	Superstructure	Foundation
14	S-285	Eglinton under CP Rail (between Don Mills and Leslie)	City of Toronto	1955	Single span steel girder	Piled
15	S-505	Eglinton over roadway to Celestica Site	City of Toronto	1966	3 span reinforced concrete thin flat slab	Spread footings
16	S-313	Eglinton under Don Valley Parkway	City of Toronto	1961	Single span rigid frame, Reinforced concrete with voided deck	Spread footings
17	S-540	Eglinton Avenue over St. Dennis – Wynford	City of Toronto	1969 (H20-S16)	3 span precast girder with concrete deck	Mixed, East piled/west spread footings
18	S-273	Eglinton Avenue over CP Rail (between Credit Union and St. Dennis - Wynford Dr.)	City of Toronto	1954 (H20-S16)	4 span, Steel girder with concrete deck, skewed	Mixed, piled and spread footings with deep sheet -pile protection for river piers
		Eglinton Avenue over East Don River	City of Toronto			
19	S-591	Eglinton Avenue over CN Rail (between Midland and Kennedy)	City of Toronto	1976	Post-tensioned, voided slab, 9 span continuous	Spread footings

4.1.3 Cultural Environment

4.1.3.1 Archaeology

During a Stage 1 Archaeological Assessment (**Appendix B**) consultation of the Ontario Heritage Properties Database and the City of Toronto Inventory identified the presence of nine listed[1] and designated heritage properties within or in close proximity to the Eglinton Crosstown LRT corridor. Additional background research determined that there are nine registered archaeological sites within and adjacent to the LRT corridor.

Of particular note, sites AkGu-6 and AkGu-24, an aboriginal campsite and a village respectively, are located very close to the LRT corridor. The location of these sites in such close proximity to the proposed study corridor indicated that additional significant aboriginal archaeological resources may be encountered during a field assessment. The LRT study corridor is bisected by Mimico Creek, the Humber River, Black Creek, the West Don River, the East Don River, and Massey Creek. As such, the research supports high potential for locating Aboriginal artifactual remains within undisturbed portions of the subject lands falling within 300 metres of the above mentioned watercourses.

A review of the LRT corridor within the *Tremaine's Map of the County of York, Canada West, 1860* and *The 1878 Illustrated Historical Atlas of York County and the township of West Gwillimbury & Town of Bradford in the County of Simcoe* indicated that numerous properties, homesteads and structures were illustrated within or directly adjacent to its limits. The study corridor encompasses several historic railroads, one historic post office, two historic school houses, one urban concentration, a church and many orchards. Two historic cemeteries, Richview Memorial Cemetery (also known as, Union Chapel Cemetery plus Willow Grove and McFarlane Cemeteries) established in 1853 and Prospect Cemetery established 1890, are situated alongside the study corridor. Additionally, the study area traverses the historic village of Union and its respective school house. The extensive background research has concluded that there is high potential for the recovery of both Aboriginal and historic, Euro-Canadian archaeological remains within undisturbed portions of the subject lands. Subsequently, a Stage 2 Archaeological Assessment study concluded that all undisturbed lands except two parcels of land had no archaeological concerns. The Stage 2 Archaeological Assessment consisted of a test-pit survey at the undisturbed portions of lands and the identification of disturbed locations within the LRT corridor.. Encountered disturbances included paved roadways and highway intersections, paved sidewalks and bicycle paths, paved and gravel shoulders, paved driveways, grading from previous and recent development activities, wet drainage ditches, sloping terrain from embankment constructions, and underground utilities. Physiographic factors affecting archaeological potential consisted of sloping terrain. Due to the low archaeological potential classification of these areas, systematic survey was not warranted nor was it undertaken. Furthermore, two portions of the proposed LRT corridor, north and south of Highway 401 between Matheson Boulevard and Convair Drive fell within private ownership and permission to enter was not obtained. As such, these lands will require assessment prior to any intrusive activity.

Test-pit survey was undertaken at five metre intervals, based on the established high potential for the recovery of archaeological resources. Despite careful scrutiny, no archaeological resources were encountered during the Stage 2 Archaeological Assessment field investigation and, thus, with the exception of the unassessed segments, the remainder of the subject lands, encompassing the Eglinton Crosstown LRT have been considered clear of further archaeological concern. The Ministry of Culture have reviewed the Stage 1 and Stage 2 Archaeological Assessment reports and agreed to its findings. See **Appendix B** for further details.

4.1.3.2 Built Heritage and Cultural Landscape

One cultural heritage landscape, the Richview Cemetery, is located on the south side of Eglinton Avenue between the lanes of Highway 427. Further details are available in **Appendix C.** Several other built heritage features and cultural heritage landscapes were found along the LRT corridor.

Exhibit 160 includes all municipally designated and listed cultural heritage resources located within or adjacent to the Eglinton Avenue study corridor. **Exhibit 160** is is a list of cultural heritage resources that may be affected by the placement of LRT station location and associated facilities. The LRT stations not identified in this exhibit will not be affected based on the review of the most recent.

[1] "Listed" is a term used for properties for which the Toronto City Council has adopted a recommendation to be included on the Inventory. The recommendations are based on criteria that relate to architecture, history, and neighbourhood context. Their inclusion on the Inventory is a clear statement that the City would like to see the heritage attributes of these properties preserved. If designated, these structures must be preserved (www.toronto.ca)

Exhibit 160: Identified Cultural Heritage Landscapes (CHL) and Built Heritage Resources (BHR)

Site #	Resource Type	Category	Location	Description	Heritage Status
MARTIN GROVE ROAD TO JANE STREET (FORMERLY ETOBICOKE)					
1.	BHR	Institutional	50 Winterton Drive at southeast corner of Eglinton Avenue West and Martin Grove Road, south side	Martingrove Collegiate Institute (MCI) is located at the intersection of Eglinton Avenue West and Martin Grove Road. The school opened its doors on May 27, 1966. Style is typical of school design of the time	
2.	BHR	Institutional	1738 Islington Ave at Eglinton Avenue West, south side.	Richview Collegiate Institute is a Toronto District School Board secondary school in Etobicoke built in 1958. Style is typical of school design of the time.	
3.	BHR	Religious	4480 Eglinton Avenue West, north side.	Church of Christian Science built mid 20th century; 2 storey, multi-gable roof, building designed in Tudor Revival style of the Home Smith Kingsway development to south using Humberstone exterior cladding.	
4.	BHR	Residential	4400 Eglinton Avenue West, north side.	1 ½ storey residence with stone exterior, gable dormer, mid 20th century, garage.	
5.	BHR	Residential	4200 Eglinton Avenue West, north side.	Mary Reid House, 2 storey, brick residence with Tudor influences built 1939; dry stone fence along road.	Included on the City of Toronto Inventory of Heritage Properties.
JANE STREET TO BATHURST STREET (FORMERLY CITY OF YORK)					
6.	CHL	Waterscape	Humber River and valley at Eglinton Avenue West.	Eglinton Flats, open flats in river valley and Humber River.	Humber River is designated as a Canadian Heritage River.
7.	CHL	Historical Community	Eglinton Avenue West at Weston Road.	Mount Dennis, former hamlet in York Township, developed in the late 19th century and early 20th century. It contains numerous residences dating from the 19th and 20th century on both sides of the Eglinton Avenue West, Weston Road and Locust and Holly Street in the study area. Locust Street consists of early 20th century housing built for local industry workers. Hollis Street consists of early 20th century streetscape of workers housing with gambrel roofs and some post W.W.II bungalows. 4 Hollis Street is a former fire hall, now Mount Dennis Community Hall. Date stone on community centre indicates cornerstone laid by Home Smith in 1921. The site also has a commemorative plaque from City of York to the fire fighters. At Weston Road, Eglinton Avenue West comprises some commercial development including a c1950s Bank of Nova Scotia building on the northeast corner of the intersection. On the south side of Eglinton Avenue West at Weston Road, the early 20th century Good Shepherd Church with its gable and side tower forms a landmark at the corner. The church hall on Weston Road has a date stone of 1953.	
8.	BHR	Industrial	3500 Eglinton Avenue West, north side	Employees' Building of the former Canadian Kodak Company site, built in 1939, opened 1940. Kodak Canada moved its factory to a site along the rail	Municipal intention to list on *City of Toronto*

Site #	Resource Type	Category	Location	Description	Heritage Status
				line running next to Weston Road during World War I. Former industrial complex, known as "Kodak Heights," was a major employer for Mount Dennis' residents until in 2005. Only building left on-site from the large industrial complex.	*Inventory of Heritage Properties* (2006) and designate under the *Ontario Heritage Act*. (information current as of December 2009.)
9.	BHR	Transportation	Eglinton Avenue West at CN Railroad line crossing of Eglinton Avenue West between Weston Road and Black Creek Drive.	Concrete retaining wall, plaque notes built by Metropolitan Toronto in 1966. Road improvements carried out as part of a never realized expressway plan.	
10.	CHL	Transportation	Railway overhead structure on Eglinton Avenue West between Weston Road and Black Creek Drive.	Built as steel girder railway overhead c1965 when Metropolitan Toronto government reconstructed Eglinton Avenue West under railway tracks.	
11.	CHL	Transportation	Road bridge on Eglinton Avenue West between Weston Road and Black Creek Drive.	Plaque on road bridge with 1965 construction date. Built as access road to Kodak site when Metro Toronto government reconstructed Eglinton Avenue West under railway tracks as part of proposed expressway plan.	
12.	CHL	Waterscape	Black Creek at Eglinton Avenue West, east of Black Creek Drive.	Black Creek Bridge built in 1966 by Metro Toronto and rehabilitated in 2005 by City of Toronto, new superstructure, and abutments original.	
13.	CHL	Recreation	2801 Eglinton Avenue West south side	Keelesdale Park, established on south side and Coronation Park on the north side of Eglinton Avenue West established c1950s.	
14.	BHR	Public	2700 Eglinton Avenue West, north side.	Former York Municipal Offices, officially opened 1950, architect Shore & Moffat; additions to the complex in 1960, 1962 and 1974. To the east of the complex, the open space with the York Township Cenotaph (unveiled in 1950).	Included on the City of Toronto Inventory of Heritage Properties
15.	BHR	Public	2694 Eglinton Avenue West north side	Canada Centennial Building, York Museum built in late 1960s.	
16.	BHR	Institutional	2690 Eglinton Avenue West north side	York Memorial Collegiate, established in 1929 in a rural setting. Named in memoriam for W.W. I soldiers.	Municipally designated under the *Ontario Heritage Act* and included on the City of Toronto Inventory of Heritage Properties.

Site #	Resource Type	Category	Location	Description	Heritage Status
17.	BHR	Commercial	2623 Eglinton Avenue West, south side.	TD Canada Trust building, former Toronto Dominion Bank built c1950s.	
18.	BHF	Residential	2614 Eglinton Avenue West north side.	Brick, 1 ½ storey, front gable residence, built circa 1900.	
19.	CHL	Transportation Road	Venn Crescent, south side.	Former alignment of Eglinton Avenue West on south side between Kane Avenue and Blackheath Avenue.	
20.	CHL	Transportation	CN Railway Between Blackthorn Ave. and Gilbert Ave	CN Railway on right of way of former suburban Belt Line Railway built in 1890s. CN Railway overhead structure with date plaque of 1930 and rehabilitation 1991.	
21.	BHR	Commercial	600 Caledonia Road, northwest corner of Eglinton Avenue West, north side.	Post World War II commercial building, built to fit triangular lot at corner.	
22.	CHL	Cemetery	Eglinton Avenue West at between Harvie Avenue and McRoberts Avenue, south side.	North entrance gate to Prospect Cemetery, established 1890.	
23.	BHR	Religious	1828 Eglinton Avenue West at Dufferin Street, north side.	Christ Church Methodist Episcopal Church, St. James, formerly St. Cuthbert's United Church, building form still evident but exterior much altered.	
24.	BHR	Commercial	1808-1804 Eglinton Avenue West, north side.	2 story commercial block on north side of street with date stone of 1947.	
25.	BHR	Commercial	1850-1854 Eglinton Avenue West, north side	Built in 1947, 2 storey brick veneer commercial building with altered commercial windows ground floor and side entrance to upper apartments. Date stone of 'A. B. Law 1947' on upper wall. Building is located in a grouping of four building probably dating from the same period,	
26.	BHR	Religious	640 Glenholme Avenue at Eglinton Avenue West, south side.	St. Thomas Aquinas Church, mid 20th century. Main entrance faces onto Glenholme Avenue.	
27.	BHR	Commercial	1606 Eglinton Avenue West, north side	Mid 20th century, 1 storey commercial building, much altered.	
28.	BHR	Religious	1601 Eglinton Avenue West at Oakwood Avenue, south side.	Pizza Pizza store, formerly Imperial Bank and CIBC, built c1950.	
29.	BHR	Commercial	1557 Eglinton Avenue West, south side.	Mid 20th century, 2 storey commercial building, much altered.	
30.	BHR	Commercial	1573-75 Eglinton Avenue West at Oakwood Avenue, southeast corner.	Mid 20th century, 2 storey commercial building with buff brick walls and decorative wall elements such as quoins, and horizontal bands along upper floor window openings. Ground floor commercial area is much altered. Building is located on a corner and addresses the corner with an angled wall,	
31.	BHR	Commercial	1574-1576 Eglinton Avenue West, north side	Mid 20th century, 2 storey commercial building with painted brick elevation; commercial area on ground floor.	
32.	BHR	Religious	1445 Eglinton Avenue West, south side.	Beth Sholom Synagogue built in 1947.	
33.	BHR	Commercial	1150 Eglinton Avenue West at Glenarden, north side.	Buff brick, 1 storey, CIBC bank building, former Imperial Bank of Canada, built c1950.	
BATHURST STREET TO BAYVIEW AVENUE (CITY OF TORONTO)					
34.	BHR	Residential	790 Eglinton Avenue West, north side east of Bathurst Street.	Forest Hill Manor, 4 storey, buff brick apartment building, designed by Forsey Page and Steele and John B. Parkin in the International style, built 1940.	Included on the City of Toronto Inventory of Heritage Properties.
35.	BHR	Residential	130 Old Forest Hill Road at Eglinton Avenue West, south side.	Five-storey apartment block with a curvilinear form, built 1950s.	
36.	BHR	Institutional	730 Eglinton Avenue West, north side.	Forest Hill Collegiate with War memorial at front entrance.	
37.	BHR	Public	700 Eglinton Avenue West, north side.	Forest Hill Library, built 1962-63, designed by Marani, Morris & Allan	

Site #	Resource Type	Category	Location	Description	Heritage Status
				Architects.	
38.	BHR	Residential	697-701 Eglinton Avenue West, south side.	"Village Manor", large, five storey low-rise apartment building built into rise of land, circa mid 20th century.	
39.	CHL	Transportation	Belt Line Trail at Eglinton Avenue West, west of Chaplin Crescent.	Former right-of-way of suburban Belt Line Railway and CN Railway, now a trail, and associated bridge with decorative features.	
40.	BHR	Public	641 Eglinton Avenue West, south side.	Fire Hall No. 29 and United Way, formerly Forest Hill Fire Hall and Police Station, designed G. A. Bachman and A. Wilson, built 1932 by Works Department Forest Hill Village; additions 1937 and 1971.	City of Toronto Inventory of Heritage Properties
41.	BHR	Residential	540 Russell Hill Road at Eglinton Avenue West. south side.	"Drayton Manor", low rise apartment buildings c1950, similar to "The Shenstone Court" across Russell Hill Road.	
42.	BHR	Residential	555 Russell Hill Road at Eglinton Avenue West, south side.	"The Shenstone Court", low-rise, 4 storey apartment building built c1950s, companion to Drayton Manor across Russell Hill Road	
43.	BHR	Commercial	400 Eglinton Avenue West, north side.	Eglinton Theatre designed in a blended Art Deco and Art Modern style by Toronto architects Kaplan and Sprachman completed in 1934. Entrance pylon has "Eglinton" spelt in vertical letters. Includes commercial storefront from 400 to 412 on the north side of street in front of the Eglinton Theatre.	Municipally designated under the *Ontario Heritage Act* and included on City of Toronto Inventory of Heritage Properties.
44.	BHR	Commercial	270-272 Eglinton Avenue West, west of Oriole Parkway, north side.	3 storey brick commercial building. 2 storefronts, 3 bays upper elevation with cornice.	
45.	BHR	Religious	173 Eglinton Avenue West east of Eastbourne Avenue, south side.	Unity Church of Truth, designed by Architect John B. Parkin, completed in 1954.	
46.	BHR	Commercial	159 Eglinton Avenue West at Lascelles Boulevard, south side.	Bedford Funeral Home, former residence, 2 ½ storey brick, built c1920s.	
47.	BHR	Industrial	60 Eglinton Avenue West at Duplex Avenue, northwest corner	20th century, Toronto Hydro substation, formerly North Toronto Hydro-Electric Substation, two storey brick building with decorative elements, large entrance door and stone cornice.	
48.	CHL	Transportation	South side of Eglinton Street East, east of Duplex Avenue.	TTC bus terminal, now vacant, built early 1950s on former TTC car barn site.	
49.	BHR	Commercial	50 Eglinton Avenue East	10-storey curtain wall office building c1960s.	
50.	BHR	Commercial	72 Eglinton Avenue East	Bell Canada, built c1950 as Bell Telephone Co. of Canada office and exchange, 4 storey brick.	
51.	BHR	Commercial	170, 174 and 180 Eglinton Avenue East, north side	Low-rise, 2 storey commercial row of three buildings, 174 and 180 built as a unit c1940, 170 built c1960s replacing a residence.	
52.	BHR	Commercial	794 Mount Pleasant Road at Eglinton Avenue East, north side	Second Cup, former Imperial Bank of Canada, mid 20th century building with decorative stone cornice, stone clad ground floor and upper brick wall, decorative Classical style entrance that addresses both Mount Pleasant Road and Eglinton Avenue East, paired 2nd floor window openings.	
53.	BHR	Residential	300 Eglinton Avenue East, north side.	The Royal, high rise apartment, 14 floors, designed by Uno Prii in Modern style with curved balconies and built 1964.	City of Toronto Inventory of Heritage Properties
54.	BHR	Utility	386 Eglinton Avenue East, north side.	Toronto Hydro transformer station, residential style of 1960s.	
55.	BHR	Commercial	379-383 Eglinton Avenue East, south side.	2-storey brick commercial block, early 20th century.	

Site #	Resource Type	Category	Location	Description	Heritage Status
56.	BHR	Religious	503 Eglinton Avenue East, south side.	Eglinton Avenue Gospel Hall, mid 20th century, front gable roof.	
BAYVIEW AVENUE TO LESLIE STREET (FORMER EAST YORK)					
57.	CHL	Commercial	600 Eglinton Avenue East at Bayview Avenue. north side.	Sunnybrook Plaza, opened as Sunnybrook Shopping Centre, in May 1952, occupied two city blocks with 17 stores, along Eglinton Avenue East. When built it was Ontario’s first planned community shopping centre.	
58.	BHR	Institutional	200 Hanna at Eglinton Avenue East, south side.	Leaside High School, at the corner of Eglinton and Bayview Avenues, established in 1945, opened September 1948.	
59.	BHR	Religious	670 Eglinton Avenue East, north side.	Leaside Presbyterian Church, opened April 1, 1945.	
60.	BHR	Residential	801 and 803 Eglinton Avenue East, south side.	Two, 2-storey brick, low rise apartment blocks c1950s, only remaining two of seven identical apartment blocks.	
61.	CHL	Commercial	Eglinton Avenue East between Sutherland and Laird Drive, north side.	Commercial streetscape associated with Leaside Village, row of 20th century commercial buildings anchored by TD bank building (878) at Laird Drive.	
62.	BHR	Commercial	880 Eglinton Avenue East	Bank of Nova Scotia building c1950s associated with Leaside Village commercial area.	

4.1.4 Transportation

4.1.4.1 Transit Systems

Transit services along Eglinton Avenue are operated by the TTC, Mississauga Transit and GO Transit.

There are two TTC subway lines running on a north-south direction crossing the LRT corridor: the University-Spadina Subway Line and the Yonge Subway Line.

TTC bus routes 32 Eglinton West with its four branches, 61 Avenue Road North, 5 Avenue Road, 54 Lawrence East, 56 Leaside, 34 Eglinton East, 51 Leslie, 100 Flemingdon Park and 103 Mount Pleasant North operate along Eglinton Avenue. Night route 307 is an overnight service with headway of 30 minutes, connecting all airport terminals to the Eglinton Subway Station on the Yonge subway line. Night route 305 and 354 serve Eglinton Avenue East. Thirteen TTC bus routes operating mostly along major arterial roads in the north-south direction intersect Eglinton Avenue.

The trunk Route 32 service originates at Eglinton Subway Station and extends to Renforth Drive in the west. Three of the four branches originate at Eglinton Subway Station. Branches 32A and 32B extend into the City of Mississauga serving different parts of the Airport Corporate Centre employment district. Branch 32C extends north-westerly along Trethewey Drive terminating in the Jane Street/Lawrence Avenue area. Branch 32D originates at Eglinton West Subway Station on the Spadina Subway line and terminates at Emmett Drive west of Jane Street. The 5/5A Avenue Road and 61 Avenue Road North routes both provide service over the short section of Eglinton Avenue between Avenue Road and the Eglinton Subway Station.

Route 34 Eglinton East is the main route on Eglinton Avenue east of Yonge Street and provides a trunk service from Eglinton Subway Station to Kennedy Subway Station Routes. Routes 103 Mt Pleasant North, 100 Flemingdon Park, 51 Leslie, 56 Leaside, and 54 Lawrence East are the other routes which provide service along parts of Eglinton Avenue East as follows:

- 103 Mt. Pleasant North from Mt. Pleasant Road to Yonge Subway Station
- 100 Flemingdon Park from Don Mills Road to Eglinton Subway Station;
- 51 Leslie from Leslie Street to Eglinton Subway Station;
- 54 Lawrence East from Leslie Street to Eglinton Subway Station; and
- 56 Leaside from Laird Drive to Eglinton Subway Station.

As shown on **Exhibit 161,** TTC bus routes 32 Eglinton West, 34 Eglinton East and 54 Lawrence East have the highest ridership. Bus routes 32 Eglinton West and 34 Eglinton East are the bus routes operating along almost the entire length of the Eglinton Crosstown LRT corridor.

Exhibit 161: Existing Ridership for Routes Operating Along Eglinton Avenue

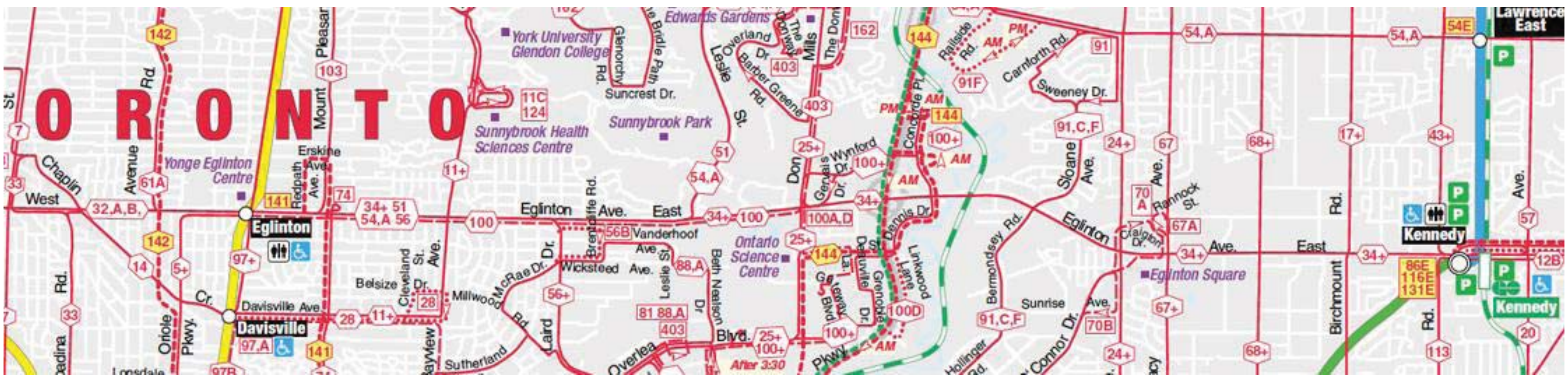
Route	Route Name	All-Day Ridership	TTC Ridership Ranking	Peak Hour Ridership at Eglinton Station
32	Eglinton West (all branches)	41,568	7	1647
61	Avenue Rd. North	3,240	100	296
5	Avenue Rd (both branches)	1,767	125	131
54	Lawrence East(all branches)	33,846	10	863
34	Eglinton East (both branches)	26,300	16	776
100	Flemingdon Park(all branches)	15,535	36	754
56	Leaside(both branches)	3,527	97	160
51	Leslie	3,363	99	197
103	Mt.Pleasant North	1,381	131	117
Total All Day Ridership		130,527		

The following list presents TTC bus routes travelling mainly on a north-south direction which cross the LRT corridor:

112 West Mall
191 Highway 27 Rocket
111 East Mall
46 Martin Grove
405 Etobicoke
45 Kipling
37 Islington
73 Royal York
79 Scarlett Rd
35 Jane
89 Weston
71 Runnymede
171 Mt. Dennis
41 Keele
47 Lansdowne
29 Dufferin
90 Vaughan
63 Ossington
7 Bathurst
33 Forest Hill
109 Ranee
14 Glencairn
142 Avenue Road Expressway
97 Yonge
141 Downtown/Mt. Pleasant Express
74 Mt. Pleasant
11 Bayview
25 Don Mills
144 Don Valley Exp.
91 Woodbine
24 Victoria Park
70 O'Connor
67 Pharmacy
68 Warden
17 Birchmount
24 Victoria Park
113 Danforth Rd.
43 Kennedy
91 Woodbine

There are opportunities for bus-LRT transfers at the locations where these routes cross Eglinton. **Exhibit 162** presents the TTC bus routes and subway lines within the Eglinton Crosstown LRT corridor.

Exhibit 162: Existing TTC Bus Routes Within the Eglinton Crosstown LRT Corridor



Mississauga Transit bus route 89 Meadowvale operates on Eglinton Avenue and bus routes 50 Creekbank and 18 Northwest-Explorer serve the Airport Corporate Centre. Bus routes 7 Airport and 18 Northwest-Explorer routes travel along Renforth Drive, starting from the Mississauga City Centre and terminating at Westwood Mall. Route 7 serves the airport terminals directly. Route 18 Northwest-Explorer operates only during rush hours. No ridership data was available for the Mississauga Transit bus routes.

Three GO Transit train services, the GO Georgetown, the GO Barrie and the GO Richmond Hill, cross Eglinton Avenue although no GO train stations are located along Eglinton Avenue. All GO train services lead to Union Station.

4.1.4.2 Road Traffic

The LRT corridor was divided into of the following sections for the purpose of traffic analysis:

- Section 1 – from Silver Dart Drive to Renforth Drive;
- Section 2 - from Renforth Drive to Jane Street;
- Section 3 – from Jane Street to Yonge Street;
- Section 4 – from Yonge Street to Leslie Street; and
- Section 5 – from Leslie Street to Kennedy Road.

The capacity analyses for all the study area signalized intersections under the existing traffic conditions were carried out based on procedures set out in the Highway Capacity Manual (2000) with the assistance of Trafficware Traffic Signal Timing software package - Synchro Version 6 based on a review of available most recent turning movement counts and signal timing information at all of the intersections. Relevant data pertaining to traffic volumes and signal timings were obtained from the City of Toronto. The evaluation of the performance measures of all the intersections was focused primarily on the weekday morning and afternoon peak hours along Renforth Drive and Eglinton Avenue under existing traffic conditions. The intersection operation is typically described based on parameters e.g. the ratio of traffic demand to available capacity (v/c) and the average delay occurs at any intersection. The Highway Capacity Manual prescribes that the 'Level of Service' (LOS) ratings at intersections should be related to average vehicular delay and expressed on a scale of "A" to "F", where "A" is considered excellent (i.e. very little delay) and "F" is considered unacceptable (i.e. very congested, very long delays), as outlined below.

Level of Service (LOS)	Average Delay per Vehicle (seconds/vehicle)
A	≤ 10
B	> 10 and </= 20
C	> 20 and </= 35
D	> 35 and </= 55
E	> 55 and </= 80
F	> 80

The minimum acceptable level of service at any signalized intersection is 'D', where the average vehicular delay is less than 55 seconds; City of Toronto guidelines indicate that necessary counter measures should be initiated to address any critical movements occurring at any signalized intersection.

Critical movements at signalized intersections are defined in the 'City of Toronto's Guidelines for the preparation of Transportation Impact Studies'. Any through or shared through/ turning movements that exceed a v/c ratio of 0.85, or any exclusive turning movement for which the v/c ratio exceeds 1.0 are termed as critical movements.

Exhibit 163 summarizes the measurement of performances of all the signalized intersections located along Section 1, as defined above. Although the Eglinton Crosstown LRT does not pass through the Renforth Drive intersections with Carlingview Drive and Highway401/427 Ramp, they have been included as part of obtaining a general understanding of the traffic conditions in this section of the LRT corridor. As becomes evident most of the study area intersections within Section 1 are performing at acceptable levels of service, although the following intersections are operating with full/partial constraints under the existing traffic condition.

Exhibit 163: Summary of Capacity Analysis – Section 1 (Silver Dart Drive to Renforth Drive)

Intersection	AM Peak			PM Peak		
	v/c	Average Delay (s)	LOS	v/c	Average Delay (s)	LOS
*Carlingview Drive and Renforth Drive	2.86	407.7	**F**	2.13	247.9	**F**
Silver Dart Drive and Renforth Drive	1.00	42.8	**D**	1.37	52.0	**D**
Convair Drive and Renforth Drive	0.52	7.9	**A**	0.72	13.7	**B**
*Hwy 401/427 Ramp and Renforth Drive	0.96	15.7	**B**	1.59	205.6	**F**
Eglinton Avenue and Commerce Boulevard	0.35	5.8	**A**	0.66	18.5	**B**

* = LRT is not planned to pass through this intersection

The intersections of Convair Drive and Renforth Drive and Eglinton Avenue and Commerce Boulevard operate at acceptable levels of service during the weekday AM and PM peak hours.

The intersection of Carlingview Drive and Renforth Drive operates over its overall respective capacity during the weekday AM peak hour, as evidenced by its unacceptable LOS of 'F', the ratio of traffic demand to available capacity (v/c ratio) and average delay. While this intersection may not facilitate the LRT, its proximity to the intersection of Silver Dart Drive and Renforth Drive poses the possibility of spillback queuing, which would severely impact LRT operations at this intersection.

The morning peak hour v/c ratio for the intersection of Silver Dart Drive and Renforth Drive suggests that the intersection operates at capacity, although the average delay is less than the unacceptable level of 55 seconds. The demand at the Silver Dart Drive and Renforth Drive intersection exceeds available capacity by approximately 37% during the PM peak period, although the average delays is still within acceptable limit, reflecting partially constrained traffic operations.

The intersections of Renforth Drive and Highway 401-427 Ramp and Renforth Drive and Carlingview Drive both operate over capacity during the weekday PM peak hour, and the average delay is much higher than the acceptable level.

The existing critical movements during the weekday AM and PM peak hours at the capacity constrained intersections along Section 1, as discussed above are summarized in **Exhibit 164.** The table also compares the available storage (pocket) lane length and 95th queue length at the identified problem intersections, for the critical movements during both the weekday AM and PM peak hours under the existing traffic conditions, as obtained from the Synchro analyses.

Exhibit 164: Critical Movements at Operationally Constrained Intersections – Section 1 (Silver Dart Drive to Renforth Drive)

Intersection	Movement	Available Storage (pocket) Length (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			v/c	Average Delay (s)	95th Queue Length (m)	v/c	Average Delay (s)	95th Queue Length (m)
Carlingview Drive and Renforth Drive	EBL	75.0	4.58	1644.5	459.8	2.92	906.9	420.4
	EBT	-	0.91	36.7	151.0	-	-	-
	WBL	85.0	-	-	-	2.13	586.8	76.8
	NBL	65.0	1.79	404.3	291.9	1.32	210.1	83.2
	SBL	110.0	0.99	80.7	63.4	-	-	-
	SBT	-	1.60 dr	90.8	123.2	1.27 dr	30.4	86.5
Silver Dart Drive and Renforth Drive	EBL	60.0	-	-	-	1.38	213.6	65.6
	WBTLR	-	0.89	23.9	-	-	-	-
	SBR	145.0	1.26	172.5	224.7	1.22	160.3	178.1
Highway 401-427 Ramp and Renforth Drive	EBR	-	-	-	-	2.40	676.5	242.8
	SBL	65.0	-	-	-	1.01	117.4	61.8

dr = Defacto right turn lane, where shared lane contains high right-turn volume

Exhibit 165 summarizes the measurement of performances of all the signalized intersections located within Section 2, as defined above. As becomes evident, most of the study area intersections within Section 2 of the corridor are performing at acceptable levels of service, although the following intersections are operating with full/partial constraints under the existing traffic condition.

The intersections of Martin Grove Road and Eglinton Avenue, Widdicombe Hill Boulevard and Eglinton Avenue and Jane Street and Eglinton Avenue operate over their overall respective capacities during the weekday AM peak hour. The average delay reflects that the intersections of Widdicombe Hill and Jane Street on Eglinton Avenue still perform at acceptable LOS, whereas at Martin Grove the average delay is much beyond the acceptable limit, and the subject intersection operates at an unacceptable LOS of 'F'.

Exhibit 165: Summary of Capacity Analysis – Section 2 (Renforth Drive to Jane Street)

Intersection on Eglinton Avenue with	AM Peak			PM Peak		
	v/c	Average Delay (s)	LOS	v/c	Average Delay (s)	LOS
Renforth Dr.	0.92	77.9	**E**	1.64	211.8	**F**
Matheson Blvd. East	0.66	8.3	**A**	0.77	78.2	**F**
The East Mall	0.73	26.2	**C**	0.88	15.8	**B**
401/427	0.74	26.2	**C**	0.85	35.7	**D**
Martin Grove Rd.	1.14	91.2	**F**	0.98	93.8	**F**
Widdicombe Hill Blvd.	1.69	47.0	**D**	2.42	66.3	**E**
Kipling Ave.	0.86	34.6	**C**	1.16	47.2	**D**
Wincott Dr.	0.76	16.7	**B**	0.70	14.2	**B**
Islington Ave.	0.74	31.3	**C**	1.06	36.5	**D**
Russell Rd.	0.49	9.8	**A**	0.59	10.4	**B**
Royal York Rd.	0.75	30.7	**C**	0.87	45.1	**D**
Scarlett Rd.	0.87	26.8	**C**	0.84	27.2	**C**
Jane St.	1.22	38.5	**D**	1.68	53.0	**D**

The Renforth Drive and Eglinton Avenue intersection operates over capacity during the weekday PM peak hour, and the average delay is much higher than the acceptable level.

The demand at the Widdicombe Hill Boulevard on Eglinton Avenue exceeds approximately twice the available capacity, and the same at Kipling Avenue and Islington Avenue exceeds by approximately 16% and 7% of the available capacities, respectively during the weekday PM peak hour, although the average respective delays, are still within acceptable limit, reflect partially constrained traffic operations.

The intersection of Jane Street and Eglinton Avenue also exceeds the available capacity during the weekday PM peak hour, although traffic operation at this intersection, as becomes evident from the average vehicular delay, is again partially constrained.

The existing critical movements during the weekday AM and PM peak hours at the capacity constrained intersections within Section 2, as discussed above are summarized in **Exhibit 166.** The table also compares the available storage (pocket) lane length and 95th queue length at the identified problem intersections, for the critical movements during both the weekday AM and PM peak hours under the existing traffic conditions, as obtained from the Synchro analyses.

Exhibit 166: Critical Movements at Operationally Constrained Intersections – Section 2

Intersection on Eglinton Avenue with	Movement	Available Storage (pocket) Length (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			v/c	Average Delay (s)	95th Queue Length (m)	v/c	Average Delay (s)	95th Queue Length (m)
Renforth Drive	EBL	300.0	-	-	-	1.95	476.0	345.1
	EBR	100.0	-	-	-	1.23	152.4	315.8
	WBR	155.0	-	-	-	1.54	307.1	498.3
	SBT	-	-	-	-	1.15	121.0	240.3
Martin Grove Road	EBL	210.0	1.01	111.7	103.2	-	-	-
	WBT	-	1.34	198.6	321.2	-	-	-
Widdicombe Hill	EBL	50.0	2.13	576.3	80.9	2.94	935.6	108.4
	EBT	-	1.01	43.7	342.8	-	-	-
	WBTR	-	-	-	-	0.93	22.7	268.6
	NBL	35.00	-	-	-	1.35	244.4	103.7
Kipling Avenue	EBL	95.0	-	-	-	1.37	231.3	104.6
	EBTR	-	-	-	-	0.94	39.3	242.1
Islington Avenue	WBL	75.0	-	-	-	1.07	135.8	64.6
	NBL	100.0	-	-	-	1.14	200.9	50.6
	NBT	-	-	-	-	0.97	67.5	146.8
Jane Street	EBL	100.0	1.34	212.2	71.1	2.49	733.4	88.4
	WBL	80.0	-	-	-	1.08	138.5	56.9
	NBL	120.0	1.20	156.9	82.0	-	-	-

Exhibit 167 summarizes the capacity analyses results under the existing traffic conditions for the Section 3 from Weston Road to Yonge Street. Most of the major intersections along Eglinton Avenue within this section operate at acceptable levels of service during the weekday AM peak hour, although intersections of Trethewey Drive, Allen Road (northbound), Bathurst Street, Spadina Road, and Yonge Street onto Eglinton Avenue operate beyond the respective capacities and acceptable average vehicular delay during the weekday AM peak hour under existing traffic conditions. The intersections of Weston Road and Allen Road (northbound) onto Eglinton Avenue operate at over capacity during the weekday AM peak hour, although the average vehicular delay is within the acceptable limit.

During the weekday PM peak hour the average delay at all these study area intersections are within acceptable limit, although the Allen Road (southbound) intersection onto Eglinton Avenue operate with an average delay higher than the acceptable limit and the overall demand exceeds the available capacity. The overall demand at Trethewey Drive, Allen Road (northbound) and Yonge Street exceed the overall capacity available at those intersections.

Exhibit 167: Summary of Capacity Analysis - Section 3 (Weston Road to Yonge Street)

Intersection on Eglinton Avenue with	AM Peak			PM Peak		
	v/c	Average Delay (s)	LOS	v/c	Average Delay (s)	LOS
Weston Rd.	1.08	32.9	**C**	0.63	18.4	**B**
Black Creek Dr.	0.66	32.9	**C**	0.79	37.9	**D**
Bicknell Ave.	0.51	14.1	**B**	0.40	12.9	**B**
Trethewey Dr.	1.10	99.9	**F**	1.28	55.9	**E**
Richardson Ave.	0.53	9.1	**A**	0.50	7.9	**A**
Gabian Way	0.42	11.9	**B**	0.51	13.2	**B**
Blackthorn Ave.	0.52	9.1	**A**	0.51	7.9	**A**
Caledonia Rd.	0.52	18.7	**B**	0.70	23.1	**C**
Harvie Ave.	0.53	9.6	**A**	0.59	10.9	**B**
Ennerdale Rd.	0.27	5.5	**A**	0.40	5.7	**A**
Dufferin St.	0.61	15.4	**B**	0.81	22.9	**C**
Northcliffe Blvd.	0.44	15.9	**B**	0.37	10.4	**B**
Glenholme Ave.	0.36	7.8	**A**	0.35	5.6	**A**
Oakwood Ave.	0.75	21.6	**C**	0.96	44.8	**D**
Marlee Ave.	0.55	14.8	**B**	0.62	19.1	**B**
Allen (SB) Rd. West	0.96	53.0	**D**	1.05	88.3	**F**
Allen (NB) Rd. East	1.69	159.7	**F**	1.17	49.3	**D**
Old Park Rd.	0.50	12.1	**B**	0.39	10.4	**B**
Rostrevor Rd.	0.50	6.7	**A**	0.55	6.6	**A**
Bathurst St.	2.43	120.1	**F**	0.99	37.6	**D**
Old Forest Hill Rd.	0.58	21.6	**C**	0.59	7.4	**A**
Vesta Dr.	0.60	12.0	**B**	0.63	12.6	**B**
Spadina Rd.	1.11	99.2	**F**	0.83	20.1	**C**
Chaplin Cres.	0.86	33.5	**C**	0.61	19.8	**B**
Heddington Ave.	0.30	4.5	**A**	0.33	4.2	**A**
Castle knock Rd.	0.30	9.5	**A**	0.30	9.5	**A**
Avenue Rd.	0.64	25.5	**C**	0.83	29.4	**C**
Oriole Parkway	0.57	12.4	**B**	0.81	18.1	**B**
Lascelles Blvd.	0.38	7.7	**A**	0.51	8.8	**A**
Duplex Ave.	0.75	24.7	**C**	0.60	27.0	**C**
Yonge St.	1.07	80.0	**E**	1.12	59.3	**E**

The existing critical movements during the weekday morning and afternoon peak hours at the capacity constrained intersections within Section 3, as discussed above are summarized in **Exhibit 168.** The table also compares the available storage (pocket) lane length and 95th queue length at the identified problem intersections, for the critical movements during both the weekday AM and PM peak hours under the existing traffic conditions, as obtained from the Synchro analyses.

Exhibit 168: Critical Movements at Operationally Constrained Intersections – Section 3

Intersection on Eglinton Avenue with	Movement	Available Storage (pocket) Length (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			v/c	Average Delay (s)	95th Queue Length (m)	v/c	Average Delay (s)	95th Queue Length (m)
Weston Road	EBL	50.0	1.19	151.5	85.1	-	-	-
	NBTR	-	0.96	40.8	162.8	-	-	-
Trethewey Drive	EBL	40.0	1.37	232.6	148.5	-	-	-
	EBTR	-	0.97	52.9	147.4	-	-	-
	WBTR	-	1.66	347.2	154.7	1.03	68.6	167.5
	NBL	90.0	-	-	-	1.70	393.5	77.3
	NBTR	-	-	-	-	1.00	59.9	163.5
Allen (SB) Road West	SBL	-	-	-	-	1.27	130.6	314.9
	SBR	-	-	-	-	1.25	123.7	249.0
Allen (NB) Road East	WBR	60.0	1.95	445.4	466.3	1.27	143.2	351.9
Bathurst Street	EBL	40.0	3.55	1203.6	130.9	-	-	-
	EBTR	-	0.87	30.2	133.3	-	-	-
	WBL	45.0	1.50	303.2	51.3	-	-	-
	WBTR	-	1.04	61.0	194.6	-	-	-
	NBL	75.0	1.44	243.0	110.9	-	-	-
Spadina Road	WBTL	-	1.94	179.2	237.2	-	-	-
Yonge Street	SBTL	-	1.33	179.6	274.3	-	-	-
	EBTLR	-	-	-	-	1.19	118.7	189.7
	NBTL	-	-	-	-	1.06	60.3	188.3

Exhibit 169 summarizes the capacity analyses for Section 4 from Dunfield Avenue to Leslie Street. Most of the study area intersections operate at acceptable levels of service excluding some of the major intersections along this section of Eglinton Avenue.

Exhibit 169: Summary of Capacity Analysis – Section 4 (Dunfield Avenue to Leslie Street)

Intersection on Eglinton Avenue with	AM Peak			PM Peak		
	v/c	Average Delay (s)	LOS	v/c	Average Delay (s)	LOS
Dunfield Avenue	0.30	8.1	**A**	0.36	10.3	**B**
Redpath Avenue	0.46	12.0	**B**	0.53	13.6	**B**
Mount Pleasant Road	0.84	28.1	**C**	1.02	32.7	**C**
Forman Avenue	0.43	8.6	**A**	0.40	8.4	**A**
Banff Road	0.54	9.9	**A**	0.44	9.3	**A**
Bayview Avenue	1.09	48.4	**D**	1.10	57.3	**E**
Rumsey Road	0.70	13.4	**B**	0.63	12.8	**B**
Sutherland Drive	0.61	7.6	**A**	0.49	6.8	**A**
Laird Drive	1.00	56.4	**E**	1.12	87.2	**F**
Brentcliffe Road	0.90	49.3	**D**	1.60	109.1	**F**
Leslie Street	1.24	81.2	**F**	0.83	24.3	**C**

As becomes evident from the capacity analysis table above Leslie Street and Eglinton Avenue operates over capacity during the AM peak hour with a high average delay. During the weekday PM peak hour the intersections of Eglinton Avenue with Laird Drive and Brentcliffe Road operate with high delay, and approaching/exceeding the respective capacities under the existing traffic conditions. The intersections onto Mount Pleasant Road during the weekday PM peak hour and Bayview Avenue during both the weekday AM and PM peak hours exceed their respective capacities, although average delays at these intersections remain within acceptable limits.

The existing critical movements during the weekday AM and PM peak hours at the capacity constrained intersections within Section 4, as discussed above are summarized in **Exhibit 170.** The table also compares the available storage (pocket) lane length and 95th queue length at the identified problem intersections, for the critical movements during both the weekday AM and PM peak hours under the existing traffic conditions, as obtained from the Synchro analyses.

Exhibit 170: Critical Movements at Operationally Constrained Intersections – Section 4

Intersection on Eglinton Avenue with	Movement	Available Storage (pocket) Length (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			v/c	Average Delay (s)	95th Queue Length (m)	v/c	Average Delay (s)	95th Queue Length (m)
Mount Pleasant Road	NBL	40.0	-	-	-	1.24	201.0	38.9
	SBT	-	-	-	-	0.93	38.8	209.5
Bayview Avenue	EBL	120.0	-	-	-	1.36	224.7	104.2
	EBTR	-	0.88	41.5	136.6	-	-	-
	WBL	60.0	1.41	239.5	109.9	1.09	123.2	77.7
	WBT	-	0.94	47.7	161.3	1.01	68.2	177.1
	NBTR	-	-	-	-	1.00	62.4	184.1
	SBL	100.0	0.99	71.2	96.8	-	-	-
Laird Drive	EBTLR	-	-	-	-	1.27	161.4	186.6
	NBL	70.0	-	-	-	1.18	150.8	132.4
Brentcliffe Road	EBTL	-	-	-	-	1.19	117.7	205.1
	WBL	300.0	-	-	-	1.07	109.4	94.4
Leslie Street	EBL	240.0	1.08	101.8	150.8	-	-	-
	SBR	-	1.24	172.6	257.3	-	-	-

Exhibit 171 summarizes the measurement of performances of all the signalized intersections situated in Section 5 of the proposed LRT corridor along Eglinton Avenue. Most of the signalized intersections operate with acceptable levels of service during the weekday AM peak hour, whereas some of the major intersections along Section 5 operate with higher delays during the weekday PM peak hour.

Exhibit 171: Summary of Capacity Analysis – Section 5 (Leslie Street to Kennedy Road)

Intersection on Eglinton Avenue with	AM Peak			PM Peak		
	v/c	Average Delay (s)	LOS	v/c	Average Delay (s)	LOS
Don Mills Road	1.41	74.5	**E**	1.44	86.1	**F**
Don Valley Parkway (SB) West	0.92	24.3	**C**	0.91	47.7	**D**
Don Valley Parkway (NB) East	0.96	54.1	**D**	1.11	89.4	**F**
Saint Dennis Drive	0.66	3.8	**A**	0.88	52.9	**D**
Credit Union / Swift Drive	1.27	53.7	**D**	0.96	27.9	**C**
Bermondsey Road	1.09	195.3	**F**	0.97	148.3	**F**
Victoria Park Avenue	0.97	36.8	**D**	1.11	56.1	**E**
Eglinton Square	0.54	20.3	**C**	0.84	15.8	**B**
Pharmacy Avenue	0.86	36.8	**D**	1.15	51.9	**D**
Lebovic Avenue	0.53	24.0	**C**	0.79	35.1	**D**
Warden Avenue	1.42	97.3	**F**	1.29	125.7	**F**

Intersection on Eglinton Avenue with	AM Peak			PM Peak		
	v/c	Average Delay (s)	LOS	v/c	Average Delay (s)	LOS
Prudham Gate	0.44	10.1	**B**	0.51	13.6	**B**
Sinnot Road	0.47	12.7	**B**	1.29	25.3	**C**
Birchmount Road	1.02	44.9	**D**	0.82	34.1	**C**
Rosemount Drive	0.51	11.8	**B**	0.51	11.8	**B**
Lonview Road	0.40	10.1	**B**	0.42	10.2	**B**
Kennedy Road	0.90	55.5	**E**	1.12	67.0	**E**

The Don Mills Road and Eglinton Avenue intersection operates much over the available capacity during both the weekday AM and PM peak hours and the average delays are much beyond the acceptable limit.

The DVP (NB) East ramp terminal intersection operates near to its capacity with a high delay during the weekday AM peak hour, although it operates over capacity during the weekday PM peak hour and the average delay increases beyond the acceptable limit.

The Credit Union and Swift Drive and Eglinton Avenue intersection operate exceeding the available capacity during the weekday AM peak hour, whereas the demand approaches to the available capacity during the weekday PM peak hour.

The Bermondsey Road and Eglinton Avenue intersection operates within overall capacity, although the average delays during both the peak hours are much over the acceptable limit.

The Victoria Park and Eglinton Avenue intersection operates over the available capacity during the weekday PM peak hour, although the average delay is within the acceptable limit. This reflects partially constrained traffic operation. Similarly the Pharmacy Avenue and Eglinton Avenue intersection reflect partially constrained operation, although the overall demand exceeds available capacity.

The Warden Avenue and Eglinton Avenue intersection operates over capacity during both the peak hours, and the average delays during both peak hours are much over the acceptable limit.

The Sinnot Road and Eglinton Avenue and Birchmount Road and Eglinton Avenue operate over available capacities during the weekday afternoon and weekday morning peak hour, respectively, although the average delay at both these intersections reflect partially constrained traffic operations.

The Kennedy Road and Eglinton Avenue intersection operates over capacity during the weekday PM peak hour, and the average delay exceeds the highest acceptable limits.

Exhibit 172 below summarizes the critical movements at the capacity constrained intersections:

Exhibit 172: Critical Movements at Operationally Constrained Intersections – Section 5

Intersection on Eglinton Avenue with	Movement	Available Storage (pocket) Length (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			v/c	Average Delay (s)	95th Queue Length (m)	v/c	Average Delay (s)	95th Queue Length (m)
Don Mills Road	EBL	100.0	1.14	131.6	119.0	1.12	122.3	119.8
	EBTR	-	0.97	58.6	149.8	1.19	135.0	198.4
	WBL	210.0	1.32	201.8	145.2	1.09	137.3	115.9
	NBL	130.0	1.16	141.3	107.8	-	-	-
	NBT	-	-	-	-	0.87	41.0	149.7
	SBL	135.0	1.66	344.0	176.4	1.76	394.6	195.8
DVP (NB) East	NBR	-	-	-	-		541.9	386.3
Swift Drive	WBT	-	0.91	21.2	210.0	-	-	-
	NBL	-	2.11	556.2	188.1	-	-	-
Bermondsey Road	EBT	-	0.86	40.2	137.3	-	-	-
	WBL	100.0	1.66	406.3	66.5	-	-	-
	WBT	-	1.77	393.9	341.9	-	-	-
Victoria Park Avenue	EBL	180.0	-	-	-	1.16	141.5	114.2
	WBL	*100.0*	-	-	-	1.11	181.6	49.1
	NBT	-	-	-	-	0.96	51.8	211.8
	SBT	-	-	-	-	1.14	110.8	237.1
Pharmacy	EBL	90.0	-	-	-	1.55	291.2	156.2

Intersection on Eglinton Avenue with	Movement	Available Storage (pocket) Length (m)	Weekday AM Peak Hour			Weekday PM Peak Hour		
			v/c	Average Delay (s)	95th Queue Length (m)	v/c	Average Delay (s)	95th Queue Length (m)
Avenue	EBTR	-	-	-	-	0.89	34.9	183.1
Warden Avenue	EBL	75.0	1.33	212.4	91.1	1.10	113.2	93.8
	NBL	50.0	1.32	243.2	89.0	1.15	145.1	93.3
	NBTR	-	1.19	139.1	215.1	1.72	372.9	355.9
	SBL	55.0	1.79	438.1	129.2	-	-	-
	SBT	-	1.20	141.0	218.7	1.00	70.1	166.3
Sinnot Road	WBL	85.0	-	-	-	1.51	320.3	49.2
Birchmount Road	WBT	-	0.89	34.0	184.1	-	-	-
	NBL	70.0	1.29	248.0	56.0	-	-	-
	SBT	-	1.03	75.9	198.4	-	-	-
Kennedy Road	EBL	40.0	-	-	-	1.16	141.6	93.4
	EBT	-	-	-	-	1.11	94.4	243.3
	WBL	100.0	-	-	-	1.13	165.1	84.2
	SBL	45.0	-	-	-	1.20	157.8	107.1

The analysis results clearly demonstrate that traffic operation along all the five sections along the proposed LRT corridor under the existing traffic conditions are significantly constrained; the critical movements at 20 key intersections identified operate under capacity constrained conditions and the average delays are much beyond the acceptable limit.

With the implementation of the proposed LRT system, it could be assumed that due to the constrained operation under existing traffic conditions, a significant diversion in travel mode might become predominant under the future traffic conditions.

4.1.4.3 Bicycle and Pedestrian Network

Existing bike lanes running east-west within the Eglinton Avenue right-of-way, presented from a west to east direction include an existing off-road path running parallel to Eglinton Avenue, on the south side of the road, from Etobicoke Centennial Park, located west of Renforth Drive, to Jane Street. This off-road path is proposed to be extended from Jane Street to Bicknell Avenue, west of Keele Street.

Existing pedestrian facilities along Eglinton Avenue currently include sidewalks and pedestrian crossing with traffic signals at major intersections.

4.1.4.4 Navigable Watercourses

Transport Canada has confirmed that the Humber River, West Don River and East Don River are considered navigable. Mimico Creek, Black Creek, Silver Creek, Wilson Brook and Massey Creek are not considered navigable by Transport Canada.

4.2 Future Conditions

Below presents future conditions as they would be without the implementation of Eglinton Crosstown LRT.

4.2.1 Natural Environment

No major changes to the natural environment are expected with respect to fish and fish habitat; vegetation and vegetation communities; wildlife and wildlife habitat; and designated natural areas over the next 20 years.

4.2.1.1 Air Quality

If the trends of increasing population bring with it more vehicular traffic it is doubtful that the declining trend of air pollutant concentrations will be maintained despite improved vehicle emission standards. The amount of road dust resuspension is anticipated to increase as the number of vehicles on the road increases. Therefore, other emission reduction strategies, such as increased use of public transportation can only benefit the air quality in the city.

4.2.1.2 Noise and Vibration

The average daytime measured sound levels along Eglinton Avenue without the LRT in the year 2020 is forecasted to range from 56 to 69 decibels at a distance of 10 to 52 metres from the nearest receptor. At the same setbacks, the average night time sound levels range from 50 to 62 decibels. One vibration sensitive operation has been identified to date, Celestica, located at Don Mills Road and Eglinton Avenue. This business uses electron beam microscopes and other potentially vibration-sensitive equipment. Further details are available in **Appendix H**.

4.2.2 Socio-Economic Environment

4.2.2.1 Future Development

According to the City of Toronto, the Greater Toronto Area is projected to grow by more than 2.6 million people to reach 8.6 million by 2031. The City of Toronto is expected to capture 20 percent of the Greater Toronto Area's population increase. While the City's population is expected to grow 22 percent over its 1996 base, it will also continue to age. Younger age groups are expected to remain relatively stable while age groups over 65 will represent an increasing proportion of the City's population by 2031.

Future development plans identified were mainly for high-density housing and commercial and office uses along the corridor. **Exhibit 173** presents a list of future development plans within the study area recorded from January 2005 to March 2008. There are thirty-eight development applications within the study area. These include site plan, OPA/rezoning, condominium, part lot control, and subdivision applications. There are twenty-seven site plan applications, fifteen OPA/rezoning applications, eight condominium applications for six different locations, two part lot applications and one subdivision application.

A number of properties with potential for future development have been identified by the Greater Toronto Airport Authority (GTAA) along the LRT corridor. Most of the properties are assumed to be for industrial operations, office and retail commercial uses. There are three parcels of land within the designated the Airport Corporate Centre planning district for future office development.

Exhibit 173: List of Future Development Plans within the City of Toronto

Application Type	Application No.	Application Date	Address	Ward	Proposed Use Type	Proposed Use Description	Prop. Non-Resd. GFA SQ M	Prop. Resd. GFA SQ M	GFA SQ M	Prop. Units	Existing Lot Size	Status
Site Plan Approval	05 211417 WET 03 SA	12/21/2005	40 RAKELY CRT	03	Institutional	Proposed development of an 18 410 m2 place of worship building which will include a sanctuary area, an accessory school, day nursery, administrative offices and other accessory uses.	20,439.60	-	20,439.60	0	77,645.28	Planning Application Submitted
Site Plan Approval	08 173971 WET 03 SA	6/23/2008	5515 EGLINTON AVE W	03	Commercial	Construct two 7-storey towers, 254 room hotel and 204 at grade parking spaces	16,849.70	-	16,849.70	0	13,020.00	Permit Application
OPA / Rezoning	07 248066 WET 04 OZ	7/27/2007	25 FONTENAY CRT	04	Commercial	Proposal to permit the replacement of the existing retail/commercial development with 247 residential units and new commercial space to be contained within a 19 storey and 12 storey apartment building linked by a 5 storey podium	1,377.00	28,640.00	30,017.00	247	7,049.00	Delegated/Council Approval
OPA / Rezoning	07 258892 WET 04 OZ	9/5/2007	7-21 RICHGROVE DR	04	Residential Apartments	To propose residential intensification development consists of 3 blocks of townhouses with frontage on Richgrove Dr, and two 21-storey residential building atop a 1-storey podium on southern portion of the site. The total development including two exist	-	46,352.00	75,530.00	550	27,877.00	Delegated/Council Approval
Site Plan Approval	06 198889 WET 04 SA	12/19/2006	60 RICHVIEW RD	04	Residential Apartments	To add a 3 storey addition of 306 m2 with a terrace on the roof and to fit up the existing 4th floor shell space of existing Long Term Care Facility to occupy 1829 m2 and accommodate 32 beds	-	-	-	0	7,275.23	Building Permit Issued
Site Plan Approval	09 165525 WET 11 SA	9/3/2009	101 EMMETT AVE	11	Recreation	Site plan control for proposed construction of an additional storage (pocket) building.	185.50	-	693.20	0	-	Planning Application Submitted
OPA / Rezoning	05 136264 WET 11 OZ	5/26/2005	955-969 WESTON ROAD	11	Residential Townhouses	Proposal for residential development consisting of 71 three storey freehold townhouse dwelling units located in 4 blocks on a private (condominium) roadway.	-	7,411.00	7,411.00	71	7,411.00	Delegated/Council Approval
Site Plan Approval	08 195543 WET 11 SA	8/20/2008	4 ASTORIA AVE	11	Residential Singles	Proposed development of 4, 2 storey single detached dwellings	-	742.83	742.83	4	1,037.73	Under Construction
OPA / Rezoning	08 230964 WET 12 OZ	12/18/2008	3500 EGLINTON AVE W & 55 RAY AVE	12	Mixed Use - Non-Residential	Rezoning Application proposes to permit a commercial development consisting of office, retail, and service commercial uses.	70,950.00	-	75,100.00	0	232,268.00	Planning Application Submitted
Site Plan Approval	05 182542 WET 12 SA	9/21/2005	2560 EGLINTON AVE W	12	Commercial	Site Plan Approval Application to convert an existing 2-storey furniture store to a mixed use building (Cantu Furniture) containing office and retail space and a drop-in seniors centre.	4,610.77	-	4,610.77	0	2,237.94	Permit Application
Site Plan Approval	06 119240 WET 12 SA	3/22/2006	123 WESTBURY CRES	12	Residential Singles	Site Plan application to construct a two-storey rear addition and a second storey addition on the existing dwelling	-	216.92	216.92	1	636.62	Building Permit Issued
OPA / Rezoning	07 266058 NNY 15 OZ	9/28/2007	601-605 OAKWOOD AVE	15	Commercial	To permit commercial/office uses at grade and maintain the second floor residential uses.	-	-	677.94	0	555.30	Delegated/Council Approval
OPA / Rezoning	09 110945 NNY 16 OZ	2/20/2009	2300 YONGE ST, 33 ORCHARD VIEW BLVD & 411 DUPLEX AVE	16	Commercial	Renovation of the interior retail mall, office lobbies and pedestrian connections, to extend a coherent public realm throughout the centre	23,736.00	-	170,066.00	0	3,808.74	Planning Application Submitted
OPA / Rezoning	09 148228 NNY 16 OZ	6/10/2009	36-44 EGLINTON AVE W	16	Residential Apartments	Proposed 53 stories mixed-use building with condominium and ground floor retail	228.00	42,204.00	42,432.00	458	1,403.60	Planning Application Submitted
OPA / Rezoning	09 199580 NNY 16 OZ	12/23/2009	515-525 CHAPLIN CRES	16	Residential Apartments	Intensify the existing residential development by expanding the southerly building into an under-used area of the property, adjacent to the Beltline trail, a net increase of 64 units.	-	8,223.61	26,645.13	64	6,798.70	Planning Application Submitted

Application Type	Application No.	Application Date	Address	Ward	Proposed Use Type	Proposed Use Description	Prop. Non-Resd. GFA SQ M	Prop. Resd. GFA SQ M	GFA SQ M	Prop. Units	Existing Lot Size	Status
OPA / Rezoning	08 182458 NNY 16 OZ	7/16/2008	58, 60, 64, 68 ORCHARD VIEW BLVD. & 439, 441, 443, 445 DUPLEX AVE	16	Residential Apartments	The proposal is to develop the site with a 20-storey residential tower having an 8-storey podium. In addition the development will include 6 2-storey townhome units.	-	15,804.00	15,804.00	230	1,494.00	Planning Application Submitted
OPA / Rezoning	06 191791 NNY 16 OZ	11/16/2006	1066 AVENUE RD	16	Institutional	Proposal for a 7 storey retirement residence for seniors.	7,655.00	-	7,655.00	87	1,995.40	Permit Application
Site Plan Approval	09 146122 WET 17 SA	6/5/2009	426 A GILBERT AVE	17	Residential Singles	Site Plan amendment to permit an alteration to the existing fencing structure and grading. No additional Gross Floor Area is being created.	-	-	-	0	230.18	Building Permit Issued
OPA / Rezoning	05 127355 STE 21 OZ	4/28/2005	1065 EGLINTON AVE W	21	Residential Apartments	Proposed conversion of 34 existing rental units into residential condominiums.	-	-	1,581.10	0	1,025.60	Planning Application Submitted
OPA / Rezoning	08 231395 STE 21 OZ	12/22/2008	1950 BATHURST ST / 89 DEWBOURNE AVE	21	Institutional	Re zoning application to construct Private day school attached to existing Place of worship (sanctuary hall to be maintained on site)	5,383.00	(211.00)	12,200.00	0	8,930.00	Planning Application Submitted
Condominium Approval	06 187002 STE 21 CD	10/26/2006	31-33 SHALLMAR BLVD	21	Residential Apartments	Proposal to convert existing building into 4 condo units.	-	4.63	975.17	0	39.31	Delegated/Council Approval
OPA / Rezoning	08 164351 STE 21 OZ	5/30/2008	740 EGLINTON AVE W	21	Residential Apartments	OPA for conversion of existing building from co-ownership /life lease to standard condomimium	-	-	5,379.90	0	1,552.20	Delegated/Council Approval
Site Plan Approval	09 104567 STE 21 SA	1/23/2009	207 AVA RD	21	Residential Singles	SPA approval for new new detached brick dwelling with a detached carport	-	309.72	309.72	1	541.34	Building Permit Issued
Site Plan Approval	07 278776 STE 21 SA	11/14/2007	149 STRATHEARN RD	21	Residential Singles	Proposal to demolish existing SFD and construct a new detached SFD.	-	535.27	535.27	1	955.16	Under Construction
Site Plan Approval	06 113576 STE 21 SA	3/1/2006	561 ARLINGTON AVE	21	Residential Singles	Proposed second storey addition with rear addition to ground floor.	-	98.16	163.02	0	244.16	Under Construction
OPA / Rezoning	06 199566 STE 22 OZ	12/22/2006	140 REDPATH AVE	22	Parking	To amend the Zoning By-law on a temporary basis to permit an existing 42 space commercial parking lot at 140, 142 and 144 Redpath Avenue.	-	-	-	0	902.20	Planning Application Submitted
Condominium Approval	09 173809 STE 22 CD	9/29/2009	1670 BAYVIEW AVE	22	Other and N/A	Proposal to convert existing 5 sty office rental to office condo.	-	-	3,847.50	0	1,946.00	Planning Application Submitted
OPA / Rezoning	08 152941 STE 22 OZ	4/29/2008	54 BERWICK AVE	22	Residential Apartments	20 3-storey townhouses onto Duplex Ave., and 205 condominium apartment units in a 17-storey building that fronts onto Berwick Ave.	-	19,550.00	19,550.00	225	4,749.00	Planning Application Submitted
OPA / Rezoning	08 217828 STE 22 OZ	10/31/2008	79 DUNFIELD AVE, 85-117 EGLINTON AVE E	22	Residential Apartments	Propsal is to erect two 29 storey towers above a 8 storey podium building containing 574 residential dwelling units	4,959.72	48,794.14	53,753.86	571	5,562.00	Planning Application Submitted
OPA / Rezoning	07 251456 STE 22 OZ	8/9/2007	299 ROEHAMPTON AVE	22	Residential Apartments	Proposed replacement of existing townhouse units at the north-east corner of Rawlinson and Roehampton Aves, with a new 14 storey apartment building containing 171 dwelling units. Demo of existing 7 rental units.	-	14,872.82	42,872.22	189	12,162.00	Delegated/Council Approval
OPA / Rezoning	05 116292 STE 22 OZ	3/17/2005	480 ORIOLE PKWY	22	Residential Apartments	Proposed condominium conversion of existing 33 unit equity co-operative.	-	-	3,345.00	0	1,921.10	Delegated/Council Approval
OPA / Rezoning	05 175158 STE 22 OZ	8/25/2005	79 DUNFIELD AVE	22	Residential Apartments	Proposal for a 22 storey (231 unit) residential building. Applicant has been in contact with Tim Burkholder. (85-97 Eglinton Ave. E)	570.00	19,690.50	20,260.50	231	2,548.20	Delegated/Council Approval
OPA / Rezoning	05 195762 STE 22 OZ	10/21/2005	359, 365 & 377 ROEHAMPTON AVENUE	22	Residential Apartments	To construct 15 townhouses, in three pods.	-	2,400.20	2,400.20	15	2,178.30	Permit Application
Site Plan Approval	09 120970 STE 22 SA	3/27/2009	643 EGLINTON AVE W	22	Institutional	Site plan approval for new 2 storey EMS station with at-grade parking.	458.78	-	458.78	0	950.36	Permit Application

Application Type	Application No.	Application Date	Address	Ward	Proposed Use Type	Proposed Use Description	Prop. Non-Resd. GFA SQ M	Prop. Resd. GFA SQ M	GFA SQ M	Prop. Units	Existing Lot Size	Status
Site Plan Approval	09 125339 STE 22 SA	4/9/2009	279 CHAPLIN CRES	22	Residential Singles	Site plan aproval for a new 2 sty SFD.	-	312.05	312.05	1	452.40	Building Permit Issued
OPA / Rezoning	06 106482 STE 22 OZ	2/1/2006	70 ROEHAMPTON AVE	22	Residential Apartments	Redevelopment of the North Toronto Collegiate Site with the construction of a new secondary school and two residential condominium buildings (24 and 27 storeys) containing a total of 472 units.	15,793.00	46,182.37	61,975.37	459	21,449.10	Building Permit Issued
OPA / Rezoning	05 177537 STE 22 OZ	9/2/2005	18 BROWNLOW AVE	22	Residential Apartments	Maintain 19 storey rental building & construct new 21-storey condominium building on west half of site;	-	16,708.30	29,765.50	212	6,526.00	Under Construction
Site Plan Approval	05 138719 STE 22 SA	6/2/2005	219 HILLSDALE AVE E	22	Residential Singles	Site plan approval for 2 new SFD	-	457.30	457.30	0	656.40	Under Construction
OPA / Rezoning	07 277684 NNY 25 OZ	11/9/2007	99 ERSKINE AVE	25	Residential Apartments	35-storey apartment infill at 99 Erskine Ave. and 66 Broadway Ave.	500.00	28,042.00	54,694.20	392	12,728.00	Planning Application Submitted
OPA / Rezoning	06 102160 NNY 25 OZ	1/12/2006	1075-1095 LESLIE ST (FORMERLY 1100 EGLINTON AVE E)	25	Commercial	To convert existing 23-storey hotel tower to a 128-unit retirement residence.	-	-	21,350.00	0	16,200.00	Delegated/Council Approval
OPA / Rezoning	06 100399 NNY 25 OZ	1/4/2006	1075-1095 LESLIE ST (FORMERLY 1100 EGLINTON AVE E)	25	Commercial	Application to permit additional retail space. Application to lift the holding provision (H symbol) is not required because total proposd retail gross floor area does not exceed 5,000m2.	4,400.00	-	4,400.00	0	5,200.00	Delegated/Council Approval
Site Plan Approval	07 230587 NNY 25 SA	6/11/2007	260, 262 & 264 REDPATH AVE	25	Residential Townhouses	3 - Three storey townhouses	-	539.00	539.00	3	251.00	Building Permit Issued
OPA / Rezoning	08 111649 NNY 26 OZ	2/14/2008	1185 EGLINTON AVE E	26	Residential Apartments	To permit the development of a 28-storey, 282-unit apartment building, with a retail at-grade component on a site currently used for an existing office building and surface parking lot	586.00	24,880.00	37,642.00	282	11,499.00	Planning Application Submitted
Condominium Approval	08 187460 NNY 26 CD	7/29/2008	170 WICKSTEED AVE	26	Industrial	Proposal is to convert the existing industrial/office building into 4 condominium units.	-	-	590.83	0	575.25	Planning Application Submitted
OPA / Rezoning	06 106496 NNY 26 OZ	2/1/2006	1901 BAYVIEW AVE	26	Residential Apartments	Conversion of existing equity co-op building to condominium (36 units) which includes five rental units.	-	-	2,831.20	0	1,252.60	Planning Application Submitted
Site Plan Approval	09 116609 NNY 26 SA	3/12/2009	52 RYKERT CRES	26	Residential Singles	The construction of a 2 storey addition to an existing 2 storey, single family dwelling within Ravine and TRCA lands.	-	149.78	294.71	0	736.33	Planning Application Submitted
Site Plan Approval	06 152700 NNY 26 SA	6/30/2006	75 WYNFORD DR	26	Other and N/A	Proposed Phase One development to include new place of worship and community centre. Phase 2 is Aga Khan museum.	18,882.00	-	18,882.00	0	67,800.00	Planning Application Submitted
Site Plan Approval	09 170627 NNY 26 SA	9/18/2009	62 RYKERT CRES	26	Residential Singles	One and two storey additions to existing dwelling	-	33.14	340.31	0	805.52	Delegated/Council Approval
Site Plan Approval	09 141932 NNY 26 SA	5/26/2009	180 LAIRD DR	26	Commercial	Addition to existing bank building.	161.70	-	597.70	0	1,056.00	Permit Application
OPA / Rezoning	06 172720 NNY 26 OZ	9/1/2006	211 LAIRD DR	26	Commercial	To permit the construction of a new single storey comercial building to be occupied by a financial institution and medical and professional offices. The existing industrial building would be demolished.	1,084.57	-	1,084.57	0	2,415.48	Permit Application
Site Plan Approval	09 155468 NNY 26 SA	8/10/2009	12 RYKERT CRES	26	Residential Singles	To contruct a rear two storey addition and a side second storey addition to a house on a lot within TRCA and Ravine Area.	-	139.13	263.17	0	499.71	Building Permit Issued
Site Plan Approval	07 285207 NNY 26 SA	12/7/2007	970 EGLINTON AVE E	26	Residential Apartments	Convert existing file/storage (pocket) room to two apartment units in the basement level	-	98.00	8,908.00	2	5,264.00	Under Construction

Application Type	Application No.	Application Date	Address	Ward	Proposed Use Type	Proposed Use Description	Prop. Non-Resd. GFA SQ M	Prop. Resd. GFA SQ M	GFA SQ M	Prop. Units	Existing Lot Size	Status
Site Plan Approval	09 108820 NNY 34 SA	2/12/2009	155 BERMONDSEY RD	34	Commercial	Habitat for Humanity. 2 storey building for office, warehouse and retail uses.	2,517.00	-	2,517.00	0	8,004.00	Planning Application Submitted
Site Plan Approval	08 160468 NNY 34 SA	5/21/2008	1681 EGLINTON AVE E	34	Commercial	Sales office trailer for Parkway Honda	145.00	-	3,379.00	0	13,488.00	Planning Application Submitted
Site Plan Approval	09 111057 NNY 34 SA	2/20/2009	188 BERMONDSEY RD	34	Industrial	An additional bunker building to be built on the Bermondsey Waste Transfer Station property.	2,148.60	-	6,884.60	0	730,086.00	Planning Application Submitted
OPA / Rezoning	05 114048 NNY 34 OZ	3/9/2005	78 TISDALE AVE	34	Residential Townhouses	To construct 24, 3-storey townhomes with a new public road.	-	4,500.00	4,500.00	24	6,102.00	Delegated/Council Approval
Site Plan Approval	07 104661 ESC 35 SA	1/24/2007	41 LEBOVIC AVE	35	Commercial	Site plan approval application for a new 2-storey mixed commercial and office development	6,020.74	-	6,020.74	0	14,211.80	Planning Application Submitted
Site Plan Approval	05 144956 ESC 35 SA	6/16/2005	744 KENNEDY RD	35	Residential Townhouses	construct 9 townhouses on vacant block of land tied to the common element condominium at 740 Kennedy Road.	-	1,245.00	1,245.00	9	1,813.00	Planning Application Submitted
Site Plan Approval	07 114491 ESC 35 SA	3/8/2007	1-70 EGLINTON SQ	35	Commercial	Proposed expansion of the Shoppers Drug Mart store along the north face of the Eglinton Square shopping mall and parking area modifications	166.20	-	33,728.80	0	80,202.42	Delegated/Council Approval
Site Plan Approval	08 147066 ESC 35 SA	4/14/2008	1039 DANFORTH RD	35	Commercial	Proposal to demolish two, single storey buildings and construct a new, single storey retail building. Technical and service upgrades to the existing ESSO service station are also proposed.	69.92	-	492.72	0	2,429.20	Delegated/Council Approval
OPA / Rezoning	05 188743 ESC 35 OZ	9/29/2005	773 WARDEN AVE	35	Industrial	Currently, unit #1 of 773 Warden Avenue operates an automotive sales business. This use is not permitted on this site. The applicant is seeking to allow automotive sales as a permitted use to unit #1.	-	-	2,889.60	0	9,609.50	Delegated/Council Approval
Site Plan Approval	07 284203 ESC 35 SA	12/4/2007	2005 EGLINTON AVE E	35	Commercial	Proposal for a single storey addition to the existing Enterprise Rent-a-Car.	48.70	-	156.69	0	836.10	Permit Application
Site Plan Approval	06 152301 ESC 35 SA	6/29/2006	1897 EGLINTON AVE E	35	Commercial	A site plan for a new car dealership was approved earlier this year. The owner is now contemplating a 540 sq.m. rear addition which would used for a rapid lube faciltity as part of the vehicle service use and an automatic car wash facility.	1,085.30	-	8,499.30	0	28,312.00	Building Permit Issued
Site Plan Approval	09 200843 ESC 36 SA	12/31/2009	15 COUGAR CRT	36	Residential Apartments	The applicant is proposing to construct 17 additional units to the existing 17-storey apartment building, to a total of 210 units. A new playground is also proposed.	-	-	23,945.50	17	11,704.50	Planning Application Submitted
Site Plan Approval	06 158452 ESC 36 SA	7/19/2006	20 MARKANNA DR	36	Institutional	PORTABLE CLASSROOM AT SCHOOL	-	-	-	0	-	Delegated/Council Approval
Site Plan Approval	06 109610 ESC 36 SA	2/14/2006	216-220 SCARBOROUGH GOLF CLUB RD	36	Commercial	TEMPORARY SALES TRAILER AT 216-220 SCARBOROUGH GOLF CLUB RD	-	-	-	0	-	Delegated/Council Approval
OPA / Rezoning	07 272312 ESC 36 OZ	10/23/2007	3201-3227 EGLINTON AVE E	36	Residential Apartments	The applications seek approval for the development of a phased mixed use project comprised of 1057 residential units in 6 condominium apartment buildings	5,486.00	97,726.00	100,160.00	1057	26,009.00	Delegated/Council Approval
Site Plan Approval	07 101483 ESC 37 SA	1/10/2007	1040 BIRCHMOUNT RD	37	Industrial	Addition to existing warehouse.	129.20	-	869.00	0	2,195.60	Planning Application Submitted
Site Plan Approval	08 114574 ESC 37 SA	2/26/2008	1553 VICTORIA PARK AVE	37	Commercial	A retail building proposed for a new Home Hardware store.	882.00	-	882.00	0	2,228.00	Planning Application Submitted
Site Plan Approval	09 145003 ESC 37 SA	6/3/2009	2480 EGLINTON AVE E	37	Commercial	Proposed 1,882 m2 commercial building (consisting of 16 back-to-back retail/office units and two restaurants) on the east/south-east portion of the site.	1,882.00	-	5,026.00	0	15,736.00	Planning Application Submitted

Application Type	Application No.	Application Date	Address	Ward	Proposed Use Type	Proposed Use Description	Prop. Non-Resd. GFA SQ M	Prop. Resd. GFA SQ M	GFA SQ M	Prop. Units	Existing Lot Size	Status
Site Plan Approval	09 151961 ESC 37 SA	6/19/2009	50 THERMOS ROAD	37	Commercial	The applicant has submitted plans for a site plan amendment to permit a Garden Centre / Frost House on the front facade of the existing Zellers building.	241.00	-	21,287.00	0	59,814.66	Planning Application Submitted
Site Plan Approval	08 163599 ESC 37 SA	5/28/2008	1900 EGLINTON AVE E	37	Commercial	The site plan application (Phase 3) proposes a "big-box" retail/commercial development at 1900 Eglinton Avenue East.	7,687.00	-	7,687.00	0	27,654.00	Under Construction
Site Plan Approval	08 152652 ESC 37 SA	4/29/2008	1966 EGLINTON AVE E	37	Commercial	Site plan application for the modification of the existing McDonald's drive through configuration to the "side-by-side" drive through.	-	-	-	0	57,022.00	Delegated/Council Approval
OPA / Rezoning	09 104879 ESC 37 OZ	1/26/2009	1966-1972 EGLINTON AVE E	37	Commercial	This application proposes a zoning by-law amendment to delete performance standard no. 230, which limits the retail sale of food to a maximum of 700 square metres in any retail store.	-	-	12,451.00	0	57,045.00	Delegated/Council Approval
OPA / Rezoning	05 203162 ESC 37 OZ	11/16/2005	1980-2040 EGLINTON AVE E	37	Commercial	Proposal for a commercial development that consists of four 1-storey buildings	-	-	-	0	-	Permit Application
Site Plan Approval	08 150972 ESC 37 SA	4/24/2008	1980 EGLINTON AVE E	37	Commercial	Site plan approval to convert former areas used for light industrial purposes (Building D) to retail purposes for a Fabricland Store.	-	-	4,213.00	0	15,254.25	Building Permit Issued
Site Plan Approval	09 159264 ESC 38 SA	8/18/2009	2990 EGLINTON AVE E	38	Commercial	Site plan approval for Swiss Chalet to replace the existing restaurant building with a new one.	576.55	-	576.55	0	3,971.95	Planning Application Submitted
Site Plan Approval	09 106275 ESC 38 SA	2/2/2009	3174-3182 EGLINTON AVE E	38	Commercial	Proposal for the construction of a 85.74 square metre (923 square foot) addition to the exisitng single storey building.	85.74	-	134.14	0	1,751.40	Planning Application Submitted
Site Plan Approval	05 110287 ESC 38 SA	2/21/2005	2800-2810 EGLINTON AVE E	38	Commercial	Temporary sales trailer - future townhouse development	81.83	-	81.83	0	22,830.00	Delegated/Council Approval
Site Plan Approval	08 117416 ESC 43 SA	3/7/2008	3739 KINGSTON RD	43	Institutional	Proposal to construct an entrance addition to the existing church and reconfigure the existing parking lots to add more parking spaces.	152.00	-	1,711.50	0	5,412.70	Planning Application Submitted

4.2.2.2 Contaminated Property and Waste

Assuming that no other major infrastructure projects and the Eglinton Crosstown LRT will not be implemted, it is anticipated that the condition of existing contaminated property will remain the same as described above as existing conditions.

4.2.2.3 Utilities

Assuming that no other major infrastructure projects and the Eglinton Crosstown LRT will not be implemted, it is anticipated that the future utilities will be similar to existing utility conditions. No major utility construction is anticipated to occur.

4.2.2.4 Structural Inventory

No new major structural constructions are anticipated to occur within the study area. Conditions of existing structures will deteriorate over time.

4.2.3 Cultural Environment

No major changes are expected in the cultural environment in this area.

4.2.4 Transportation

4.2.4.1 Transit

Without the Eglinton Crosstown LRT, transit services would continue to be offered mainly by buses operating in mixed traffic.

The City of Mississauga is currently developing a Bus Rapid Transit system, BRT East, which will run parallel to Highway 403, Eastgate Parkway and Eglinton Avenue. BRT East will have service connections to the TTC's Bloor-Danforth subway line via Highway 427, and to Hurontario Street which connects Port Credit in Mississauga to Brampton's downtown at Queen Street. The first phase of BRT East, expected to be completed by end of 2012, begins from Mississauga City Centre easterly to Renforth Drive. A BRT East station, the Renforth BRT Station, is proposed to be located on Commerce Boulevard within the Airport Corporate Centre, which is within the Eglinton Crosstown LRT – Airport Link study area.

<u>GO Georgetown Line</u>

The "Georgetown Corridor Planning Study" (2002) and the "Georgetown South Service Expansion and Union-Pearson Rail Link Environmental Project Report" (2009) identified a future GO station on Eglinton Avenue approximately mid-way between Black Creek Drive and Weston Road. The 'Georgetown Corridor Planning Study" (2002) identified a 'York City Centre/Black Creek Gateway' station immediately south of Eglinton Avenue, with a primary passenger access via Photography Drive. The second alternative location considered is on the northeast quadrant of Eglinton Avenue and GO Georgetown line. Additional examination of the need and feasibility of stations will be required, given the close proximity of Weston GO Station (at Lawrence Avenue). The GO-LRT interface will require transfers via appropriate pedestrian connections. The closest proposed Eglinton LRT stops/stations to the GO station are on Weston Road and Black Creek Drive.

<u>GO Barrie Line</u>

The "Bradford Corridor Planning Study" (2002) has identified a potential station immediately north of Eglinton Avenue on the east side of Westside Mall, with pedestrian access to the platforms and across the rail corridor via a separate pedestrian bridge. The GO station would be located beneath an overpass. A direct GO-LRT interface will require transfers via appropriate pedestrian connections. The closest proposed LRT station is Caledonia which has ben located adjacent to the rail ine.

<u>GO Richmond Hill Line</u>

The Richmond Hill Line crosses Eglinton East of Wynford Drive. There are no current plans to add a station to this line.

5. IMPACT ASSESSMENT, MITIGATION AND MONITORING

The Transit Projects Regulation (Ontario Regulation 231/08) Section 9 (2) requires the proponent to prepare an environmental project report that contains the following information, among other requirements:

"6. The proponent's assessment and evaluation of the impacts that the preferred method of carrying out the transit project and other methods might have on the environment, and the proponent's criteria for assessment and evaluation of those impacts.

7. A description of any measures proposed by the proponent for mitigating any negative impacts that the preferred method of carrying out the transit project might have on the environment.

8. If mitigation measures are proposed under paragraph 7, a description of the means the proponent proposes to use to monitor or verify their effectiveness."

The purpose of this chapter is to document the potential impacts of the Eglinton Crosstown LRT, to identify mitigation measures and to recommend monitoring activities.

5.1 Interactions Between the Undertaking and the Environment

The environmental factors that may be affected by project facilities/activities were identified using an interactions matrix. The interactions matrix is designed to scope the types and level of significance of environmental effects that may be encountered for this project and the level of detail that may be necessary to address those environmental effects. The interactions matrix considered site-specific environmental conditions and project-specific facilities and activities.

The environmental effects of the Undertaking can be classified under three categories:

1. **Footprint Impacts** – These are existing environmental features located within the study area that will potentially be displaced or lost through the introduction of the LRT facility;
2. **Construction Impacts** – These are potential short-term disruption effects resulting from construction of the LRT facility; and
3. **Operation and Maintenance Impacts** – These are potential long-term disruption effects resulting from the operation and maintenance of the LRT facility.

The level of interaction between a facility/activity and an environmental factor can be classified as: "none," "weak," "moderate" and "strong." These terms were defined as follows:

1. **None** (blank) - no probability of an interaction or the interaction has no significance to society. As a result, no additional discussion and documentation is required in support of this Transit Project Assessment.
2. **Weak** (W)- a low probability of an interaction or the interaction has low significance to society. A general discussion is provided in this section, but given the anticipated low probability and/or significance, no additional commitments or follow up actions are required.
3. **Moderate** (M) - a moderate probability of an interaction or the interaction has moderate significance to society. A more detailed discussion accompanied with supporting supplemental analysis and possible mitigation measures and commitments.
4. **Strong** (S) - a high probability of an interaction or the interaction has a high level of significance to society. These issues are usually regulated or closely monitored by government agencies and will require detailed analysis to quantify the potential impact and the anticipated effect of mitigation measures. Future commitments for elements with strong interactions are addressed.

The interactions matrix helped to establish the scope of the environmental assessment and reveal which project facilities/activities have a significant interaction with environmental factors. The interactions matrix is presented in **Exhibit 174.** The subsequent sections will discuss for each of the environmental effects identified in **Exhibit 174**, the following topics:

1. Describe the potential impacts;
2. Identify mitigation measures and residual impacts;
3. Describe the monitoring program; and
4. Recommend contingency measures, as required.

Exhibit 174 presents a summary of Eglinton Crosstown LRT potential impacts, mitigation measures, monitoring, future work, and contingency plan.

5.2 Monitoring

A monitoring plan will be prepared in accordance with Subsection 9(2)(8) of Ontario Regulation 231/08. The objectives of the monitoring plan will be as follows:

1. To augment existing information and databases, where required;
2. To determine the accuracy of impact predictions and the effectiveness of environmental protection measures;
3. To ensure compliance with federal, provincial and local legislation and regulations; and,
4. To ensure that EA commitments, plans and programs are carried out as planned.

These objectives help to determine the types of monitoring to be used including baseline monitoring, implementation monitoring, effectiveness monitoring and compliance monitoring.

5.2.1.1 Baseline Monitoring

A considerable amount of baseline information has been collected for the Study Area. At the same time, the level of detail of information and the timeframe involved presents only a snapshot of conditions as they are today. For these reasons, an ongoing monitoring program is required to gain a fuller understanding of baseline conditions within the Study Area.

5.2.1.2 Implementation Monitoring

A plan for implementing prescribed mitigation measures and environmental commitments will be prepared during design. The plan will include a schedule, resources and priorities for implementation. The plan will also serve as a baseline for monitoring the completion of tasks. A review to determine the success of implementation will be conducted on a regular basis. An annual report will be prepared to document the degree of implementation of prescribed measures and set priorities for the following year.

5.2.1.3 Effectiveness Monitoring

Effectiveness monitoring will be performed at regular intervals to determine if impact predictions were accurate and if environmental protection measures are effective. If the results of effectiveness monitoring reveal unanticipated effects, contingency measures will be implemented to correct the situation.

Environmental commitments and mitigation measures will usually form the basis of contract documents for construction.

5.2.1.4 Compliance Monitoring

Compliance monitoring will be conducted to ensure that construction activities do not contravene legislation and regulations and are in accordance with contract provisions.

Where standard monitoring procedures are known, they are identified in the following sections. A detailed monitoring plan will be prepared once the design for the Eglinton Crosstown LRT is advanced. Contingency measures, where appropriate, will be addressed as part of the detailed monitoring plan.

Exhibit 174: Interaction Matrix

Facilities/Activities	Environmental Factors	Natural Environment					Emissions					Socio-Economic					Culture		Transportation				
		Terrain and Soils	Groundwater	Surface Water	Communities/ Ecosystems	Population/Species	Electromagnetic Interference	Air Pollution	Noise	Vibration	Stray Current	Parks and Open Space	Utilities	Businesses Operations	Land Use	Property	Archaeology	Cultural Heritage	Traffic Operations	Transit Service	Cyclists	Pedestrians	Navigation
Footprint Impacts	LRT Runningway			S									S										
	New Bridge Over Highway 401			S																			
	Bridge/Culvert Improvements			S	S	S																	S
	Intersection Improvements			S	S	S							S			S							
	Road Improvements			S	S	S							S										
	Stations	S	S			S						S	S		S	S		S					
	Stops			W									S										
	Traction Power Substation			W		S						S			S	S		S					
	Emergency Exit Buildings			W		S						S			S	S		S					
	Ventilation Shafts			W		S						S						S					
	Portals	S	S		S	S																	
	Work Yards			S	S	S						S											
	Tunnel	S	S										S										
	Bus Terminals			S		S										S							
Construction Impacts	Tunnelling/Work Yards	S	S	W					W	W		S	S										
	Cut and Cover Construction	S	S					S	S	S				S					S	S	S	S	
	Surface Excavation	S	S	S				S	S	S													
	Clearing and Grubbing			S	S	S		S	S	S													
	Utility Relocation												S						W			W	
	Roadwork							S	S	S				M					S				
	Building Demolition							W	W	W				W				S				W	
	Soil Removal and Disposal	S		W				W				S							S				
	Dewatering		S	W		M							S										
	Reinforcement of Existing Buildings	W				M				S													
	Erosion and Sedimentation Control	S		S				W				S											
	Heavy Equipment Operations and					M		M	S	S		S											

Facilities/Activities	Environmental Factors	Natural Environment					Emissions					Socio-Economic					Culture		Transportation				
		Terrain and Soils	**Groundwater**	**Surface Water**	**Communities/ Ecosystems**	**Population/Species**	**Electromagnetic Interference**	**Air Pollution**	**Noise**	**Vibration**	**Stray Current**	**Parks and Open Space**	**Utilities**	**Businesses Operations**	**Land Use**	**Property**	**Archaeology**	**Cultural Heritage**	**Traffic Operations**	**Transit Service**	**Cyclists**	**Pedestrians**	**Navigation**
	Maintenance																						
	Traffic Management																		S	S	S	S	
	Material Import/Stockpiling							W				S							S				
	Trackwork								W	W				S					S				
	Concrete Forming			S		M																	
Operations and Maintenance Impacts	LRT Operations						M		M	W	M								S	S	M		
	Track and Structure Maintenance																		M	M			
	Stormwater Management			S	W	W																	
	Bus Operations							M	M	M										M			
	Station Maintenance																			M	W		
	Stop Maintenance																			M	W		
	Testing of Emergency Equipment								S														
	Snow Removal					W													W				

Level of Interaction: "-" = None "W" = weak "M" = Moderate "S" = Strong

5.3 Displacement of Existing Features by LRT Facilities

Development of the Eglinton Crosstown LRT will result in the permanent displacement or loss of the existing features found within the footprint of the new facility. The Eglinton Crosstown LRT will be developed for the most part within the centre median along the existing rights-of-way of Silver Dart Drive, Convair Drive, Commerce Drive and Eglinton Avenue. Where the existing roadway is too narrow to accommodate LRT facilities and potential widening is constrained by development, the LRT will travel underground. The central underground section extends from west of Keele Street to east of Brentcliffe Road. There is a second underground section at the intersection with Don Mills Road and the Don Mills LRT. In the underground sections, footprint impacts are associated with LRT surface facilities including station entrances, traction power substations, ventilation shafts and emergency exit buildings.

Where the existing roadway is currently three lanes wide in each direction, the centre two lanes will be converted to LRT runningway and two lanes of traffic will be maintained in each direction. The sections where road widening will not be required extends from Weston Road to Black Creek Drive and from east of Brentcliffe Road to Kennedy Road. Through these sections, footprint impacts are associated with minor intersection improvements and traction power substations.

Where the roadway is currently two lanes wide in each direction, the roadway will be widened by two lanes to accommodate the LRT runningway within the median and to maintain two lanes of traffic in each direction. The section where road widening is required extends from Pearson International Airport to Weston Road and from Black Creek Drive to west of Keele Street. Through these sections, footprint impacts are associated with new traffic lanes and intersection improvements.

Several bridge/culverts will also be widened to accommodate LRT facilities. Bridge/culvert widening is required at Mimico Creek, Black Creek, West Don River, East Don River and Wilson Brook. No bridge/culvert widening is required at Silver Creek, Humber River and Massey Creek. Footprint impacts are associated with bridge/culvert widening, although no encroachment into the wetted channel is anticipated at bridge/culvert sites. A new bridge will also be constructed over Highway 401 to accommodate the LRT runningway only.

No displacement of existing features will occur during the operations and maintenance phase.

5.3.1 Terrain and Soils

Potential Impacts

The Eglinton Crosstown LRT will have minimum permanent impacts on terrain as LRT facilities will be located primarily within the right-of-way and the vertical profile of Silver Dart Drive, Convair Drive, Commerce Drive and Eglinton Avenue will be maintained. Minimium impact on terrain will occur in underground sections.

A large volume of soil will be displaced by tunnelling and cut-and-cover activities to be carried out at the portal, tunnel and stations. Approximately 1.8 million m^3 of soils are expected to be removed. Excavations may generate excess soil that cannot be reused within the project. Excess soil that is stained, odourous, contains debris or has been analysed and found to be contaminated will require management as a waste.

Mitigation

Excess soil will require waste classifications in accordance with regulatory requirements. Regulatory requirements in place at the time of construction and excess materials management guidelines and specifications (e.g. OPSS180) will be used when developing an excess materials management plan.

A Soil and Groundwater Management Strategy will be developed during the design phase.

Monitoring

If excavations or property acquisitions are planned in areas of known or high potential for environmental impacts, additional environmental investigations (e.g. Phase 1 Environmental Site Assessments and Phase 2 Environmental Soil & Groundwater Investigations) will be conducted in accordance with provincial regulatory requirements to assess the environmental site conditions, disposal requirements for soil as well as health and safety requirements. Contaminated soils will be managed in accordance with provincial legislation and regulations including the Ministry of the Environment's Guidelines for Use at Contaminated Sites in Ontario (MOE 1997). This may include management within the right-of-way depending on circumstances.

A monitoring program will be included in the Soil and Groundwater Management Strategy which will be developed during the design phase.

Contingency

A contingency plan will be developed during the design phase where appropriate.

5.3.2 Groundwater

Potential Impacts

It is anticipated that Eglinton Crosstown LRT facilities will not interrupt existing groundwater migration pathways and permanent groundwater dewatering systems will not be used.

Mitigation

Contaminated groundwater will be managed in accordance with provincial legislation and regulations including the Ministry of the Environment's Guidelines for Use at Contaminated Sites in Ontario (MOE 1997). A Soil and Groundwater Management Strategy will be developed during the design phase.

Monitoring

If excavations or property acquisitions are planned in areas of known or high potential for environmental impacts, additional environmental investigations (e.g. Phase 1 Environmental Site Assessments and Phase 2 Environmental Soil & Groundwater Investigations) will be conducted in accordance with provincial regulatory requirements to assess the environmental site conditions, disposal requirements for soil as well as health and safety requirements. Groundwater will be managed in accordance with provincial legislation and regulations including the Ministry of the Environment's Guidelines for Use at Contaminated Sites in Ontario (MOE 1997). This may include management within the right-of-way depending on circumstances.

A monitoring program will be included in the Soil and Groundwater Management Strategy which will be developed during the design phase.

Contingency

A contingency plan will be developed during the design phase where appropriate.

5.3.3 Surface Water

Potential Impacts

At two locations, Humber River and Black Creek, it was determined that the Eglinton Crosstown LRT will be affected by the regional storm event (1 in 500 years) but operations will not be affected by the 100 year storm event. The east and west portal are both located above the flood elevation for the regional storm; therefore, minimum risk of flooding within the portal or tunnel are predicted.

A small drainage channel that originates west of the West Don River Bridge on the north side of Eglinton Avenue and flows easterly into the West Don River will be displaced by the proposed LRT facilities.

Stormwater runoff within most of the Eglinton Avenue right-of-way is conveyed by storm sewers. However, roadway runoff at the west section of the project is conveyed by roadside ditches. Storm runoff from these areas is eventually conveyed to 8 watercourse crossings with the exception of drainage area 1. Storm runoff from the drainage area 1 (west project limit) is collected by storm sewers and conveyed to Renforth Creek /Etobicoke Creek located outside the project limits, and as such there is no creek crossing within this segment (Renforth Drive to Silver Dart) of the project.

Under proposed conditions, the existing storm sewers will continue to discharge to current cross-culverts and trunk sewer systems within the Eglinton Avenue right-of-way, as presently occurs. It is assumed that the proposed roadway drainage within Mimico Creek and Silver Creek watersheds will continue to be conveyed by roadside ditches. The general direction of roadway flow will not be altered and drainage pattern will be maintained. In the west section (west of Martin Grove Road), catchbasins / storm sewers may require relocation as a result of proposed Eglinton Avenue widening. The storm sewers located between Royal York and Weston Road may require hydraulic capacity assessment to ensure that the capacities of these receiving storm sewers are not compromised due to proposed increase in pavement area. At other locations where increase in pavement area is nominal, it is anticipated that the existing storm sewers capacities will not be impacted.

A pavement area analysis was performed to determine the increase in impervious surface as a result of the roadway improvements. It was determined that the proposed roadway improvements will result in a 15-percent increase in pavement area within the study corridor. As a result, the project will not significantly add impermeable areas in the east section of the project. Also, at underground sections there will be no significant increase in the pavement with the exception to portal locations where some roadway widening is anticipated. As such no water quality control measures are warranted on these segments of the LRT.

However, according to the Ministry of the Environment (MOE), any new construction/development must address existing situations and provide the necessary measures to achieve an 'enhanced' level of water quality treatment of stormwater converging into the watercourses that are located within the project area. Due to the limitation of space, it is recommended to provide oil/grit separator (OGS) units to improve the existing situation at all watercourses where water quality is impaired. Where feasible, the project should incorporate water quality control measures by means of permeable paving on future bike lanes/sidewalks and creating more green spaces within the right-of-way.

In the west section, a number of stormwater quality control practices were reviewed and assessed for their applicability on this project. Due to the nature of this facility (i.e. linear transportation corridor), limited space within the roadway right-of-way, it was determined that two possible stormwater management measures were applicable for use, namely oil/grit separator systems and grassed swales. The possibility of using wet ponds located in adjacent lands outside the right-of-way (existing /future) should be explored to ensure that the stormwater objectives are effectively addressed. A more detailed evaluation of these measures is required during the design phase.

It is assumed that existing water quality control measures (i.e. roadside ditches within the project corridor) will be maintained. Wherever feasible, opportunities to enhance existing stormwater measures will be explored. Currently water quality controls at Mimico Creek and Silver Creek are achieved by roadside ditches. Where space constraints allow, these roadside ditches should be enhanced by providing a flat bottom width of 0.75 metres. Details including location, length and size of swales will be determined during the design phase.

The drainage system at east Don River Bridge consists of deck drains located at certain intervals on the bridge deck. Stormwater is collected into a single pipe and then discharged through outfall below the deck into the river. It is recommended to modify the current drainage system by directing outlet pipe from deck drain to soak pits. The soak pits can be placed at the bottom of piers. These soak pits will prevent erosion and filter runoff before discharging to the river system. The possibility of installing OGS before discharging to soak pits should be explored during the design phase.

It should be noted that no deck drains exist on other bridges including west Don River Bridge. Storm water drains to catch basins at the abutments and outlet to adjacent roadside ditches before reaching the river. Erosion protection is required at the catch basin outlets to protect the embankment and prevent potential sediments from reaching the river.

Mitigation

LRT operations will be suspended during the regional storm event to prevent potential risks to human health and safety and damage to LRT facilities and vehicles.

The small drainage channel west of the West Don River Bridge on the north side of Eglinton Avenue will need to be realigned or enclosed as it is currently confined by Eglinton Avenue and the adjacent embankment. The treatment for this drainage channel will be determined during the design process in consultation with the TRCA.

Eglinton Crosstown LRT facilities will be located within the TRCA Regulation Limit; therefore, a permit(s) under Ontario Regulation 166/06 – Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses will be secured from TRCA during the design phase.

A stormwater management plan will be developed during the design phase in accordance with the City of Toronto, city of Mississauga, TRCA and the Ministry of the Environment requirements. Stormwater Control, Mitigation, Erosion and Sediment Control measures shall be enumerated as per Ministry of the Environment's Stormwater Management Design Manual 2003 and City of Toronto's Wet Weather Flow Management Guidelines 2007.

Water quality control for the Eglinton Avenue widening should meet the following stormwater management criteria:

- Provide water quality treatment to offset, as a minimum, the increase in roadway pavement area as a result of roadway widening;
- Any proposed control measures should be sized to provide Level 1 treatment and meet the design requirements of the Ministry of the Environment s Stormwater Management Planning and Design (MOE Manual, 2003); and,
- Provide erosion control, if feasible (Detention runoff for 24 hours from 25 mm storm).

Monitoring

The City of Toronto operates and maintains a network of rainfall gauges. The information is used to determine sewer sizes and the influence of storms of various sizes on the existing sewer system and on streams (floods).

The City collects and analyses water samples from sewers at sewer outfalls, in stream and at the lakefront for a variety of management reasons. Sample results from sewer outlets are used to determine trace and correct the discharge of prohibited pollutants to its sewer systems.

5.3.4 Communities/Ecosystems

An ecological community is composed of a group of organisms or a population of different species, both plant and animal, occupying a particular area. The species present often interact with one another, affecting each other's distribution, abundance, diversity and existence. Human interference can also greatly affect these four interdependent components of a community.

5.3.4.1 Terrestrial

Vegetation communities were classified according to the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee et al. 1998). A total of twenty-five different ecological land classification (ELC) vegetation community types have been identified by LGL along Eglinton Avenue. These communities include: mixed forest (FOM6-1); deciduous forest (FOD2-1, FOD3-1, FOD4, FOD5-1, FOD5-2, FOD5-3, FOD5-8, FOD6-1, FOD6-4, FOD7, FOD7-3 and FOD8); cultural plantation (CUP3); cultural meadow (CUM1-1); cultural thicket (CUT1); cultural savannah (CUS1); cultural woodland (CUW1); deciduous swamp (SWD2-2, SWD4 and SWD4-1); swamp thicket (SWT2-2); meadow marsh (MAM2 and MAM2-2); and, shallow marsh (MAS2-1). The above vegetation communities are considered widespread and common in Ontario and secure globally.

Potential Impacts

The Eglinton Crosstown LRT runningway includes dedicated light rail tracks travelling in both directions along the centreline of Eglinton Avenue, Commerce Boulevard, Convair Drive and Silver Dart Drive between the Pearson International Airport and Kennedy Road. Because the LRT will operate in a dedicated right-of-way in the centre of the road on Eglinton Avenue; the ELC communities will only be impacted along the edge of the vegetation community that is adjacent to the existing road alignment and fragmentation of any ELC community will not occur.

The LRT will be underground through the central section of the overall alignment, from Keele Street to Brentcliffe Road; consequently, vegetation communities along this section will not be affected.

A total of 1.357 hectares of vegetation will be removed along the Eglinton Crosstown LRT corridor. Deciduous forests account for 42.7% (0.579 hectares) of this total. The majority of forest cover to be removed (0.554 hectares) occurs along the west section of the alignment between Martin Grove Road and Keele Street. The forest parcels that will be affected are generally linear in extent, relatively isolated, and are bordered on their interior side by residential or industrial/commercial development.

The forest communities associated with the Humber River, Black Creek, the West Don, and East Don Rivers are natural, contiguous vegetation communities defined by the valley systems of each of the watercourses. The existing bridge structures at each of the river crossings span the associated watercourse and have sufficient vertical clearance over the vegetation communities that are present under the bridge structure; as a result, impacts to the forest vegetation communities at each of these watercourses are not anticipated.

The remaining vegetation communities to be affected are culturally based and account for 59.6% (0.741 hectares) of the total area lost. The community type and quantity of area to be affected includes: cultural meadows, CUM1-1, 0.469 hectares; cultural woodlands, CUW1, 0.197 hectares: cultural thickets (CUT1) 0.075 hectares; and cultural savannah (CUS1) 0.034 hectares. Thirty-eight individual cultural vegetation communities will be affected; however the quantity of vegetation removal at each community is generally less than 500 square metres. The communities will only be impacted along the edge of the vegetation community that is adjacent to the existing road alignment, and in general, fragmentation of the communities will not occur. All of the vegetation communities that will be affected are presently in a disturbed state as a result of past human disturbances.

Several wetland communities were identified within the Eglinton Crosstown LRT corridor including deciduous swamps, swamp thickets, meadow marshes and shallow marshes; however only two areas are at risk. A small meadow marsh (MAM2) is situated on the north side of Eglinton Avenue, west of Victoria Park Avenue and a linear shallow marsh is located on the south side of Eglinton Avenue immediately west of Renforth Drive. In both situations, the amount of area affected is less than 10 square metres.

The proposed realignment of Wynford Drive to remove the existing grade separation and create a new at grade intersection to the east will result in an encroachment into the East Don River valleylands. The vegetation community in this area is comprised of a high quality dry fresh sugar maple – beech deciduous forest (FOD5-2) that provides slope stabilization and a natural migration corridor along the East Don River. The proposed encroachment will extend over the top of bank in this location and will require a retaining wall or fill slope to support the Wynford Drive road platform. Given the significance of impact in this location, including an encroachment into areas regulated by Toronto and Region Conservation Authority (TRCA) under Ontario Regulation 166/06 and Toronto Ravine and Natural Feature Protection By-law, the realignment of Wynford Drive should be investigated further during design.

The total loss of 1.357 ha of vegetation as a result of this project is considered minor given the disturbed condition of the vegetation, the limited encroachment that will occur in each instance and the magnitude of the project. However, in the cities of Mississauga and Toronto, where vegetation cover is at a premium, every effort must be made to avoid vegetation loss where possible.

Mitigation

Further opportunities to reduce the physical extent of natural areas impacted by the LRT will be investigated during the design process. Notwithstanding, the cumulative total loss of vegetation does represent a significant loss of natural area cover and needs to be addressed. A suitable restoration/compensation plan to accurately reflect this loss will be developed with TRCA and Urban Forestry (RNFP) to address this concern.

The following environmental protection measures designed to reduce or minimize vegetation removals will be considered on a site-specific basis during the design phase:

- Reduce grading requirements to the minimum extent possible;
- Implement local protection measures including guide rails, retaining walls and ditches, where warranted to avoid vegetation removals;
- Identify and protect trees to be retained during construction using a temporary tree protection barrier in accordance with OPSS 565 and the City's Tree Protection Policies. Work zones will be isolated using construction fencing, barrier fencing and silt fencing to avoid accidental vegetation removal;
- Prepare arborist reports, tree protection plans, edge management plans and restoration plans during design to identify site-specific impacts, mitigation and compensation measures to offset vegetation losses and to achieve a net gain in vegetation area, attributes and functions; and,
- Prepare restoration and enhancement plans that will meet or exceed both TRCA and Urban Forestry standards that will offset vegetation losses and achieve a net gain in vegetation area, attributes and functions.

In addition, the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees prohibits the following activities in protection zone areas which are outside the work zones during construction to avoid accidental removal of vegetation:

- No altering of grade by adding fill, excavating, trenching, scraping, dumping or disturbance of any kind within a protection zone area;
- No storage (pocket) of construction materials, equipment, soil, construction waste or debris within a protection zone area;
- No disposal of any liquids e.g. concrete sleuth, gas, oil, paint within a protection zone area;
- No movement of vehicles, equipment or pedestrians within a protection zone area; and
- No parking of vehicles or machinery within a protection zone area.

Protection of natural areas is in part provided by the Ravine & Natural Feature Protection By-law that is defined by and administered through City of Toronto's Urban Forestry. Proposed removal of trees and features within protected areas will be reviewed and subject to approval by City of Toronto's Urban Forestry.

5.3.4.2 Aquatic

Potential Impacts

There are eight watercourses located along the Eglinton Crosstown LRT. In general terms, any project that involves road widening and associated bridge/culvert improvements over a watercourse, drainage modifications or generation of stormwater runoff has the potential to result in a harmful alteration, disruption or destruction (HADD) of fish habitat.

The Mimico Creek Bridge will be widened by 5.5 metres on each side to accommodate the LRT. This widening can be achieved with no encroachment into the wetted stream channel; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

The Silver Creek Culvert is wide enough to accommodate the Eglinton Crosstown LRT; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

The Humber River Bridge is wide enough to accommodate the Eglinton Crosstown LRT; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

The Black Creek Bridge will be widened by 1.5 metres on each side to accommodate the LRT. This widening can be achieved with no encroachment into the wetted stream channel; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

The West Don River Bridge will be widened by 1.0 metre on each side to accommodate the LRT. This widening can be achieved with no encroachment into the wetted stream channel; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

The East Don River Bridge will be widened by 1.2 metres on each side to accommodate the LRT. This widening can be achieved with no encroachment into the wetted stream channel; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

The Wilson Brook Culvert will be extended by 3.5 metres to the north to accommodate the LRT. This extension can be achieved with no encroachment into the wetted stream channel; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices. Wilson Brook is enclosed downstream of Eglinton Avenue for a distance of approximately 750 metres so a 3.5 metres extension is considered negligible.

The Massey Creek Bridge is wide enough to accommodate the Eglinton Crosstown LRT; therefore, alteration of fish habitat is not anticipated with the implementation of best management practices.

Mitigation

To reduce the potential for alteration of fish habitat, the following best management practices will be implemented:

- Delineate work areas with construction fencing to minimize the area of disturbance;
- Restrict the use of heavy equipment in the watercourse and on watercourse banks;
- Prohibit the use of heavy equipment in the watercourse;
- Place silt fence along stream margins in areas of soil disturbance;
- Monitor and maintain erosion and sedimentation control measures during construction to ensure their effectiveness;
- Apply seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and

- Implement good housekeeping practices related to materials storage (pocket)/stockpiling, equipment fuelling/maintenance, etc. during construction.

These environmental protection measures will greatly reduce the potential for adverse effects to fish and fish habitat located along the Eglinton Avenue LRT. The TRCA has a Level III agreement with the Department of Fisheries and Oceans. TRCA staff will review the project in line with TRCA's Level III agreement with Fisheries and Oceans Canada as per Section 35 (1) of the *Fisheries Act.* TRCA's will assess all components of the project to determine whether there is a potential for the project to result in a Harmful Alteration, Disruption or Destruction of fish habitat (HADD). Where fisheries timing window restrictions apply, TRCA will provide TTC with the necessary information for construction staging purposes. Staff will work with TTC to ensure appropriate mitigation and restoration is achieved during construction.

5.3.5 Populations/Species

A population is a group of individuals of the same species located in a particular time and place. Species are of related plants or animals all sharing common attributes. Streetscape trees are included under this environmental factor.

Potential Impacts

The existing land use along the Eglinton Avenue corridor is primarily industrial, commercial, residential or educational/institutional. With the exception of the valley corridors along the Humber River, Black Creek, the West and East Don Rivers, terrestrial wildlife habitat is minimal and the habitat that is present is provided by cultural meadows, cultural thickets, cultural woodlots and isolated forested parcels. Most of the available wildlife habitat that is adjacent to Eglinton Avenue can best be characterized as being of poor quality, low structural diversity and low habitat diversity.

A number of streetscape trees and trees within private properties identified for acquisition may be affected by the placement of fire ventilation shafts, station entrances, emergency exit buildings, traction power substations, bus terminals and the widening of roads to accommodate the LRT.

It is inevitable that some habitat will be lost. A total of 1.357 hectares of habitat will be removed along the Eglinton Crosstown LRT corridor. Deciduous forests account for 42.7% (0.579 hectares) of the total while cultural woodlots, thickets and meadows account for 59.6% (0.741 hectares) of the total area affected. Because the LRT will operate in a dedicated right-of-way in the centre of the road on Eglinton Avenue, only edge habitat will be affected. Fragmentation of any wildlife habitat areas will not occur.

The overall limited capability of the wildlife habitat and the type of species supported by these isolated patches of vegetation reduces the level of significance attributable to the loss. Wildlife species present in these areas are represented primarily by small mammals and small, migratory and resident passerine birds; species that are tolerant of human disturbance. Minor habitat loss will not have any significant long term effects on the existing populations as individuals will adapt and become tolerant of the new conditions.

There are two plant species of concern: Honey locust (Gleditsia triacanthos) and Virginia bluebells (Mertensia virginica). Honey locust was found within the FOD3-1 vegetation community, in the northwest quadrant of the Islington Avenue/Eglinton Avenue intersection. Honey Locust is ranked as S2 (Imperilled) by the Ministry of Natural Resources. Virginia bluebells was found within a FOD4 vegetation community, south of Eglinton Avenue and Leslie Street. Virginia bluebells is ranked as S3 (Vulnerable) by the Ministry of Natural Resources. However, both honey locust and Virginia bluebells are considered to be non-native in the TRCA watershed (TRCA, April 2003) consequently their significance is reduced.

The study area does, however, contain thirty-seven plant species that are rare to uncommon in the City of Toronto and in the TRCA watershed, including: balsam fir (Abies balsamea), black maple (Acer nigrum), smooth juneberry (Amelanchier laevis), wild columbine (Aquilegia canadensis), Pennsylvania bitter-cress (Cardamine pensylvanica), fibrous rooted sedge (Carex communis), broad-leaved sedge (Carex platyphylla), stellate sedge (Carex rosea), blue cohosh (Caulophyllum thalictroides), Virginia spring beauty (Claytonia virginica), round-leaved hawthorn (Crataegus chrysocarpa), Cockspur thorn (Crataegus crus-galli), marginal wood fern (Dryopteris marginalis), running strawberry-bush (Euonymus obovata), woodland strawberry (Fragaria vesca ssp. americana), cleavers (Galium aparine), spotted crane's-bill (Geranium maculatum), witch-hazel (Hamamelis virginiana), cow-parsnip (Heracleum maximum), common juniper (Juniperus communis), eastern red cedar (Juniperus virginiana), tamarack (Larix laricina), moonseed (Menispermum canadense), common evening-primrose (Oenothera biennis), ninebark (Physocarpus opulifolius), white spruce (Picea glauca), red pine (Pinus resinosa), old-field cinquefoil (Potentilla simplex), white rattlesnake-root (Prenanthes alba), white oak (Quercus alba), smooth rose (Rosa blanda), swamp rose (Rosa carolina), marsh rose (Rosa palustris), common elderberry (Sambucus nigra ssp. canadensis), early goldenrod (Solidago juncea), marsh fern (Thelypteris palustris var. pubescens), and white trillium (Trillium grandiflorum). Measures will be taken during detail to design to avoid these rare to uncommon plants to the extent possible. Where avoidance is not achievable, plants will be removed from the impact area and transplanted into nearby areas that will be protected from construction.

Three wildlife species recorded in the Eglinton Avenue study area are listed by Committee on the Status of Endangered Wildlife in Canada and regulated under the Canadian *Species at Risk Act*. The Chimney Swift (Chaetura pelagica) is recognized as a Threatened Species, whereas the milk snake (Lampropeltis triangulum) and map turtle (Graptemys geographica) are listed as Special Concern, Schedule 1. The habitats where these three species were observed are not located in areas that will be affected by this project and as a result, displacement of or disturbance to these species is not anticipated.

The Fish and Wildlife Conservation Act protects three bird species, twelve mammal species and four of the herpetofauna species recorded. Most of the bird species are also protected under the Migratory Birds Convention Act. Eight of the migratory bird species recorded in the study area are also recognized as priority species of conservation concern by Bird Studies Canada for the Toronto region.

All fish species historically recorded within or near the study area are considered to be either very common in Ontario (provincial rank of S5), common (provincial rank of S4) or non-native (provincial rank of SE). One aquatic species, redside dace (Clinostomus elongate) that is classified as Endangered by the Committee on the Status of Species at Risk in Ontario (COSSARO) and by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has been observed in the Humber and Don River watersheds. However, none of the historic records for redside dace occur in the vicinity of Eglinton Avenue. Since no in-water work is required at this time, there will be no impact on fish species or populations.

Mitigation

The impacts on wildlife, wildlife habitat resulting from this project are generally considered to be of minor significance; however habitat loss will be required to construct the LRT along the preferred transit alignment. The following environmental protection measures designed to reduce or minimize vegetation removals/wildlife habitat will be considered on a site-specific basis during the design process:

- Reduce grading requirements to the minimum extent possible;
- Implement local protection measures including guide rails, retaining walls and ditches, where warranted to avoid vegetation removals;

- Work zones will be isolated using construction fencing, barrier fencing and silt fencing to avoid further encroachment to wildlife habitat;
- Prepare restoration, enhancement and streetscape plans to offset vegetation/habitat losses and to achieve a net gain in vegetation/habitat area, attributes and functions;
- Prepare edge management plans for areas where encroachment on vegetation communities/habitat will occur;
- Bird friendly lighting and design will be incorporated where the LRT crosses valley and stream corridors to reduce the potential for birds to impact buildings; and
- Perform good housekeeping practices related to materials storage (pocket)/stockpiling, equipment fuelling/maintenance, etc. will be implemented during construction.

In addition, the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees prohibits the following activities in the protection zone areas which are outside the work zones during construction:

- No altering of grade by adding fill, excavating, trenching, scraping, dumping or disturbance of any kind within a protection zone area;
- No storage (pocket) of construction materials, equipment, soil, construction waste or debris within a protection zone area;
- No disposal of any liquids e.g. concrete sleuth, gas, oil, paint within a protection zone area;
- No movement of vehicles, equipment or pedestrians within a protection zone area; and
- No parking of vehicles or machinery within a protection zone area.

A total of forty-one plant species that are rare to uncommon were recorded in the study area. Individual occurrences of these species are generally beyond the zone of influence of this project and it is unlikely that they will be disturbed. During the design phase, precise locations for all species located in areas of potential disturbance will be determined and site-specific measures such as avoidance, design modifications, installation of construction fencing and transplanting where appropriate, will be identified to minimize displacement or disturbance effects.

During the design phase, design and construction of underground support columns and retaining wall structures will be considered to facilitate adequate continuous soil tranches within the road right-of-way. Also streetscape tree plantings in continuous soil trenches will be considered during the design phase.

Implementation of the mitigation measures outlined above will minimize or reduce the potential effects and as a result, the Eglinton Crosstown LRT will have no significant adverse effects on wildlife, wildlife habitat or vegetation species/populations.

5.3.6 Parks and Open Space

Potential Impacts

Construction of fire ventilation shafts, station entrances, emergency exit buildings and traction power substations along the Eglinton Crosstown LRT corridor will result in minor encroachment at five parks/parkettes including: St. Hilda's parkette; Ben Nobleman Park; Chaplin parkette; Eglinton Park; and, Howard Talbot Park. The LRT facilities proposed at each park/parkette are presented in **Exhibit 175**.

Exhibit 175: LRT Facilities Proposed Within Parks and Open Space

Park/Parkette	LRT Facility
St. Hilda's Parkette	Dufferin Station Main Entrance
Ben Nobleman Park	Allen Station Vent Shaft
Chaplin Parkette	Chaplin Station Double Vent Shaft
Eglinton Park	Emergency Exit Building #3
Howard Talbot Park	Traction Power Substation #13, Bayview Station Secondary Entrance, Bayview Station Vent Shaft

Eglinton Avenue will be widened by one lane in each direction to maintain two lanes of traffic in each direction and to accommodate LRT facilities. Between Martin Grove Road and Scarlett Road, Eglinton Avenue will be widened on the north side within the Richview Corridor. The existing recreational trail located on the south side of Eglinton Avenue between Martin Grove Road and Scarlett Avenue will be maintained in place.

Mitigation

The LRT facilities will be positioned and configured to minimize intrusion into the parks to the extent possible. The LRT facilities will be designed to blend into their surroundings using a context sensitive solution. TTC will consult with City of Toronto Parks, Forestry and Recreation Division during design to mitigate impacts on City of Toronto parks and parkettes located along Eglinton Avenue.

5.3.7 Utilities

Potential Impacts

There are a number of large diameter utilities and pipelines located within the Eglinton Avenue right-of-way. There are also numerous large underground utility chambers throughout, with the majority located at the major intersections. In addition, there is an extensive system of minor storm sewers and combination storm/sanitary sewers along Eglinton Avenue. Similarly, there are watermains located along Eglinton Avenue from 150 millimetre diameter up to 600 millimetre diameter.

Along the north and south sides of Eglinton Avenue, there are Hydro towers west of Martin Grove Road and west of the Highway 427 overpass. Toronto Hydro has poles located along the roads within the LRT corridor and has an extensive system of buried conduit throughout, with large underground chambers at numerous major intersections. Hydro One Networks Inc (Ontario Hydro) has a 115 kV transmission line crossing Eglinton Avenue just east of Yonge Street. Rogers and Telus utility plants are located in shared buried conduit and Enbridge Gas has 100 millimetres and 150 millimetres gas main throughout the LRT corridor. There are also gas mains crossing Eglinton Avenue at various intersections. Bell Canada has an extensive conduit system along Eglinton Avenue, with double conduit systems at a number of locations as well as crossing ducts at intersections.

Many of these utilities and pipelines will be impacted by the Eglinton Crosstown LRT.

Mitigation

Utilities and pipelines located within the underground section of the Eglinton Crosstown LRT will be avoided to the extent possible through tunneling. In areas of cut and cover construction, small utilities that are not in direct conflict with the LRT facility will be supported and protected during construction. For utilities that are in direct conflict with the LRT facility, or for large utilities that cannot be temporarily supported, relocation will occur. Services will be maintained to the extent possible during relocation and notice of planned service interruptions will be provided to service users prior to interruptions. The location of all plant, potential conflicts and the relocation strategy will be confirmed with service providers during design.

For all utilities that will be relocated, relocation plans and construction activities will be undertaken in accordance with the *Road Rights of Way Act* and with the City's Requirements for the Installation of Services within the City of Toronto Road Allowance or its equivalent in Mississauga.

5.3.8 Property

Potential Impacts

A total of 149 properties are required to accommodate road widening/realignment, LRT alignment, station entrances, emergency exit buildings, vent shafts, and traction power substations. Of the 149 property acquisitions, 45 are full acquisitions and 104 are partial acquisitions, while 88 acquisitions occur of private property and 61 acquisitions occur of public property. The 88 acquisitions of private property include 45 partial acquisitions and 43 full acquisitions. The list of property takings are summarized in **Exhibit 176**.

Exhibit 176: List of Property Acquisitions

	Address	Street Name	Full (F) or Partial (P)	Reason for Property Impact	Public or Private Property
1	--	Silver Dart Rd	P	Substation - TPSS 02	Public
2	--	Silver Dart Rd	P	Road widening	Public
3	--	Convair Dr	P	LRT alignment	Public
4	--	Convair Dr	P	LRT alignment	Public
5		Hwy 401	P	New bridge	Public
6	2882	Matheson Blvd E	P	LRT alignment	Private
7	2845	Matheson Blvd E	P	Road widening	Private
8	2901-2911	Matheson Blvd E	P	Road widening	Private
9	5090	Commerce Blvd	P	Road widening	Private
10	5080	Commerce Blvd	P	Road widening	Private
11	--	Citation Place West edge of Citation Place ROW	P	Road widening	Public
12	5015	Commerce Blvd	P	Road widening	Private
13	2780-2800	Skymark Ave	P	Road widening	Private
14	2885	Eglinton Ave	P	Road widening	Public
15	--	NW corner of Renforth Dr and Eglinton Ave	P	Road widening	Public
16	--	North of Eglinton Ave between Renforth Dr and Matheson Blvd	P	Road widening	Public
17	--	South of Eglinton Ave between Renforth Dr and Matheson Blvd	P	Road widening / TPSS 03	Public
18	--	South of Eglinton Ave between Eglinton Ave and Hardwick Crt	P	Road widening	Public
19	128	Rangoon Rd	P	Road widening	Private
20	130	Rangoon Rd	P	Road widening	Private
21	132	Rangoon Rd	P	Road widening	Private
22	--	Open space near Rangoon	P	Road widening	Public
23	--	SW corner of Hwy 427 Southbound lane and Eglinton Ave	P	Road widening	Public
24	--	SW corner of Martin Grove Rd / Eglinton Ave	P	Diversion lane	Public
25	--	SW corner of Martin Grove Rd / Eglinton Ave	P	Diversion lane	Public
26	--	NW corner of Martin Grove	P	Road widening	Public
27	--	NE corner of Martin Grove	P	Road widening	Public
28	55	Martin Grove North side of Eglinton, between Martin Grove Rd and Widdicombe Hill Blvd	P	Road widening	Public
29	--	North side of Eglinton, between Widdicombe Hill Blvd and Kipling Ave	P	Road widening	Public
30	--	North side of Eglinton, between Kipling Ave and Wincott Dr	P	Road widening	Public

	Address	Street Name	Full (F) or Partial (P)	Reason for Property Impact	Public or Private Property
31	--	North side of Eglinton, between Wincott Dr and Islington Ave	P	Road widening	Public
32	--	North side of Eglinton, between Islington Ave and Russell Rd	P	Road widening	Public
33	--	North side of Eglinton, between Islington Ave and Russell Rd	P	Road widening	Public
34	--	North side of Eglinton, between Islington Ave and Russell Rd	P	Road widening	Public
35	--	North side of Eglinton, between Islington Ave and Russell Rd	P	Road widening	Public
36	--	North side of Eglinton, between Islington Ave and Russell Rd	P	Road widening	Public
37	--	North side of Eglinton, between Islington Ave and Russell Rd	P	Road widening	Public
38	4400	Eglinton Ave	P	Road widening	Public
39	--	SE corner of Islington Ave and Eglinton Ave W	P	Substation - TPSS 06	Public
40	--	SE corner of Eglinton Ave and Eden Valley Dr	P	Road widening	Public
41	--	SW corner of Eglinton Ave and Royal York Rd	P	Road widening	Public
42	4200	Eglinton Ave	P	Road widening	Public
43	--	NW corner of Richview Rd and Eglinton Ave	P	Road widening	Public
44	--	Entrance to Plant World Wedge of land between Richview Rd and Eglnton Ave	P	Road widening	Public
45	125	La Rose Ave	P	Road widening	Public
46	3588	Eglinton Ave	F	Road widening	Private
47	3586	Eglinton Ave	F	Road widening	Private
48	3584	Eglinton Ave	F	Road widening	Private

	Address	Street Name	Full (F) or Partial (P)	Reason for Property Impact	Public or Private Property
49	3582	Eglinton Ave	F	Road widening	Private
50	3580	Eglinton Ave	F	Road widening	Private
51	3578	Eglinton Ave	F	Road widening	Private
52	3576	Eglinton Ave	F	Road widening	Private
53	3574	Eglinton Ave	F	Road widening	Private
54	3570	Eglinton Ave	F	Road widening	Private
55	3568	Eglinton Ave	F	Road widening	Private
56	3566	Eglinton Ave	F	Road widening	Private
57	3564	Eglinton Ave	F	Road widening	Private
58	3562	Eglinton Ave	F	Road widening	Private
59	3560	Eglinton Ave	F	Road widening	Private
60	3558	Eglinton Ave	F	Road widening	Private
61	3556	Eglinton Ave	F	Road widening	Private
62	1	Bijou Walk	F	Road widening	Private
63	3	Bijou Walk	F	Road widening	Private
64	5	Bijou Walk	F	Road widening	Private
65	7	Bijou Walk	F	Road widening	Private
66	9	Bijou Walk	F	Road widening	Private
67	11	Bijou Walk	F	Road widening	Private
68	--	NE corner of Pearen St and Eglinton Ave	P	Road widening	Private
69	--	NE corner of Pearen St and Weston Rd	P	Road widening	Private
70	3561	Eglinton Ave	P	Road widening	Private
71	3559	Eglinton Ave	P	Road widening	Private
72	3549	Eglinton Ave	P	Road widening	Private
73	3547	Eglinton Ave	P	Road widening	Private
74	3543	Eglinton Ave	P	Road widening	Private
75	3533	Eglinton Ave	F	Road widening	Private
76	3531	Eglinton Ave	P	Road widening	Private
77	1148	Weston Rd	F	Road widening	Private
78	1	Hollis St	P	Road widening	Public
79	1156-1160	Weston Rd	F	Road widening	Private
80	1162	Weston Rd	F	Road widening	Private

	Address	Street Name	Full (F) or Partial (P)	Reason for Property Impact	Public or Private Property
81	1168	Weston Rd	P	Road widening	Private
82	1151	Weston Rd	P	Road widening	Private
83	2800	Eglinton Ave	P	Widening due to portal	Public
84	2700	Eglinton Ave	P	Widening due to portal	Public
85	2690	Eglinton Ave W	P	Secondary Entrance / Fire Vent	Public
86	111	Yore Rd	F	Main Entrance / Substation - TPSS 09 Bus terminal	Private
87	2660	Eglinton Ave W	P	Fire Vent	Public
88	2615	Eglinton Ave W	P	Secondary Entrance / Fire Vent	Private
89	2330	Eglinton Ave W	P	2 Fire Vents Secondary Entrance Station box	Private
90	--	Rail Corridor	P	Main Entrance (partial) plus Tunnel between Main Entrance and Station	Public
91	--	NW corner of Croham Rd & Eglinton Ave W	F	Main Entrance and Bus loop	Public
92	1854	Eglinton Ave W	F	Fire Vent	Private
93	1804-1808	Eglinton Ave W	P	Substation - TPSS 10 / 2 Fire Vents	Private
94	1815 - 1817	Eglinton Ave W	P	Main Entrance (partial)	Private
95	1606	Eglinton Ave W	F	Fire Vent	Private
96	1574	Eglinton Ave W	F	Secondary Entrance	Private
97	1609	Eglinton Ave W	P	Secondary Entrance / Fire Vent	Public
98	1573-1575	Eglinton Ave W	F	Main Entrance	Private
99	1557	Eglinton Ave W	F	Fire Vent	Private
100	--	NE corner of Park Hill Rd & Eglinton Ave W	P	Fire Vent	Public
101	--	NW corner of Allen Rd W & Eglinton Ave W	P	Emergency Exit	Public
102	1435	Eglinton Ave W	P	Automatic Entrance / Fire Vent	Public
103	1435	Eglinton Avenue West		Automatic Entrance	
104	--	SE corner Everden Ave & Eglinton Ave W	P	Fire Vent	Public
105	--	SW corner Glen Cedar & Eglinton Ave W	F	Emergency exit building (# 2)	Public
106	880	Eglinton Ave W	F	Fire Vent	Private
107	842	Eglinton Ave W	F	Main Entrance / Substation - TPSS 11 / Fire Vent	Private
108	823-825	Eglinton Ave W	P	Secondary Entrance	Private
109	821	Eglinton Ave W	F	Fire Vent	Private
110	576	Eglinton Ave W	P	2 Fire Vents	Public
111	574	Eglinton Ave W	F	Main Entrance	Private
112	550	Eglinton Ave W	P	Secondary Entrance / 2 Fire Vents	Private
113	--	SE corner of Chaplin Cres and Eglinton Ave W	P	Secondary Entrance	Public
114	643	Eglinton Ave W	P	Secondary Entrance (partial)	Public
115	1024 + 1024A	Avenue Rd.	F	Main Entrance / Fire Vent	Private
116	284	Eglinton Ave W	F	Fire Vent	Private
117	1021	Avenue Rd.	P	Secondary Entrance	Private

	Address	Street Name	Full (F) or Partial (P)	Reason for Property Impact	Public or Private Property
118	275	Eglinton Ave W	P	Fire Vent	Private
119	180	Eglinton Ave W	P	Emergency exit building (# 3)	Public
120	1 to 73	Eglinton Ave W	P	Substation - TPSS 12 / 2 Fire Vents / Emergency Exit	Public
121	30	Eglinton Ave E	F	2 Fire Vents	Private
122	123	Eglinton Ave E	P	Emergency exit building (# 4) – parking	Public
123	223	Eglinton Ave E	P	Fire Vent	Public
124	256	Eglinton Avenue East	F	Main Entrance	Private
125	280	Eglinton Ave E	F	Secondary entrance	Private
126	282	Eglinton Ave E	F	2 Fire Vents	Private
127	485	Eglinton Ave E	P	Emergency exit building (# 5) – parking	Private
128	656	Eglinton Ave E	P	Main Entrance / 2 Fire Vents	Private
129	660	Eglinton Ave E	P	Secondary entrance / Fire Vent	Private
130	635	Eglinton Ave E	P	Secondary entrance / Substation - TPSS 13 / Fire Vent	Public
131	276	Rumsey Road	P	Emergency Exit building (#6) - parking	Private
132	250-256	Laird Dr	F	Main Entrance / 2 Fire Vents	Private
133	825 to 845	Eglinton Ave E	P	Secondary entrance / 2 Fire Vents	Private
134	939	Eglinton Ave E	P	Road widening	Private

	Address	Street Name	Full (F) or Partial (P)	Reason for Property Impact	Public or Private Property
135	--	SW corner of Eglinton Avenue and Don River West Branch	P	Launch shaft & Work zone	Public
136	15	Gervais Dr	P	Road widening	Private
137	1200	Eglinton Ave E	P	Road widening	Private
138	--	NE corner of Eglinton Ave and Don Mills Rd	P	Bus terminal	Public
139	35	Wynford Heights Crt	P	Wynford Dr re-alignment	Private
140	-	Wynford Heights Crt	P	Wynford Dr re-alignment	Public
141	1880	Eglinton Ave E	P	Road widening & North side U-turn	Private
142	1891	Eglinton Ave E	P	South side U-turn	Private
143	1896	Eglinton Ave E	P	Road widening	Private
144	1897	Eglinton Ave E	P	Road widening	Private
145	1900	Eglinton Ave E	P	Road widening	Private
146	1960	Eglinton Ave E	P	Substation - TPSS 18	Private
147	2206	Eglinton Ave E	P	RT alignment	Private
148	2201	Eglinton Avenue East	P	Right turn lane	Private
149	2222	Eglinton Ave E	P	Right turn lane	Public

Mitigation

Property acquisition required for this project will be undertaken by the City of Toronto on behalf of the TTC. In acquiring property, the City of Toronto balances community need and the rights of the property owner. The objective is to ensure that individual rights are respected and protected and to provide fair compensation within the framework of the *Expropriations Act* for any property acquired or affected by civic projects. The acquisition process emphasizes negotiation and the achievement of a mutually satisfactory agreement between the City and the owner. If necessary, in order to protect the ability to proceed with the Eglinton Crosstown LRT project, expropriation may be required to acquire the necessary property. In general, property acquisition uses the following steps:

- The City of Toronto contacts the property owner to indicate its interest in the property and to identify issues and concerns;
- The City conducts legal surveys, appraisals, environmental site assessments and other property-related assessments;

- An offering price is discussed. If a tentative agreement is reached, an Offer to Sell is signed by the owner. The Offer is then sent to City of Toronto Council for approval and acceptance;
- If discussions do not result in an agreement, the City initiates the expropriations procedures. The expropriation process may be initiated while negotiations are occurring;
- If expropriation is pursued, the owner has a right to an independent inquiry called a Hearing of Necessity, which determines whether the property requirements are fair, sound and reasonably necessary;
- The City approves the settlement/expropriation, and acquires the property; and
- If expropriated, the owner has the right to have compensation payable referred to arbitration at the Ontario Municipal Board.

The objective of the *Expropriations Act* is to put tenants and property owners in the same position that they were in prior to the beginning of the civic project directly affecting their properties. Compensation is determined having regard for the *Expropriations Act* by experienced, qualified appraisers and other experts. Compensation is generally based on three factors:

- Market Value – Market value is defined as "the amount that the land will be expected to realize if sold on the open market by a willing seller to a willing buyer." The date of expropriation is usually determined as the date to determine market value.
- Damages Attributable to Disturbance – These refer to the economic loss suffered by an owner as a result of having to vacate expropriated property. This can include moving costs, temporary accommodation, redundant furninshings, or loss of business revenues and profitability. Compensation for damages of this type is determined after expropriation.
- Damages for Injurious Affection – Injurious affection is sometimes referred to as "consequential damages." It has very precise and limited applications according to the law and can include items such as reduced market value and increased business operating expenses. Injurious affection is usually determined after expropriation.

The total property acquisition process and resulting compensation is intended to leave the affected owner "whole" and thereby mitigating the negative impact.

Partial takings have been identified for a further 49 properties. These include underground easements and surface facilities such as station entrances. TTC and the City of Toronto will conduct a Property Protection Study during the design of the Eglinton Crosstown LRT, which will determine detailed property requirements, including temporary construction easements. The acquisition of these properties will follow the same principles described above.

Where properties to be displaced form a continuous development of retail/business streetscape, the displacement TTC facility will ensure the continuation of the existing street wall (with respect to height setback and general architectural characteristics).

Any brownfield sites will be managed in accordance with the Ontario Regulation 153/04 and Ontario Regulation 511/09 once it comes into force. A Designated Subtances Surveys for any buildings or structures which require demolition will be undertaken during the design phase.

5.3.9 Archaeology

Potential Impacts

A Stage 1 and 2 archaeological assessment was conducted in accordance with the Ministry of Culture's Archaeological Assessment Technical Guidelines (MCzCR 1993).

The Stage 1 archaeological assessment involved an evaluation of archaeological potential based on a review of geographic, land use and historical information and a field inspection of the Eglinton Crosstown LRT corridor. The Stage 1 Archaeological Assessment indicated high potential for the recovery of archaeological material along the Eglinton Crosstown LRT corridor. This was based on the confirmed presence of nine listed[2] and designated heritage properties along the corridor. Additionally, a total of five registered archaeological sites had been encountered within a one-kilometre radius of the Eglinton Crosstown LRT corridor, and four registered archaeological sites within a two-kilometre radius of the Airport Link study area, indicating that significant archaeological resources could be encountered within their limits.

The subject lands are bisected by Mimico Creek, the Humber River, Black Creek, the West Don River, the East Don River, and Massey Creek, further supporting the potential for locating Aboriginal artifactual remains within undisturbed portions of the study area limits. A review of the subject lands within the Tremaine's Map of the County of York, Canada West, 1860 and The 1878 Illustrated Historical Atlas of York County and the township of West Gwillimbury & Town of Bradford in the County of Simcoe indicated that approximately 90 properties and between 15 to 23 homesteads and structures are illustrated within or directly adjacent to its limits. The subject lands encompasses the sites of several historic railroads, one historic post office, two historic school houses, one urban concentration, a church and many orchards. Two historic cemeteries, Richview Memorial Cemetery (also known as, Union Chapel Cemetery plus Willow Grove and McFarlane Cemeteries) established in 1853 and Prospect Cemetery established 1890, are situated alongside the Eglinton Crosstown LRT study corridor. As such, the research supported high potential for locating Euro-Canadian artifactual remains within undisturbed portions of the subject lands. In light of all of this information, it was recommended that a Stage 2 archaeological assessment be undertaken in all undisturbed locations.

Consequently, a Stage 2 archaeological assessment was conducted and consisted of a test-pit survey as well as the identification of disturbed locations within the footprint of the Eglinton Crosstown LRT. Encountered disturbances included paved roadways and highway intersections, paved sidewalks and bicycle paths, paved and gravel shoulders, paved driveways, grading from previous and recent development activities, wet drainage ditches, sloping terrain from embankment constructions, and underground utilities. Physiographic factors affecting archaeological potential consisted of sloping terrain. Due to the low archaeological potential classification of these areas, systematic survey was not warranted nor was it undertaken. Furthermore, two portions of the proposed alignment along Commerce Drive and Convair Drive, specifically from north of STA 53+180 to 53+340, and STA 53+520 to 53+600, fell within private ownership and permission to enter was not granted. As such, these lands will require assessment prior to any intrusive activity.

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[2] "Listed" is a term used for properties for which the Toronto City Council has adopted a recommendation to be included on the Inventory. The recommendations are based on criteria that relate to architecture, history, and neighbourhood context. Their inclusion on the Inventory is a clear statement that the City would like to see the heritage attributes of these properties preserved. If designated, these structures must be preserved (www.toronto.ca)

The remaining undisturbed portions of the subject lands that could be tested were comprised of grass and fallow margins. Test-pit survey was undertaken at five metre intervals, based on the established high potential for the recovery of archaeological resources. Despite careful scrutiny, no archaeological resources were encountered during the Stage 2 field assessment and, thus, with the exception of the unassessed segments, the remainder of the Eglinton Crosstown LRT is considered clear of further archaeological concern.

Mitigation

No mitigation measures are proposed since no archaeological resources are known to occur within the footprint of Eglinton Crosstown LRT facilities. The Stage 1 and 2 Archaeological Assessment reports were filed with the Ministry of Culture in compliance with Section 65 (1) of the *Ontario Heritage Act*. The Ministry reviews reports to ensure that the licensee has met the terms and conditions of the licence and archaeological resources have been identified and documented according to the standards and guidelines set by the ministry, ensuring the conservation, protection and preservation of the heritage of Ontario. Confirmation that the Ministry of Culture has entered these reports into the provincial register of reports and that the Ministry of Culture has no further archaeological concerns with this project was received on December 21, 2009.

A Stage 2 archaeological assessment will be conducted on properties where permission to enter were not obtained during the Transit Project Assessment.

Monitoring and Contingency

The following monitoring and contingency measures are recommended by the Ministry of Culture:

1. Should previously unknown or unassessed deeply buried archaeological resources be uncovered during development, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*. The office of the Heritage Operations Unit, Ministry of Culture (416-314-7146) should be contacted immediately.
2. Any person discovering human remains must immediately notify the office of the Heritage Operations Unit, Ministry of Culture (416-314-7146), the police or coroner, and the Registrar of Cemeteries, Cemeteries Regulation Unit, Ministry of Government Services (416-326-8404).

Consultation with stakeholders, including First Nations, will be initiated in the event that archaeological resources or human remains are discovered in accordance with Ministry of Culture practices.

5.3.10 Cultural Heritage

Potential Impacts

Generally changes due to transit infrastructure projects have the potential to adversely affect cultural heritage landscapes and built heritage resources by displacement and/or disruption during and after construction. Built heritage and/or cultural heritage landscapes may experience displacement or direct impacts, i.e., removal, if they are located within the rights-of-way of the undertaking. There may also be potential for disruption or indirect impacts to cultural heritage resources by the introduction of physical, visual, audible or atmospheric elements that are not in keeping with their character and, or setting. Both direct and indirect effects will occur as a result of the Eglinton Crosstown LRT.

The potential impacts of the Eglinton Crosstown LRT on cultural heritage resources are presented in **Exhibit 180**. The Eglinton Crosstown LRT will not encroach on either of the two cemeteries located within the project limits, the Richview Cemetery or the Prospect Cemetery. Station entrances will displace 1950's commercial buildings at Oakwood Station and the 20th Century commercial buildings at Mount Pleasant Station. Placement of station entrances at Keele Station, Mount Pleasant Station and Bayview Station will indirectly affect the cultural heritage landscape around the York Memorial School, 300 Eglinton Avenue East (a Uno Prii designed building) and Sunnybrook Plaza, the first strip mall built in the City of Toronto.

Mitigation

Transit improvements should be managed in such a way that its impact is sympathetic with the value of the resources. When the nature of the undertaking is such that adverse impacts are unavoidable it may be necessary to implement management or mitigation strategies that alleviate the deleterious effects to cultural heritage resource. Mitigation is the process of lessening or negating anticipated adverse impacts to cultural heritage resources, It may include such actions as avoidance, monitoring, protection, relocation, documentation, salvage, remedial landscaping, etc., and may be a temporary or permanent action.

The measures identified to mitigate potential impacts of the Eglinton Crosstown LRT on cultural heritage resources are presented in **Exhibit 177.** Documentation through the use of historical mapping and photography of the affected buildings will be conducted prior to removal in accordance with the requirements of the City of Toronto Heritage Preservation Services requirements. LRT Station entrances will be designed using context sensitive solutions in consultation with the City of Toronto, Heritage Preservation Services.

Exhibit 177: Cultural Heritage Impacts and Mitigation Measures

Location and Potential Impact	Mitigation Recommendation
Weston Road 1) Displacement: Row of residences, N. Side of Eglinton Ave. West 3556-3588 2) Disruption: 1151 Weston Road, Bank of Nova Scotia site context.	1) City of Toronto Heritage Preservation Services will require a Heritage Impact Statement (HIA) for the collection of residences to be removed after screening. 2) Document the change with photographs and historical mapping prior to intersection modifications and prepare a brief area history. Consult with Heritage Preservation Services regarding report content prior to commencement.
Keele Street Disruption: Road widening on the west side of the Keele Street and placement of an emergency exit in front of York Memorial Collegiate, a municipally designated property under the *Ontario Heritage Act*.	Prepare a sympathetic design that recognizes the importance of the viewscape in front of the building. A Heritage Impact Statement (HIA) will be required for this site by City of Toronto Heritage Preservation Services.
Dufferin Street	

Location and Potential Impact	Mitigation Recommendation
Displacement: Loss of a 1947 commercial buildings for fire vent placement: 1850-1854 Eglinton Avenue West	Document the change in the streetscape with photographs and historical mapping and prepare a brief area history prior to removal of the buildings. Consult with Heritage Preservation Services regarding report content prior to commencement.
Oakwood Avenue Displacement: Loss of 1950's commercial buildings for station/exit placement. Addresses displaced include: 1557; 1573-75; 1574-76; and, 1606 Eglinton Avenue West.	Document the change in the streetscape with photographs and historical mapping and prepare a brief area history prior to removal of the buildings. Consult with Heritage Preservation Services regarding report content prior to commencement.
Mount Pleasant Road 1) Displacement: The 20th century commercial building at 794 Mount Pleasant Road will be removed. 2) Disruption: The station development will result in a change in the context adjacent the Uno Prii designed apartment building, 300 Eglinton Avenue East is listed on the City of Toronto Inventory of Heritage Properties.	1) City of Toronto Heritage Preservation Services will require a Heritage Impact Statement (HIA). Adaptive reuse of the building will be considered as a station entrance will be studied further during design. Photo document of the building and site prior to removal, if this is the preferred option. 2) City of Toronto Heritage Preservation Services will require a Heritage Impact Statement (HIA) for the site.
Bayview Avenue Disruption: Change in context due to new secondary entrance at Sunnybrook Plaza, 600 Eglinton Avenue East. Site listed on City of Toronto Modernist Inventory.	City of Toronto Heritage Preservation Services will require a Heritage Impact Statement (HIA) for the site after screening.

5.3.11 Navigable Waters

Potential Impacts

The Humber River, West Don River and East Don River have been identified as navigable waters by Transport Canada, Navigable Waters Protection Agency. The *Navigable Waters Protection Act* (NWPA) regulates any works proposed in, upon, over, under, through or across any navigable waterway in Canada. Modifications to the Humber River Bridge, including adding an LRT facility, and the West Don River Bridge and East Don River Bridge, including adding an LRT facility and associated bridge widening and possible reinforcement, may require an approval under the NWPA.

Mitigation

TTC will prepare and submit an application for approval under the *Navigable Waters Protection Act* during detail design. The application will include mitigation measures designed to maintain navigation clearances at these bridges and maintain navigation on these waterways during construction. Measures to mitigate potential impacts on navigable waters may include the following:

- Bridge modifications shall not encroach on the existing horizontal or vertical navigation clearances.
- The navigation channel shall be maintained at all times during construction. Boat traffic shall be allowed uninterrupted passage through the work site at all time, and assisted as necessary. The navigation channel shall not be altered in any way during construction.
- Sufficient signage shall be erected upstream and downstream of the work area to alert boat traffic of construction activities.
- A temporary containment system shall be installed under the bridges to prevent any materials from falling off the bridge into the navigation channel.
- No person shall permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in navigable water to remain in such water after the completion of the project.

NWPA approval will be obtained by TTC prior to construction at navigable waters.

5.4 Construction Impacts

The runningway will be tunnelled through the underground sections. As a result, impacts are predicted to be negligible. Stations and special track work areas will be constructed by cut-and-cover method. Station entrances, emergency exit buildings, ventilation shafts, and traction power substations will be constructed following standard at surface construction methods with excavation activities for connection to the underground sections. Bridge modifications are not anticipated to involve in-water construction work.

5.4.1 Terrain and Soils

Potential Impacts

This project will result in the displacement of approximately 1.8 million m^3 of surplus excavated material generated by tunnelling and cut-and-cover construction at the portals, tunnel and stations. This material will be hauled by truck for disposal off-site. A total of 160 trucks per day will be required to remove this material, the equivalent of one truck every four minutes. On busy urban streets such as Eglinton Avenue and the major north-south arterials that already carry a large proportion of truck traffic, the addition of one truck every four minutes is considered a neglibible increase in truck traffic. Truck haul routes will be identified during detail design as part of traffic management plans. Trucks hauling materials associated with the Eglinton Crosstown LRT will be restricted from entering residential areas through contract provisions.

There is potential for encountering buildings with deep foundations within the underground section of the Eglinton Crosstown LRT. Therefore, where necessary, underpinning will be implemented to minimize the potential for building settlement/structural stress due to tunnelling, piling and dewatering.

Mitigation

A review of historical records identified several areas to have known soil or groundwater impacts from previous and current operations. Phase 1 Environmental Site Assessments and Phase 2 Environmental Soil & Groundwater Investigations will be conducted in areas where excavation, road widening and property acquisitions will take place and have known or high potential for environmental impacts. This is to meet provincial regulatory requirements to assess the environmental site conditions, disposal requirements for soil/groundwater as well as health and safety requirements.

An excess materials management plan will be implemented in accordance to regulatory requirements during construction. Management of contaminated material encountered will follow MOE Standards, Ontario Regulation 153/04 and Ontario Provincial Standards Specification 180 – General Specification for the Management and Disposal of Excess Material.

Monitoring

This baseline monitoring will be undertaken in accordance with the *Ontario Environmental Protection Act* and will be documented in the Geotechnical Baseline Report, which will provide the necessary information for the handling and disposing of excess soil. The disposal of contaminated materials will be directed to an MOE approved soil treatment site or waste disposal site. The monitoring of these facilities is the jurisdiction of the Ministry of the Environment of Ontario.

Prior to construction, TTC will require the contractor to submit the name, location and type of license of the designated soil disposal sites (as issued by MOE).

Prior to the commencement of construction operations, separate nstrumentation readings will be taken to provide a pre-condition survey for all buildings to assess current conditions.

Monitoring during construction will include ground settlement measurements, inclinometers and surface monitoring points for structures. Monitoring is undertaken on a weekly basis during active excavation. This moinotiring schedule is reduced to every three months for up to a year following backfilling.

The monitoring program will include revie wand alert levels. If instrument readings exceed “review” levels, TTC and its contractor will jointly assess the necessity of altering the method, rate or sequence of construction. At “alert” levels, TTC can order construction operations to cease until the necessary mitigation measures are undertaken.

Following construction, TTC and its contractors will arrange for a joint post-construction inspection of buildings/structures and utilities with the respective Owners. The results of these surveys will be compared with the pre-construction surveys.

TTC will monitor horizontal and vertical movements and tilt of adjacent structures and utilities on a daily basis during active excavation or backfilling. In the event that instrument readings reach “alert” levels, (as to be defined on a structure-specific bais in the construction contract documents), TTC site supervisory staff oil order construction operations to cease and take necessary actions to mitigate unacceptable movements, including, but not limited to alternative construction methods or construction equipment and/or additional support/protection measures.

Contingency

In the event that a property owner submits a claim for property damage, TTC will conduct further investigations and, if appropriate, will negotiate a settlement.

5.4.2 Groundwater

Potential Impacts

The groundwater table is likely to be above the base of the proposed depth of alignment at many areas within the underground section of the Eglinton Crosstown LRT. Therefore, seepage cut-off and depressurization of aquifers will be required to control groundwater, stabilize the base of excavations and tunneling. It can be expected that groundwater will need to be controlled by methods such as pumping from sumps, educators or well points or in some cases by deep well dewatering systems. For the majority of the underground section of the LRT, the base of excavation/tunneling is likely to be in glaciolacustrine (silt, clay and sand) deposists of the Thorncliffe Formation; therefore, care must be taken to prevent the removal of fine soil particles during pumping.

Mitigation

There is potential to encounter contaminated groundwater. Further hydrogeologic assessments will be conducted at locations requiring dewatering to estimate discharge rates, predict impacts and evaluate treatment/discharge options. These studies are also needed to support the Ministry of the Environment’s Permit to Take Water (PTTW) applications.

There is potential for buildings to have foundations built below the local water table, and a potential exists for these foundations to be affected by dewatering. Further investigation to determine the radius of influence of any required dewatering will be necessary to fully consider the impacts to nearby structures and infrastructure. Further mitigation plans will be developed during the design phase.

Monitoring

Most cut-and-cover operations for the construction of stations will require dewatering to reduce groundwater pressure and lower groundwater levels to allow for construction on stable undisturbed and substantially dry subgrade. To avoid adverse effects sush as settlement of buildings two tupes of monitoring are employed:

1. Amount of Total Suspended Solids in the Dewatering Effluent – Unless required to be more stringent by the geotechnical engineer during design, is limited to 5 parts per million Total Suspended Solids. This monitoring is undertaken 12 hours after the commencement of pumping.
2. Ground Water Monitoring Wells (piezometers) – The measurement of groundwater levels are taken from piezometers generally situated within areas of excavation. As part of the baseline monitoring, a minimum of 2 sets of readings prior to the start of dewatering will be taken. The monitoring of water levels will be conducted on a daily basis while dewatering systems remaining in operation. The monitoring program will include review and alert levels. If instrument readings exceed “review” levels, TTC and its contractor will joinly assess the necessity of altering the method, rate or

sequence of construction. At “alert” groundwater levels, TTC can order construction operations to cease until the necessary mitigation measures are undertaken.

Recognizing the urban environment within which this project occurs, the disposal of groundwater will be to an existing storm or sanitary sewer and will be arranged by the contractor. The conditions and resulting monitoring and reporting requirements will be th subject of a water disposal permit with the City of Toronto and monitoring will include sampling and analysis carried out in accordance with the procedures, modified or validated by the City, as set out in the City document entitled “Quality System, Analytical Methods Manual” as it may be amended from time to time. [Amended 2002-10-31 by By-law No. 855-2002]

5.4.3 Surface Water

Impacts

In-stream works are not proposed at any of the crossings therefore changes to the fluvial integrity of the channel are not anticipated. Measures will be put in place during all phases of construction to minimize disturbance to watercourses from inputs of soil, concrete dust/washwaterand other materials. Measures will be included in the design process to ensure that storm water impacts will be minimal and that water features are protected as part of the proposed construction.

In areas where construction sites or roadways are located in proximity to watercourses, the use of minor grading to direct surface runoff away from the aquatic habitats is recommended. This generally consists of the slope leading to a very shallow swale created by a low ridge of topsoil. The vegetative swale is configured to direct surface runoff along the swale back away from the edge.

If uncontrolled, the construction activities associated with Eglinton Avenue widening could result in increased rates of erosion and sedimentation within and adjacent to the site area and tributaries to three major watersheds which include Mimico Creek, Humber River and the Don River. The potential environmental impacts from increased erosion and sedimentation include: degradation of water quality; destruction of fisheries habitat; and, increased flooding potential. Erosion and sedimentation processes are typically accelerated due to construction activities.

Mitigation

In order to prevent and minimize the release of sediment to watercourses, various sediment and erosion control measures will be implemented during LRT construction, such as:

- Environmental protection measures will be installed in areas adjacent to watercourses. Erosion and sediment control measures will be prepared in accordance with the TRCA Guidelines “Erosion and Sediment Control for Urban Construction Sites”;
- During the design process, a sediment and erosion control plan will be developed utilizing Best Management Practices;
- Any required structure work will be isolated from the open watercourse and conducted “in the dry”;
- Any required dewatering operations for structure work should be outlet onto a grassed area at least 30m from the watercourse, a settling pond, and/or wetland filter bag. A Permit to Take Water application will be submitted to the Ministry of the Environment to undertake any dewatering that is over 50,000 L/day;
- Any effluents derived from concrete cutting/grinding/forming will be collected and managed in accordance to provincial standard specifications;
- Following the completion of final site grading and topsoil application, a roadside seed mixture (Ontario Provincial Standard Specification, OPSS 572) and perennial rye grass nurse crop seed should be applied to all exposed soils. For exposed soils located adjacent to watercourses, immediately following seed application a straw erosion control blanket (installed as per OPSS 572.05.07, 572.05.08 and 572.07.04.04) should also be installed along the embankment slopes;
- All necessary steps should be taken to prevent dust nuisance resulting from Contractors’ work. Dust suppression will be undertaken as per OPSS 501 and 506;
- In order to mitigate the potential impacts associated with excess material storage (pocket), no stockpiles shall be located closer than 30m from water features, in accordance with OPSS 180. Waste and excess materials will be dealt with in accordance with OPSS 180, General Specification for the Management and Disposal of Excess Material. Waste generated on-site, which requires off-site removal should be in accordance with Ontario Regulation 347 under the *Environmental Protection Act* which provides for the transportation and processing of hazardous and non-hazardous waste;
- To prevent surface water contamination during construction, care will be taken to avoid accidental spillage or discharge of chemical contaminants (i.e. gasoline, oils and lubricants). Refuelling should take place no closer than 30 metres from water features. Furthermore, proper containment, clean up and reporting, in accordance with provincial requirements, should be completed in the event of a spill;
- All exposed slopes shall be treated with topsoil and seeding, mulching or sodding;
- A significant step towards controlling erosion during construction is to minimize the amount of disturbed ground cover particularly near watercourses;
- Exposed areas should not be left uncovered longer than necessary and ground cover should be re-established as quickly as possible; and
- Sediment control measures will be installed prior to construction, monitored during the construction and replaced as necessary.

Monitoring

Prior to construction, the contractor is required to submit comprehensive environmental controls and methods plan to address, among other elements, effluent (water) control. The effectiveness of this plan is monitored during a demonstration of the process that is undertaken before the Work can commence on site. A representative of TTC will undertake monitoring of plan compliance.

As a component of erosion and sedimentation control, environmental inspections of the construction site will be conducted. Environmental inspections will be conducted to assess the performance of erosion and sedimentation control measures and identify any required maintenance. The frequent inspections will also permit the identification of localized erosion and sedimentation control issues that require site specific attention. A detailed erosion and sedimentation control plan will be prepared during later design phases.

Contingency

During the course of construction, there is a risk of spills or discharges of pollutants or contaminants by the Contractor. The following contingency plan will be put in place:

1. Names and telephone numbers of persons in local municipalities and MOE to be notified forthwith of a spill;
2. Names and telephone numbers of representatives of fire, police and health departments of local municipalities who are responsible to respond to mergency situations;
3. Names and telephone numbers of companies experienced in control and clean up of hazardous materials that will be called in an emergency involving a spill;
4. Contingency plan shall include provisions for hazardous or unknown materials (e.g. puncturing a drain during excavation);
5. Containement and control of spill and cluean up procedures are to be initiated immediately to mitigate environmental damage, while awaiting additional assistance; and
6. Ensure materials and products are on site with which temporary repairs can be made to broken pipelines or other services so emissions of pollutants can be controlled and stopped.

5.4.4 Communities/Ecosystems

Potential Impacts

The potential environmental effects on communities and ecosystems are described in detail in Section 4.2.4. Surface construction of the Eglinton Crosstown LRT has the potential to result in short term disturbance to vegetation that currently exists along the Eglinton corridor. Activities such as relocation of street lighting and utilities, temporary or permanent road widening, boulevard modifications, maintaining access to side streets and entrances, and temporary staging areas for construction equipment or construction materials can temporarily increase the overall project footprint size, and result in generally, short term disturbances.

Mitigation

The disturbance to vegetation along Eglinton Avenue as a result of this transit project is considered negligible since the majority of vegetation located adjacent to the right-of-way has been previously disturbed by urban development.

To minimize disturbance at a particular site:

- Work zones will be isolated using construction fencing and silt fencing to minimize the area of disturbance;
- Reinstate growing conditions on top of LRT facilities in areas of cut-and-cover construction; and
- Good housekeeping practices related to materials storage (pocket)/stockpiling, equipment fuelling/maintenance, etc. will be implemented during construction.

The work zones associated with the west and east portals will affect a considerably large area of approximately 5000 square metres and 7500 square metres, respectively, at each site.

The proposed location for the west portal work site is on the south side of Eglinton Avenue, 200 metres east of Black Creek Drive. The area is locally known as Keelesdale Park and the present land use consists of baseball diamonds, an indoor hockey arena and a grass soccer pitch. The soccer pitch is located adjacent to but separated from Eglinton Avenue by a cultural woodlot (CUW1), is bordered by a small deciduous forest parcel (FOD2-1) to the east, and a parking lot to the south. The work zone will be established on the soccer pitch, resulting in a temporary disturbance to this grassed area. Upon completion of the project, the soccer pitch will be re-established to its present condition. To minimize or avoid increased disturbances to this site, the cultural woodlot should be left intact or restored following construction.

The proposed location for the east portal is on the south side of Eglinton Avenue, 400 metres east of Brentcliffe Road. The exact location of the east portal work zone will be determined during design. Vegetation at the site is predominantly manicured grass, extending from the proposed access road in the west to the western boundary of a TRCA property in the east. In order to provide a work zone of 7500 square metres, an encroachment on the TRCA property measuring approximately 25 metres x 80 metres (2000 square metres) is required. The vegetation community that is present on the TRCA property is classified as cultural woodlot (CUW1). The loss of part of the CUW1 community is not regarded as significant as it is a temporary intrusion only. The disturbance will not result in permanent loss of vegetation cover or long term impacts on the natural heritage function of the cultural woodlot. Upon completion, restoration of the site to existing or better natural conditions will occur in accordance with a restoration plan approved by TRCA and Urban Forestry.

Resulting impacts at both of these sites are considered to be temporary and short term.

Monitoring

In the event that works must be undertaken within vegetation communities / ecosystems, TTC will monitor the health of the trees and overall state of the existing vegetation communities during construction. Once all construction activities are complete, this monitoring program will continue into the following growing season.

Contingency

If it is determined that tree health or vegetation community restoration is failing or has failed, then trees or shrubs will be replaced with the identical species and girth, and a modified restoration plan will be determined.

5.4.5 Populations/Species

Potential Impacts

During construction, the urban wildlife species present in the Eglinton Crosstown LRT corridor will be temporarily displaced but will re-establish to the available habitat once operation of the Eglinton Crosstown LRT is established. These short term impacts are not considered to be significant. There is potential impact to streetscape trees and possibly trees within private properties during construction but considered minor. Disturbance to trees and shrubs can have a direct effect on the vegetation itself but can also affect nesting birds.

Mitigation

The *Migratory Birds Convention Act* (MBCA) prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. To meet the requirements of the MBCA, no vegetation removals should occur during the nesting season. With several exceptions, this includes the period from April 1 to July 31. This timing restriction will also protect the birds listed under the *Fish and Wildlife Conservation Act.*

TTC will comply with the requirements of the *Migratory Birds Convention Act* and nesting season, and as a result, the Eglinton Crosstown LRT will have no significant adverse effects on avian wildlife species/populations.

The potential impact to streetscape trees and possibly trees within private properties is of minor concern because trees at risk can be protected with barrier fencing, transplanted or removed and replaced during the final construction stage.

Monitoring

If vegetation clearing is required during the nesting season, TTC will retain a qualified avian biologist to conduct a nesting survey.

Contingency

If active nests are found, TTC will prepare a site-specific mitigation plan in consultation with the Canadian Wildlife Service.

In the event that works must be undertaken within areas of communities / ecosystems, TTC will monitor the health of the affected community during construction. Once all construction activities are complete, this monitoring program will continue into the following growing season.

5.4.6 Air Quality

Potential Impacts

During construction, there is potential for air quality impacts to occur. These impacts will be of short duration, limited to the period where significant excavation and construction activities occur on surface sections of the LRT or where cut and cover construction is required on the underground section of the LRT. The two major sources of emissions from construction are dust emissions and exhaust emissions from construction equipment. All construction locations will be temporary and will have a localized impact.

Mitigation

Best management practices will be implemented to prevent the potential release of dust and other airborne pollutants off site, such as:

- Periodic watering of unpaved construction areas;
- Periodic watering of stockpiles;
- Limiting speed of vehicular travel;
- Use of water sprays during the loading, unloading of materials; and
- Sweeping and/or water flushing of the entrances to the construction zones.

These types of controls aid in minimizing impacts to the environment during the construction phase. Night time construction activities should also be considered in order to reduce the higher emissions from vehicles that are slowed down by the reduced existing road capacity during the day. It is recommended that only water be used as a dust suppressant.

The reductions in greenhouse gases associated with the use of the LRT will far outweigh any short term increase in greenhouse gas emissions that are associated with construction activities.

Monitoring

During a demonstration and throughout the work, air monitoring of crystalline silica, total dusts and other contaminants (as applicable) should be conducted as a check on the effectiveness on dust control measures. In particular, Air quality monitoring should be conducted prior to, during or following construction as follows:

1) When construction and/or demolition activities are likely to cause dust emission, air monitoring must be conducted prior to beginning activities to establish a baseline value for the quantity of SPM in the air. During construction and/or demolition operations where dust is being created, air quality minotiring must b econducted to establish the level of particulate matter in the air. Following construction and/or demolition operations where dust was created, confirmatory tests must be conducted to quantify the level of particularte matter in the air.
2) Construction Borne Particulate Matter within Existing Buildigns – In instances where works are necessary to connect new works to existigtng buildings and stations and activities, such as sawcutting are required. Monitoring of airborne contaminants such as crystalline silica will be required to show that these contaminants are below their respective time weighted average exposure values as indicated in Regulation 833.

5.4.7 Noise and Vibration

Potential Impacts

The impact of construction noise and vibration on nearby sensitive receptors has been investigated. Where feasible, noise and vibration control measures will be implemented to limit the potential disturbance of construction equipment and activities to nearby receptors. As the project has not reached the design level, specifics of equipment to be used in the construction process have not been determined. The focus of the construction noise and vibration impact assessment was to develop a generic guide to be further refined and expanded when more information becomes available during the design phase. As the project is quite extensive, consideration is given not only to structural and health-related effects of construction noise and vibration, but also to community annoyance.

Residential receptors were the focus of the impact assessment as they are the predominant sensitive receptor in the corridor. Impacts at nearby residential receptors are representative of potential impacts at other sensitive receptors such as hospitals and nursing homes. It is recommended that in the long term construction areas, high-traffic commercial applications such as restaurants be treated as noise- and vibration-sensitive receptors. Industrial and commercial sites were also considered with respect to structural vibration and noise impacts, although their sensitivity is normally much less than residential and institutional receptors.

Mitigation

Provincial and municipal guidelines provide basic restrictions and recommendations with regard to construction noise and vibration. These criteria will be followed in all areas, regardless of duration of construction. In particular, municipal by-laws from the City of Toronto stipulate limitations on the vibration from construction activity and the times of construction. These have been taken from the MOE Model Noise Bylaw. The applicable guidelines can be found in the following documents:

- MOE's Model Municipal Noise Control Bylaw
- Toronto Municipal Code, Chapter 591, Noise, dated 2007-12-13
- City of Toronto Bylaw No. 1400-2007, Noise, Respecting Construction Noise, in force on January 1, 2008
- City of Toronto By-Law No. 514-2008, amending the Toronto Municipal Code Chapter 363, Building Construction and Demolition, with Respect to Regulation of Vibration from Construction Activity

- NPC-115 'Construction Equipment'
- NPC-205 'Sound Level Limits for Stationary Sources in Class 1&2 (Urban) Areas'
- NPC-118 'Motorized Conveyances'

Provincial guidelines with regard to construction sound levels place specific restrictions on source sound levels. The guidelines are written to restrict maximum allowable sound levels for equipment used in certain construction activities. The applicable guidelines can be found in NPC-115. NPC-205 excludes noise sources related to construction activities.

Municipal bylaws place restrictions on the hours of operation for all construction activity: in particular, construction is limited from 7:00 AM to 7:00 PM on weekdays, and are more stringent on weekends and holidays. If construction activities occur outside the hours of operations, special exemptions will need to be obtained from the City of Toronto and residents in the area will be notified several weeks in advance of the construction activities.

It is assumed that the surface LRT construction will be carried out in a manner similar to the current streetcar construction methods. Much of the noise resulting from this construction activity will be that typical of a highway or road widening. The overall duration of the construction activity will be significant: however, the impact to a specific area will be comparatively short during the course of construction as construction will progress from one area to the next.

Monitoring

Noise levels for nearby sensitive uses (such as residential or institutional) will have specific monitoring locations and maximum noise elvesl. These levels and construction activities that may benerate exceedences will be definted prior to construction. The monitoring program will include review and alert levels. If instruments readings exceed "review" levels, TTC and its contractor will jointly assess the necessity of altering the method, rate or sequence of construction. At "alert" levels, TTC can order construction operations to cease until the necessary mitigation measures are undertaken.

Vibration resulting from construction will be monitored using seismographs. Vibrations will be monitored at locations at various distances from work operations and at critical structural or utility locations. As part of the baseline monitoring, a minimum of 3 consistent sets of readings will be taken prior to the start of work. TTC will then continuously monitor ambient vibration levels during construction. The monitoring program will include review and alert levels. If instrument readings exceed "review" levels, TTC and its contractor will jointly jointly assess the necessity of altering the method, rate or sequence of construction. At "alert" levels, TTC can order construction operations to cease until the necessary mitigation measures are undertaken.

Similarly, vibration during the tunnelling process will require monitoring.

Contingency

In the event that instrument readings reach "alert" levels, (as to be defined on a structure-specific basis in the construction contract documents), TTC site supervisory staff will order construction operations to cease and take necessary actions to mitigate unacceptable movements, including, but not limited to alternative construciton metods or construction equipment.

5.4.8 Business Operations

Potential Impacts

Eglinton Avenue, Commerce Boulevard, Convair Drive and Silver Dart Drive provide the essential visibility and accessibility needed by businesses and other economic activities. The proposed Eglinton Crosstown LRT will enhance this accessibility with improved transit service, bringing more patrons to and along the corridor. By stimulating transit oriented development along the corridor, the Eglinton Crosstown LRT will attract more business activity, resulting in positive economic benefits.

Experience from other large LRT projects in the City has suggested that an important business issue is the possible reduced vehicle access to the area and potential loss of on-street parking. The design of the project has been developed to minimize these impacts. The City/TTC are committed to accelerating construction as much as possible to reduce the construction period in order to minimize construction related impacts to residents and businesses. Auto and transit traffic will be maintained throughout the construction period with a minimum of a single lane of travel in each direction. Pedestrian access may be detoured at times but will also be maintained throughout construction. Every attempt will be made to replace any short-term parking loss for individual homes and businesses.

Access to businesses will be modified during construction activities. As part of this study the construction footprint of the station box was analyzed. As a result, a minimum 1 metre clearance from the building face to construction could be provided for access to businesses during construction.

Mitigation

The City/TTC will form a "Construction Liaison Group" in active construction zones during construction to provide quick access to construction related information, specifically schedule and timing information for local business owners and residents. The Construction Liaison Groups will be made up of City/TTC and Contractors staff who will meet regularly on site. Business owners and residents directly impacted by the current/future construction activity will be invited and encouraged to attend these meetings where the day to day issues affecting their home/business will be discussed and resolved. Issues such as business deliveries, local parking, and garbage pick-up will often be topics of concern. Further, construction schedule and activity timing is also a prime topic. Besides the Construction Liaison Group, the City and TTC will undertake prior to each phase of construction, a comprehensive public awareness campaign. Keeping the area up to date and well informed in advance of construction can dramatically reduce the inevitable disruption brought about by this project.

Monitoring

A public consultation plan, including information on how the public can raise issues/concerns, will be developed during the design phase.

Contingency

Any complaints received will be investigated and resolved in an effective and efficient manner.

5.4.9 Parks and Open Space

Potential Impacts

The proposed location for the west temporary work site is on the south side of Eglinton Avenue, 200 m east of Black Creek Drive. The area is locally known as Keelesdale Park and the present land use consists of baseball diamonds, an indoor hockey arena and a grass soccer pitch. The soccer pitch is located adjacent to but separated from Eglinton Avenue by a cultural woodlot (CUW1), and is bordered by a small deciduous forest parcel (FOD2-1) to the east and a parking lot to the south. The majority of the work zone will be established on the soccer pitch, but will also require removal of approximately 0.105 ha. of cultural woodlot to accommodate the northern boundary of the work zone and the 'open shaft' access to the portal. The FOD2-1 vegetation community will not be affected. The soccer pitch will also be used as the tunnel boring machine launch site and as temporary material stockpiling and heavy equipment operations site resulting in temporary impacts to its recreational use.

Mitigation

To ensure that the forested area remains undisturbed, the entire FOD2-1 vegetation community will be separated and isolated with a barrier to prevent encroachment by any construction related activity.Upon completion of the project, the soccer pitch will be re-instated to its present condition. The cultural woodlot (CUW-1) will also be restored to its pre-construction state as it will be replanted with suitable native species.

5.4.10 Traffic Operations

Potential Impacts

Road improvements and cut-and-cover construction used for station construction and special track work areas will result in disruption to traffic operations along Silver Dart Drive, Convair Drive, Commerce Drive and Eglinton Avenue.

At least three traffic lanes will be open to traffic and on-street parking will not be permitted during construction.

Mitigation

During the design process, TTC will work with the City of Toronto and the City of Mississauga to develop an acceptable approach for traffic maintenance during construction. This material will be provided to the contractor as a guide. In the event that the contractor decides to deviate from this plan, the contractor will be required to prepare and submit a detailed and comprehensive Traffic Management Plan, for review by TTC and the Toronto and Mississauga transportation departments.

5.4.11 Property

Potential Impacts

Temporary property easements will be required during the construction phase to establish work zones, material laydown areas, equipment maintenance/storage (pocket) and to obtain acesss for construction activities.

Mitigation

The City of Toronto will negotiate temporary construction easements with property owners on a case-by-case basis following the procedures described in **Section 5.3.8.** Following construction, the City will reinstate lands to pre-construction conditions.

5.5 Operations and Maintenance Impacts

The operations and maintenance of the Eglinton Crosstown LRT will result in impacts that will be experienced over the life of the project. These impacts are associated with emissions during facility operations including air pollution, noise, vibration, electromagnetic interference and stray current. The Eglinton Crosstown LRT will also have long term effects on traffic and transit operations.

5.5.1 Air Quality

Potential Impacts

The operation of the Eglinton Crosstown LRT will result in significant reductions in emissions of oxides of nitrogen, volative organic compounds and carbon monoxide along Eglinton Avenue compared to current conditions. The replacement of existing diesel powered buses tha serve the LRT corridor and transfer of terminus points for some bus routes that are currently served from either the Eglinton Station or Eglinton West Station will result in a reduction in local air emissions.

There will be a need for more electricity to operate the Eglinton Crosstown LRT. However, even with the increased contaminant releases associated with electricity production, it is estimated that there will be a reduction of common air contaminants released in southern Ontario as a result of implementing the LRT. These reductions will grow if private vehicle users become LRT riders.

The new off-street bus terminals/bus loops located at the Keele Station, Don Mills Station and Caledonia Station will be point sources for exhaust emissions. Based on the number of buses to use these terminals/bus loops at any one time, the duration that the buses will be idling on site and the age o fthe bus fleet, it was determined that carbon monoxide (CO), total suspended particulate (TSP) and nitrogen oxide (NO_x) emission will be well below Canada Wide Standards and Ontario Ambient Air Quality Objectives at these locations.

5.5.2 Noise

Potential Impacts

Overall, the noise impact of the LRT is a slight increase in sound levels on the surface and a zero change or reduction in sound levels on the underground sections. The increases, at the most are 3dB on the surface routes and 4dB at the portals, are below the criterion limit of 5dB permissible increase in sound. Hence, no noise control is warranted as a result of the surface LRT operations.

Near the eastern tunnel portals, near Brentcliffe and on the east side of the Don Mills portal, the increase in sound approaches 5dB. Although slightly below the criterion limit, some noise absorption within the tunnel should be considered during the detail design phase to ensure that sound levels do not exceed 5dB. This comment partially reflects the reverberant character of the sound emanating from the tunnel out of the portals.

The Keele Street bus terminal, the Don Mills Road bus terminal and the Caledonia bus loop do not exceed the guideline limits with their current designs. No noise control is required for these facilities.

Traction power substations 10, 11 and 17 are significantly above the ambient sound levels at the nearest receptors.

Several fire ventilation shafts may generate noise in excess of the ambient sound levels in the area and guidelines.

Mitigation

Although no noise control measures are warranted for the Keele Street Bus Terminal, TTC has committed to install noise barriers along the terminals eastern property line in recognition of nearby residences.

At traction power substations 10, 11 and 17, consideration should be given to moving these power stations further away from the receptors. Otherwise, noise control measures should be incorporated into the design of the power substations. As this analysis is based on approximate data, the requirement for mitigation should be reviewed once more detailed data become available.

At several fire ventilation shafts, silencing beyond the standard generic package needs to be developed and implemented in order to meet the guidelines at the limited number of locations. In addition, the removal of property to facilitate the placement of fire ventilation shafts results in very local impacts that trigger the warrants for acoustic barriers or other forms of shielding for the roadway noise. These barriers should be constructed to a height similar to that of the buildings that are being removed.

5.5.3 Vibration

Potential Impacts

The perceptible vibration levels expected to be caused by the LRT are 0.1mm/s at a setback of 20 metres from the track. This vibration level meets the MOE/TTC vibration criterion limit of no more than 0.1 mm/s of vibration being received by a receptor along the LRT. At closer setbacks, further vibration isolation will be required. The induced noise from vibration is predicted to cause some impact based on the US Federal Transit Administration guideline limit of 35dBA. Vibration impacts along tangent track in the underground section are not expected provided the isolation system is as effective as that employed along the Sheppard Subway Line.

Mitigation

Vibration isolation improvements would be needed for the tangent tracks, on the surface, located in residential neighbourhoods to reduce interior sound levels resulting from LRV vibration to 35dBA. Significant modifications to the vibration isolation system would be required for the special track areas noted as local vibration levels are expected to be significantly above the criterion limit, both in terms of noise and perceptible vibration in the areas where surface operations are within 20 m of residences.

5.5.4 Electromagnetic Interference (EMI)

Potential Impacts

All electrical devices generate electromagnetic interference (EMI). The LRT will operate using 600 VDC; therefore, it is a source of EMI. The most common sources of EMI include:

- Computing devices including microprocessor based patient diagnostic, monitoring and therapeutic equipment;
- Radio transmitters including radio paging transmitters and portable/mobile transmitter/receivers such as the familiar walkie-talkie units used by maintenance and security personnel;
- Television receivers and projection devices;
- Cellular telephones; and
- Electrical distribution systems within buildings.

Based on recent tests undertakin by the Bay Area Rapid Transit System (BART), examples of EMF intensities from human activities include the following:

- Overhead power transmission line – 32 to 57 mG (range of exposure to utility workers);
- Household appliances – 8 to 165 mG (at a distance of 27 cm);
- Computer video display – 2 to 4 mG (at a distance of 35 cm); and
- Electric powered rail vehicle – 400 mG (at 110 cm from the vehicle floor) to 1,500 mG (at floor level).

For comparison, in the natural environment apart from human activity, the earth's static magnetic field varies from 300 mG (30µT) at the equator to over 600 mG (µT) at the magnetic poles.

Mitigation

TTC currently operates under and nearby a variety of sensitive uses, including hospitals and university laboratories. TTC has had no EMI related issues materialize along any part of its electric system. Based on measurements taken on the BART system, the results of the modelling showed that static magnetic field levels above 50 µT do not extend beyond 10.0 m from the centre of the two BART tracks at track level. Therefore EMI can be mitigated through the setback of the overhead catenary wire.

5.5.5 Stray Current

Potential Impacts

Stray current corrosion, which is a form of electrolytic corrosion, occurs on buried metallic structures and differs from other forms of corrosion damage in that the current, which causes the corrosion, has a source external to the affected structure. Stray current is caused by a portion of the negative return current which leaks into the ground and returns to the traction power substation through parallel paths provided by the ground and by any other metallic structures. For a non-metallic structure, such as plastic or concrete pipe and plastic coated cables, stray current is a non-issue. Stray current activities and step and touch voltage hazards will be considered during the design of traction power substations.

Mitigation

In order to minimize uncontrolled stray currents a number of measures shall be used in connection with measures applied to the traction power return system:

- Low linear rail electrical resistance;
- High rail-to-earth resistance, including insulated trackwork mounted fittings and appurtenances;
- Good rail bonding, both longitudinally and track cross-bonding;
- Parallel connected negative reinforcing feeder cables, insulated and cross-bonded to the return rails;
- Good water drainage;
- Structural steel-work and reinforcing isolation/separation; and
- Utility structures to be electrically insulated, bonded, coated and cathodically protected as required.

The LRT traction power distribution system shall be ungrounded and shall have no direct connection to the earth.

The running rails shall be insulated from earth with the use of insulating pads and hardware, and by the isolation of all rail associated metal ware from earth. Where applicable, the negative running rails shall be connected to the AC ground system through a floating negative automatic ground switch (FNAGS). The FNAGS operates (and alarms) only on an abnormally high return rail to ground voltage.

Monitoring

A monitoring program will be put in place where the LRT crosses a high-pressure steel pipeline. The monitoring program will include:

- Prior to construction, a baseline survey for stray current corrosion control is undertaken and reported to the pipelines;
- During construction, stray current test equipment is installed in the immediate vicinity of the pipelines;
- Upon completion of the work, stray currents will be monitored as often as is prudently required; and
- All data will be shared between the pipelines and TTC.

5.5.6 Traffic Operations

Along these sections, there will be some impact on the capacity for automobile movements although the total people carrying capacity of the corridor will be increased by introducing LRT service.

At existing non-signalized intersections, there will be a right-in/right-out arrangement to ensure safe LRT operation by not permitting crossing of the alignment by motor vehicles. A preliminary planning study has carefully considered each location to ensure that either an existing or new signalized intersection is nearby to provide a nearby U-turn opportunity.

At specific major signalized intersections, left-turns will not be provided to improve transit operations. Instead, motorists will be provided with left-turn and U-turn opportunities at locations beyond the intersections. The LRT section from the Pearson International Aiport to Martin Grove Road will not have left turn prohibitions at intersections.

In the section from Keele Street to Brentcliffe Road, the LRT will be underground. Lane configurations on Eglinton Avenue in this section will be unaffected.

The removal of one through lane in each direction along the east section of the Eglinton Crosstown LRT may displace some vehicular traffic. Current drivers could use other roads or could be converted to transit users.

Bicycle lanes will be provided or maintained along the LRT alignment to provide an alternative travelling mode for non-drivers.

Emergency service providers will continue to operate at current service levels with the LRT in place. The track area of the LRT will be paved with concrete. Emergency vehicles can utilize this right-of-way to avoid traffic congestion. As a step towards accommodating emergency vehicles' entry/exits, modifications to the LRT right-of-way will include adjusting pole locations or lowering the raised right-of-way at the driveways of fire, police and ambulance stations.

Monitoring

Traffic volumes on public roads and transit schedules are part of the City of Toronto's and TTC normal operating procedures. This will allow for either agency to identify future issues and develop corrective actions. Furthermore, as development proceeds around each station/stop, the City of Toronto and the City of Vaughan will ensure the continued functioning of the road network, through the use of supporting traffic impact studies.

5.5.7 Transit Operations

A formal analysis of bus routing changes, including public consultation, will be undertaken between 12 and 18 months prior to the opening of the Eglinton Crosstown LRT. For planning purposes, TTC staff have developed a preliminary bus plan to help guide discussion about LRT facilities and potential bus connections. The preliminary bus plan is presented in **Exhibit 159** and identifies the following changes to the existing bus network related to the Eglinton Crosstown LRT:

- No parallel bus routes will be provided along Eglinton Avenue;
- North-south arterial bus routes will continue to operate;
- The Don Mills and Eglinton Station will include a new seven-bay bus terminal to service the 25N, 25S, 54 and 100 bus routes;
- The Keele and Eglinton Station will include a new four-bay bus terminal to service the 32C and 32D bus routes; and

- The Caledonia Station will include a new bus loop to service the 47N and 47S bus routes.

Stop/station locations were selected based on achieving the right balance between convenient local access and speed of service. Closely spaced stops/stations provide excellent local access, but speed of service is compromised if stops/stations are spaced too closely together. Stops/stations will be located where current TTC services, including buses and subways, intersect Eglinton Avenue in order to provide convenient passenger connections between those services and the LRT. The proximity of existing neighbourhoods, commercial areas, major destinations and future developments was also considered when stop/station locations. The average distance between stops/stations and corresponding LRT vehicle speed is presented in **Exhibit 178**. The spacing and resulting speed of service in the underground section is comparable to the Bloor-Danforth Subway. On the surface sections, average stop spacing is approximately twice that of the existing bus service along Eglinton Avenue which, together with providing exclusive lanes, results in a speed of service increase of approximately 50%.

Exhibit 178: Stop/Station Spacing and Resulting Route Speed

Section	Stop/Station Spacing	Route Speed
West Surface Section	670 m	28-31 km/h
Underground Section	850 m	32 km/h
East Surface Section	660 m	22-25 km/h

Exhibit 179 lists the existing bus routes that serve portions of the Eglinton Crosstown LRT route and their potential re-alignments.

Exhibit 179: Potential Modifications to Bus Routes on Eglinton Avenue

Route	Description	Start/End Station	Route Overlaps LRT to:	Distance on Eglinton (km)	Potential Re-Alignment
Existing Routes to be Altered					
5	Avenue Road	Eglinton	Oriole Pkwy	0.6	Combine with 61- run through Avenue Rd Stn
32	Eglinton West	Eglinton	Renforth	16.13	Discontinue
32A	Eglinton West	Eglinton	Renforth	16.13	Discontinue
32B	Eglinton West	Eglinton	Renforth	16.13	Discontinue
32C	Eglinton West	Eglinton	Keele	6.4	Terminate at Trethewey (Keele & Eglinton Stn)
32D	Eglinton West	Eglinton W	Keele	3.3	Terminate at Trethewey (Keele & Eglinton Stn)
34	Eglinton East	Eglinton	Kennedy	11.5	Discontinue
47	Lansdowne	Lansdowne	Caledonia	0.3	Re-routed to serve Caledonia Station
51	Leslie	Eglinton	Leslie	4.1	Combine with 56 along Eglinton to Laird
54	Lawrence East	Eglinton	Leslie	4.1	Terminate at Don Mills & Eglinton Station
56	Leaside	Eglinton	Laird	2.8	Combine with 51 along Eglinton to Leslie
61	Avenue Road North	Eglinton	Avenue Rd	0.6	Combine with 5 - run through Avenue Rd Stn
100	Flemingdon	Eglinton	Don Mills	5.1	Terminate at Don Mills & Eglinton from east via Wynford to Donlands Stn
103	Mt. Pleasant North	Eglinton	Mt. Pleasant	0.6	Loop at Eglinton Station with 74 Mt. Pleasant to St. Clair
New Routes to be Added					
51/56	Leslie/Leaside	Donlands	Laird to Leslie	1.25	New route for Leslie bus along Eglinton to Laird

5.6 Beneficial Effects

In general the benefits of a well developed transit system for the health and vitality of big cities are well documented. Transit helps cities be more liveable and vibrant by:

- Ensuring that transit is an more attractive travel option by improving travel times, comfort, and reliability of service;
- Increasing the people movement capacity in all corridors, generally without the widening of roadways and in an environmentally sound manner, so that they can take advantage of the employment, educational, recreational, and many other opportunities cities offer;

- Providing alternative travel choices for non-drivers, including transit and enhanced environments for cycling and walking;
- Providing opportunities to include urban design and streetscaping features in the construction of the LRT line;
- Improving air quality and, in doing so, improving people's health and their ability to enjoy outdoor spaces and activities;
- Reducing the wear-and-tear on city roads and the need to spend tax dollars on repairing and expanding road infrastructure; and
- Ensuring the long-term economic stability and environmental sustainability by reducing climate-changing emissions and reliance on fossil fuels.

A recent study named *"Greenhouse Gases and Air Pollutants in the City of Toronto-Toward a Harmonized Strategy for Reducing Emissions, 2007"* on the sources of greenhouse gases and air pollutants in the City of Toronto indicates that close to 40 per cent of greenhouse gas emissions originate from the transportation sector. The vast majority of these emissions are from cars and trucks. Encouraging residents to choose alternatives to the automobile for as many trips as possible must be a vital part of any action plan to reduce harmful emissions and address climate change. The emission reductions resulting from the implementation of the Eglinton Crosstown LRT will result in a net benefit to those who reside in close proximity to Eglinton Avenue. Furthermore, greenhouse gas emissions are estimated to be reduced and that benefit can be extended should the LRT encourage motorists to use the public transit system.

Light-rail transit technology, as proposed in this study, offers significant benefits with respect to the environment and city-building. These include:

- Provision of premium quality service – quiet, smooth, comfortable, fast, and reliable – which attracts people to ride transit;
- Highly energy-efficient technology: light rail vehicles produce 92 per cent less CO_2 than autos and 83 per cent less CO_2 than diesel buses, and produce zero local-area or "tailpipe" emissions;
- Ample capacity for projected ridership in all proposed corridors, with the capability to expand to meet increasing demands;
- Demonstration of long-term and substantial commitment to quality transportation, to instil the confidence which landowners and investors need to invest in development and city-building, and the confidence which residents need to choose a transit-oriented lifestyle;
- Creation of a strong and highly-recognizable presence which signifies the availability of high-quality transit; and
- Association with Toronto's streetcar heritage and the positive connotations which streetcars bring to the City and its transit system

Potential benefits of the Eglinton Crosstown LRT are that it will promote the Official Plan vision for a more liveable Toronto as future growth within Toronto wll be steered to areas which are well served by transit, the existing road network and which have a number of properties with redevelopment potential.

Having a safe, fast and reliable transit service like the Eglinton Crosstown LRT, that is a viable alternative to vehicular travel, will attract new business in the area based on the provision of increased people movement capacity.

The mixed use areas within Avenues will perform a "Main Street" function and become meeting places for local neighbours and the wider community. By promoting alternative forms of travel, these areas become vibrant communities centred on the people and uses instead of automobiles. By directing growth to areas such as Avenues, the Official Plan provides greater certainty for land owners, businesses and residents about what type of growth can be anticipated, and where growth will occur.

Exhibit 180: Summary of Eglinton Crosstown LRT Potential Impacts, Mitigation Measures, Monitoring, Future Work and Contingencies

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
Terrain and Soils	Changes in terrain and generation of excess soil	LRT facilities will be located primarily within the right-of-way and the vertical profile of Silver Dart Drive, Convair Drive, Commerce Drive and Eglinton Avenue will be maintained. Minimum impact on terrain will occur in underground sections. Approximately 1.8 million m^3 of soils are expected to be removed.	Regulatory requirements in place at the time of construction and excess materials management guidelines and specifications (e.g. OPSS180) will be used when developing an excess materials management plan. Contaminated soils will be managed in accordance with provincial legislation and regulations including the Ministry of the Environment's Guidelines for Use at Contaminated Sites in Ontario (MOE 1997).	A Soil and Groundwater Management Strategy will be developed during the design phase. Any brownfield sites will be managed in accordance with the Ontario Regulation 153/04 and Ontario Regulation 511/09 once it comes into force. A Designated Subtances Surveys for any buildings or structures which require demolition will be undertaken during design phase. If excavations or property acquisitions are planned in areas of known or high potential for contaminated soils, Phase 1 and 2 Environmental Site Assessments will be conducted during design phase. A contingency plan will be developed during design phase where appropriate.
Groundwater	Impacts to groundwater during construction and from implementation of the LRT.	Potential for tunnelling activities encountering groundwater. The groundwater table is likely to be above the base of the proposed depth of alignment at many areas within the underground section of the Eglinton Crosstown LRT. Potential for encountering contaminated groundwater during dewatering. There is potential for buildings to have foundations built below the local water table, and a potential exists for these foundations to be affected by dewatering.	Groundwater will need to be controlled by methods such as pumping from sumps, educators or well points or in some cases by deep well dewatering systems. For the majority of the underground section of the LRT, the base of excavation/tunneling is likely to be in glaciolacustrine (silt, clay and sand) deposits of the Thorncliffe Formation; therefore, care must be taken to prevent the removal of fine soil particles during pumping. It is anticipated that Eglinton Crosstown LRT facilities will not interrupt existing groundwater migration pathways and permanent groundwater dewatering systems will not be used.	Further hydrogeology studies will be conducted at locations requiring dewatering to estimate discharge rates, predict impacts and evaluate treatment/discharge options. These studies are also needed to support the Ministry of the Environment's Permit to Take Water (PTTW) applications. Contaminated groundwater will be managed in accordance with provincial legislation and regulations including the Ministry of the Environment's Guidelines for Use at Contaminated Sites in Ontario (MOE 1997). A Soil and Groundwater Management Strategy will be developed during the design phase. A contingency plan will be developed during design phase where appropriate.
Surface Water, Drainage and Stormwater	Impacts to LRT operations during regional and 100 storm events. Impacts to drainage and stormwater systems from the LRT. Fuel spills, due to accidents	At two locations, Humber River and Black Creek, it was determined that the Eglinton Crosstown LRT will be affected by the regional storm event (1 in 500 years) but operations will not be affected by the 100 year storm event. The east and west portal are both located above the flood elevation for the regional storm; therefore,	Stomwater control, mitigation, erosion and sediment control measures will be enumerated as per MOE's Stormwater Design Manual 2003 and the City of Toronto's Wet Weather Flow Management Guidelines 2007. LRT operations will be suspended during the regional storm event to prevent potential risks to human health and safety and damage to LRT facilities and vehicle.	Stormwater management, in accordance with City of Toronto, City of Mississauga, TRCA and MOE requirement will be developed during the design phase. The City of Toronto operates and maintains a network of rainfall guages. The information is used to determine sewer sizes and the influence of storms of various sizes on the existing sewer system and on streams (floods).

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
	during construction refueling and accidents during operation, entering the watercourses. Impacts to quality and quantity of surface water.	minimum risk of flooding within the portal or tunnel are predicted. West of Martin Grove Road, catchbasins/storm sewers may require relocation as a result of proposed Eglinton Avenue widening. The storm sewers located between Royal York and Weston Road may require hydraulic capacity assessment to ensure that the capacities of these receiving storm sewers are not compromised due to proposed increase in pavement area. At other locations where increase in pavement area is nominal, it is anticipated that the existing storm sewers capacities will not be impacted. The LRT will not significantly add impervious surfaces, as such no water quality control measures are warranted. Potential for decline of quality of surface water during construction due to erosion and sedimentation. Potential for surface water contamination.		The City collects and analyses water samples from sewers at sewer outfalls, in stream and at the lakefront for a variety of management reasons. Sample results from sewers and at sewer outlets are used to determine, trace and correct the discharge of prohibited pollutants to its sewer systems. A permit under Ontairo Regulation 166/06 will be secured from TRCA during the design phase.
Fisheries	Alteration of fish habitat during construction.	Potential alteration of fish habitat as a result of bridge widening and culvert extensions. No work in the wetted stream channel is proposed.	Implement best management practices for work on watercourse banks. Implement erosion and sedimentation control measures. Implement stormwater management practices	The TRCA has a Level III agreement with the Department of Fisheries and Oceans. TRCA staff will review the project in line with TRCA's Level III agreement with Fisheries and Oceans Canada as per Section 35 (1) of the *Fisheries Act.* TRCA's will assess all components of the project to determine whether there is a potential for the project to result in a Harmful Alteration, Disruption or Destruction of fish habitat (HADD). Where fisheries timing window restrictions apply, TRCA will provide TTC with the necessary information for construction staging purposes. Staff will work with TTC to ensure appropriate mitigation and restoration is achieved during construction On-site environmental inspection during work at

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
				bridge/culvert sites.
	Mortality of fish species during construction.	Potential mortality to fish species as a result of bridge widening and culvert extensions. No work in the wetted stream channel is proposed.	Implement best management practices for work on watercourse banks. Implement erosion and sedimentation control measures. Implement stormwater management practices.	On-site environmental inspection during work at bridge/culvert sites.
Vegetation	Loss of vegetation during construction and from the operation of the LRT.	A total of 1.357 hectares of vegetation will be removed along the Eglinton Crosstown LRT corridor. Deciduous forests account for 42.7% (0.579 hectares) of this total. The majority of forest cover to be removed (0.554 hectares) occurs along the west section of the alignment between Martin Grove Road and Keele Street. The remaining vegetation communities at risk are culturally based and account for 59.6% (0.741 hectares) of the total area affected.	The following environmental protection measures designed to reduce or minimize vegetation removals will be considered on a site-specific basis during the design phase.	Obtain permits and approvals for tree protection and removal/injury from TRCA, city of Mississauga and City of Toronto (including permits required under the Ravine and Natural Feature Protection By-law and by-laws that protect private trees, street trees and park trees), as applicable. Preparation of arborist reports, tree protection plans, edge management plans and restoration plans will be developed during the design phase to identify site-specific impacts, mitigation and compensation measures to offset vegetation losses and to achieve a net gain in vegetation area, attributes and functions. Prepare restoration and enhancement plans that will meet or exceed both TRCA and Urban Forestry standards that will offset vegetation losses and achieve a net gain in vegetation area, attributes and functions.A monitoring plan will be developed during the design phase to measure the effectiveness of proposed mitigation measures. A contingency plan will be developed during the design phase.
	Disturbance to vegetation through edge effects during construction.	Creating new forest edges may result in sunscald, wind throw, and invasion by exotic species. Ditching, grading and other drainage modifications may alter local soil moisture regimes.	The City of Toronto Tree Protection Policy and Specifications for Construction Near Trees requirements will be met. To minimize disturbance at a particular site, • work zones will be isolated using construction fencing and silt fencing to minimize the area of disturbance; • reinstate growing conditions on top of LRT facilities in areas of	A monitoring plan will be developed during the design phase to measure the effectiveness of proposed mitigation measures. A contingency plan will be developed during the design phase.

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
			cut-and-cover construction; and, • good housekeeping practices related to materials storage (pocket)/stockpiling, equipment fuelling/maintenance, etc. will be implemented during construction.	
	Rare, threatened or endangered flora.	Forty-one plant species that are rare to uncommon in the City of Toronto and in the TRCA watershed	Determine precise GPS locations of potentially affected plant species during design phase.	A monitoring plan will be developed during the design phase to measure the effectiveness of proposed mitigation measures. A contingency plan will be developed during the design phase.
Wildlife	Destruction/ Disturbance of wildlife habitat during construction.	Construction of the LRT and associated facilities will result in the removal of vegetation and the wildlife habitat that it supports.	The *Migratory Birds Convention Act* prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. To meet the requirements of the Act, no vegetation removals should occur during the nesting season. With several exceptions, this includes the period from April 1 to July 31. This timing restriction will also protect the birds listed under the *Fish and Wildlife Conservation Act*. TTC will comply with the requirements of the *Migratory Birds Convention Act* and nesting season, and as a result, the LRT will have no significant adverse effects on avian wildlife species/populations. Mitigation measures for the disturbance to vegetation will be implemented to mitigate any impacts to wildlife habitat.	If vegetation clearing is required during the nesting season, TTC will retain a qualified avian biologist to conduct a nesting survey. If active nests are found, TTC will prepare a site-specific mitigation plan in consultation with the Canadian Wildlife Service. In the event that works must be undertaken within areas of communities / ecosystems, TTC will monitor the health of the affected community during construction. Once all construction activities are complete, this monitoring program will continue into the following growing season. A monitoring plan will be developed during the design phase to measure the effectiveness of proposed mitigation measures. A contingency plan will be developed during the design phase.
	Impacts on wildlife mortality during construction	Removal of wildlife habitat may result in wildlife mortality.	Perform vegetation removals outside of wildlife breeding seasons (typically April 1 to July 31).	Bird Friendly lighting and design will be incorporated where the LRT crosses valley and stream corridors to reduce the potential for birds to impact buildings.
	Disturbance to rare, threatened or endangered wildlife.	No rare, threatened or endangered wildlife identified within study area.	None required.	None required.

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
Electromagnetic Interference (EMI)	Potential generation of electromagnetic interference	All electrical devices generate electromagnetic interference (EMI). The LRT will operate using 600 VDC; therefore, it is a source of EMI.	EMI can be mitigated through the setback of the overhead catenary wire.	
Air Quality	Impacts on air quality during construction. Impacts on air quality due to implementation of LRT.	Air quality impacts will be of short duration, limited to the period where significant excavation and construction activities occur on surface sections of the LRT or where cut and cover construction is required on the underground section of the LRT. The two major sources of emissions from construction are dust emissions and exhaust emissions from construction equipment. All construction locations will be temporary and will have a localized impact. Overall emissions are expected to decrease with LRT implementation.	Best management practices will be implemented to prevent the potential release of dust and other airborne pollutants off site. Air quality is anticipated to be improved after the LRT implementation. Gases pollutants and particulate based pollutants are anticipated to be decreased during LRT operations.	Monitor and investigate complaints on air quality issues.
Noise and Vibration	Noise level increase during construction and operation of the LRT. Vibration impacts generated from the operation of the LRT	Noise level increases during construction will be of short duration, limited to the period where significant excavation and construction activities occur on surface sections of the LRT or where cut and cover construction is required on the underground section of the LRT. Overall, the noise impact of the LRT is a slight increase in sound levels on the surface and a zero change or reduction in sound levels on the underground sections. The increases, at the most are 3dB on the surface routes and 4dB at the portals, are below the criterion limit of 5dB permissible increase in sound. Hence, no noise control is warranted as a result of the surface LRT operations. Near the eastern tunnel portals, near	Comply with construction noise by-laws (Toronto Municipal Code) to provide means of limiting excessively noisy operations and equipment. Specify hours of operation during construction. Noise by-law exemptions will be obtained prior to construction if required. Although slightly below the criterion limit, some noise absorption within the eastern tunnel should be considered during the detail design phase to ensure that sound levels do not exceed 5dB. Consideration should be given to moving the three power stations further away from the receptors. Otherwise, noise control measures should be incorporated into the design of the power substations. Silencing fire ventilation shafts beyond the standard generic package needs to be developed and implemented in order to meet the guidelines at the limited number of locations. The acoustic barriers should be constructed to a height similar to	Monitor and investigate complaints on noise and vibration issues Provincial and municipal guidelines provide basic restrictions and recommendations with regard to construction noise and vibration. These criteria will be followed in all areas, regardless of duration of construction. In particular, municipal by-laws from the City of Toronto stipulate limitations on the vibration from construction activity and the times of construction. Mitigation measures will be developed during the design phase.

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
		Brentcliffe and on the east side of the Don Mills portal, the increase in sound approaches 5dB. The Keele Street bus terminal, the Don Mills Road bus terminal and the Caledonia bus loop do not exceed the guideline limits with their current designs. No noise control is required for these facilities. Traction power substations 10, 11, and 17 are significantly above the ambient sound levels at the nearest receptors. Several fire ventilation shafts may generate noise in excess of the ambient sound levels in the area and guidelines. The removal of property to facilitate the placement of fire ventilation shafts results in very local impacts that trigger the warrants for acoustic barriers or other forms of shielding for the roadway noise. The perceptible vibration levels expected to be caused by the LRT will meet vibration criterion limit of 0.1mm/s rms at a setback of 20 metres from the tracks. Vibration impacts along tangent track in the underground section are not expected provided the isolation system is effective.	that of the buildings that are being removed. Vibration isolation improvements would be needed for the tangent tracks, on the surface, located in residential neighbourhoods to reduce interior sound levels resulting from LRV vibration to 35dBA. Significant modifications to the vibration isolation system would be required for the special track areas noted as local vibration levels are expected to be significantly above the criterion limit, both in terms of noise and perceptible vibration in the areas where surface operations are within 20 m of residences. Mitigation measures will be developed during the design phase.	
Property	Loss of property for the construction of the LRT	Total of 149 properties - 45 full acquisitions and 104 partial acquisitions are required, while 88 of the acquisitions are private properties	Compensation for residential and commercial impacts will be provided for temporary and permanent property requirements. For permanent property acquisitions, compensation will be provided	The property owners will be contacted during the design stage. Partial property acquisitions have been identified for a

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
		and 61 are public properties.	at fair market value, which is determined at the time of purchase with a property appraisal report forming the basis for negotiations. Other ancillary costs are negotiated on a case-by-case basis. Compensation will provided for the temporary property requirements. Upon completion of construction, temporary property will be returned to the owner and restored to its original condition. Where properties to be displaced form a continuous development of retail/business streetscape, the displacement TTC facility will ensure the continuation of the existing street wall (with respect to height setback and general architectural characteristics).	further 49 properties. These include underground easements and surface facilities such as station entrances. TTC and the City of Toronto will conduct a Property Protection Study during the design of the Eglinton Crosstown LRT, which will determine detailed property requirements, including temporary construction easements. The acquisition of these properties will follow the same principles described above.
Stray Current	Potential impacts from stray current	Stray current corrosion occurring on buried metallic structures	Stray current activities and step and touch voltage hazards will be considered during the design of traction power substations. In order to minimize uncontrolled stray currents a number of measures shall be used in connection with measures applied to the traction power return system.	A monitoring program will be put in place where the LRT crosses a high-pressure steel pipeline. The monitoring program will include: • Prior to construction, a baseline survey for stray current corrosion control is undertaken and reported to the pipelines; • During construction, stray current test equipment is installed in the immediate vicinity of the pipelines; • Upon completion of the work, stray currents will be monitored as often as is prudently required; and, • All data will be shared between the pipelines and TTC.
Parks and Open Space	Impacts to parks and city trees	Between Martin Grove Road and Scarlett Road, Eglinton Avenue will be widened on the north side within the Richview Corridor. Temporary impacts to the use of the soccer pitch at Keelesdale Park as the west temporary work site will be used for tunnel boring machine launch site, temporary material stockpiling and heavy equipment operations site. The west temporary work site will also require removal of approximately 0.105 ha. of cultural woodlot to	Vegetation located east of the soccer pitch will be separated and isolated with a barrier to prevent encroachment by any construction related activity. Upon completion of the project, the soccer pitch will be re-instated to its present condition. The cultural woodlot will also be restored to its pre-construction state as it will be replanted with suitable native species. The LRT facilities will be positioned and configured to minimize intrusion into the parks to the extent possible. The LRT facilities will be designed to blend into their surroundings using a context sensitive solution.	TTC will consult with City of Toronto Parks, Forestry and Recreation division during design to mitigate impacts on City of Toronto parks and parkettes located along Eglinton Avenue.

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
		accommodate the northern boundary of the work zone and the 'open shaft' access to the portal. Construction of fire ventilation shafts, station entrances, emergency exit buildings and traction power substations along the Eglinton Crosstown LRT corridor will result in minor encroachment at five parks/parkettes (St. Hilda's parkette; Ben Nobleman Park; Chaplin parkette; Eglinton Park; and, Howard Talbot Park)..		
Utilities	Potential conflicts with existing utility plants	The presence of an extensive system of storm and sanitary sewers, large diameter utility plants, pipelines and utility poles may be impacted by the implementation of the LRT.	Utilities and pipelines located within the underground section of the Eglinton Crosstown LRT will be avoided to the extent possible through tunneling. In areas of cut and cover construction, small utilities that are not in direct conflict with the LRT facility will be supported and protected during construction. For utilities that are in direct conflict with the LRT facility, or for large utilities that cannot be temporarily supported, relocation will occur. Services will be maintained to the extent possible during relocation and notice of planned service interruptions will be provided to service users prior to interruptions. The location of all plant, potential conflicts and the relocation strategy will be confirmed with service providers during detail design.	For all utilities that will be relocated, relocation plans and construction activities will be undertaken in accordance with the *Road Rights of Way Act* and with the City's Requirements for the Installation of Services within the City of Toronto Road Allowance or its equivalent in Mississauga.
Businesses Operations, Pedestrians and Cyclists	Access to businesses will be modified during construction activities.	Reduced vehicle access to the area and potential loss of on-street parking during construction	A minimum 1 metre clearance from the building face to construction could be provided for access to businesses during construction. The City/TTC are committed to accelerating construction as much as possible to reduce the construction period in order to minimize construction related impacts to residents and businesses. Auto and transit traffic will be maintained throughout the construction period with a minimum of a single lane of travel in each direction. Pedestrian access may be detoured at times but will also be maintained throughout construction. Every attempt will be made to replace any short-term parking loss for individual homes and businesses. The City/TTC will form a "Construction Liaison Group" in active	A public consultation plan, including information on how the public can raise issues/concerns, will be developed during the design phase. Any complaints received will be investigated and resolved in an effective and efficient manner.

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
			construction sites during construction to provide quick access to construction related information, specifically schedule and timing information for local business owners and residents. The Construction Liaison Group will be made up of City/TTC and Contractors staff who will meet regularly on site. Business owners and residents directly impacted by the current/future construction activity will be invited and encouraged to attend these meetings where the day to day issues affecting their home/business will be discussed and resolved. Issues such as business deliveries, local parking, and garbage pick-up will often be topics of concern. Further, construction schedule and activity timing is also a prime topic. Besides the Construction Liaison Committee, the City and TTC will undertake prior to each phase of construction, a comprehensive public awareness campaign. Keeping the area up to date and well informed in advance of construction can dramatically reduce the inevitable disruption brought about by this project	
Archaeology	Loss of archaeological resources	Stage 1 and Stage 2 archaeological assessment was conducted for the LRT corridor except for two segments of the proposed LRT corridor, north and south of Highway 401 between Matheson Boulevard and Convair Drive.	Despite careful scrutiny, no archaeological resources were encountered during the Stage 2 Archaeological Assessment field investigation and, thus, with the exception of the unassessed segments, the remainder of the subject lands, encompassing the Eglinton Crosstown LRT have been considered clear of further archaeological concern. The Ministry of Culture have reviewed the Stage 1 and Stage 2 Archaeological Assessment reports and agreed to its findings.	A Stage 2 archaeological assessment will be conducted for the two unassessed segments segments of the proposed LRT corridor, north and south of Highway 401 between Matheson Boulevard and Convair Drive during design phase. The following monitoring and contingency measures are recommended by the Ministry of Culture: 3. Should previously unknown or unassessed deeply buried archaeological resources be uncovered during development, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*. The office of the Heritage Operations Unit, *Ministry of Culture* (416-314-7146) should be contacted immediately. 4. Any person discovering human remains must immediately notify the office of the Heritage Operations Unit, *Ministry of Culture* (416-314-7146), the police or coroner, and the Registrar of Cemeteries, Cemeteries Regulation Unit, *Ministry of Government Services* (416-326-8404).

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
Built Heritage and Cultural Landscapes	Generally changes due to transit infrastructure projects have the potential to adversely affect cultural heritage landscapes and built heritage resources by displacement and/or disruption during and after construction.	Buildings near the intersection with Eglinton Avenue and Weston Road, Keele Street, Dufferin Street, Oakwood Avenue, Mount Pleasant Road and Bayview Avenue may be affected. Built heritage and/or cultural heritage landscapes may experience displacement (removal) or disruptions (by the introduction of physical, visual, audible or atmospheric elements that are not in keeping with their character and, or setting).	A Heritage Impact Statement (HIA) for the collection of buildings to be removed will be conducted during design phase. Documentation through the use of historical mapping and photography of the affected buildings will be conducted prior to removal in accordance with the requirements of the City of Toronto Heritage Preservation Services requirements. LRT Station entrances will be designed using context sensitive solutions in consultation with the City of Toronto, Heritage Preservation Services.	TTC will prepare Cultural Heritage Evaluation Reports and/or undertake Heritage Impact Assessments at select sites to address City of Toronto Heritage Preservation Services and City of Mississauga Local Municipal Heritage Committee requirements during the design phase.
Traffic Operations	Reduce level of services on vehicular traffic	Road improvements and cut-and-cover construction used for station construction and special track work areas will result in disruption to traffic operations along Silver Dart Drive, Convair Drive, Commerce Drive and Eglinton Avenue. At least three traffic lanes will be open to traffic and on-street parking will not be permitted during construction.	During the design process, TTC will work with the City of Toronto and the City of Mississauga to develop an acceptable approach for traffic maintenance during construction.	The contractor will be required to prepare and submit a detailed and comprehensive Traffic Management Plan, for review by TTC and the Toronto and Mississauga transportation departments. City Transportation Services will monitor.
Transit Services	Change to TTC bus routes and stops	A high-order transit service will replace some of the existing TTC routes. Stops/stations will be located where current TTC services, including buses and subways, intersect Eglinton Avenue in order to provide convenient passenger connections between those	For planning purposes, TTC staff have developed a preliminary bus plan to help guide discussion about LRT facilities and potential bus connections. The preliminary bus plan identifies the following changes to the existing bus network related to the Eglinton Crosstown LRT: • no parallel bus routes will be provided along Eglinton Avenue; • north-south arterial bus routes will continue to operate; • the Don Mills and Eglinton Station will include a new seven-bay	TTC will require to continue to monitor the future transit service demands. A formal analysis of bus routing changes, including public consultation, will be undertaken between 12 and 18 months prior to the opening of the Eglinton Crosstown LRT.

Factor	Environmental Issue / Concern	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Monitoring / Future Work / Contingency
		services and the LRT.	bus terminal to service the 25N, 25S, 54 and 100 bus routes; • the Keele and Eglinton Station will include a new four-bay bus terminal to service the 32C and 32D bus routes; and, • the Caledonia Station will include a new bus loop to service the 47N and 47S bus routes.	
Navigation	Potential impacts to navigation activities at watercourses	The Humber River, West Don River and East Don River are considered navigable. Therefore, modifications to the Humber River Bridge, including adding an LRT facility, and the West Don River Bridge and East Don River Bridge, including adding an LRT facility and associated bridge widening and possible reinforcement, may require an approval under the *Navigable Waters Protection Act.*	Measures to mitigate potential impacts on navigable waters will meet the *Navigable Waters Protection Act* requirements.	The *Navigable Waters Protection Act* approval will be obtained by TTC prior to construction at navigable waters.

6. CONSULTATION PROCESS

6.1 Introduction

6.1.1 Overview of Consultation Process

An extensive consultation process was undertaken to assist in the planning and impact assessment process for the Eglinton Crosstown LRT project. The consultation process was designed to address the requirements of *Ontario Regulation 231/08.* Consultation was conducted during the Preliminary Planning Phase prior to the formal declaration of the Transit Project Assessment process on November 13, 2009 through the issuance of the Notice of Commencement.

Consultation was conducted with the government review agencies, technical agencies and local municipalities, the general public, business improvement areas and ratepayers associations, property owners, Aboriginal communities,

This chapter outlines the consultation carried out during the Preliminary Planning phase and during the formal Transit Project Assessment process. A detailed summary of how the issues noted in Schedule 2 of Ontario Regulation 231/08 were addressed is included in **Section 6.4**

Staff from key technical agencies and municipalities and the TTC participated in a Technical Advisory Committee which met each month throughout the Preliminary Planning and Transit Project Assessment. Other technical agencies and municipal were engaged through issue-specific meetings, working groups and a stakeholder agency workshop. As well, key study recommendations were endorsed by the Toronto Transit Commission and the City of Mississauga Council and approved by Toronto City Council. Detailed information about technical agency and municipal consultation is presented in **Section 6.2.1** and **Section 6.3.1.**

During the Preliminary Planning phase, a letter was sent to the Ministry of the Environment (MOE), Environmental Assessment Approvals Branch (EAAB) Director requesting input for First Nation Consultation. The details of First Nations Consultation are included in **Section 6.2.3.**

The general public and property owners were able to choose their level of involvement from one or more of the following options:

- Public open houses,
- Project website, and/or
- Contacting the project team directly (24/7 hot line; fax; e-mail; and regular mail).

At the public open houses, information about the project was presented on display panels arranged in sequence in a public meeting place. Project staff was available at the open houses to answer directly any questions or concerns raised by a member of the public.

As discussed in **Section 6.2.4** and **Section 6.3.4** four formal rounds of public consultation were undertaken. **Appendix M** includes reports which summarize public comments submitted for each of round of consultation as well as a log of all public comments received during the study.

6.1.2 Notification Protocol

To notify the general public, business improvement associations, ratepayers associations and property owners within the study area of the consultation dates, newspaper advertisements were placed in the Toronto Star and community-base newspapers. Similar notices were issued by Canada Post mail walk to 72,200 households and business in the study area and were also placed on the project website and posted at key TTC subway stations.

Letters were sent to members of the general public, affected land owners and interest groups by regular mail and/ or by email. As the study progressed, the mailing lists were update to include new individuals taking an interest in the LRT project. In addition, all property owners within 30 metres of the project were advised on the Notice of Commencement.

The Notice of Commencement of the Transit Project Assessment was done in accordance with the requirements of Section 7 (4) of the regulation. Specifically:

- Letters were sent to all property owners within 30 metres of the project;
- Email notices were sent to the MOE Regional Director and EAAB Director in addition to the government ministries, agencies and local municipalities noted later in this chapter;
- All members of the public that participated in previous consultation events received notification;
- Newspaper ads were placed in the Toronto Star, Metro News, City Centre Mirror, North York Mirror, East York Mirror, Scarborough Mirror, and Etobicoke Guardian ; and
- A notice was posted on the project website.

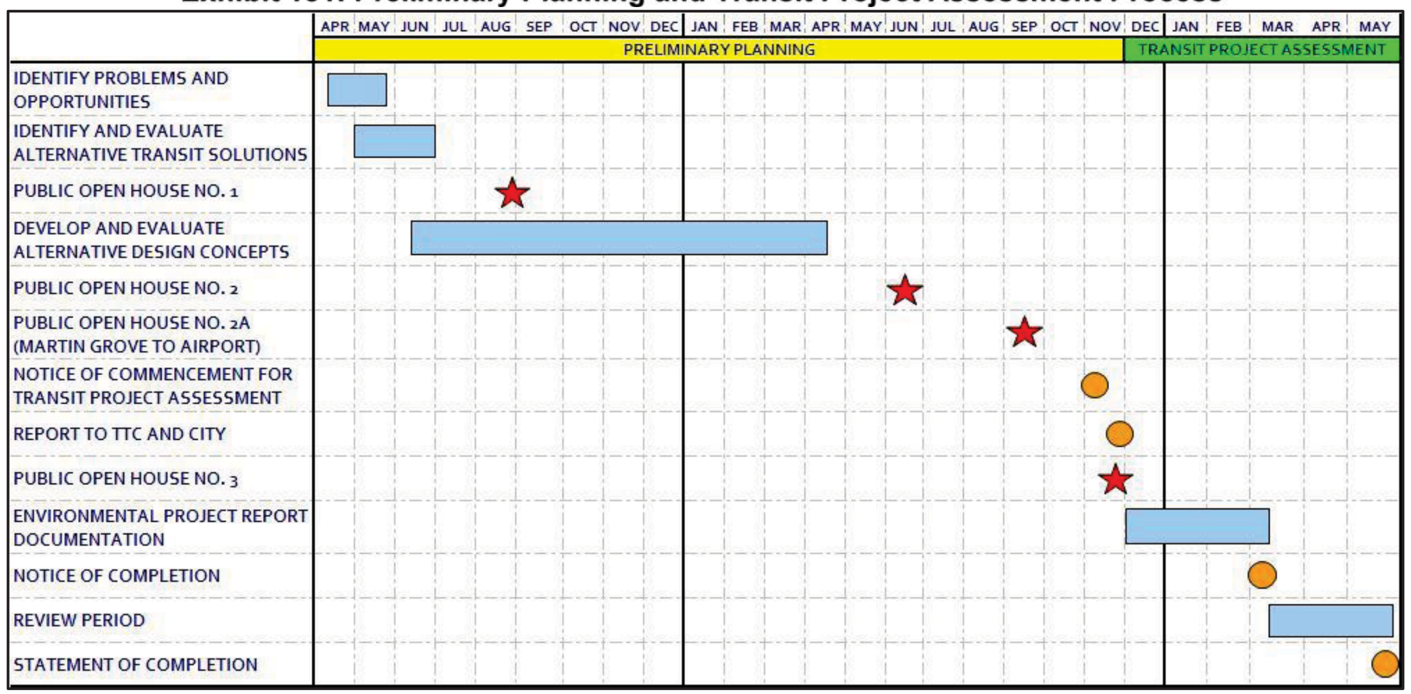
6.1.3 Study Organization and Study Stages

As shown in **Exhibit 181**, the study included two distinct phases: the Preliminary Planning phase and the subsequent Transit Project Assessment process.

The focus of rthe Preliminary Planning phase was to discuss planning issues with stakeholders and identify a project. This phase occurred between March 2008 and November 12, 2009. The consultation undertaken as part of Preliminary Planning is outlined in **Section 6.2**.

The focus of the Transit Project Assessment process, which commenced on November 13, 2009, was to consult on the project, the alternatives considered, the potential impacts and proposed mitigation measures. The consultation undertaken during the Transit Project Assessment is outlined in **Section 6.3**.

Exhibit 181: Preliminary Planning and Transit Project Assessment Process



6.2 Preliminary Planning

6.2.1 Technical Agencies and Municipal Staff

Notification and consultation was carried out to encourage the involvement of government, technical agencies and municipal staff during the Preliminary Planning Phase. The following technical review agencies and municipal departments were engaged during Preliminary Planning and the subsequent Transit Project Assessment process.

The following technical review agencies were invited to be involved in the Preliminary Planning Study as well as the formal Transit Project Assessment process.

Federal Government Review Agencies

Canadian Environmental Assessment Agency
Canadian Transportation Agency
Indian and Northern Affairs Canada
Environment Canada
Department of Fisheries and Oceans
Transport Canada

Provincial Government Review Agencies
Ministry of Aboriginal Affairs
Ministry of Agriculture, Food and Rural Affairs
Ministry of Citizenship and Immigration
Ministry of Culture
Ministry of Energy and Infrastructure
Ministry of the Environment
Ministry of Municipal Affairs and Housing
Ministry of Natural Resources
Ministry of Transportation
Ontario Realty Corporation

Technical Agencies
Bell Canada
Enbridge Gas Distribution
Enbridge Pipelines
Hydro One Networks Incorporated
Rogers Cable
Sarnia Products Pipeline Company, Inc.
Sun-Canadian Pipeline Company, Inc.
Toronto Hydro
Trans-Northern Pipeline
Canadian National Railway
Canadian Pacific Railway
Greater Toronto Airports Authority (GTAA)
Toronto and Region Conservation Authority (TRCA)
VIA Rail
GO Transit

Municipal Staff
City of Mississauga
City of Toronto – City Planning
City of Toronto – Emergency Medical Services
City of Toronto – Transportation Services
City of Toronto - Parks Forestry and Recreation
City of Toronto – Public Health
Conseil Scolaire de district Catholique Centre-Sud
Toronto District School Board
Toronto Catholic District School Board
Toronto Fire Services
Toronto Parking Authority
Toronto Police Services
Toronto Water

A Technical Advisory Committee (TAC) was established early in the Preliminary Planning phase to facilitate communication between the study team and key stakeholders, including TTC departments, the City of Toronto (co-proponents), GO Transit and Mississauga Transit. The TAC provided advice to the study team and was consulted on key recommendations during Preliminary Planning.

- City of Toronto – City Planning – Transportation Planning (East, North and West District)
- City of Toronto - City Planning – Urban Design
- City of Toronto Transportation Services

- TTC Service Planning
- GO Transit
- Mississauga Transit

In addition to monthly TAC meetings, focussed meetings were held with government and technical review agencies and City of Toronto and City of Mississauga departments in order to communication key study recommendations and to resolve issues. **Exhibit 182** lists meetings held with government review and technical agencies and **Exhibit 183** lists meetings held with municipal staff during Preliminary Planning.

Key issues raised and the study team's responses and/ or follow-up actions are summarized in **Section6.4.**

Exhibit 182: Preliminary Planning - Technical Agencies Meetings

Date	Agency	Purpose
September 4, 2008	GO Transit	Coordinate future plans with GO Transit
October. 30, 2008	MTO	Coordination with Mississauga BRT
December. 1, 2008	TRCA	Initial meeting with TRCA to review western section of Eglinton Crosstown LRT Project
December 16, 2008	TRCA	Initial meeting with TRCA to review eastern section of Eglinton Crosstown LRT Project
January 8, 2009	TRCA	Initial site visit to review the Humber River, Mimico Creek and Black Creek watersheds
January 12, 2009	TRCA	Site visit to review the Don River watersheds
January 22, 2009	MOE	Present Eglinton Crosstown LRT to MOE
February. 2, 2009	GO Transit	Discuss potential opportunities to interface GO Transit services with the Eglinton Crosstown LRT
March 11, 2009	MTO	Coordination with Mississauga BRT
April. 14, 2009	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority
April. 17, 2009	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority
April. 28, 2009	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority
May 5, 2009	TRCA	Meeting to discuss floodplain and property issues at Jane Street
July 16, 2009	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority
July 29, 2008	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority
July 29, 2009	MOE	Consultation/Coordination with the Project Officer from MOE
August 24, 2009	MTO	Coordination with Mississauga BRT
August 27, 2009	MOE	Present overview of Eglinton Crosstown LRT to MOE staff and to review scopes of work for Air, Noise and Vibration, and Water Resources investigations
September 2, 2008	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority
September. 15, 2009	TRCA	Site visit to review surface water issues at Mimico Creek, Jane Street, Black Creek and West Tunnel Launch Site
September 29, 2009	TRCA	Site visit to review surface water issues at East Tunnel Launch Site, West Don River, East Don River, Wilson Brooke and Massey Creek
December. 18, 2009	GTAA	Coordinate the alignment of the Eglinton Crosstown LRT with the Airports Authority

In accordance with TRCA's requirements, a copy of all letters issued by TRCA during Preliminary Planning and the Transit Project Assessment are included in **Appendix M**.

Exhibit 183: Preliminary Planning - Municipal Staff Meetings

Date	City/ Department	Purpose
April 17, 2008	City of Mississauga	Coordination with Mississauga BRT
June 10, 2008	City of Toronto - Toronto Water	Proposed water main at Mt. Pleasant Road
June 18, 2008	City of Mississauga	Coordination with Mississauga BRT
September 16, 2008	City of Toronto - City Planning	Don Mills LRT/Eglinton Crosstown LRT Special Study Kick-off
October 21, 2008	City of Toronto - City Planning	Obtain information on development plans in the North District
November 5, 2008	City of Toronto - City Planning	Don Mills LRT/Eglinton Crosstown LRT Screening of Initial Alternatives
December 8, 2008	City of Toronto - City Planning & Transportation Services	Workshop on Traffic Issues – West Surface Section
December. 12, 2008	City of Toronto - City Planning & Transportation Services	Workshop on Traffic Issues – East Surface Section
January 20, 2009	City of Toronto - City Planning & Transportation Services	Traffic Issues – Wynford and Victoria Park
January 22, 2009	City of Toronto - Toronto Water	Proposed water main at Mt. Pleasant Road
January 28, 2009	City of Toronto - City	Traffic Issues – Martin Grove, Kipling and Jane

Date	City/ Department	Purpose
	Planning & Transportation Services	
February. 2, 2009	City of Toronto - City Planning & Transportation Services	Traffic Issues – Wynford and Victoria Park
February 6, 2009	City of Toronto - Toronto Water	Proposed water main at Mt. Pleasant Road
March 11, 2009	City of Mississauga	Coordination with Mississauga BRT
March 27, 2009	City of Toronto - Transportation Services	Traffic Analysis – U-turn versus standard intersection configuration
March 30, 2009	City of Mississauga	Coordination with Mississauga BRT
Apr. 7, 2009	City of Toronto - City Planning & Transportation Services	Black Creek traffic and Maintenance and Storage (pocket) access analysis
April 8, 2009	City of Toronto - City Planning	Station Entrances
April 21, 2009	City of Toronto - City Planning & Transportation Services	Interface with Jane LRT
April 30, 2009	City of Toronto - City Planning	Station Entrances
May 1, 2009	City of Toronto - Transportation Services	Intersection Concepts – West Surface Section
May 1, 2009	City of Toronto - Transportation Services	Intersection Concepts – East Surface Section
May 1, 2009	City of Toronto - City Planning	Don Mills LRT/Eglinton Crosstown LRT Special Study Final Results
May 7, 2009	City of Toronto - Parks, Forestry & Recreation	Meeting to discuss floodplain and property issues at Jane Street
May 22, 2009	City of Toronto - Police, Fire, EMS	Consultation with issues related to property owned by these services
June 6, 2009	City Planning & Transportation Services	Black Creek traffic and Maintenance and Storage (pocket) access analysis
July 13, 2009	City of Mississauga	Coordination with Mississauga BRT
August 14, 2009	City of Toronto - Transportation Services	Updated traffic analysis
September 3, 2009	City of Toronto - City Planning	Station Entrances
September 9, 2009	City of Toronto - City	Black Creek traffic and Maintenance and Storage

Date	City/ Department	Purpose
	Planning & Transportation Services	(pocket) access analysis
September 10, 2009	City of Toronto - Transportation Services	Traffic analysis update
October 2, 2009	City of Mississauga	Coordination with Mississauga BRT
October 14, 2009	City of Mississauga	Coordination with Mississauga BRT
October 20, 2009	City of Mississauga	Coordination with Mississauga BRT
October 28, 2009	City of Toronto - Parks, Forestry & Recreation	Meeting to discuss property issues on City parklands where station entrances, fire vent shafts, emergency exit buildings or traction power substations would be located.
November. 13, 2009	City of Toronto - Parks, Forestry & Recreation	Discuss the West Launch Shaft site at Keelesdale Park

6.2.2 Municipalities

In addition to the involvement of municipal staff on technical elements of the study, municipal political representatives in the City of Toronto and the City of Mississauga were provided with project overview presentations at key milestones during Preliminary Planning. The dates of key meetings held are noted in **Exhibit 184.**

Exhibit 184: Preliminary Planning – Municipal Meetings

Date	Purpose
August 7, 2009	City of Toronto Councillor Briefing – First Round of Public Open Houses
June 3 and 4, 2009	City Councillor Briefing – Second Round of Public Open Houses
August 31, 2009	City Councillor Briefing – Third Round of Public Open Houses

6.2.3 Aboriginal Consultation

Ontario Regulation 231/08 requires transit project proponents to request from the Ministry of the Environment's Environmental Assessment and Approvals Branch "for a list of bodies that, in the opinion of the Director, would be able to assist in identifying aboriginal communities that may be interested in the transit project" (Section 7(4)(a). On November 11, 2008, the TTC wrote to the Environmental Assessment and Approvals Branch to request agency contacts that could assist in identifying potentially interested aboriginal communities for the Transit City projects including the Eglinton Crosstown LRT.

The MOE Environmental Assessment and Approvals Branch (Zeljko Romic) wrote the TTC on December 3, 2008 with detailed information regarding agencies to assist in identifying potentially interested communities. The agencies included: Ontario Ministry of Aboriginal Affairs, and Indian and Northern Affairs Canada (INAC): (Specific Claims, Litigation Management and Resolution Branch (LMRB) and Comprehensive Claims).

During the first round of public consultation in the preliminary planning phase, notices were sent to:

- INAC Specific Claims, LMRB and Comprehensive Claims (July 31, 2008),
- Ministry of Aboriginal Affairs (July 31, 2008), and
- Mississaugas of the New Credit First Nation (July 31, 2008).

No comments were received from these organizations during the first round of open houses.

During the second round of consultation in the preliminary planning phase, notices were sent as follows:

- INAC Specific Claims, INAC LMRB, and INAC Comprehensive Claims (June 3, 2009),
- Ontario Ministry of Aboriginal Affairs (June 3, 2009), and
- Mississaugas of the New Credit First Nation (June 3, 2009).
- No comments were received from these organizations during the second round of open houses.

On September 2, 2009, an additional open house was held to specifically discuss the section of the LRT from Martin Grove Road to Pearson International Airport. Notices for this additional open house during preliminary planning were sent to the Mississaugas of the New First Nation (August 21, 2009). No comments were received from the Mississaugas as part of this Open House.

6.2.4 General Public and Property Owners

Involvement of the general public, community associations, ratepayers groups and property owners was an integral component of the study.

The following community associations and ratepayers groups received notification of public consultation events during both Preliminary Planning and the Transit Project Assessment process:

- Avenue Road Eglinton Community Association
- Bayview Blythwood Ratepayers Association
- Canadian Hispanic Congress
- Centennial Community Ratepayers Association
- Clairlea Regent Heights Neighbourhood Association
- Community of Rathburn-Grove Ratepayers
- Confederation of Resident & Ratepayers Associations
- Corvette Residents' Association
- Eglinton Way BIA
- Green Hills Residents' Association
- Islington Ratepayers & Residents Association
- Kennedy Road BIA
- Leaside Business Park
- Leaside Property Owners Association
- Markland Homes Association
- Martin Grove Ratepayers' Association
- Maryvale Community Association
- Midland Park Community Association
- Mount Dennis Community Association
- North Leaside Resident Association
- Renaissance Tenants Association
- Santamonica Birchmount Neighbourhood Association
- Silverthorne Ratepayers Association
- St. Andrew-St. Patrick Tenants Association
- The Princess Anne Manor Ratepayers Association
- Upper Village BIA
- West Deane Homeowners Association
- West Gate Residents Association
- Wexford BIA
- Wynford/Concorde Residents Association
- York-Eglinton BIA

Key public consultation dates during preliminary planning were:

- First round of public open houses – August 14 to September 22 2009 (6 locations),
- Ward 12 Open House – December 9, 2008,
- Second round of public open houses – June 15 to July 29, 2009 (6 Locations),
- TTC Advisory Committee on Accessible Transit – July 27, 2009,
- Don Mills Residents Incorporated – July 27, 2009, and
- Third round public open house – September 2, 2009.

Three rounds of public open house were held at key points during the Preliminary Planning phase. At each open house display panels were presented for public review and representatives TTC, City of Toronto, City of Mississauga (third open house only), and the consultants were available to discuss the study on a one-on-one basis with members of the public.

<u>First Round of Public Open Houses (August 14 to September 22, 2008</u>

The first round consisted of six open houses held between August 14, 2008 and September 22, 2008. The purpose of the first round was to share information about the Eglinton Crosstown LRT project with the community and to gather feedback on preliminary project plans. Each open house presented information on:

- The planning context (rationale) for the LRT on Eglinton Avenue;

- Background information about the Eglinton Avenue Corridor (such as consistency with City and Provincial Plans, existing conditions and a description of LRT technology);
- Proposed surface and underground sections;
- Proposed stop and station locations; and
- Potential construction methods.

The level of public participation for the first round of open houses is summarized in **Exhibit 185.**

Exhibit 185: First Round of Public Open Houses – Summary of Participation

	Location	Number of Participants signed-in	Number of Comments Forms Received
August 14, 2008	Forest Hill Memorial Arena 340 Chaplin Crescent	119	35
August 19, 2008	Leaside Arena 1073 Millwood Road	172	45
August 25, 2008	Humber Valley United Church 76 Anglesey Boulevard	209	52
August 27, 2008	Don Montgomery Community Centre 2467 Eglinton Avenue East	48	8
September 4, 2008	Richview Baptist Church 1548 Kipling Avenue	70	11
September 22, 2008(*)	Centennial Recreation Centre 2694 Eglinton Avenue West	73	18
	Total	**691**	**169**

(*) Joint Open House with the Jane LRT

Ward 12 Open House (December 9, 2008)

In addition, at the request of Councillor Frank DiGiorgio, an informal open house was held on December 9, 2008. The open house included the same presentation materials as the first round of public open houses. A total of twelve members of the public signed in at this event.

Second Round of Public Open Houses (June 15 to July 29, 2009)

The second round of public open houses were held at six locations June 15, 2009 and July 29, 2009. Initially, the open houses were scheduled to conclude by June 25, 2009, but the final open house was rescheduled to July 29, 2009 due to a civic strike. The purpose of the second round was to provide:

- Responses to frequently heard comments at Open House 1;
- Key objectives of the Eglinton Crosstown LRT;
- Typical portal, stop and station plans;
- Details of specific surface stops and underground stations (including proposed station entrance locations);
- Traffic management for surface LRT stops (including rerouted left turns at 10 key intersections);
- Potential corridors for the LRT between Martin Grove Road and Pearson International Airport; and
- Potential underground construction methods (including twin bore and single bore tunnelling).

In addition to notification to the general public through the methods described in **Section 6.1.2**, letters were issued to private property owners to advise of preliminary full and partial property requirements defined to date through the Preliminary Planning process.

The level of participation during the third round of Open Houses is summarized in **Exhibit 186.**

Exhibit 186: Second Round of Open Houses – Summary of Participation

Date	Location	Number of Participants signed-in	Number of Comment Forms Received
June 15, 2009	William Lea Room 1073 Millwood Road	257	82
June 17, 2009	Eglinton Public School 223 Eglinton Avenue East	160	37
June 18, 2009	Richview Collegiate 1738 Islington Avenue	275	35
June 23, 2009	York Memorial Collegiate 2690 Eglinton Avenue West	99	15
June 24, 2009	Beth Sholom Synagogue 1445 Eglinton Avenue West	168	44
July 29, 2009	Ionview Heights United Church 115 Ionview Road	45	7
	Total	**1,004**	**220**

Dons Mills Residents, Inc. (July 27, 2009)

A meeting was held at the request of the Don Mills Residents, Inc. to review the Eglinton Crosstown LRT project in general and the options for Don Mills Station and Wynford Stop. In addition to the general project comments received, feedback was given regarding the assessment of the two Don Mills LRT interface options (including the proposed bus Terminal) and the two options at Wynford Drive.

TTC Advisory Committee on Accessible Transportation (ACAT) (July 27, 2009)

An overview of the materials provided for public review and comment at the second round of public open houses was presented to the ACAT Design Review Sub-committee for information.

Third Round Public Open House (September 2, 2009)

Subsequent to the completion of the second round, a separate open house was held on September 2, 2009 at the Etobicoke Olympium at 590 Rathburn Road. The purpose of this round of consultation was to present the recommended route for the LRT from Martin Grove Road to Pearson International Airport.

The open house presentation materials included:

- The five alternative routes between Martin Grove Road and Pearson International Airport;
- Reasons for selecting Route 1 (via Eglinton Avenue, Commerce Boulevard, Convair Drive and Silver Dart Drive) as the preferred route; and
- Stop concepts for the recommended route.

A total of 139 participants signed in, and 30 comment forms were submitted.

6.3 Transit Project Assessment

6.3.1 Technical Agencies and Municipal Staff

The involvement of the government agencies, technical agencies and municipal staff as listed in **Section 6.2.1** continued through the Transit Project Assessment phase.

Stakeholder Agency Workshop (January 8, 2010)

A stakeholder agency workshop was held to present the preferred design and proposed environmental impacts and impacts and to solicit comments from government review and technical agencies in advance of issuance of the draft Environmental Project Report.

Thirty-seven staff representing the government and technical review agencies and municipal departments listed below attended the workshop:

- Bell Canada
- Canadian Environmental Assessment Agency
- City of Mississauga
- City of Toronto – City Planning (Transportation Planning)
- City of Toronto – City Planning (Urban Design)
- City of Toronto – Emergency Medical Services
- City of Toronto – Fire Services
- City of Toronto - Parks, Forestry and Recreation
- City of Toronto – Transportation Services
- Enbridge Gas Distribution
- Metrolinx/GO Transit
- Ministry of the Environment
- Ministry of Transportation
- Rogers Cable
- Toronto and Region Conservation Authority
- Toronto Hydro
- Toronto Water

The meeting included a presentation of the preferred design as well as proposed environmental impacts and mitigation measures. Attendees participated in facilitated discussion groups and completed work books which requested comments about the proposed environmental impacts and mitigation measures, commitments to future work (to be included in the Environmental Project Report) and permits and approvals required for implementation of the Eglinton Crosstown LRT. Comments heard at the Stakeholders Workshop are summarized in Exhibit 172 shown later.

As for the Preliminary Planning phase, and as summarized in **Exhibit 187** and **Exhibit 188,** focused meetings were held during the Transit Project Assessment to address key issues.

Exhibit 187: Transit Project Assessment - Meetings with Technical Review Agencies

Date	Agency	Purpose
November 25, 2009	CEAA	Conference call to discuss Project Description prepared under the Canadian Environmental Assessment Act
January 5, 2010	TRCA	Follow-up to site visits held on Sept. 15, 2009 and Sept. 29, 2009 and to review TRCA comments on Drainage and Storm Water Management Report and Structures Report

Exhibit 188: Transit Project Assessment - Meetings with Municipal Staff

Date	Agency	Issues
November 13, 2009	City of Toronto – Parks, Forestry and Recreation	Meeting to coordinate the design of the Keelesdale Community Centre with the West Launch Site
January 21, 2010	City of Toronto – Parks, Forestry and Recreation	Meeting to discuss the requirement of the Ravine and Natural Features Protection by-law and the Tree Protection by-law and to review the design of the Wynford stop
February 1, 2010	City of Toronto-	Meeting to review Cultural Hertiage Assessment Report

Date	Agency	Issues
	Heritage Preservation Services	
February 1, 2010	City of Toronto – Parks, Forestry and Recreation	Subsequent meeting to discuss the West Launch Site at Keelesdale Park

As part of the government and technical reviewed agency consultation, technical special reports to key agencies as requested. **Exhibit 189** lists which agencies received the technical specialist reports.

Exhibit 189: Circulation of Technical Specialist Reports

Technical Specialist Report	Circulation Agency
Air Quality	Ministry of the Environment
Stage 1 and Stage 2 Archaeological Assessment Report	Ministry of Culture City of Toronto - Heritage Preservation Services
Cultural Heritage Assessment Report	City of Toronto - Heritage Preservation Services
Drainage and Storm Water Management Report	Toronto and Region Conservation Authority
Geotechnical Assessment Report	Toronto and Region Conservation Authority
Hydrogeological Assessment Report	Toronto and Region Conservation Authority
Natural Heritage Assessment Report	City of Toronto – Parks, Forestry and Recreation Toronto and Region Conservation Authority
Noise and Vibration Assessment Report	Ministry of the Environment
Traffic	City of Toronto – Transportation Services City of Toronto – City Planning Ministry of Transportation City of Mississauga

6.3.2 Municipalities

There was continued involved of municipal political representatives in the City of Toronto and the City of Mississauga during the Transit Project Assessment Process. The Toronto Transit Commission, Toronto City Council and City of Mississauga Council have endorsed the Transit Project and the filing of the Environmental Project Report. Key municipal consultation dates are noted in **Exhibit 190.**

Exhibit 190: Transit Project Assessment - Municipal Consultation

Date	Purpose
November 17, 2009	Toronto Transit Commission
December 4, 2009	Toronto City Council
December 2, 2009	Mississauga City Council
January 19, 2010	City of Toronto Pedestrian Committee
February 17, 2010	Toronto Transit Commission

6.3.3 Aboriginal Consultation

Following clarification received during the Scarborough Malvern LRT project, all Williams Treaty Bands were contacted in addition to the Mississaugas of the New Credit First Nation. The following contacts were made:

- November 12, 2009: a letter and Notice of Commencement was sent to all Williams Treaty Bands and their legal coordinator Ms. Karry Sandy McKenzie asking for written confirmation of any interest they may have in the project. The Williams Treaty Bands include: Alderville, Beausoleil, Chippewas of Georgina Island, Chippewas of Rama, Curve Lake, Hiawatha, Mississaugas of Scugog, Moose Deer Point First Nations.
- November 12, 2009: The Mississaugas of the New Credit were contacted via e-mail (their preferred method and asked to provide written confirmation of any interest they may have in the project); and
- November 12, 2009: Notices were sent to INAC Specific Claims, INAC LMRB, and INAC Comprehensive Claims and the Ontario Ministry of Aboriginal Affairs to confirm First Nation contacts.

Chief Sharon Stinson Henry (Chippewas of Rama First Nation) confirmed receipt of the Notice of commencement and letter via e-mail on November 12, 2009 and did not express interest. The Alderville First Nation (Shelley Gray - Consultation Coordinator) confirmed receipt of the Notice of Commencement and letter on January 7th, 2009. The Alderville First Nation expressed no concerns with the project but wishes to be contacted should any environmental or archaeological issues arise. A letter dated October 29th, 2009 from the Beausoleil First Nation acknowledged receipt of the Preliminary Planning notice for the Eglinton LRT.

Follow-up emails asking for confirmation of receipt of the November 12 letter and Notice of Commencement for the Eglinton Crosstown LRT were e-mailed to the Mississaugas of the New Credit and all Williams Treaty First Nations on January 4, 2010.

Follow-up phone calls were made to the Mississaugas of the New Credit First Nation on Feb 22nd and to all Williams Treaty Bands and Ms. Karry Sandy McKenzie, their legal coordinator on February 23 and 24, 2010. On Feb 23rd, the Chippewas of Georgina confirmed receipt of the Notice of Commencement, as did the Curve Lake First Nation. Neither expressed concerns and Curve Lake (Chief Knott) indicated an interest in being notified of any archaeological finds.

As of February 25, 2010, no specific interest or concerns have been raised by The Mississaugas of the New Credit and/or by any of the Williams Treaty Bands.

A Notice of Completion will be sent to all First Nations agencies, Williams Treaty Bands and the Mississaugas of the New Credit First Nation with an additional request for each First Nation to express any interest they may have in writing and to confirm receipt. Furthermore, these First Nations will be contacted immediately should any potential First Nation archaeology be discovered.

6.3.4 General Public and Property Owners

Through November and early December, 2009, seven Open Houses were held across the study corridor after the formal Notice of Study Commencement was issued. The following summarizes consultation undertaken. Key public consultation events held during the Transit Project Assessment Process were:

- TTC Advisory Committee on Accessible Transportation – Design Review Sub-Committee (November 18, 2009),
- Fourth Round of Public Open Houses (November 23, 2009 to December 10, 2009) (seven locations),
- Mount Dennis Community Meeting – December 14, 2009,
- Ward 34 Open House – January 14, 2010,
- Airport Corporate Centre Businesses Meeting – January 18, 2010,
- Mount Dennis Community Association Meeting hosted by Councillor Lindsay Luby – January 28, 2010,
- Latvian Canadian Cultural Centre Board of Directors Meeting – Feb 1, 2010,
- Ward 4 Community Meeting – February 3 2010,
- Ward 34 Meeting hosted by Councillor Minnan Wong - Feb 9, 2010,
- Wards 11 and 12 meeting hosted by Councillors Nunziata and Di Giorgio – Feb 11, 2010

During the Transit Project Assessment Process, TTC issued notification to all property owners for whom permanent full or partial property acquisition requirements were identified through the preliminary planning process. Several owners attended the fourth round of public open houses. Additional meetings were arranged with affected property owners upon request.

Fourth Round Public Open Houses (November 23 to December 10, 2009)

The purpose of the public open houses was to provide information covering:

- Response to frequently heard comments at Open Houses 2 and 3;
- Details and locations of specific surface stops and underground stations;
- Recommendations at Jane Street., Black Creek Drive, Wynford Drive. and Don Mills Road.;
- Locations of surface facilities (station entrances, emergency exit buildings, ventilation shafts and traction power substations);
- Recommended traffic management (including rerouted left turns at nine key intersections);
- Construction methods; and
- Potential environmental impacts and recommended mitigation measures.

Exhibit 191 summarizes the level of participation for the fourth round of public open houses.

Exhibit 191: Fourth Round of Open Houses – Summary of Participation

Date	Location	Number of Participants signed-in	Number of Comment Forms Received
November 23, 2009	York Memorial Collegiate 2690 Eglinton Avenue West	112	14
November 24, 2009	Etobicoke Olympium 590 Rathburn Road	125	11
November 25, 2009	Northern Secondary School 1929 Bayview Avenue	161	19
November 26, 2009	Richview Collegiate 1738 Islington Avenue	206	34
December 2, 2009	Canadian National Institute for the Blind 851 Mt. Pleasant Road	122	34
December 8, 2009	Don Montgomery Community Centre 2467 Eglinton Avenue East	63	14
December 10, 2009	Beth Sholom Synagogue 1445 Eglinton Avenue West	71	13
	Total	**860**	**139**

TTC Advisory Committee on Accessible Transportation (November 18, 2009)

A presentation was made to the ACAT Design Review Subcommittee meeting of November 18, 2009 to provide an overview of the recommendations approved by the Commission at is November 17, 2009. Subcommittee members registered concerns about stop and station spacing and recommended the implementation of parallel bus service.

Mount Dennis Community Meeting (December 14, 2009)

The Mount Dennis Community Association and Councillor Frances Nunziata invited the TTC to a community meeting to discuss the LRT on December 14, 2009. Approximately 75 residents attended. Specific information was presented by project staff related to the rationale for selecting a surface LRT alignment versus an underground option. The councillor invited all residents who had been formally contacted by TTC regarding property impacts. Therefore, project staff explained the property acquisition process in detail to the residents in attendance to ensure they had a clear understanding. Residents and Councillor Nunziata indicated they would follow-up with TTC to confirm a community position regarding preference for above ground versus below-ground LRT in advance of the Commission meeting in order for deputations to be made from local residents directly to the City Councillors overseeing the Commission.

Ward 34 Open House (January 14, 2010)

At the request of Councillor Denzil Minnan-Wong, an additional public open house was held at the Latvian Centre; 144 participants signed in at the event and 30 comment forms were received. The key issue raised by meeting attendees was strong opposition to the recommended removal of the LRT stop at Swift Drive/ Credit Union Road.

Airport Corporate Centre Businesses (January 18, 2010)

In response to a motion raised at the December 2, 2009 Mississauga Council meeting, City of Mississauga staff hosted an information meeting for Airport Corporate Centre (vicinity of Eglinton Avenue and Commerce Drive, south of Highway 401) businesses. The event opened with a presentation by City of Mississauga staff about the Mississauga Bus Rapid Transit project staff. TTC provided an overview presentation of the Transit Project Assessment Process recommendations for the Airport Corporate Centre area. Following the presentations, an informal question and answer session was held. The meeting was attended by 3 persons representing two property owners.

Mount Dennis Community Association Meeting (January 28, 2010)

The Mount Dennis Community Association board invited TTC staff, Councillors Nunziata and Di Giorgio to discuss their concerns with surface LRT, and propose an alternative design option. The Mount Dennis Community Association put forward a hybrid option. The Mount Dennis Community Association proposal was for a half surface LRT on the north side of Eglinton Avenue (from the planned Black Creek portal to the rail corridor bridge) and half underground tunnel (from the west side of the rail corridor bridge under Weston Road and emerging at a portal on the east side of Jane street.

The Mount Dennis Community Association indicated their proposal was based on attempting to minimize additional cost requirements by including a surface section, bypass the need for undercutting the rail corridor supports, minimize traffic disruption and minimizing residential acquisition. Mount Dennis Community Association noted they were particularly interested in ensuring a full surface stop to serve the new recreation centre, a hub connection with the GO line, and new green space created by the tunnel deck from the rail corridor to Weston Road.

Councillors Di Giorgio and Nunziata stated that their preference was not for a hybrid option or surface LRT but only for underground LRT from Keele Street to Jane Street. Councillor Di Giorgio expressed specific concerns with surface LRT and the Mount Dennis Community Association's hybrid proposal in terms of traffic back-ups at Black Creek.

TTC reviewed the Mount Dennis Community Association proposal and indicated significant concerns with LRT operations and traffic flow, and traffic safety for the proposed north side of Eglinton Avenue surface alignment.

Latvian Canadian Cultural Centre Board of Directors Meeting (February 1, 2010)

On February 1, 2010, TTC staff attended a meeting at the Latvian Canadian Cultural Centre with members of the Board of Directors and members of the Latvian Canadian Cultural Centre. This was a follow-up initiative to the Open House held at the Centre on January 14, 2010 with Councillor Minnan-Wong (Ward 34).

Led by the Chair of the Board of Directors of the Latvian Canadian Cultural Centre, several members declared their opposition to the removal of the stop, stating their belief that the decision to remove the stop will have detrimental effects to usership of the Centre, especially by the senior population.

TTC staff explained the rationale for recommending against the stop due to the steep grade of Eglinton Avenue between the Don River Valley and Swift/Credit Union. Specifically the intersection would need to be lowered by 6 metres. As well as additional costs, this treatment would also require the closure or relocation of driveways at 3 Swift Drive, 25 Swift Drive, and 1681 Eglinton Avenue. TTC noted that the nearest LRT stop at Bermondsey is located 350 metres to the east. The maximum walking distance to the Bermondsey Stop is 600 metres, considered an acceptable walking distance to transit.

The ECLRT team explained that although the technical recommendation to remove the stop had already been approved by City Council, groups wishing to provide feedback could submit letters or make deputations directly to the TTC Commission on February 17 when a report on the public consultation results would be considered by the Commission. TTC provided Latvian Canadian Cultural Centre members with some further engineering information in advance of the Commission presentation deadline regarding an option suggested at the meeting to modify the bridge over the East Don River Valley.

Ward 4 Public Meeting (February 3, 2010)

Councillor Lindsay Luby hosted a meeting at Richview Collegiate to discuss rerouted left turns at major intersections in Ward 4. The meeting was attended by 120 members of the public. TTC staff made a presentation about the rerouted left turns and Metrolinx staff provided an overview of the Transit City Program.

Residents largely indicated they would prefer a subway as opposed to surface LRT as they were concerned about traffic and noise.

Ward 34 Meeting (February 9, 2010)

On February 9, 2010 TTC staff attended a meeting eam met in a common room in the condominium at 1700 Eglinton Avenue East. The meeting was arranged by Councillor Minnan-Wong as a follow-up to a January 14, 2010 Open House to discuss the Transit City technical recommendation to eliminate a stop at Swift/Credit Union, in the vicinity of where the meeting was held.

The Councillor's office issued invitations to local stakeholders including the President of the local Parkway Honda dealership at 1681 Eglinton Avenue East, representatives of condominium buildings and property management companies in the area and the Victoria Village Residents Association. A representative from the Latvian Canadian Cultural Centre also attended to represent the Latvian Canadian Cultural Centre.

TTC staff explained the rationale for recommending against the stop due to the steep grade of Eglinton Avenue between the Don River Valley and Swift/Credit Union and distributed a hand-out outlining that the intersection would need to be lowered by 6 metres. As well as additional costs, this treatment would also require the closure or relocation of driveways at 3 Swift Drive, 25 Swift Drive, and 1681 Eglinton Avenue.

TTC staff advisedthat the nearest LRT stop at Bermondsey is located 350 metres to the east. The maximum walking distance to the Bermondsey Stop is 600 metres, considered an acceptable walking distance to transit.

Attendees raised questions regarding the retaining walls that would be necessary if a stop was recommended and various engineering accommodations that would have to be adopted with a stop at Swift/Credit Union were explained.

General information about the Transit City Eglinton LRT line were discussed, including the centre median operation and at-grade operation, as well as general construction season impacts.

Ward 11 and Ward 12 Community Meeting (February 11, 2010)

Councillors Nunziata and Di Giorgio hosted a meeting and invited TTC to clarify the challenges of building an underground and an above ground LRT in order for their constituents, in order to confirm a community preference to present directly to the TTC Commissioners. Approximately 150 residents attended and they indicated a strong preference for an underground LRT from Keele Street to Jane Street.

Residents raised specific concerns with surface LRT in regards to traffic and safety - particularly for crossings at Black Creek, Weston Road and Jane Street. Residents expressed access concerns with surface LRT to York Memorial Collegiate, the future recreation centre on the south side of Eglinton, as well as both vehicular and pedestrian access concerns to Keelesdale Park and Eglinton Flats.

TTC indicated that the cost of underground LRT options, including underground stations from Keele Street to Jane Street ranges from $200-300 million compared to the surface LRT and analysis shows that traffic and pedestrian flow would be accommodated by surface LRT operations.

The audience indicated that extra money should be spent for underground LRT to Jane Street, even if that means re-allocating funds from other Transit City lines. Although outside the scope of this TPA, many residents from the Green Hills Community Association in Councillor Di Giorgio's ward spoke out against a future maintenance and storage (pocket) facility location at Black Creek.

6.4 Summary of Consultation

The input received through the consultation processes undertaken during the Preliminary Planning and Transit Project Assessment phases indicate that there is broad public and stakeholder support for the Eglinton Crosstown LRT. As indicated throughout this chapter (and described in further detail in **Appendix M**) a number of concerns were also raised by the general public and by stakeholders. The key comments raised up to January 25, 2010 and how they were addressed is outlined in **Exhibit 192**.

Exhibit 192: Comment Tracking Table

Project Element	Comment/Issue	How Comment Was Addressed	Stakeholders
1) Airport Extension	Preferred routes from Martin Grove to the Airport (some members of the public preferred Renforth/Commerce, others preferred Highway 27)	A special study was undertaken to evaluate 5 proposed routing options between Martin Grove Road and the Airport. The preferred alignment is from Martin Grove Road along Eglinton Avenue to Commerce Boulevard, then Commerce Boulevard across Highway 401 to Convair Drive and Silver Dart Drive.	City of Toronto – Transportation Services City of Toronto - City Planning Mississauga Transit GO Transit MTO
2) Business Impacts	Concern about pedestrian and vehicular access to businesses during construction	TTC will prepare detailed maintenance of traffic plans during design to address traffic issues during the construction phase. The plan will include pedestrian access to businesses.	Business Improvement Areas City of Toronto – Transportation Services
3) Connection with BRT	BRT and LRT interchange at Commerce Boulevard needs to be further addressed/examined to provide convenient transfer	The interface between the Mississauga BRT station and the Eglinton Crosstown LRT will be refined during the design phase	Mississauga BRT GO Transit
4) Construction Method	Single bore tunnel is preferred over twin bore tunnel for building the underground section	Analysis has concluded that this alternative is less desirable due to: • The lower station platform of the single bore tunnel scheme would have been less desirable for passengers moving between the surface and platform levels • The technology for the single bore tunnel would have been in excess of 13 metres in diameter and would have been without precedent as the largest bore ever attempted in North America • Existing geological strata would have resulted in higher risk of ground impacts at the surface and to adjacent buildings during the boring operations	General Public Technical Advisory Committee
5) Cycling	Provide for cycling lanes and bike facilities	The standard cross-section for the Eglinton Crosstown LRT includes bicycle lanes on each side of the road. In the area between Martin Grove Road and Jane Street, no bike lanes will be provided, as the existing bike path will serve as the primary bicycle route.	City of Toronto – Transportation Services General Public
6) East Mall Stop	A stop is needed at East Mall at the ramp from Highway 427 to Eglinton Avenue West	A detailed traffic assessment was prepared for the intersection of the ramp from Highway 427 to the Eglinton Avenue West/East Mall intersection. A bus queue jump lane is proposed to provide an opportunity for bus riders on the 191 Highway 27 Rocket to transfer to the Eglinton Crosstown LRT.	City of Toronto – Transportation Services MTO

Project Element	Comment/Issue	How Comment Was Addressed	Stakeholders
7) Network Connectivity	Ensure that the LRT system interfaces with the existing subway and other transit systems such as GO Transit	The Eglinton Crosstown LRT will interface with the Mississauga BRT at the proposed BRT station near Commerce Drive. It will also interface with the Spadina Subway at Eglinton West Station, the Yonge Subway at Eglinton Station, and the Scarborough RT/Danforth Subway at Kennedy Station. Future connections with GO Transit rail lines will be protected at Weston Road (GO Georgetown line) and at Caledonia Station (GO Barrie-Bradford line). The Eglinton Crosstown LRT will also interface with the Jane LRT, the Don Mills LRT and the Scarborough/Malvern LRT lines.	Mississauga Transit GO Transit
8) Noise and Vibration	Noise and Vibration and vibration concerns during construction and during operations phase	A detailed noise and vibration study was carried out in accordance with the established MOE/TTC Protocol. No noise impacts are anticipated from LRT operations. A noise barrier is proposed for the Keele Bus Terminal. Further analysis is recommended to determine any noise impacts and potential mitigation measures from traction power substations and station vent shafts. No vibration impacts are expected from LRT operations in general running track areas. Further analysis will be undertaken during design to assess vibration impacts at special trackwork areas. Noise and vibration concerns during construction will be managed through performance specifications contained in contract documents.	Local Residents
9) New Bridge	Length of time required for gaining approval of Bridge over Highway 401	Coordination with Ministry of Transportation is underway to obtain approval for a new LRT structure over Highway 401 in Mississauga	MTO
10) Number of Lanes	Maintain at least four lanes of traffic (2 lanes per direction) – loss of lanes will result in increased traffic congestion	In the west surface section, the current lane configuration is two travel lanes in each direction from Commerce Boulevard to Weston Road. In the east surface section, the existing lane configuration is two general purpose travel lanes in each direction plus one peak period HOV lane in each direction. The standard cross-section for the Eglinton Crosstown LRT consists of two travel lanes in each direction and will not affect traffic.	City of Toronto – Transportation Services City of Toronto – City Planning
11) Parking	Request for commuter parking lots	No commuter parking is included in the Transit City Plan, of which the Eglinton Crosstown LRT is included. The focus of access to the LRT is by pedestrians and by transit users transferring from other modes (bus, subway, RT, other LRT lines)	General Public
12) Allen Station	Impacts to 13 Division Property near Eglinton West Station	Placement of a station entrance at Eglinton West Station on the south side of Eglinton Avenue west will impact land owned by the 13 Division of Toronto Police Services. A concept plan for mitigating the impact to the parking lot was prepared and accepted by Police Services.	City of Toronto –Police Services
13) Property Impacts	Concern about impacts to private property	Compensation will be provided for temporary and permanent property requirements. For permanent property taking, compensation will be provide at fair market value, which is determined at the time of purchase with a property appraisal report forming the basis of negotiations. Compensation will also be provided for the temporary property requirements.	Local Residents City of Toronto
14) Keele Station 15) Chaplin Station	Impacts to property owned by Emergency Medical Services at Keele Station and Chaplin Station	Through consultation with Emergency Medical Services, the station entrances at Keele Station and Chaplin Station have been shifted to avoid impact to future development plans by EMS at these locations.	City of Toronto - Emergency Medical Services

Project Element	Comment/Issue	How Comment Was Addressed	Stakeholders
16) Bayview Station 17) Dufferin Station 18) Chaplin Station 19) Allen Station 20) Eglinton Park	Impacts to property owned by Parks, Forestry and Recreation due to proposed station entrances/vent shafts at Bayview, Dufferin, Chaplin, Allen Stations and the emergency exit building at Eglinton Park.	Consultation has commenced with City of Toronto Parks, Forestry and Recreation regarding placement of station entrances and/or vent shafts at these park/parkette locations. Station entrances, vent shafts and/or EEBs at these park/parkette locations.	City of Toronto – Parks, Forestry and Recreation
21) Station Spacing	Provide a station between Dufferin and Caledonia	Caledonia Station was shifted westward from Caledonia Road to the location where Eglinton Avenue passes over the GO Transit Barrie-Bradford line. This shift was undertaken to protect for a future connection with GO Transit and to provide better access to the West Side Mall.	City of Toronto – City Planning GO Transit
22) Station Location	Provide a station at Laird and at Brentcliffe	The station spacing between Laird and Brentcliffe is too close to meet the TTC desired goal of approximately 850 metres between stations for the underground section.	General Public
23) Station Spacing	Continue to provide bus service on Eglinton Avenue because of long distances between stations to help seniors access transit service	In the underground section, stations will be located about 850 metres apart, typically at intersections where existing north-south bus routes or the Yonge and Spadina Subway lines cross Eglinton Avenue. This station spacing is similar to the central sections of the existing Bloor-Danforth and Yonge-University subway lines where passengers accept a longer walk to reach the frequent, reliable service and weather-protected waiting area provided by the underground operation. While the distance between underground stations is longer than the distance between surface stops, the resulting longer walk is an acceptable compromise between access, increased reliability, and cost. Parallel bus service is not proposed at this time.	General Public TTC Advisory Committee on Accessible Transit
24) Swift/Credit Union Stop	Provide a stop at the Swift/Credit Union intersection.	A stop was initially proposed but due to cost and property impact considerations, the stop was dropped from further consideration. The removal of the stop was presented at the third round of Open Houses in November and December. A subsequent meeting was held at the Latvian Centre on January 14, 2010 to further review the issues of placing a stop at this location.	General Public
25) Technology	Build a subway instead of LRT – subways have greater capacity	The design of a transit service is based on the number of people it is expected to carry per hour in a single direction at the 'peak point', the busiest spot on the line. City planning forecasts for the Eglinton Crosstown corridor into the foreseeable future show a peak point demand in the order of 5,000 to 5,400 people per hour. This demand can easily be accommodated by LRT, particularly given that the new light rail vehicles being designed for the TTC will be about twice the size of a standard Toronto streetcar, and can be easily 'coupled' to operate as two-car or three-car trains, if single vehicle operation is too frequent to avoid vehicle bunching. A peak point demand of 5,000 to 5,400 per hour is well below the 10,000 passengers per hour generally required to justify the much higher cost of a subway.	General Public
26) Traffic	Re-routing of Left Turns at nine intersections will impact traffic travel times	In order to provide for optimum LRT performance on the surface sections, left turns will be re-routed to U-turns at nine intersections (Martin Grove, Kipling, Islington, Royal York, Scarlett, Jane, Victoria Park, Warden and Birchmount). The re-routing of traffic to U-turns will not have a significant impact on traffic travel times.	General Public City of Toronto – Transportation

Project Element	Comment/Issue	How Comment Was Addressed	Stakeholders
			Services City of Toronto – City Planning
27) Traffic	Concern about infiltration of traffic onto local streets	The proposed cross-section for the Eglinton Crosstown LRT will retain the existing number of general traffic lanes throughout most of the corridor (except for a small section from Weston Road to Black Creek Drive). As no decrease in capacity will result, no traffic infiltration is expected. During construction, a traffic management plan will be prepared. It is anticipated that at least 3 lanes of traffic will be available at the underground section to provide as much traffic capacity on Eglinton Avenue as possible.	General Public City of Toronto – Transportation Services City of Toronto – City Planning
28) Traffic	Concern about truck routing in the corridor as a result of restricting left turns at nine intersections	A preliminary truck routing plan was prepared during the analysis of traffic operations at the nine intersections where left turns are recommended to be restricted. Further consultation will be undertaken during design with the City of Toronto Transportation Services Division regarding truck routes.	General Public City of Toronto – Transportation Services
29) Underground Stations- General	Number of entrances at each station	Initially, a main entrance, one secondary entrance and an emergency exit were proposed at underground stations. Following consultation and after further review, the typical station entrance was revised to include a main entrance and two secondary entrances.	City of Toronto – City Planning
30) Urban Development	Protect for future development opportunities west of Black Creek Drive	Development opportunities exist on the former Kodak lands and the current No-Frills property.	General Public City of Toronto – Transportation Services City of Toronto – City Planning
31) Urban Design/Pedestrian Realm	Provide an aesthetically pleasing urban environment	The standard cross-section for the Eglinton Crosstown LRT includes a boulevard with a tree planting area. The design of station entrances, bus terminals, traction power substations and other facilities will be prepared in consultation with the City of Toronto City Planning Division – Urban Design.	City of Toronto – City Planning General Public
32) Utilities	Utility relocations can require a significant amount of time to design and implement	Consultation with utility companies will be undertaken early in the design phase to accommodate the timing requirements of utility relocations.	Utility companies affected by the design
33) Vegetation	Impacts to vegetation communities	Impacts to vegetation communities will need to be tallied during design. Effort will be undertaken during design to minimize impacts.	TRCA City of Toronto –

Project Element	Comment/Issue	How Comment Was Addressed	Stakeholders
			Parks, Forestry and Recreation
34) Vertical Alignment	Build the LRT underground	Light rail transit can be constructed more cost-effectively on the surface than in an underground or aerial configuration. The central section of the Eglinton Crosstown LRT is being built in an underground configuration due to the narrow width of Eglinton Avenue from Keele Street to Brentcliffe Road. The width of Eglinton Avenue in the western and eastern sections is sufficient to accommodate the LRT.	General Public

As part of the Transit Project Assessment Process, a draft version of this document was distributed to technical review on January 25, 2010 to solicit comments. **Exhibit 193** summarizes major comments received and the responses to those comments. A complete listing of all comments received and responses thereto appears in **Appendix M**.

Exhibit 193: Summary of Comments and Responses to Draft Environmental Project Report

Project Element	Stakeholders	Comment/Issue	How Comment Was Addressed
1) Air Quality	MOE	Although at this time, the proponent is not aware of the contamination that will be present during the construction of the Eglinton LRT undertaking. However, during construction there could be the possibility of contaminated soils be exposed and thus impacting nearby receptors or pedestrians. If TTC during the design stage is aware of a contamination issue, at that time TTC should consult with the Ministry Central Region Office to discuss the requirements in dealing with contamination issues and ambient monitoring requirements, if applicable.	If contamination is found, TTC will discuss the requirements with Minstry of the Environment.
2) Bridges	City of Toronto – City Planning	Pedestrian sidewalk widths on Bridges - To each of the two main bridges being discussed at Black Creek and the East and West Don River- add a note- design of pedestrian sidewalks across bridges will acknowledge their unique challenges for pedestrians and will provide adequate space with appropriate rails, splash guards and lighting to promote safe comfortable pedestrian crossings.	Bridges that require widening will be widened to accommodate sidewalks. Details regarding rails, splash guards and lighting will be addressed in design.
3) Design Review	City of Toronto – City Planning	• The location and appearance of substations and emergency exit buildings need to be located with the guidance of City planning and City urban designers, the building appearance should fit within its context and landscaping should be provided. • The proposed main entrances and secondary entrances should be integrated within developments when ever possible rather than being free standing elements. • The proposed Fire Ventilation Shafts and the Traction Power Sub Stations should ideally be integrated within existing or new buildings where possible. They should not be free standing elements which sterilize potential development parcels. • When and where possible TTC must work with Community Planning and Urban Design to fully integrate TTC facilities with proposed development.	TTC will consult with City Planning during design regarding the design of features and facilities associated with the LRT.
4) Natural Heritage	City of Toronto – Urban	• The second paragraph mentioning the protection of natural areas in the OP should also mention the Ravine & Natural Feature Protection bylaw as the	The text has been revised to mention the Ravine and Natural Feature Protection

Project Element	Stakeholders	Comment/Issue	How Comment Was Addressed
	Forestry	means of providing that protection, similar to that provided in Section 5.4 in the Natural Heritage Assessment Report • More clarification is needed regarding removal/disturbance to edge features and diminishment of area. Also to say that vegetation loss is not considered as significant is misleading and erroneous. • Should add the following regarding tree permits: Trees are protected against injury or removal in the City of Toronto by a number of bylaws. In areas of the City protected by the Ravine & Natural Feature Protection bylaw, all trees are protected and grades are protected against alteration. Outside of this protected area, trees greater than 30 cm dbh on private property are protected by the Private Tree bylaw. All trees on city owned land, including streets and parks, are protected. Urban Forestry has delegated authority to issue permits. Completed applications along with supporting information, must be made to Urban Forestry. The issuance of permits may be conditional, for example, on the applicant providing for compensatory planting, to UF standards.	bylaw. Section 4.2.4.1 was revised to include the following paragraph: "Protection of natural areas in part protected by the Ravine and Natural Feature Protection bylaw that is defined and administered through the City of Toronto's Urban Forestry. Proposed removal of trees and features within protected areas will be reviewed and subject to approval by City of Toronto's Urban Forestry
5) Noise	MOE	• The noise and vibration protocols in the noise report should be revised for clarity to state that the upper limit for vibration levels is 0.1 mm/s rms. • The LRT system is being assessed based on the use of 2-car trains. It is acknowledged that in the future 3-car trains will be provided. Therefore, the noise assessment should account for 3-car trains.	The Noise and Vibration Assessment Report has been revised to state that the upper limit for vibration levels is 0.1 mm/s rms. Section 4.1.3 of the Noise and Vibration Assessment Report has been revised to include 3-car trains.
6) Parks	City of Toronto - Parks	• Tunnel section drawings do not include plan for Emergency Exit Building #3 which is proposed for Eglinton Park. Include the plan for EEB in Eglinton Park in final EPR. • The Interaction Matrix should include a 'strong' impact for the interaction between Stations/Park and Open Space. Station entrances are proposed for St. Hilda's Parkette and Howard Talbot Park. • The Interaction Matrix does not identify impacts to Parks and Open Spaces from Western Launch Site in Keelesdale Park. Table should identify all impacts from the Launch Site, including a 'strong' impact for the interaction between Tunnelling/Parks and Open Space, Material Import and Stockpilling/Park and Open Space, and Heavy Equipment Operations and Maintenance/Parks and Open Space. • Private property acquisition should continue to be investigated to lessen impact to parkland and compensate for loss of public parkland. • Parks, Forestry & Recreation have identified that the Western Launch Site will result in the following impacts: loss of the sports field during construction; displacement of recreational permit holders; loss of revenue generated from permitting; tree and vegetation disturbance; and potential noise, dust and traffic impacts to the rest of the park. TTC has committed to re-instating the soccer pitch after construction. In addition, TTC will be asked to satisfactorily address these impacts as an agreement to occupy the site is developed. TTC will continue discussions with PF&R to determine agreements, compensation, mitigation and restoration plans for use of Keelesdale Park as Western Launch Site.	The tunnel sections drawings now include the area around Emergency Exit Building #3. The interaction matrix has been revised accordingly. TTC's approach to property acquisition, in concert with City Planning, is to investigate acquisition of public property before considering private property. TTC will continue discussions with Parks, Forestry and Recreation regarding the temporary use of Keelesdale Park as the West Launch Site.
7) Public Art	City of Toronto – City	Public Art commitment must be acknowledged in the EPR. The public art plan	A commitment to consult with City Planning concering public art has been added

Project Element	Stakeholders	Comment/Issue	How Comment Was Addressed
	Planning	must be planned during the design process - not after the fact.	to Chapter 7.
8) Subway Station Design	City of Toronto – Police Services	• As is the current practice with any new subway station designs, police input into the design of any underground stations would be recommended. The design of the area surrounding the Eglinton intersections may also need further review, as it may present a number of traffic-related access problems both for the public and the police. • As with new development, we recommend the application of Crime Prevention Through Environmental Design (CPTED). The Toronto Police Service is regularly involved in CPTED, which embodies the concept that the design and effective use of the built environment can lead to a reduction in the opportunity for crime through strategies of natural surveillance, natural access control, and territorial reinforcement.	As indicated in Chapter 7, TTC has committed to consult with emergency service providers during design.
9) Stray Current	City of Toronto – Parks, Forestry and Recreation; Water	Is there an influence of stray current from substations?	TCG needs to address – the comment tracking table is not complete with respect to this comment.
10) Surface Water	Environment Canada	Interaction between concrete forming and surface water should be added, and given a “strong” level of interaction.	The Interaction Matrix has been changed to reflect a strong level of interaction.
11) Surace Water	MOE	• Throughout the body of this document, the author has indicated that impacts of the proposed LRT development on the natural environment will be minimal however, Exhibit 155: Interaction Matrix indicates that the “Footprint, Construction and Operations and Maintenance Impacts” will be “strong” regarding the surface water elements. Please clarify this variation, additionally, “dewatering and the tunnel construction” should also be graded as having some potential impacts on surface water. • As noted, dewatering at rates higher than 50,000 L/day will require a Permit To Take Water (PTTW) issued by the Ministry of the Environment (MOE). Included in the PTTW applications, the MOE requires a discussion of potential impacts to the natural environment, any risks posed to nearby structures due to subsidence resulting from construction dewatering, the potential for the movement of contaminated groundwater due to construction dewatering, and the potential impacts on surrounding waterbody features. PTTW applications should also detail the planned discharge method for the water taking and discuss how the discharged water will meet the quality criteria for the chosen discharge method. Due to the scale and complexity of the ECLRT project, the TTC is encouraged to initiate a pre-consultation process with the MOE regarding the required PTTWs for ECLRT construction dewatering.	TCG for first bullet. The commitment in Chapter 7 regarding the Permit to Take Water has been revised to include pre-consultation where appropriate. The commitment in Chapter 7 regarding the Permit to Take Water has been revised to include pre-consultation where appropriate.
12) Traffic Management During Construction	City of Toronto – City Planning; Transportation Services	A traffic management plan is needed during construction.	Chapter 7, Commitments to Future Work, includes a commitment to develop traffic, parking, transit, cycling and pedestrian management strategies to be included in construction contract documents.
13) Tree Protection	City of Toronto – Urban	• Road improvements activity under footprint impacts would strongly impact City streetscape trees and possibly private trees, with any significant changes in the	• Streetscape trees and private trees are covered under the Populations/Species environmental factor. "S" is already marked.

Project Element	Stakeholders	Comment/Issue	How Comment Was Addressed
	Forestry	current curb locations, within the Eglinton Avenue E and W City road allowances. Currently, this box is not 'S' marked in the Interaction Matrix. • A significant number of properties in Exhibit 157 'List of Property Acquisitions' indicate road widening as the reason for Property Impacts. This is an indicator of significant curb realignments involved in this project. Others with significant negative tree impacts are: Launch Shaft and Work zone; Station, Secondary and Alternate entrances; Fire Vents; Emergency Exit Buildings, and Right turn lanes. • The bulk of the existing City trees along Eglinton Avenue West and East will likely require removal to facilitate either the surface road reconstruction and curb alignments, or the underground station construction, including existing utility relocation. Trees On City Streets (TCS) by-law allows for such City streetscape tree removal, if it is in the interest of the public good. However, this is generally quite a contentious issue. Councillor consultation is recommended, if the project has not yet been approved by Council. This pre-Council approval scenario would also include the PDIM/Forestry Directors' sign-off with PFR General Manager notification requirement for park tree removal approval, on a park by park basis. A complete permit application, under the PTP by-law, will be required for any applicable private trees, to be injured or destroyed by proposed work well within their respective tree protection zones, as all City agencies, boards, commissions, and divisions are subject to the Private Tree Protection (PTP) by-law.	• The interaction of Population/Species with road improvements under footprint impacts is now marked as "S" and the interaction with building demolition is now marked as "M". Other interactions were marked as "S". • TTC will apply for permits as required. The Eglinton Crosstown LRT Project has already received City Council approval.
14) Truck Routing	City of Toronto – City Planning; Transportation Services	Address truck routing concerns relative to relocated left turns at U-turn locations	Chapter 6, Commitments to Future Work, includes a commitment to further study truck routings prior to the completion of design.
15) U-Turns	City of Toronto – City Planning; Transportation Services	• Allow pedestrian crossings at U-turn locations • Possibly realign Sinnot to align with Thermos at U-turn location	The U-turns were developed without pedestrian crossings or cross traffic in order to keep the traffic cycle lengths as short as possible to minimize delay to LRT operations and traffic. Relocation of Sinnot and Thermos is not required for the LRT
16) U-turns	City of Toronto – Police Services	Concerns regarding redirection of left turning vehicles resulting in heavy traffic. Pedestrian and motorists should be notified of the changes and the proper approach to the new rules. Signage should be clear, as people may not follow the left turn restrictions due to inconvenience.	As part of the design process, signage will be provided to direct motorists to the U-turn location that will replace the existing left turn.
17) Utilities	City of Toronto – Water	• The impacts to the utilities should be further assessed, especially regarding impacts on maintenance and future replacement or capital works • There is contract underway to install a 750mm water main to replace sections of the 600 mm water main	A commitment has been added to Chapter 6 regarding review of utilities with respect to maintenance, future replacement or capital works. Text has been added regarding the 750 mm water main.
18) Wynford Drive	City of Toronto – City Planning; Transportation Services; Parks, Forestry and Recreation	Commit to work with the City of Toronto regarding the design of the Wynford Stop.	A commitment has been added to Chapter 6.

7. COMMITMENTS TO FUTURE ACTION

During the Transit Project Assessment, the TTC and the City of Toronto have worked closely with key stakeholders to address and resolve all issues or concerns identified. However, not all issues can be addressed within the context of a Transit Project Assessment since the design of the Eglinton Crosstown LRT has been prepared at a conceptual level and further details are required to finalize property requirements, planning initiatives, construction issues and permits/approvals. The following sections present the TTC's and City of Toronto's commitments to future action during preliminary and detail design.

7.1 Consultations

The TTC will consult with the public, property owners and stakeholder agencies (including emergency service providers) during the design of the Eglinton Crosstown LRT alignment, stops/stations, bus terminals and ancillary facilities. Specifically, the TTC will:

a) Develop a public consultation plan, which will include a strategy for public participation during design and addressing community issues/concerns during construction of design; and
b) Consult with City of Toronto emergency service providers (including fire, police and emergency medical services) on the design of the surface LRT stops and runningway.

7.2 Property Acquisition

The City of Toronto and the TTC will proceed with property acquisition (including permanent property requirements and temporary construction easements) as follows:

a) The TTC will conduct a Property Protection Study during the early stages of the design;

b) The City of Toronto and the TTC will continue property negotiations with the Greater Toronto Airports Authority (Pearson International Airport lands), the Ministry of Transportation, Hydro One Networks Inc., Ontario Realty Corporation, the Toronto and Region Conservation Authority, the City of Mississauga, the Toronto District School and the Toronto Catholic District School Board for publicly-owned property;

c) For privately-owned properties within the City of Toronto, the City of Toronto will acquire property by negotiation or expropriation, as required; and

d) For privately-owned properties located within the City of Mississauga (west of Renforth Drive), the City of Toronto will secure the required property interests by negotiation or expropriation as required and will coordinate the property acquistion activities with the City of Mississauga.

7.3 Planning and Design Initiatives

The TTC, City of Toronto and the City of Mississauga will undertake tthe following planning and design initiatives:

a) The TTC will work with the City of Toronto to ensure that selected locations for station entrances, vent shafts, traction power substations (and Emergency Exit Buildings) meet established urban design and community planning policies and guidelines, limit impact, and provide opportunities for enhancements of the sites and pedestrian access;
b) The TTC will work with the City of Toronto and the City of Mississauga to ensure that short- and long-term cycling amenities are incorporated into the Eglinton Crosstown LRT facility designs, in accordance with prevailing City policies and design standards;
c) The TTC and the City will "conduct an early planning review of the Eglinton/Oakwood station node, where the Toronto Parking Authority is currently exploring a joint venture development" (refer to Section 1.8);
d) The TTC wil incorporate City of Toronto and City of Mississauga urban design criteria into the design of Eglinton Crosstown LRT facilities. Specifically, the TTC and the City of Toronto will undertake an Urban Design Study to identify characteristics of the existing and planned context along the corridor;
e) The TTC will work with the City of Toronto and the City of Mississauga to ensure that the pedestrian environment at surface stops and underground stations meets established urban design and community planning policies and guidelines;
f) The City of Toronto and the TTC will work with the Greater Toronto Airports Authority (GTAA) to select a preferred alignment and stop(s) at Pearson International Airport as part of a special study;
g) The TTC will complete a separate Transit Project Assessment, under the Scarborough RT Conversion and Extension Project, to confirm the alignment of the Eglinton Crosstown LRT from the intersection of Kennedy Road into Kennedy Station;
h) The TTC will work with Metrolinx to ensure that appropriate interface opportunities with GO Transit rail lines are protected for in the vicinity of Black Creek Drive/Weston Road, Caledonia Road and Leslie Street;
i) The TTC and the City of Toronto will conduct further traffic analyses for nine key intersections where left turn prohbitions are to be implemented (Martin Grove Road, Kipling Avenue, Islington Avenue, Royal York Road, Scarlett Road, Jane Street, Victoria Park Avenue, Pharmacy Avenue and Birchmount Road) to support fast and reliable LRT service and to encourage transit-oriented development in the Eglinton Avenue corridor;
j) The TTC will implement public art in accordance with prevailing TTC Corporate Policy; and
k) An amendment to the Mississauga Official Plan will be required to include a rapid transit corridor from Eglinton Avenue West and Commerce Boulevard to Pearson International Airport via Commerce Boulevard, Convair Drive and Silver Dart Drive.
l) The TTC will explore opportunities to provide coniferous vegetation along the property line between the Keele Street Bus Terminal and residential properties to minimize potential off-site air quality impacts

7.4 Construction Issues

The TTC will conduct further research and analysis for the construction of the Eglinton Crosstown LRT, including, but not limited to the following activities:

a) Prepare a monitoring plan in accordance with subsection 9.2.8 of Ontario Regulation 231/08 to verify the effectiveness of mitigation measures;

b) b) Include noise, vibration and air quality monitoring and mitigation measures and construction site maintenance/upkeep requirements in construction contract documents;

c) Develop traffic, parking, transit, cycling and pedestrian management strategies to be included in construction contract documents;

d) Analyse cut and cover construction sites further with the objective to minimize impacts including: reducing width of station box construction by refinement of station platform width and tunnel diameter; alternate methods of excavation support for cut and cover locations; use of mining methods at critical locations; and development of comprehensive pedestrian and traffic management plans;

e) Develop utility, pipeline and municipal servicing relocation plans with service providers (including but not limited to Bell Canada, Enbridge Gas Distribution, Trans-Northern Pipelines, Rogers Cable, Sun-Canadian Pipelines, Toronto Hydro, Toronto Water, Enersource and the Region of Peel;

f) Develop emergency response plans with emergency service providers to maintain fire, police and emergency medical services during construction;

g) Prepare and implement arborist reports, tree protection plans, edge management and streetscape plans;

h) In consultation with TRCA, City of Toronto and City of Mississauga, determine areas where compensation for vegetation loss will be required; determine quantity and type of species to be used; and, identify sites where restoration efforts would be maximized;

i) Undertake Designated Substances Surveys for any buildings or structures which require demolition and to reflect the findings in construction contract documents;

j) Develop procedures for disposal of excavated materials, including excess soils, in accordance with Ministry of the Environment requirements;

k) Prepare and implement a Soil and Groundwater Management Strategy, including water treatment methods, which results in discharge water quality complying with prevailing TRCA and City of Toronto water guidelines and requirements; and contaminated soils management, in accordance with environmental legislation, regulations and guidelines;

l) Prepare an erosion and sedimentation control plan, which complies with prevailing TRCA, City of Toronto and City of Mississauga water guidelines and requirements;

m) Undertake buildings, structures, and railway protection and monitoring;

n) Prepare Cultural Heritage Evaluation Reports and/or undertake Heritage Impact Assessments at select sites to address Ministry of Culture, City of Toronto Heritage Preservation Services and City of Mississauga Local Municipal Heritage Committee requirements. In the City of Toronto, cultural heritage resources of “heritage interest” but not on the Municipal Register, will be screened to assess local significance and whether to proceed through to the Heritage Impact Assessment process.;

o) Undertake stray current protection (if applicable) and monitoring for pipelines and other utilities;

p) Manage brownfield sites in accordance with Ontario Regulation 153/04 and Ontario Regulation 511/09 as it may be amended from time to time;

q) Conduct a Phase 1 and 2 Environmental Site Assessment for any areas of existing contamination prior to property acquisition for the Eglinton Crosstown LRT and consult with MOE as appropriate;

r) Conduct a Stage 2 archaeological assessment for properties with archaeological potential that could not be assessed during the Transit Project Assessment; and

s) For lands under TRCA ownership, conduct archaeological investigations in accordance with TRCA and Ministry of Culture requirements.

7.5 Permits and Approvals

The TTC will secure necessary permits and approvals for the implementation of the Eglinton Crosstown LRT, including, but not limited to:

a) Planning approvals (including Site Plan Approval) for all above-grade structures and facilities (through the City of Toronto or the City of Mississauga);

b) Park access permits (through the City of Toronto) for access to parks for construction and staging activities;

c) Building permits for the stations, emergency exit buildings and traction power substations (through the City of Toronto or the City of Mississauga);

d) Navigable Waters Protection Act approval (through Transport Canada) at the Humber River, West Don River and East Don River;

e) Permit(s) to Take Water (from the Ministry of the Environment) (for locations where dewatering exceeds 50,000 litres per day);

f) Ontario Regulation 166/06 (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) permits (through TRCA) for work within regulated areas including Mimico Creek, Silver Creek, Lower Main Humber River, Black Creek, West Don River, East Don River, Wilson Brook and Massey Creek;

g) Stormwater management, in accordance with City of Toronto, City of Mississauga, TRCA and MOE requirements;

h) Sewer discharge approvals, in accordance with Region of Peel, City of Mississauga, City of Toronto and TRCA requirements;

i) Railway Crossing Agreements at the Weston Subdivision, Mactier Subdivision, Newmarket Subdivision, Belleville Subdivision and Bala Subdivision (through CN Rail, CP Rail or Metrolinx);

j) Pipeline Crossing Agreements,as required;

k) Permits and/or approvals for a new bridge crossing Highway 401 and modifications to the Highway 401/427 interchange and the Highway 427 ramps (through the Ministry of Transportation Corridor Management Office);

l) Certificate of Approval for Air Quality in accordance with the Environmental Protection Act (through MOE);

m) Permits for construction within the existing road allowances (through the City of Toronto and City of Mississauga); and

n) Highway Alteration By-law approval for alterations to Eglinton Avenue (through the City of Toronto).

o) Permits and approvals for tree protection and removal/injury (through TRCA, the City of Mississauga and the City of Toronto as applicable);

p) Assure that applicable Ontario Energy Board approvals are obtained for utility relocations; and

q) Comply with City of Toronto Ravine and Natural Feature Protection By-law, as applicable.

7.6 Noise and Vibration Protocols

The TTC will conduct additional noise and vibration studies as required, in accordance with existing MOE/TTC protocols.

7.7 Canadian Environmental Assessment Act Determination

TTC submitted a CEAA Project Description to the Canadian Environmental Assessment Agency (CEA Agency). The CEA Agency has circulated the Project Description to relevant federal agencies to determine if there is a need for an environmental assessment and which federal agencies may have a responsibility or interest. Most of the federal agencies have not identified a trigger; however, Transport Canada, Department of Fisheries and Oceans and Canadian Transportation Agency may still identify a trigger under the Navigable Waters Protection Act, Fisheries Act or Canada Transportation Act, once project design has advanced. If required, TTC will conduct an environmental screening to secure a determination under the Canadian Environmental Assessment Act.

7.8 Municipal Approvals

7.8.1 Toronto City Council

At its meeting of November 30, 2009, Toronto City Council approved a report from the Toronto City Manager which included the following recommendations:

In addition to amendments to Section 7.3, City Council approved the following motions:

a) "Local Councillor(s) be consulted during the prepartation of property protection sutdies, and as part of the property acquisition process for termporay construction easements.

b) No specific discussion on the deferral of the construction of "any stops" will occur with Metrolinx without first consulting the local Councillor(s) well in advance of that consideration.

c) The deferral of the construction of any stops shall not occur without the TTC seeking approval of City Council.

d) City Council request the TTC to have the Eglinton Crosstown LRT connection from Martin Grove Road to Pearson International Airport and the Etobicoke-Finch West LRT connection from Humber College to Pearson International Ariport evaluated together as the Transit City Light Rail Network, and that evaluations of options include maintenance and operating costs from a network perspective as evaluation criteria.

e) City Council requests the TTC to consider full property acquisitions for use as secondary station accesses, not soley for fire vents, where practical.

f) The City Manager and TTC staff report back on a truck operations plan including appropriate highway signage, in conjunction with the design for the Eglinton LRT.

g) The TTC be requested to provide detailed analysis on truck movements prior to completion of the final design.

h) City Council requests the TTTC to expedite the implementation of the Eglinton Crosstown LRT and that the City Manager be requested to report to the TTC on any impediments or specific issues that need to be resolved in order to eliminate delay."

These City Council-approved motions are included in this chapter of the Environmental Project Report as a commitment to future action.

7.8.2 City of Mississauga General Committee

At its meeting of December 3, 2009, the City of Mississauga General Committee (a Committee of City of Mississauga Council) endorsed the City of Toronto and the Toronto Transit Commission' (TTC) Eglinton Crosstown Light Rail Transit (LRT) Project from Kennedy Station to Pearson Airport, specifically the alignment in the City of Mississauga on Eglinton Avenue and Commerce Boulevard with a new crossing of Highway 401 as part of LRT connection to Toronto Pearson International Airport." In addition, the Committee approved the recommendations that staff:

a) "report back to General Committee at the appropriate time on the official plan amendment needed to support the Airport transit connection.

b) That staff be directed to facilitate information meetings with the landowners and the business community."

These Committee-approved recommendations are included in this chapter of the Environmental Project Report as a commitment to future action.

7.9 Addendum Process

The TTC will prepare an addendum if significant changes to the project occur after the Notice of Completion is issued in accordance with Section 15 of the Transit Projects Regulation, including:

- Preparation of an addendum to the Environmental Project Report;
- Preparation of a Notice of Addendum to the Environmental Project Report; and,
- Distribution of the Notice of Addendum to relevant stakeholders and the Ministry of the Environment.

Upon resolution of the alignment on the Airport Lands with the GTAA and Metrolinx, the TTC and the City of Toronto will proceed with amending the Environmental Project Report under the Provincial process if required.

GLOSSARY OF TERMS

Airport Link	Light Rail Transit connection between the Pearson International Airport and the area at Eglinton Avenue/Martin Grove Road.
Avenues	Important corridors along major streets where redevelopment and growth is encouraged.
Alignment	Refers to the specific horizontal and vertical location of the Light Rail Transit tracks.
Ambient/Background Sound Level	The all-encompassing noise associated with a given environment and comprises as composite of sounds from many sources, other than the source of interest, near and far. In the context of this document, the ambient or existing noise level is the noise level, which exists at a receptor as a result of existing traffic conditions without the addition of noise generated by the proposed undertaking or the new source of noise.
At-grade	Roadway and/or LRT rail corridor at the same elevation as the surrounding land.
Below-grade	Roadway and/or LRT rail corridor beneath the elevation of the surrounding land.
Bus Bays	Off-street areas for loading and unloading passengers within the bus circulation potion of a transit station.
Bus Terminal	Off-street and on-street structures for loading and unloading bus passengers.
Centre Stop	LRT surface stop located on either side of the intersection.
Concourse Level	The level of the LTR station between the street level and the platform level.
Crossover Track	Consists of two tracks of opposite orientation superimposed upon each other. Crossovers allow trains to transfer from one track to the other in order to change directions.
Cut and Cover	Construction method for shallow tunnels consisting of excavation from the surface to the bottom of the tunnel. A trench is excavated and roofed over.
DB Increases (Vibrations)	The decibel scale is often used to describe vibration. When the speed of a vehicle increases from 30km/hr to 60km/hr, the vibration levels would be 6dB higher at the greater speed. The impression on an individual of an increase in vibration in terms of dB is greater than the same increase in sound level causes. The decibel scale is also used to provide an indication of the percentage reduction in levels. A 10dB reduction in vibration levels would correspond to vibration levels being 32% of their original level.

dB Change in Vibration	% Increase in Vibration	% Decrease in Vibration
1	12%	11%
3	41%	29%
6	100%	50%
10	216%	68%

Decibel (dB)	A unit of measurement of loudness as detected by the human ear.
Easements	Right to enter subject property for specific reasons.
Electromagnetic Interference	A disturbance that affects an electrical circuit due to either electromagnetic conduction or electromagnetic radiation emitted from an external source. The disturbance may interrupt, obstruct, or otherwise degrade or limit the effective performance of the circuit.
Emergency Exit Building	Building located at street level used to evacuate passengers from the Light Rail Transit tunnels in the event of an emergency. It is typically located between two underground stations to provide passengers and staff an intermediate exit route when stations are further than 762m apart to meet established code and guideline requirements.
Environment	Environment as defined in the Ontario Environmental Assessment Act means: a) air, land or water; b) plant and animal life, including human life; c) the social, economic and cultural conditions that influence the life of humans or a community; d) any building, structure, machine or other device or thing made by humans; e) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or f) any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.
Environmental Impacts	Positive or negative effects on the environment caused by the construction or operation and maintenance of the Spadina Subway Extension.
Environmental Project Report	A report documenting the Transit Project Assessment Process, the conclusions reached, the impacts, the associated mitigation measures, and the future commitments for a transit project.
Erosion	A slow wearing away of the surface by natural action of wind and water
Evaluation Criteria	Principle or standard on which a judgement or decision may be based.
Excavation	The act of taking out material.
Expropriation	The acquisition of property in accordance with the Expropriations Act of Ontario.
Farside Stop	LRT surface stop located beyond the intersection in the direction of travel.
Fire Ventilation Shafts	Shafts which connect from the platform level of a station to the surface used to balance air pressure within the tunnels and stations and to provide for emergency exhaust and fresh air supply in case of an underground fire.

Floodplain	Normally dry land areas that are adjacent to a natural stream or watercourse and that are temporarily inundated during floods.
GO Rail service	Commuter rail service which is operated by GO Transit.
Grade Separation	Bridge separating two linear facilities at cross points. This is most commonly used in discussing crossings of roads and rail.
Grade	The profile of the centre of the Light Rail Transit running way structure or its rate of ascent or descent.
Groundwater	Free water contained in the zone below the water table. The source of water in wells, springs, etc.
Headway	The time separation between two vehicles, both travelling in the same direction; this is measured from the time the head of the first vehicles passes a fixed point to the time the second vehicle passes the same fixed point.
Higher Order Transit Corridor	Term used in the City of Toronto Official Plan, which refers to the existing or future transportation routes warranting improved transit priority and capacity. It includes busways, Light Rail Transit and subways.
Landscaping	Enhancing the natural features of the land through the design and use of vegetation and other materials.
Light Rail Transit Vehicles (LRV)	The Light Rail Transit vehicles will be of modern European-style design with a varying length of approximately 30 metres and a width of 2.54 metres. They will consist of two cars initially, with an opportunity to expand to three cars when ridership levels warrant. The rated capacity for a Light Rail Transit car is 130 passengers. Maximum operating speed is 70 km/hr, with average speed including stops of 22 km/h on the surface and 32 km/h underground. The vehicles will be powered by electrical power from overhead wires. Operations, both locomotive control and opening/closing of doors, will be controlled by on-board staff.
Light Rail Transit (LRT)	Electrically powered vehicles that operate on a partially exclusive right-of-way (reserved lanes) with traffic crossings at signalized intersections. These systems are capable of carrying medium to high volumes of people.
Level of service (LOS)	A qualitative measure describing operational conditions within a traffic stream and motorists' perceptions of those conditions.
Volume to capacity ratio (v/c)	The ratio of traffic demand to available capacity. The V/C ratio is a measure of capacity sufficiency, that is, whether or not the physical geometry provides sufficient capacity for the traffic movement.
Main Entrance	Access and egress point of walk-in traffic along the underground LRT. Main entrances form anchor points for the concentration of people, uses and activities. It includes an elevator, an escalator, and stairs. The entrance connects the street level to the station concourse level.
Mississauga Bus Rapid Transit (BRT)	Transit service travelling a two-lane bus-only roadway (busway) running across the City of Mississauga. The busway will be grade separated from all crossing roads, allowing buses to operate at up to 80 km/hr on their own roadway, with no other traffic, no signals and no stop sign. The busway will run parallel to part of Highway 403, Eastgate Parkway, and Eglinton Avenue.
Mitigating Measures	Actions to reduce or eliminate any negative environmental effects caused by the Eglinton Crosstown Light Rail Transit.
Mitigation	Action necessary to prevent, change or remedy potential adverse effects.
Nearside Stop	LRT surface stop located before the intersection in the direction of travel.
Net Effects	Advantages/disadvantages remaining after mitigation or enhancement have been addressed.
Noise Barrier	A barrier of earth, stone, concrete or wood to reduce the noise level on abutting property.
Noise	Defined as any unwanted sound.
Official Plan	An Official Plan is a long-term policy document, which governs development and land use activities of a municipality that has been implemented in accordance with the Planning Act.
Off-Street	Transit operation occurring off a road right-of-way.
On-Street	Transit operation occurring within a road right-of-way.
Overburden	The mass of soil that overlies a source of rock or gravel.
Parallel Stop	LRT surface stop located on either side of the intersection.
Peak Hour	Defined period of maximum travel demand, generally the three-hour period during a weekday.
Pillar Width	Horizontal distance between two bored tunnels.
Platform Level	The area of the Light Rail Transit station which passengers use to enter and exit Light Rail Transit vehicles.
Platform	The area of a station which passengers use to enter and exit Light Rail Transit vehicles.
Pollution	Contamination of any component of the total environment by harmful substances, sounds, smells or sights degrading or

	injurious to humans and other living organisms.
Portal	Approach entrances where the Eglinton Crosstown Light Rail Transit surface section transitions into the Light Rail Transit underground section.
Profile	A longitudinal section of the Light Rail Transit runningway, station or stop.
Proof-of-Payment	Method of payment where the transit rider must provide proof of payment for a transit ticket from automated vending machines or other document.
Right-of-way (ROW)	Land generally publicly owned, acquired for and devoted to transportation purposes, predominantly roads.
Riparian	A riparian zone or riparian area is the interface between land and stream.
Route	General corridor linking the Pearson International Airport and the area at Eglinton Avenue and Martin Grove Road intersection.
Secondary Entrance	Access and egress point of walk-in traffic along the underground. Secondary entrances will include only stairs. The entrance connects the street level to the station concourse level.
Sediment	Fragmentary material that originates from weathering of rocks and is transported by suspended in or deposited by water.
Signalized Intersections	Intersections with traffic signals controlling the movement of traffic.
Slope	Any ground whose surface makes an angle with the plan of the horizon
Soil Stabilization	Measures taken to eliminate or minimize the erosion of soil, or to improve its supporting capacity.
Soil	Sediment or other unconsolidated accumulation of solid particles produced by the natural physical and chemical disintegration of rocks and which may or may not contain organic matter.
Station Layout	A preliminary subway station concept which shows the general location of the station platform and concourse, pedestrian entrances and other surface facilities.
Station	A passenger facility on the underground section of the Eglinton Crosstown LRT providing access to underground LRT trains. They are located at major roadway intersections along Eglinton Avenue. A station includes one main and two secondary entrances.
Stops	A passenger facility on the surface section of the Eglinton Crosstown LRT located on the centre of the road right-of-way mostly at major roadway intersections.
Storage (pocket) Track	Also referred to tail track, it is a third track section between the two main line tracks with turn outs at one or both ends. This allows vehicles to be moved off of the mainline track to be stored during lower demand periods or when vehicles are disabled.
Storm Drain	A system of catch basins and underground pipes design to collect, concentrate and convey water to an outfall, which is usually a nearby watercourse.
Streetscape	Visual appearance of a street and its components, comprising both hard (e.g. concrete, paving stones, asphalt, lighting and furniture) and soft (e.g. grass, trees and shrubs) landscaping.
Surface Transit Priority Network	Term used in the City of Toronto Official Plan, which refers to the measures intended to increase transit priority throughout the City. These priority measures include priority signalized intersections for streetcars and buses, reserved or dedicated lanes for buses and streetcars, and limiting or removing on-street parking during part or all of the day.
Tail track	See Storage (pocket) Track.
Traction Power Substation	A facility located at street level which converts AC current to DC current used to operate Light Rail Transit vehicles. A traction power network, including transformer, switches and circuit will supply adequate power at an acceptable voltage to the transit vehicles while minimizing stray current activities and step and touch voltage hazards.
Traffic Island	An island provided in the roadway to separate or direct streams of traffic; includes both divisional and channelizing islands.
Traffic Lanes	Portion of the travelled way for the movement of a single line of vehicles.
Traffic Volume	The number of vehicles passing a given point during a specific period of time.
Transit Project Assessment Process	A decision-making process used to determine the advantages and disadvantages to the environment of proceeding with a proposed project. This process was 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 TPAP 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.
Tunnel Boring Machine	Used for deep tunnelling where most of the tunnelling activity occurs below ground level.
Underground Walkway	A corridor for passengers to walk underground between surface facilities (such as commuter parking or bus terminals) to the concourse level of the subway station.
Vibration	A temporal and spatial oscillation of displacement, velocity or acceleration in a solid medium.
Water Table	The top of the zone of permanent soil saturation. The water table may rise or fall seasonally, or it may be drawn down by removal of water.
Watershed	The divide separating one drainage basin from another. The divide separating one drainage basin from another.
Tangent	A straight segment of road/rail free of horizontal or vertical curvature.

REFERENCE LIST

A.J Chandler & Associates Ltd. 2010. Air Quality Assessment for the Proposed Eglinton Crosstown LRT.

Archeoworks Inc. 2009. Stage 2 Archaeological Assessment Report for: Proposed Eglinton Crosstown LRT.

Unterman McPhail Associates. 2010. Cultural Heritage Resource Assessment Report Built Heritage Resources & Cultural Heritage Landscapes for Eglinton Crosstown Light Rail Transit (LRT); Kennedy Road to Pearson International Airport.

Giffels Associated Limited/IBI Group. 2010. Drainage and Stormwater Management Assessment Report: Eglinton Crosstown LRT from Pearson International Airport to Kennedy Road.

Coffey Geotechnics Inc. 2010. Geotechnical Investigation, Environmental Assessment for Eglinton Crosstown Light Rail Transit.

Coffey Geotechnics Inc. 2010. Geotechnical Investigation, Environmental Assessment for Eglinton Crosstown Light Rail Transit – Airport Link.

Coffey Geotechnics Inc. 2010. Hydrogeological Study: Proposed Eglinton Crosstown Light Rail Transit and Airport Link.

Coffey Geotechnics Inc. 2010. Contamination Overview Study in Support of Environmental Assessment for Eglinton Crosstown Light Rail

J.E. Coulter Associates Limited. 2010. Noise and Vibration Impact Assessment: Proposed Eglinton Crosstown Light Rail Transit.

LGL Limited. 2010. Natural Heritage Assessment Report: Eglinton Crosstown LRT.

“TTC - Design and Supply of the Low Floor Light Rail Vehicle – Technical Specification” “Transportation Association of Canada (TAC) – Geometric Design Guidelines”.

City of Toronto. 2006. City of Toronto’s Official Plan.

City of Mississauga. 2003. City Plan.

City of Mississauga. 2009. Website - http://www.mississauga.ca/

City of Toronto. 2001. Toronto Bike Plan.

City of Toronto. 2002. Toronto Pedestrian Charter.

Metrolinx. 2008. The Big Move: Transforming Transportation in the Greater Toronto and Hamilton Area.