4. ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND MONITORING

The implementation of the Scarborough-Malvern LRT may result in both positive and negative effects. Mitigation of negative effects has been considered through the course of the study, including screening of the corridor alternatives and the development of the preferred design. However, given that some negative effects cannot be totally avoided, mitigation measures are required during construction and during LRT operations. The anticipated or potential environmental effects and the associated mitigation measures are described in the following sections and summarized as shown on Exhibit 4-4.

4.1 Toronto Environmental Plan

In addition to the Toronto Official Plan there is a second City policy document, the Environmental Plan which is important to this process. This contains a comprehensive and wide ranging set of actions to improve the health of the natural environment. These include:

1. Protect
   - Conserve our environment capital and life off the interest; and
   - Protect the healthy elements of our natural environment.
2. Prevent
   - Anticipate and prevent pollution of the air, land and water; and
   - Be cautious in dealing with possible impacts on human and environmental health.
3. Reduce consumption of natural resources and strive for greater self-sufficiency.
4. Restore
   - Regenerate and naturalize degraded habitats and linked green spaces;
   - Remediate contaminated soils, groundwater and sediments; and
   - Restore hydrological cycles, watersheds and river systems.
5. Integrate environmental factors into decisions.

These principles have been kept in mind in developing the plan for the Scarborough-Malvern LRT.

4.2 Environmental Benefits of LRT

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 a 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 the population 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;
- freeing up road space for goods movement and reducing the wear-and-tear on city roads and the need to spend tax dollars on repairing and expanding road infrastructure; and
- ensuring 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 Air Quality Assessment study, included in Appendix C4, shows that construction of the Scarborough-Malvern Light Rail Transit (SMLRT) corridor will result in a reduction of emissions of all transportation related pollutants. Gaseous pollutants from within the study area corridor will be reduced by approximately 20% and particulate based pollutants will be reduced by approximately 25%. Carbon dioxide equivalent emissions (CO_2-e), which is the unit of measure for global warming potential, will be reduced within the study area corridor by 10,000 tonnes/year by the construction of the SMLRT.

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 instill 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.

4.3 Transportation Impacts

4.3.1 TRANSIT IMPACTS

A formal analysis of bus routing changes, including public consultation, will be undertaken between 12 and 18 months prior to the opening of the Scarborough-Malvern LRT line. 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 includes the following changes to the existing bus network related to the Scarborough-Malvern LRT:

- 34 Eglinton East bus route replaced with the Scarborough-Malvern LRT and the Eglinton Crosstown LRT;
- 86 Scarborough bus route shortened to operate between Sheppard Avenue (Toronto Zoo) and the vicinity of Kingston Road and Eglinton Avenue (via Meadowvale Road, Kingston Road, Morningside Avenue, Guildwood Parkway, and Kingston Road);
- A new bus route operating from the vicinity of Kingston Road and Lawrence Avenue to Beechgrove Drive (via Lawrence Avenue, Beechgrove Drive, Coronation Drive, Manse Road, and Lawrence Avenue); and
- 116 Morningside bus route replaced south of Sheppard Avenue with the Scarborough-Malvern LRT and the shortened 86 Scarborough bus. Bus service would be retained on Morningside Avenue north of Sheppard Avenue. (The proposed extension of the Scarborough RT to Malvern Town Centre would result in changes to some local bus routings.)

4.3.2 TRAFFIC IMPACTS

In general, the roadway space on Eglinton Avenue and Kingston Road will be reallocated from six through lanes to four general purpose lanes and reserved transit right-of-way within the Scarborough-Malvern Corridor. The LRT right-of-way will be constructed in the median of the road. 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.

The four travel lanes on Morningside Avenue will be maintained. Along Military Trail an additional general travel lane will be constructed between Ellesmere Avenue and Morningside Avenue.

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. The preferred design has carefully considered each location to ensure that either an existing or new signalized intersection is nearby to provide a nearby u-turn opportunity. Given that left-turns may not be provided at specific major signalized intersections in order to improve transit operations, left-turn and U-turn opportunities will be provided at other nearby locations.

The removal of one through lane in each direction from Eglinton Avenue East and from Kingston Road may displace some vehicular traffic. Current users could use other roads or could be converted to transit users.

Bicycle lanes will be provided along the LRT corridor to provide an alternative travelling mode for non-drivers.

4.3.3 FIRE/POLICE/EMERGENCY SERVICES

Fire/Police/Emergency services will continue to operate at current service levels, even with LRT in place, in the Scarborough-Malvern corridor. 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 could include adjusting pole locations or lowering the raised right-of-way at the driveways of fire, police and ambulance stations.

4.4 Natural Environment Impacts

4.4.1 FISH

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 due to the following effects:

- displacement of fish or fish habitat;
- disruption to fish and fish habitat through changes to water quality and quantity, alterations to base flow, changes in water temperature and barriers to fish passage; and
- displacement of fish species at risk or critical fish habitat.

<u>Overall SMLRT Route Alignment- Exclusive of Morningside ANSI/ESA</u>

There are no watercourses and associated fish habitats located along the Eglinton Avenue, Kingston Road or Morningside Avenue north of Ellesmere Avenue sections of the proposed Scarborough-Malvern LRT. Therefore, no displacement of fish or fish habitat will occur as a result of this project along these corridors.

<u>Morningside Avenue – Highland Creek Crossing</u>

The Toronto and Region Conservation Authority (TRCA) administers Ontario Regulation 166/06 *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*, which gives the TRCA the authority to: (a) prohibit, regulate or require the permission of the authority for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, or for changing or interfering in any way with a wetland; and (b) prohibit, regulate or require the permission of the authority for development, if in the opinion of the authority, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected by the development (TRCA 2007).

An encroachment within the TRCA Regulation limits for Highland Creek will occur at one location on the Morningside Avenue section of the preferred LRT alignment. This area is located in the southern section of Morningside Avenue north of the Kingston Road intersection. New support structures will be required for a new bridge that is necessary to enable the LRT to span the Highland Creek valley. The amount of area at the creek that will be affected is minimal (less than 400 m^2). Nonetheless, a permit will be required from the TRCA prior to construction in accordance with Ontario Regulation 166/06.

Mitigation Measures

To reduce the potential for alteration of fish habitat, the following environmental mitigation measures will be implemented:

- ensure the preferred design has no in-water work;
- delineate work areas with construction fencing to minimize the area of disturbance;
- restrict the use of heavy equipment on watercourse banks;
- prohibit the use of heavy equipment in the watercourse;
- place silt fence at the limit of grading/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/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 downstream of Morningside Avenue.

Species at Risk

All species recently recorded within or near the study area are considered to be either very common, common or non-native in Ontario. One aquatic species, the Redside Dace (Clinostomus elongate) that is ranked as endangered in Ontario by the MNR and by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) had been observed in the Highland Creek watershed. A record of occurrence for this species from 1928 was reported in the NHIC database; the Toronto Region Conservation Authority (TRCA) has concluded that it is not likely that the species is found within the Highland Creek watershed at present. Screening tools used by TRCA to identify areas that may be of concern to MNR have not identified the particular reach of Highland Creek at the Morningside Bridge as being of concern for Redside Dace or as providing suitable habitat for the species. The area is also not recognized as being within the 'known occupied range' for Redside Dace. Based on these statements, it is reasonable to conclude that MNR, similar to TRCA, would not have any concerns related to Redside Dace in the area. Notwithstanding, an in-water construction timing window of July 1st to March 31st is recommended for this project.

4.4.2 VEGETATION

Implementation of the Scarborough – Malvern LRT project has the potential to result in impacts to vegetation and vegetation communities. Effects on vegetation related to the LRT may include:

- displacement of vegetation and vegetation communities;
- disturbance to vegetation through edge effects (windthrow, sunscald, changes in light conditions and invasion by exotic species), and drainage modifications; and
- displacement of rare, threatened or endangered vegetation or significant vegetation communities.

Displacement of Vegetation And Vegetation Communities – Exclusive of Morningside ANSI/ESA

A total of 32 separate Ecological Land Classification (ELC) vegetation communities representative of eight ELC community types have been identified within the study limits. Over time, disturbances may alter community structure, composition and function. Effects would be most prominent in areas that have not been previously disturbed or are simply in a more natural state. Fortuitously, none of the forest communities or swamp areas identified are at risk of encroachment by the new LRT right-of-way. Consequently, impacts on these vegetation communities are not anticipated

Disturbance to vegetation along Eglinton Avenue, Kingston Road and Morningside Avenue (Ellesmere to Sheppard) 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.

Along the proposed LRT route, exclusive of the Morningside ANSI/ESA, the existing vegetation/vegetation communities that are at risk are all culturally based and are representative of previously disturbed environments. As a result, the significance of the resulting impacts is diminished. Because the LRT will operate in a dedicated right-of-way in the centre of the road on Eglinton Avenue, Kingston Road and the majority of Morningside Avenue, minimal vegetation loss is anticipated. Combined, the total amount of vegetation that will be removed on these three corridor sections, as a result of this project, is less than 1500 m^2 and is not considered to be significant. This, coupled with the fact that the areas are in an existing disturbed state, further diminishes the significance of a minor loss of vegetation.

Mitigation Measures

Notwithstanding, some clearing resulting in vegetation loss will be required to construct the LRT along the preferred transit alignment. The following environmental protection measures designed to reduce vegetation removals will be considered on a site-specific basis during detail design:

- 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; and
- identify and protect trees to be retained during construction using a temporary tree protection barrier in accordance with OPSS 565.

In addition to the above measures, a landscaping plan will be prepared during the detailed design to address impacts to vegetation and vegetation communities. The landscaping plan will identify on a site-specific basis:

- restoration and enhancement plans to offset vegetation losses and to achieve a net gain in vegetation area, attributes and functions;
- edge management plans for areas where encroachment on vegetation communities will occur;
- planting plans including the use of native, non-invasive and salt-tolerant vegetation species; and
- landscape treatments for street trees including avoidance, protection and compensation plantings.

The landscaping plan will be provided to the TRCA for review and comment at the detailed design phase of the project.

Displacement of Vegetation and Vegetation Communities – Morningside ANSI/ESA

A total of 23 different ELC community types have been identified by LGL Limited within the Morningside ANSI/Highland Forest ESA complex. These communities include: four mixed forest types, four deciduous forest types, two coniferous forest types, three marsh habitat community types, seven swamp type ecosites and three cultural community types.

In the Morningside ANSI/Highland Forest ESA area, disturbance to the vegetation communities situated on the west side of Morningside Avenue will not occur. Disturbance to vegetation communities located east of Morningside Avenue and along Ellesmere Road is required. A new forest edge of approximately 1200 metres in length will result from the removal of approximately 3.0 ha. of vegetation cover. Short term impacts would include sunscald and damage from windthrow, however this is not considered to be significant as a stable forest edge will re-establish in the long term.

The LRT alignment through this section will be restricted to the east side of Morningside Avenue, consequently only five different vegetation communities will be affected. A mineral thicket swamp, mixed forests and cultural meadow are at risk. A conservative estimate for the amount of vegetation to be removed, resulting from construction of the LRT and associated facilities is: 0.96 ha. of mixed forests, 0.83 ha. of wetlands and 0.5 ha. of cultural meadow. The alignment along Ellesmere Road will result in a loss of 0.55 ha. of mixed forest and 0.2 ha. of cultural thicket.

Mitigation Measures

The mitigation practical on the site is to minimize the area of vegetation removals to the extent possible. More specifically, within the grading limits prescribed for the area between Highland Creek and Ellesmere Road, it is recommended to remove only the vegetation necessary to accommodate the LRT right-of-way. Compensation for vegetation loss, at a 3:1 ratio, will be required to meet TRCA objectives. The actual quantity and type of vegetation to be used for compensation will be determined during the detailed design phase of this project. The precise location(s) for the remedial work is open for discussion as compensation could occur within the Highland Creek watershed or at a location recommended by TRCA.

The loss of existing forest cover will also allow for the introduction of invasive plant species to colonize the newly created forest edge and possibly further within the mature forest area. This type of impact is considered significant in the long term (by at least 10 years) as exotic species will become established in areas where they were not present. The City of Toronto's Urban Forestry division has initiated invasive species control in other areas within their jurisdiction. It is recommended that discussions with Toronto Urban Forestry be included during the detailed design phase of this project to develop an invasive species control program for the Morningside ANSI/Highland Forest ESA area.

Displacement of Rare, Threatened or Endangered Vegetation Species at Risk

No species considered rare, threatened or endangered (R, T, E) by COSEWIC or COSSARO/MNR were noted during field investigations.

A total of ten regionally rare or uncommon plant species were recorded in the study area defined by Eglinton Avenue, Kingston Road and Morningside Avenue (north of Ellesmere Avenue). 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 detail design, precise GPS locations for all species 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.

In the Morningside ESA/Highland Forest ESA area, thirty-three (33) plant species which are rare to uncommon in Toronto were identified, and of these, eighteen (18) species are found on the east side of Morningside Avenue.

Mitigation Measures

During detailed design, precise GPS locations for all species 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. The magnitude or level of significance after mitigation is considered to be minimal.

4.4.3 WILDLIFE

Possible impacts on wildlife related to the SMLRT project can be categorized into five main areas of concern including:

- displacement of wildlife and wildlife habitat;
- barrier effects on wildlife passage;
- wildlife/vehicle conflicts;
- disturbance to wildlife from noise, light and visual intrusion; and,
- displacement of wildlife species at risk and significant wildlife habitat.

Preferred Alignment – Eglinton Avenue, Kingston Road And Morningside Avenue (North)

The existing land use along Eglinton Avenue, Kingston Road, Military Trail and Morningside Avenue (north of Ellesmere Road) is primarily industrial, commercial, residential or educational/institutional. Terrestrial wildlife habitat is minimal and the habitat that is present is provided by cultural meadows, cultural thickets and cultural woodlots. These isolated patches are fragmented, relatively small and provide little connectivity for movement.

Without exception, all of the available wildlife habitat that is adjacent to Eglinton Avenue, Kingston Road, Military Trail, Morningside Avenue (north of Ellesmere Road) can best be characterized as being of poor quality, low structural diversity and low habitat diversity.

The SMLRT project will introduce an at-grade two-track LRT alignment in the centre of the roadway, grade-separated from vehicular traffic except at signalized intersections, while providing for two basic through lanes in each direction. This cross-section arrangement will be implemented along Eglinton Avenue, Kingston Road and Morningside Avenue (north). When considering the five main areas of concern, the impacts on wildlife and wildlife habitat resulting from construction and operation of the SMLRT along these sections of the preferred alignment will be minimal and are not considered to be significant.

Some habitat will be lost (less than 1500m^2 over 13 kilometres); however, the poor quality of the habitat and the type of species supported by these isolated patches of vegetation further diminishes the level of significance attributable to the loss. Wildlife species present in these areas are represented primarily by small mammals and small, transient passerine birds; species that are tolerant of human disturbance. During construction these wildlife species will be temporarily displaced but will re-establish to the available habitat once operation of the SMLRT is established.

No new barriers to wildlife passage will be created as a result of the SMLRT. The existing barriers created by Eglinton Avenue and Kingston Road will remain the same. The existing barriers created by Military Trail and Morningside Avenue (north) will be increased due to the road widening necessary to accommodate the proposed LRT alignment. Given the urban nature of the study area, the SMLRT will have no significant impact on wildlife passage. The existing wildlife passage located under Kingston Road at the Guildwood GO train station will be maintained. Crossing opportunities for terrestrial wildlife are also currently limited by the existing roadways. The potential increase in wildlife mortality above existing conditions is considered minor.

Noise, light and visual intrusion may alter wildlife activities, patterns and behaviours. In urban settings, wildlife is generally acclimatized to the urban conditions and only those species that are tolerant of human activities remain. Given the extent of urbanization in the study area, the tolerance of the wildlife assemblage to human activities and the limited zone of influence of the SMLRT, disturbance to wildlife from noise, light and visual intrusion will have no significant adverse effect.

No provincially rare, threatened or endangered wildlife were recorded within the study area; therefore, there will be no displacement of rare, threatened or endangered species as a result of the SMLRT.

Morningside Avenue – Morningside ANSI/Highland Forest ESA

The LRT alignment through this section will be shifted to the east side of Morningside Avenue, exclusive of the roadway and will result in the removal of a significant quantity of wildlife habitat. A conservative estimate for the amount of vegetation to be removed, resulting from construction of the LRT and associated facilities is: 0.96 ha. of mixed forests, 0.83 ha. of wetlands and 0.5 ha. of cultural meadow. The alignment along Ellesmere Road will result in an additional loss of 0.55 ha. of mixed forest and 0.2 ha. of cultural thicket. Photographs depicting these areas are presented in Appendix C1.

The most apparent impact along this section of the LRT corridor will be the physical removal of the vegetation and associated wildlife habitat in a 30 m slice on the east side of Morningside Avenue. The loss of this habitat is unavoidable

Small mammals and a variety of birds that typically use ‘edge habitat’ are the species that are most vulnerable in the short term. Removal of the ground cover vegetation will result in the resident small mammals relocating to available existing habitat. Intra and inter-specific competition will occur initially; however once a new forest edge becomes established, stable, small mammal populations will result. These short term impacts are not considered to be significant. Similarly, forest edge dependent bird species may be affected in the short term; notwithstanding, mitigation is available to minimize these impacts. Numerous birds located within the project limits are listed under the *Migratory Birds Convention Act* (MBCA). The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests.

Mitigation Measures

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* (FWCA). In the long term, edge dependent bird species will re-establish in the newly created edge habitat, consequently, these potential impacts are of minor significance.

Displacement of the existing forest edge further eastward will have an effect on a parcel of interior forest located east of Morningside Avenue. Interior forest, in this situation is defined as forest that is 100m from any surrounding edge. The new LRT corridor will result in the creation of a new forest edge approximately 20 to 30m east of the existing edge along Morningside Avenue. This will effectively shift the edge of the interior forest a similar distance, resulting in a decrease in the area of the interior forest parcel. This impact is considered to be significant as no mitigation is available. However, TTC will explore other compensation measures to offset the impact.

The addition of the LRT corridor, parallel to Morningside Avenue, through this section of the alignment will result in a widened barrier to east-west wildlife movement across Morningside Avenue. Heavily used east-west mammalian travel corridors were not evident during field investigations. Based on this fact, the potential increase in wildlife mortality above existing conditions is considered minor.

Deer movement corridors were evident on either side of Morningside Avenue. The corridors were oriented in a north-south direction indicating that deer utilized trails leading to either side of the Highland Creek bridge and then crossed under the bridge to continue their movement through the Highland Creek valley. It is anticipated that this behaviour will not be affected by the LRT as the deer will become habituated to the presence of the new structure. Noise levels during operation of the LRT will also have minimum affect on deer movement as increased auditory levels are anticipated to be minor.

Given that the potential deer crossing movements may still occur along Morningside Avenue and Ellesmere Road, the LRT alignment may be isolated from deer movement through the use of barrier fencing. Fencing could be effective as it would discourage deer movement across Morningside Avenue and assist in encouraging use of the already established north/south deer trails through the area. Consultation with regard

to this issue has been discussed with TRCA in the March 31, 2009 meeting. A follow up letter by TRCA dated May 28, 2009 indicated that TRCA has no objection to the use of fencing to control and protect deer populations in the area. A monitoring program will be developed to measure the effectiveness of the fencing barrier for directing deer movement along Highland Creek valley.

No provincially rare, threatened or endangered wildlife were recorded within this part of the study area; therefore, there will be no displacement of rare, threatened or endangered species as a result of the SMLRT.

4.4.4 GEOLOGY

The subsurface conditions along the Scarborough-Malvern LRT corridor generally consist of interstadial granular soils and interstadial cohesive soils layers as well as cohesive till deposits at shallow depth and granular till deposits at a greater depth. At the Highland Creek crossing, it should be anticipated that there will be thick deposits of granular soils and silt layers just beneath the current ground surface; these deposits are also exposed on the creek valley slopes. The presence of recent deposits of soft soils and "Pell Ponds" deposits in the valley areas may require the use of deep pile foundations for the bridge. Some erosion on the Highland Creek Valley slope should be anticipated as well. Subsurface conditions in the area will be defined by staged investigations during the design process to determine the conditions that may govern both the bridge and local pavement design.

The native granular soils along the corridor will generally be suitable for support of pavements and track bed when these are constructed near the existing ground surface. These soils will, however, tend to flow into open excavations where the excavations extend below the groundwater table, therefore groundwater control is required in advance of excavation works.

4.4.5 GROUNDWATER

No impacts are anticipated to occur to the geochemical characteristic of the local groundwater regime provided that construction does not occur within or adjacent to any discharge or recharge area. If proposed construction activities are to involve dewatering in excess of 50,000 litres per day, a Permit to Take Water must be obtained from the Ministry of the Environment. A review of the dewatering activities will be required by TRCA. Any subsequent discharge of water should be planned to avoid adverse effects on receiving waters and may require a Certificate of Approval.

4.4.6 STORMWATER

The addition of light rail tracks to the existing roads along the preferred route will not result in an increase in impervious surface area. As a result, there will be no increase in peak stormwater flows. From a stormwater quality perspective, the land uses will remain as they are; vehicular traffic with the proposed LRT facility will not change or provide new sources of contaminants.

Installation of the rail track infrastructure will require some removal of the existing road pavement structure. The TTC and City of Toronto may elect to undertake scheduled upgrades to underground services at the same time, simply resurface the road, or do nothing. Any stormwater management improvements should be undertaken as part of a larger road reconstruction project considering the overall drainage area. The improvements could include the reconstruction or upgrading of the storm sewers, catch basins, the road surface, and the installation of new or the upgrading of existing stormwater management facilities. An analysis of stormwater management constraints and opportunities should be completed at the detailed design stage.

The project includes construction of a new 10.0 m wide structure east of the existing Highland Creek structure on Morningside Avenue to accommodate the LRT. This would introduce a new impervious surface which would likely require a stormwater management analysis. The larger issue would be to review the impacts of the hydraulics of the new bridge structure on the Highland Creek (floodline elevations, velocities, etc.). This would likely require the updating of existing creek hydraulic modelling and approvals from the TRCA as part of the detailed design of the structure, part of which has been completed in the meander belt study.

4.4.7 EROSION AND SEDIMENTATION

LRT construction generated dust may result in the release of sediment to Highland Creek. Exposed soils and/or stockpiles of excess material located adjacent to Highland Creek may result in sediment transport to this watercourse during rain events. Construction activities, such as refuelling, may increase the potential for accidental spillage and subsequent contamination to surface water.

Mitigation Measures

In order to prevent and minimize the release of sediment to Highland Creek, various sediment and erosion control measures will be implemented during LRT construction.

- Environmental protection measures will be installed in areas adjacent to Highland Creek. Erosion and sediment control measures will be prepared in accordance with the TRCA Guidelines "Erosion and Sediment Control for Urban Construction Sites".
- During detailed design, 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 outletted onto a grassed area at least 30m from the watercourse, a settling pond, and/or wetland filter bag.
- 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 Highland Creek, 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 the Contractor's work. Dust suppression will be undertaken as per OPSS 501 and 506.
- In order to mitigate the potential impacts associated with excess material storage, 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 nonhazardous 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 30m 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.
- Sediment control measures will be installed prior to construction, monitored during the construction and replaced as necessary.

4.4.8 SURFACE WATER CONTAMINATION AND DEBRIS ACCUMULATION

Construction activities, such as re-fuelling, may increase the potential for accidental fuel or lubricant spillage and subsequent contamination to surface water. They also have the potential to result in litter and debris accumulation within the Highland Creek.

Mitigation Measures

To prevent surface water contamination during construction, care will be taken to avoid accidental spillage or discharge of chemical contaminants (e.g. gasoline, oils and lubricants). Equipment re-fuelling will take place no closer than 30 m from any watercourse to prevent water contamination due to accidental fuel spills. All equipment operating near any watercourses shall be properly maintained to avoid contaminant leakage and will be free of excess oil/grease. In the event that a spill occurs, proper containment, clean up and reporting, in accordance with provincial requirements, will be completed. The contractor will also take all necessary precautions to prevent the accumulation of litter and construction debris within the watercourse.

4.4.9 CONTAMINATED SOIL

With respect to the removal of soils, if contamination is suspected the soils should be tested for contaminants that may have been used or dumped within the construction area. The Ministry's Guidelines for Use at Contaminated Sites in Ontario February 1997 will be applied with respect to the removal and / or movement of soils. If contaminated sites are identified in or adjacent to the construction area, the MOE District Office should be contacted.

4.4.10 AIR QUALITY

To assess the potential changes in pollutant burden within the study area based on installation of the Scarborough-Malvern LRT, contaminant emissions of CO, NOx, VOCs, GhGs (CO2, CH4, N2O and CO2-e) and particulate matter (PM10 and PM2.5) were calculated for the following five scenarios:

- Existing conditions – 2007;
- Future without LRT – 2021;
- Future with LRT – 2021;
- Future without LRT – 2031; and
- Future with LRT – 2031.

The results of the pollutant burden analysis are presented below for the primary contaminants of concern CO_2-e, NO_x and PM_{10}. The details of the analysis are included in Appendix C4.

Carbon Dioxide Equivalents (CO2-e)

As outlined in Exhibit 4-1, the CO2-e pollutant burden within the study area corridor is estimated to be reduced by 1.1 ktonnes per year based on the installation of the LRT system (or a reduction of approximately 2%). This reduction is based on approximately the same number of vehicles on the road but with buses replaced by the LRT system. Exhibit 4-1 also illustrates the decrease in CO2-e emissions from existing conditions to the future scenarios, which is due to reduced emissions per vehicle based on expected emission reductions from more sophisticated engine technologies and fuels.

Exhibit 4-1: Corridor Specific CO2-Equivalent Pollutant Burden

Scenario	CO_2-e Pollutant Burden in ktonnes/year	Reduction Based on LRT in ktonnes/year
Existing Conditions	51.2	n/a
2021 without LRT	59.4	1.1 (2%)
2021 with LRT	58.3	
2031 without LRT	64.2	1.2 (2%)
2031 with LRT	63.0	

These results do not include the pollutant burden from Highway 401. As a comparison annual CO2-e emissions from Highway 401 for a 400 metre section under Morningside Ave. (200 metres on either side of Morningside Ave.) were calculated to be 19.4 ktonnes CO2-e for the year 2021 and 26.1 ktonnes CO2-e for the year 2031.

Nitrogen Oxides (NOx)

As outlined in Exhibit 4-2 the NOx pollutant burden within the study area corridor is estimated to be reduced by 0.9 tonnes NOx in 2021 and 0.2 tonnes NOx in 2031 based on installation of the LRT system (or a reduction of approximately 13%). Exhibit4-2 also illustrates a significant decrease of NOx emissions from existing conditions to the future scenarios which is due to reduced emissions per vehicle based on more sophisticated engine technologies and fuels. In recent years there have been significant advancements in the ability of automakers to reduce NOx tailpipe emissions.

Exhibit 4-2: Corridor Specific NOx Pollutant Burden

Scenario	NOx Pollutant Burden in tonnes/year	Reduction Based on LRT in tonnes/year
Existing Conditions	212	n/a
2021 without LRT	44.2	0.9 (2.1%)
2021 with LRT	43.3	
2031 without LRT	35.4	0.2 (0.5%)
2031 with LRT	35.2	

As with Exhibit 4-1, the results do not include the pollutant burden from Highway 401 or from surrounding roads. As a comparison annual NOx emissions from Highway 401 for a 400 metre section under Morningside Ave. (200 metres on either side of Morningside Ave.) were calculated to be 15.4 tonnes NOx for the year 2021 and 15.7 tonnes NOx for the year 2031. CO and VOCs exhibit similar reductions to those described above for NOx.

Particulate Matter – 10 microns (PM10)

As described on Exhibit 4-3 below the PM10 pollutant burden within the study area corridor is estimated to be reduced by approximately 5.1 tonnes PM10 in 2021 and 5.4 tonnes in 2031 based on installation of the LRT corridor (or a reduction of approximately 25%). Exhibit 4-3 also illustrates a decrease of PM10 emissions from existing conditions to the future scenarios, which is also due to reduced emissions per vehicle based on expected emission reductions from more sophisticated engine technologies and fuels.

Exhibit 4-3: Corridor Specific PM10 Pollutant Burden

Scenario	PM10 Pollutant Burden in tonnes/year	Reduction Based on LRT in tonnes/year
Existing Conditions	22.1	n/a
2021 without LRT	20.4	5.1 (25%)
2021 with LRT	15.2	
2031 without LRT	21.3	5.1 (25%)
2031 with LRT	15.9	

Similar to Exhibits 4-1 and 4-2, the results in Exhibit 4-3 do not include the pollutant burden from Highway 401 or any of the surrounding roads. As a comparison annual PM10 emissions from Highway 401 for a 400 metre section under Morningside Ave. (200 metres on either side of Morningside Ave.) were calculated to be 14 tonnes PM10 for the year 2021 and 18 tonnes PM10 for the year 2031. $PM_{2.5}$ exhibits similar reductions to those described above for PM_{10}.

The Air Quality Assessment study shows that installation of the Scarborough-Malvern Light Rail Transit (SMLRT) corridor will result in a reduction of particulate based pollutant emissions and will result in small changes to all gaseous pollutants emissions; therefore, no impacts are predicted based on the operation of the SMLRT system. Particulate based pollutants from within the study area corridor will be reduced by approximately 25% and gaseous pollutants will be reduced by approximately 2%. Carbon dioxide equivalent emissions (CO2-e), which is the unit of measure for global warming potential, will be reduced within the study area corridor by 1.1 to 1.2 ktonnes/year.

Installation of the SMLRT system will reduce pollutant emissions. Further measures recommended to reduce current and future particulate based air quality impacts from all transportation sources along the SMLRT corridor include increased tree planting adjacent to the roadway.

Trees located along the roadway, will act as screens and can reduce (by up to 90%) the particulate matter flowing horizontally from the roadway "*Reconciling Urban Fugitive Dust Emissions Inventory and Ambient Source Contribution Estimates*, Watson and Chow, 2000".

Construction Impacts

The construction of the proposed LRT system has the potential to affect air quality in the vicinity of the site during the construction phase. Emissions that are associated with road construction activities are particulate matter (TSP, PM10 and PM2.5) and typical combustion emissions, such as CO, NOx and VOCs, from construction equipment. As with any construction site, these emissions will be of relatively short duration and are unlikely to have any long-lasting effect on the surrounding area.

Dust impacts can be successfully mitigated through the use of best management practices and proper controls, 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.

4.5 Socio-Economic Impacts

4.5.1 LAND USE

Potential benefits of the SMLRT are that it will meet the Official Plan vision for a more liveable Greater Toronto Area as future growth within Toronto will 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 SMLRT, that is a viable alternative to vehicular travel, will attract new business in the area based on the provision of increased people movement capacity. Also, this will provide employment opportunities during the 4 year construction period and increase employment opportunities over the operating life of SMLRT.

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.

Potential impacts to the Study Area during construction would be short-term, localized road diversions, and / or closures during construction. This may make travelling by car more difficult, during and post-construction. There might also be limited noise impacts, dust and exhaust emissions during construction. Recommended mitigation during the construction of the SMLRT is to implement and monitor effective traffic, noise, dust, etc. management plans.

4.5.2 NOISE AND VIBRATION

Noise Analysis

As part of this study, a detailed noise analysis was carried out to assess the potential noise and vibration impacts and to determine the mitigation measures if required. In summary, the projected noise level changes, as a result of the implementation of the SMLRT, are predicted to be less than 5dBA at any receptor locations. Therefore, the consideration of noise mitigation is not required based on the MOE/TTC Criteria. The details of the noise and vibration analysis are provided in Appendix C4.

The noise analysis was performed by using STAMSON Noise Model, which is based on Ontario Road Noise Analysis Method for Environmental and Transportation (ORNAMENT). The major parameters utilized by STAMSON in the calculation of road noise include vehicle speed, road surface, topography gradient, ground surface conditions, angle of exposure and the presence of noise barriers.

Potential noise receptor locations were identified based on the MOE/TTC Protocol and MOE Model Municipal Noise Control By-Law. In this study, a point of reception may include the following land use:

- permanent or seasonal residences;
- hotel / motels;
- nursing / retirement homes;
- rental residences;
- hospitals;
- camp grounds; and
- noise sensitive buildings such as schools and places of worship.

While all of the above receptors types were considered in the receptor locations for the assessment, all of the receptors chosen were existing residential dwellings. In this noise analysis, 19 receptors were selected, the receptors chosen were generally in the proximity to the proposed SMLRT corridor compared to the other land uses as listed above. The details of the receptor locations are listed in the Noise and Vibration Report.

The noise impact from the operation of SMLRT alone (i.e. not including other sources of noise such as adjacent roadways) is below the established sound level criteria at all receptors locations. The noise impact from the combined operation of the SMLRT and the proposed realignment of the roads within the Study Area does not exceed the established criteria by more than 5 dB at any receptor location.

The latest in TTC track design is expected to minimize the amount of squeal from the track. Also note that the turning radius at the curved track sections on the SMLRT is gradual (i.e., there are no sharp turns – turning radii range between 31 m to 35 m), and the LRT vehicles are "double-ended" with a cab at each end, thereby eliminating the need for loops since they can be operated in either direction. The Ministry of the Environment requested that a tonal penalty of 5 dB be added to the LRT noise at receptors near a curved section of track to account for wheel/rail squeal noise. The 5 dB tonal penalty was added to the LRT contribution at these receptors. Even with this additional assumption, no requirement to mitigate noise is indicated.

As noted in Section 6.15, the locations and the design of the electrical substations will be finalized during the design stage. Therefore, additional noise and vibration modelling will be undertaken to determine any potential impacts or any required mitigation during that time to take into account of substation noise.

The projected noise level impact from the combined operation of the SMLRT and the proposed road improvements are calculated to be approximately -0.3 to 3.6 dBA during the day time and -0.3 to +4.0 dBA during the night time. Therefore, noise mitigation is not required in accordance to MOE/TTC criteria.

Vibration Analysis

The vibration impact analysis for the proposed SMLRT was completed using the results of vibration study reports that have been completed for previous projects. A study completed for the TTC Eastern Waterfront Project (RWDI, 2007) outlines the range of vibration levels expected at increasing distances from a TTC streetcar travelling on a track (representing the latest TTC track design). The vibration levels outlined in the TTC Eastern Waterfront Project report are regarded as being applicable to this project, as the TTC intends to implement this new track design.

According to the measurement data, vibration levels resulting from TTC vehicles are well below the limit of 0.1 mm/s at distances beyond 12 m from the track. Given the shortest distance between the centreline of a proposed SMLRT track and receptor in this assessment is 15 m, is expected that receptor vibration levels will be well within the MOE/TTC Protocol criteria value of 0.1 mm/s. A summary of the RWDI report is included in Appendix C4.

Construction Impacts

Noise from construction activity and construction equipment may have potential to be noticeable, particularly if construction occurs outside of the normal weekday construction period. According to the Toronto Municipal Code, construction must occur within time and place restrictions or an exemption must be sought prior to commencement of construction. Furthermore, all construction equipment should be properly maintained to limit noise emissions and comply with the noise limits outlined in NPC-115 and NPC-118 guidelines.

4.5.3 PROPERTY

The preliminary identification of property requirements has been included in Section 6.14. The temporary property needs for construction will be identified during the detailed design stage. 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 with 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 SMLRT project, expropriation may be required to acquire the necessary property. In general, property acquisition uses the following steps:

1. The City of Toronto contacts the property owner to indicate its interest in the property and to identify issues and concerns;

2. The City conducts surveys, appraisals, and other property-related assessments;

3. 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;

4. If discussions do not result in agreement, the City initiates expropriation procedures. The expropriation process may be initiated while negotiations are occurring;

5. 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;

6. The City approves the settlement and / or expropriation, and acquires the property; and

7. 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 to the Expropriations Act by experienced, qualified appraisers and other experts. Compensation is generally based on three factors:

1) 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.

2) Damages Attributable to Disturbance: These damages 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 furnishings, or loss of business revenues and profitability. Compensation for damages of this type is determined after expropriation.

3) 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.

4.5.4 ECONOMIC IMPACTS

The existing Eglinton Avenue, Kingston Road and Morningside Avenue corridors provide the essential visibility and accessibility needed by businesses and other economic activities along the corridors. The planned SMLRT will enhance this accessibility with improved transit service, bringing more patrons to and through the corridors. By stimulating land use redevelopment and intensification along these corridors, the SMLRT 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.

The City / TTC will form a “Construction Liaison Committee” (CLC) during construction to provide quick access to construction related information, specifically schedule and timing information for the business owners and residents. The CLC will be made up of City / TTC and Contractors staff who will meet bi-weekly 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 CLC, 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.

4.6 Cultural Environment Impacts

4.6.1 ARCHAEOLOGY

A Stage 1 archaeological assessment was conducted for the Transit City Light Rail Plan, Scarborough – Malvern Corridor. Background research determined that no sites had been registered within the study corridor or within 2 km of it. However, a review of the general physiography and local nineteenth century land uses of the study corridor suggested that it exhibits archaeological site potential.

The field review determined that although most of the study corridor has been previously disturbed by construction activities, there are several areas adjacent to the ROW that remain undisturbed and contain archaeological potential. In view of these results, the following recommendation is made:

1. The Eglinton Avenue, Kingston Road, and Morningside Avenue ROWs do not retain archaeological site potential due to previous road, commercial, and residential disturbances, or excessive slope as described in Appendix C5. Additional archaeological assessment is not required within the existing ROWs, and these portions of the study corridor can be cleared of further archaeological concern; and

2. A Stage 2 archaeological assessment should be conducted on any non-ROW lands determined to have archaeological potential that are affected by the proposed project (Figures 8-1 to 8-4: areas marked in green as shown in Appendix C5). This work will be done in accordance with the MCL’s draft *Standards and*

Guidelines for Consultant Archaeologists (MCL 2006), in order to identify any archaeological remains that may be present.

The following Ministry of Culture conditions also apply:

- Should deeply buried archaeological remains be found during construction activities, the Cultural Program Unit of the Ontario Ministry of Culture should be notified immediately; and
- In the event that human remains are encountered during construction, the proponent should immediately contact both the Ministry of Culture, and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government Services, Consumer Protection Branch at (416) 326-8404 or toll-free at 1-800-889-9768.

4.6.2 CULTURAL HERITAGE

The study area has origins in the nineteenth century survey and settlement and has been substantially altered by urbanization. While significant traces of mid-nineteenth century settlement patterns have largely diminished in the study corridor, vestiges are still present amidst a wider array of built forms and landscapes that are associated with early urban development patterns in the City of Toronto generally and Scarborough specifically.

The proposed transit project is expected to generally utilize the existing road right-of-way along Eglington Avenue, Kingston Road, and Morningside Avenue. However, in some cases the proposed LRT infrastructure will extend beyond the current right-of-way. This extension has the potential to affect resources located in close proximity to the road right-of-way (BHR 7, BHR 2, CHL 2, and BHR 6 as shown in Appendix C5). There is potential that alterations to road beds and curbs in the vicinity of BHR 7 and BHR 2 could result in direct impacts or premature deterioration. It is expected that right-of-way requirements along Morningside Avenue may result in the direct removal of residences in the vicinity of West Hill Collegiate Institute and in the reduction of vehicular access on the east side of Morningside Avenue, between Tefft Road and Fairwood Crescent. The plan includes removal of an earlier 20th century residence (BHR 6) which has been identified as a cultural resource. Appendix C5 provides a synthesis of expected impacts and recommended mitigation measures.

Mitigation Measures

Based on these potential impacts, it is recommended that:

> The proposed light rail transit route be suitably planned in a manner that avoids all identified, aboveground, cultural heritage resources. Where any identified, aboveground, cultural heritage resources are to be affected by loss or displacement, further research should be undertaken to identify the specific heritage significance of the affected cultural heritage resource. Based on the results of a detailed heritage evaluation, appropriate mitigation measures such as retention, relocation, salvage, and/or documentation, should be adopted. Specifically, a Heritage Impact Assessment (HIA) should be prepared to determine the specific heritage significance of BRT 6 and to develop appropriate mitigation measures. This study should be completed in advance of detailed designs and should recommend appropriate intervention measures.

4.7 Summary of Potential Impacts and Mitigation Measures

Exhibit 4-4 provides a summary of potential impacts of the LRT line and mitigation measures.

Exhibit 4-4: Summary of Scarborough-Malvern LRT Potential Impacts, Mitigation Measures, Monitoring and Future Actions

Factor	Environmental Issue / Concern	Potential Approval Requirements	Location	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Potential Net Effect / Impact	Monitoring / Future Work / Contingency
Protect and Enhance the Natural Environment in the corridor							
Potential effects on Fisheries and Aquatic Ecosystem	Loss of site-specific habitat	TRCA / MOE	Highland Creek Crossing	Potential loss of fish habitat as a result of new structure placed near the creek	Avoid in-water work to the extent possible. Minimize the area of in-water alteration to the extent possible. Follow in-water construction timing restriction. Perform all in-water work in the dry using a temporary flow bypass system. Establish new bridge footings out of watercourse to span channel. Provide erosion and sedimentation control	A harmful alteration of fish habitat may result. Negligible if mitigation measures are implemented	On-site environmental inspection during in-water work. Post-construction monitoring of fish habitat compensation measures.
	Impacts on fish mortality during construction	TRCA / MOE	Highland Creek Crossing	Fish may potentially be injured or killed by dewatering.	Avoid in-water work to the extent possible. Perform all in-water work in the dry using a temporary flow bypass system. Capture fish trapped during dewatering of the work zone and safely release upstream. Prohibit the entry of heavy equipment into the watercourse.	Potential impacts during construction can be managed and reduced with the appropriate mitigation measures as well as the drainage and stormwater management design	On-site environmental inspection during in-water work.
	Barriers to fish movement	TRCA / MOE	Highland Creek Crossing	None expected	Not Required	None expected	On-site environmental inspection during any in-water work. Because of abutment location, most work will not occur in the Creek.
	Baseflow alterations	TRCA / MOE	Highland Creek Crossing	New impervious surfaces can lead to changes in the frequency, magnitude and duration of flows.	Reduce the area of impervious surfaces to the extent possible. Use storm water management practices that encourage infiltration and recharge of groundwater.	Potential impacts during construction can be managed and reduced with the appropriate mitigation measures as well as the drainage and stormwater management design	Post-construction inspection of storm water management facilities to evaluate their effectiveness. On-going maintenance as required.
	Increased water temperature	TRCA / MOE	Highland Creek Crossing	Clearing of riparian vegetation and storm water management practices can impact temperature regimes.	Minimize the area of stream bank alteration to the extent possible. Use storm water management practices that encourage infiltration and recharge of groundwater. Restore riparian areas disturbed during construction with native vegetation.	Shading lost through removal of riparian vegetation will be short term	Post-construction inspection of storm water management facilities to evaluate their effectiveness. On-going maintenance as required. Post-construction inspection of riparian plantings to confirm survival
	Disturbance to rare, threatened or endangered species	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	No R,T,E species identified	None required.	No net impacts	None required.
Potential effects on Vegetation Communities	Disturbance to vegetation through edge effects.	TRCA / MOE	Highland Forest ESA – Morningside ANSI, only location where new forest edge will be created – approximately 700m in length	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.	Use close cut clearing and trimming to minimize encroachment on remaining vegetation. Delineate work zones using construction fencing/tree protection barrier.	Introduction of evasive species along newly created edge.	Restore vegetation areas disturbed during construction with native vegetation, where feasible.

Factor	Environmental Issue / Concern	Potential Approval Requirements	Location	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Potential Net Effect / Impact	Monitoring / Future Work / Contingency
	Loss of vegetation resulting from road widening to accommodate LRT	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue – exclusive of ESA / ANSI	All ELC communities affected are culturally based – CUM1-1, CUT1, and CUS1. Total amount of habitat loss exclusive of Morningside ESA / ANSI is less than 0.15 ha.	Delineate work zones using construction fencing/tree protection barrier. Minimize the area of vegetation removals to the extent possible.	Displacement of resident wildlife species	Restore vegetation areas disturbed during construction with native vegetation, where feasible. Compensation for vegetation removal at a 3:1 ratio will be required to meet TRCA objectives.
	Loss of vegetation resulting from new LRT alignment	TRCA / MOE	Highland Forest ESA – Morningside ANSI	Construction of the LRT and associated facilities will result in the removal of mature vegetation communities – FOM2-2, FOM7-2, FOM6-2, AND SWT2. Total amount of habitat potentially lost Mixed Forest – 2.78 ha. Wetland – 1.04 ha.	Minimize the area of vegetation removals to the extent possible; specifically, within the grading limits prescribed for the area between Highland Creek and Ellesmere Road, remove only the vegetation necessary to accommodate the LRT right-of-way. Use close cut clearing and trimming to minimize the number of trees to be removed. Delineate work zones using construction fencing/tree protection barrier. Protect trees within the clear zone using guide rail, curbs, etc. to prevent removal.	Displacement of resident wildlife species	Compensation for vegetation removal at a 3:1 ratio will be required to meet TRCA objectives. Compensation could occur within the Highland Creek watershed or at a location recommended by TRCA. Other compensation opportunities (such as offsite wetland creation and forest enhancement) to offset the impacts to loss of wetland and forest communities will be investigated and discussed with TRCA during the design stage. Invasive species control strategy will be developed with City of Toronto's Urban Forestry division. The measures will be discussed with TRCA during the design stage.
	Rare, threatened or endangered flora.	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue – exclusive of ESA / ANSI	Ten regionally rare plant species are located within the study limits. Individual occurrences of these species are generally beyond the zone of influence of this project.	Determine precise GPS locations of potentially affected plant species during detail design phase.	None expected	Monitor during construction to ensure mitigation is followed.
		TRCA / MOE	Highland Forest ESA – Morningside ANSI	Eighteen regionally rare plant species were identified in the ELC communities located east of Morningside Avenue within the study limits.	Determine precise GPS locations of potentially affected plant species during detailed design phase.	None expected	Monitor during construction to ensure mitigation is followed.
Potential effects on Wildlife Habitat	Destruction/ Disturbance of wildlife habitat.	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue – exclusive of ESA / ANSI	Construction of the LRT and associated facilities will result in the removal of vegetation and the wildlife habitat that it supports. Total amount of habitat loss exclusive of Morningside ESA / ANSI is less than 0.15 ha.	Minimize the area of vegetation removals to the extent possible. Use close cut clearing and trimming to minimize the number of trees to be removed. Delineate work zones using construction fencing/tree protection barrier. Protect trees within the clear zone using guide rail, curbs, etc. to prevent removal. Restore natural areas disturbed during construction with native vegetation, where feasible. Replace ornamental vegetation as part of landscaping.	Displacement of resident wildlife species	Post-construction inspection of vegetation plantings to confirm survival.

Factor	Environmental Issue / Concern	Potential Approval Requirements	Location	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Potential Net Effect / Impact	Monitoring / Future Work / Contingency
	Destruction/ Disturbance of wildlife habitat.	TRCA / MOE	Highland Forest ESA – Morningside ANSI	Construction of the LRT and associated facilities will result in the removal of vegetation and the wildlife habitat that it supports. Total amount of habitat potentially lost Mixed Forest – 2.78 ha. Wetland – 1.04 ha. Displacement of approximately 700m of forest edge habitat. Reduction in size of interior forest located 100m east of Morningside Avenue	Minimize the area of vegetation removals to the extent possible; specifically, within the grading limits prescribed for the area between Highland Creek and Ellesmere Road, remove only the vegetation necessary to accommodate the LRT right-of-way. Use close cut clearing and trimming to minimize the number of trees to be removed. Delineate work zones using construction fencing/tree protection barrier. Protect trees within the clear zone using guide rail, curbs, etc. to prevent removal.	Displacement of resident wildlife species will be short-term. Displacement of resident wildlife species will be short-term. Minor, wildlife species affected are opportunistic and will redistribute to suitable available habitat. Loss of interior forest dependent wildlife species.	On-going discussions with TRCA to ensure mitigation is followed. Bird survey in all wildlife habitats prior to construction.
	Impacts on wildlife mortality during construction	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	Removal of wildlife habitat may result in wildlife mortality.	Perform vegetation removals outside of wildlife breeding seasons (typically April 1 to July 31).	Displacement of resident wildlife species	Bird survey in all wildlife habitats prior to construction.
	Barriers to wildlife movement.	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue – exclusive of ESA / ANSI	Small increase in the width of right-of-way along Eglinton Avenue, Kingston Road and Morningside Avenue exclusive of Morningside ESA / ANSI to accommodate the LRT and associated facilities could create an additional impediment to wildlife movement.	No established corridors identified	None expected	None expected
	Barriers to wildlife movement.	TRCA / MOE	Highland Forest ESA – Morningside ANSI	New LRT alignment east of Morningside Avenue through ANSI / ESA area will effectively double the existing barrier created by Morningside Avenue.	Evidence suggests that deer movement across Morningside Avenue occurs via established corridors under the Highland Creek bridge and that the areas under the bridge should be remain open during construction	None expected	The existing wildlife corridor should remain open during construction.
	Disturbance to rare, threatened or endangered wildlife.	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	No rare, threatened or endangered wildlife identified within study area.	None required.	No net impacts	None required.
Potential effects on Groundwater	Impacts to Groundwater during construction	TRCA / MOE		B - Aquifers may be affected due to temporary dewatering activities during construction. Groundwater discharge and recharge areas being affected Potential redirection of groundwater movement	Develop ground and soil management strategy during detailed design stage.	Potential permanent changes to subsurface drainage patterns in the long term. However, no adverse effects is anticipated if mitigation measures are implemented	Develop well monitoring program to monitor the construction impacts, provide compensation if required

Factor	Environmental Issue / Concern	Potential Approval Requirements	Location	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Potential Net Effect / Impact	Monitoring / Future Work / Contingency
Potential effects on surface water resources	Fuel spills, due to accidents during construction refueling and accidents during operation, entering the watercourses.	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue Potential siltation during construction	Fish kills due to chemical spills resulting in short term population decline.	No refueling within 30 m of a watercourse. Prepare Emergency Response Plan	Short term population decline. Some contaminants within storm water system.	None required
Potential effects on Contaminated Sites	Encountering of contaminated soils	TRCA / MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	Potential encounter of contaminated soil and groundwater	Disposal of the contaminated soil and water will be done in accordance with the regulations	Identify site specific impacts during the detailed design stage	Undertake Phase 1 Environmental Site Assessment and potentially Phase 2 Environmental Site Assessment during detailed design if required.
Erosion Control	Sediment laden storm water entering watercourses during construction.	TRCA / MOE	Highland Creek Crossing	Fish kills and loss of aquatic habitat resulting in short term population decline. Soil quality, structure, stability and texture may be affected by the loss of soil	Develop Erosion and Sediment Control Plan. Potential options include using geotexiles on Highland Creek area to enhance slope stability using sediment fence at work area	Short term population decline.	Monitor sediment accumulation after rain events during construction to ensure that the proposed mitigation measures have been satisfied.
	Sediment laden storm water entering watercourses during operation.	TRCA / MOE	Highland Creek Crossing	Loss of aquatic habitat resulting in population decline. Soil quality, structure, stability and texture may be affected by the loss of soil	Develop and implement the Erosion and Sediment Control Plan in accordance with the GTA CA's Erosion and Sediment Control Guideline for Urban Construction (2006) (example OPSS 577). Potential options include using geotexiles on Highland Creek area to enhance slope stability, using sediment fence at work area. Storm water management facilities such as grassed swales, oil and grit separators, storm water ponds. Opportunities to improve stormwater quality will be investigated.	Short term population decline.	Monitor sediment accumulation in storm water management facilities.
Minimize adverse Impacts on Socio- Economic Environment							
Archaeology	Loss of archaeological resources	MCL	Eglinton Avenue, Kingston Road and Morningside Avenue	Along the Morningside Avenue corridor, between Warnsworth Street and Highland Creek, and along Military Trail a number of areas have remained undisturbed, and they exhibit archaeological site potential and may be impacted during construction.	The SMLRT will be subject to a Stage 2 archaeological assessment during preliminary detail design, if avoidance is not possible In the event that deeply buried archaeological remains are encountered during construction activities, the office of the Regulatory and Operations Group, Ministry of Culture will be notified immediately.	Potential adverse effects to known or potential archaeological resources would be avoided or mitigated.	To mitigate negative impacts on archaeological resources, a Stage 2 archaeological assessment should be conducted on lands determined to have archaeological potential that are to be affected by the proposed project. Such assessments will identify any archaeological resources that may be present along the corridor and provide appropriate recommendation measures (i.e. a Stage 3 and/or Stage 4 Archaeological Assessment)
Built Heritage and Cultural Landscapes	Loss of built heritage features	MCL	Eglinton Avenue, Kingston Road and Morningside Avenue	It is expected that BHR 6 and CHL 2 will be directly impacted by the proposed transit improvements, through displacement. It is expected that BHR 2 and BHR 7 may be impacted during construction and could be subject to premature deterioration dependent upon their proximity to the road way and transit infrastructure.	Potential displacement and disruption to identified cultural heritage resources. A Heritage Impact Assessment (HIA) will be carried out.	Potential displacement and disruption to identified cultural heritage resources.	To mitigate negative impacts on built heritage resources and cultural heritage landscapes, it is recommended that heritage impact assessments/statements be undertaken with respect to specific properties, BHR 6, CHL 2, BHR 2, and BHR 7, prior to further detailed designs. Such assessments will identify the specific heritage significance of these resources and provide appropriate recommendation

Factor	Environmental Issue / Concern	Potential Approval Requirements	Location	Effect / Impact (During Construction; During Operations)	Mitigation Measures	Potential Net Effect / Impact	Monitoring / Future Work / Contingency
							measures (i.e. retention in situ, retention, documentation, document and salvage).
Noise and Vibration	Increase noise level in 5 dBA	MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	No NSA subject to noise increases greater than 5 dBA during the LRT implementation.	None required.	None expected	Monitor and investigate complaints on noise and vibration issues
	Noise effects during construction	MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	Noise level increases during construction due to the construction equipment and the construction process.	Ensure proper maintenance of construction equipment to limit noise emissions and comply with the noise limits outlined in NPC-115 and NPC-118 guidelines. 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.	Noise level increase during construction is temporary and can be mitigated	Monitor and investigate complaints on construction noise issues
Air Quality	Impacts on air quality due to implementation of LRT	MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	Overall emissions are expected to decrease with LRT implementation.	Air quality is anticipated to be improved after the LRT implementation. Pollutants gases and particulate based pollutants are anticipated to be decreased during LRT operations	None are anticipated during LRT operations. Dust impacts can be successfully mitigated through the use of proper dust controls.	Additional measures include increasing tree planting adjacent to the roadway and increasing road vacuum sweeping and flushing during LRT operations can help to improve the air quality in the area
Property	Loss of Property	MOE	Eglinton Avenue, Kingston Road and Morningside Avenue	Total of 10 permanent displacements on Morningside Avenue Approximately 25 partial land parcels required on Eglinton Avenue Approximately 12 partial land parcels required on Kingston Road Approximately 47 partial land parcels required on Morningside Avenue	Compensation for residential and commercial impacts will be provided for temporary and permanent property requirements. For permanent property taking, compensation will be provided 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 be provided for the temporary property requirements. Upon completion of construction, temporary property will be returned to the owner and as near as reasonable possible restored to its original condition.	Expropriation may be required if negotiations failed	The property owners will be contacted during the detailed design stage.
Minimize adverse Impacts on Transportation and Other Technical Issues							
Potential effects on Traffic	Reduce level of services for vehicular traffic	City of Toronto	Eglinton Avenue, Kingston Road and Morningside Avenue	LRT is expected to address the future transit demand as well as to attract some drivers.	A number of measures have been proposed for traffic regulation	N/A	City Transportation Services will monitor
Potential effects on Existing Transit Services	Eliminate some TTC routes and stops	TTC	Eglinton Avenue, Kingston Road and Morningside Avenue	A high-order transit service will replace the existing TTC routes. The eliminate of bus stops can allow TTC to provide high speed and reliable LRT services	None required.	N/A	TTC to continue to monitor the future transit service demands

5. FUTURE COMMITMENTS

This Transit Project is being undertaken under the new Transit Project Assessment Process (TPAP). During the Preliminary Planning and Transit Project Assessment phase, TTC and the City of Toronto worked closely with the Technical Agencies to address any environmental concerns and issues. The potential impacts, mitigation measures and the associated net impacts have been identified, evaluated and assessed as documented in the previous section. However, the design process, including both preliminary design and detailed design, may lead to refinement or modification of the proposed conceptual design as noted in this EPR. It is anticipated that such changes will be minor and will not alter the original intent and the commitments to the public.

5.1 Property Acquisition

Property acquisition, and temporary easements during construction, will be required for this project. The City of Toronto and the TTC will be undertaking the following process to acquire necessary property. It should be noted that the exact property requirements can only be determined through completion of the detailed design. Commitments include:

- Undertake a Property Protection Study during the early stages of the detailed design of the Scarborough-Malvern LRT corridor to identify temporary easements for construction or other purposes, and permanent property acquisition requirements to accommodate the LRT and associated facilities;
- Negotiations with affected property owners where property acquisition is required for the Project; and
- Acquire the necessary property prior to the construction stages.

5.2 During Design

The detailed design will evaluate and assess construction methods and staging that will minimize the impacts to the surrounding properties and will develop its own mitigation plans, e.g. traffic staging, noise, air quality and etc. This will involve ongoing liaison with the technical agencies, emergency services providers and the public.

The TTC and the City of Toronto will comply with the TRCA/MOE and other regulatory government agencies' regulations, standards and directives. TRCA has provided a number of the specific issues to be addressed during detailed design and construction phases as shown in Appendix I. Specifically, the TTC and the City of Toronto's commitments to future work are listed as follows:

- During the design stage, a structural analysis of the existing bridge structures where the LRT tracks will be incorporated will be undertaken to identify any potential structural modifications that may be required. The structural analysis will take into account the bridge expansion joints, impact of LRT loading and axle spacing, track infill details (depth, width, light-weight infill), pole arrangement / load, etc;
- Environmental protection measures will be designed to reduce vegetation removals along the study corridor. A detailed landscaping plan will be prepared to address vegetation and vegetation community impacts with the consultation of the TRCA;
- Vegetation protection / restoration / compensation plans will be prepared and implemented. Discussion with Toronto Urban Forestry will be undertaken to develop an invasive species control program for the Morningside ANSI / Highland Forest ESA area. Plant inventory for the rare or uncommon plant species and site-specific measures will be prepared to minimize displacement or disturbance effects;
- An inventory of the vegetation (trees and shrubs) to be removed will be prepared as part of the TRCA permit application review. A landscape plan showing how TTC intends to implement the proposed vegetation compensation will also be prepared;
- The design team will identify opportunities to incorporate TRCA natural environment restoration projects into the overall natural heritage improvements activities for the project;
- Given that Morningside Avenue is located within TRCA's Terrestial Natural Habitat Strategy and Habitat Implementation Plan area, habitat enhancement opportunities will be explored during the detailed design;
- The team will develop an urban design layout and select the appropriate streestcaping elements for SMLRT;
- Due to the potential ecological and hydraulic impacts associated with the proposed retaining walls adjacent to the Highland Creek area, the design of the walls will be provided to TRCA for review;
- A construction access and staging plan associated with the proposed Highland Creek crossing and an assessment of the temporary construction impacts on vegetation communities will be prepared;
- A hydraulic assessment of the new Highland Creek structures will be undertaken during the design stage using the latest floodplain mapping and model provided by TRCA. The details of the required analysis will be discussed with TRCA during the design stage. The appropriate construction methodology for the new structure will be determined to minimize impacts on the natural environmental;
- The City of Toronto is undertaking several projects within the proposed Highland Creek area. Coordination wit the City department will be undertaken during the design phase;
- The details of any dewatering plans will be provided to TRCA for review and approval. An environmental monitoring plan for mitigating the natural environment during dewatering will be prepared if needed.
- Pre-emptive pier protection will be provided in order to provide additional protection of the piers against channel migration;
- A detailed stormwater management plan will be prepared;
- An erosion and sediment control plan, which complies with prevailing TRCA and Toronto Water guidelines and requirements will be prepared;
- Procedures for disposal of excavated materials, including contaminated soils, in accordance with Ministry of the Environment requirements will be developed;
- A ground and soil management strategy to mitigation the potential groundwater impact during construction will be developed;
- The team will submit a letter to the TRCA confirming issues that will be addressed;

- Transport Canada has designated the Highland Creek crossing under Morningside Ave as a navigable waterway. This designation may trigger the Canadian Environmental Assessment Act (CEAA) requirements, including submission of a Project Description, identification of the Responsible Authority, submission of an environmental screening report and posting of the project on the CEAA Environmental Registry. A permit under the Navigable Waters Protection Act will be obtained for constructing a new bridge over the Highland Creek;

- Approval and permits for the construction and permanent operations crossing the CN rail line will be required. In the event that an agreement cannot be reached between CN Rail and TTC, the crossing would require the intervention of the Canadian Transportation Agency (CTA) for a federal order which would trigger the CEAA.This TPAP commits the TTC to follow and complete the CEAA process as required by the Responsible Authority;

- Further consultations with be held with Fire/Emergency services on the LRT facility design details (example, pole locations, median height, etc.). this is part of the overall Transit City LRT program;

- Further review of traffic operations will contribute to the recommended intersection treatments in the area of capacity constraints to provide the effective operations of LRVs, pedstrian and vehicular traffic, especially at the Kingston Road/ Morningside Avenue intersection;

- The Highway 401 crossing arrangement with the Ministry of Transportation will be finalized, with the consideration of structural design and impacts, traffic operations, traffic signal operations and maintenance, urban design / landscaping opportunity, bicycle lane arrangement, cost-sharing agreement etc. A detailed traffic analysis will be undertaken to finalize the traffic operations requirements;

- Refinement of the design details including structural, stormwater management, natural environmental mitigations, traffic operation improvements, and geotechnical investigations will determine the final property impacts / requirements;

- Condition surveys of buildings, structures, and railway protection and monitoring will be undertaken;

- Designated Substances Surveys for any buildings or structures which require demolition will be undertaken. Construction contract documents will include this provision;

- Further research to identify the specific heritage significance of the affected cultural heritage resource to determine the appropriate mitigation measures such as retention, relocation, salvage, and/or documentation will be undertaken;

- A Heritage Impact Assessment will be developed to meet the needs of the Ministry of Culture;

- A Stage 2 Archaeological Assessment, where required, will be prepared; and

- The location of the electrical substations will be finalized and an additional noise and vibration analysis will be undertaken to determine the impacts and the associated mitigation measures if required.

5.3 During Construction

The TTC will conduct further analysis related to the construction of the Scarborough-Malvern LRT including, but not limited to, the following activities will be undertaken in order to:

- Evaluate and assess construction methods and staging that will minimize the impacts to the surrounding properties and will develop its own mitigation plans, e.g. traffic staging, noise, air quality and etc.

- Include noise and vibration and mitigation measures and construction site maintenance/upkeep requirements in construction contract documents;

- Develop traffic, transit and pedestrian management strategies to be included in construction contract documents to address potential traffic infiltration, operations, and safety concerns;

- Undertake stray current protection and monitoring for pipelines and other utilities;

- Develop and undertake a construction monitoring program to ensure the compliance of the contract requirements regarding construction practices specified for the project, and to assess the overall performance and effectiveness of the required environment construction practices in the field. It is recommended that TTC conduct full-time construction supervision so as to carry out inspection and monitoring services during construction of this project. Provincial and regional standards and procedures will be used by the City to ensure that this project is constructed as specified in the contract documents, with monitoring in accordance with the inspection practices of the City;

- An environmental inspector (employed by TTC) will make frequent random site visits for the duration of work at the water crossing location. The environmental inspector will be responsible for delineating work areas, ensuring that erosion and sedimentation control measures are functional and that the provisions related to fisheries and watercourse protection are met; and

- The Highland Creek Trail, which is located underneath the existing structure, will remain open at all times.

The City will enforce and monitor noise and vibration during construction in accordance with the City of Toronto Noise By-Law (Chapter 591), City of Toronto By-Law No. 514-2008 with respect to regulation of vibrations from construction activity.

5.4 During Operation

During operation there will be ongoing monitoring of traffic conditions to determine if any further changes to the traffic system should be implemented. Similarly the analysis of changes in bus routes in the area will result in monitoring of the performances of the new groups and potential implementation of any necessary adjustments.

- A monitoring program will be developed to measure the effectiveness of the fencing barrier for restricting deer movement across the LRT right-of-way adjacent to the Highland Creek valley.

- The TTC will continue to follow practices for the routine maintenance of train wheels to eliminate “wheel flats” which can contribute to ground borne noise and vibration. All tracks will have regular check up to maintain the rail tracks to satisfy TTC standards so that noise and vibration impacts can be minimized.

- The City and the TTC will monitor traffic volumes on public roads and transit schedules as part of the normal operating procedures. This will allow for either agency to identify future issues and develop corrective actions. Furthermore, as development proceeds along the study corridor, the City will ensure the continued functioning of the road network, through the use of supporting traffic impact studies. The use of residential streets and adjacent properties will be monitored.

5.5 On-Going Consultation

The TTC/City will continue to consult with the public, property owners, business owners, external agencies (including the Police, Fire and other emergency service providers) and local councillors during the design and construction phases of the Scarborough-Malvern LRT.

5.6 Utility Co-ordination

A number of utilities will require relocation prior to the construction of the SMLRT. These may include Bell Canada, Rogers Cable, Enbridge Gas, Telus, Allstream Enterprise Solutions and watermain, and stormwater and sanitary sewers. It is expected that utility relocations can be accommodated within the proposed right-of-way.

This will be confirmed in consultation with the utilities during detailed design. All of these utilities should be contacted early during the preliminary design / detailed design to confirm plant location and discuss relocation strategies / cost sharing. Impacts and mitigation requirements will be considered in relation to the alternative relocation options.

6. PERMITS AND APPROVALS

TTC will obtain necessary permits and approvals for the construction and implementation of the Scarborough-Malvern LRT Project with respect to, but not limited to:

- Planning approvals (including Site Plan Approval) for building structures and facilities;
- Permit to Take Water from the Ministry of the Environment if dewatering exceeds 50,000 litres per day;
- A review by TRCA will also be required to dewatering activity;
- Stormwater management, in accordance with City of Toronto, TRCA and MOE requirements;
- Permit to construct from the TRCA in accordance with Ontario Reg 166/06;
- Excess waste generated on-site that 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 nonhazardous;
- Railway Crossing Agreement (CN/GO Transit) and navigable water crossing screening to address potential CEAA requirements.
- A complete package to be submitted to MTO for review including the following information to be developed during the detailed design:
  - Track bed treatment to reduce the slipperiness of the track area at the interchange terminal area
  - A detailed traffic operation with micro-simulation analysis (i.e. VISSIM) to finalize the traffic management requirements
  - Signal design drawings (PHM-125) for both temporary and permanent signal arrangements and detailed signage plan
  - Analysis of structural impacts and the associated mitigation measures for the Highway 401 bridge
  - Detailed maintenance and structural rehabilitation strategic plan
- The specific issues that were indicated in a letter from the TRCA must be addressed during detailed design and construction.

6.1 Federal Environmental Assessment (CEAA)

A number of conditions associated with this TPAP may "trigger" requirements of the federal Canadian Environmental Assessment Act (CEAA). TTC will continue to monitor the Transit Project for potential CEAA "triggers" and in the event that the CEAA applies to the Transit Project, TTC will prepare an Environmental Screening Report. Depending on the Responsible Authority that may confirm a CEAA interest, these conditions may include:

- Any project funding with federal money;
- Any use of federal lands;
- Any effect on the operation of a railway company or property;
- Any effect on fish or fish habitat; and
- Any effect on a navigable waterway.

The Highland Creek crossing under Morningside Avenue is considered a navigable waterway by Transport Canada. A permit from Transport Canada may be required under the Navigable Water Protection Act. This study may also trigger the Canadian Environmental Assessment Act (CEAA) requirements. A Project Description has been submitted to Canadian Environmental Assessment Agency in September 2009 for review. The Canadian Environmental Assessment Agency will determine whether the CEAA EA is required. If it is required, the Agency will identify the Responsible Authority, for submitting an environmental screening report and posting of the project on the CEAA Environmental Registry. This TPAP commits the TTC to follow and complete the CEAA process as required by the Responsible Authority.

As the Scarborough-Malvern LRT will cross the CN rail line at Eglinton Avenue and at Kingston Road, approval and permits for construction and permanent operations must be obtained from CN Rail. In the event that an agreement cannot be reached between CN Rail and TTC, the crossing would require the intervention of the Canadian Transportation Agency (CTA) for a federal order. The involvement of CTA would trigger the CEAA.

7. CONSULTATION PROCESS

The general public, government agencies and various interest groups were provided opportunities to review, and comment on this project during the course of the study. The City of Toronto Public Consultation Team was involved in the overall public consultation process. They offered a wide range of communication methods to the public, including project web site, dedicated telephone number, fax and email address for contacting the project team.

Technical agencies including federal, provincial, municipal agencies, utilities, potential interested groups, were contacted in the beginning stage for their initial input. Three rounds of Public Open Houses were scheduled for the public to have direct communication with Project Team members. The consultation process for this study is described in this section.

The comments and recommendations received from the public have been included in the consultation reports in Appendix I. Issues that require further commitments have been documented in Section 9.6. The main points of contact that were made during this study are shown in Exhibit 8-1.

7.1 External Agencies

7.1.1 METHOD OF CONSULTATION

Consultation was carried out to encourage technical agencies to provide input during the course of the study. The following agencies were invited to be involved in the TPAP study:

Government Review Agencies	***Technical Agencies***
Canadian Environmental Assessment Agency	*All Stream*
Environment Canada	*MTS All Stream Inc.*
Department of Fisheries and Oceans	*Telus*
Transport Canada - Ontario Region	*Enwave Energy Corporation*
Ministry of Aboriginal Affairs	*Group Telecom / 360 Networks*
Ministry of Agriculture, Food and Rural Affairs	*Hydro One Network Inc.*
Ministry of Citizenship and Immigration	*Toronto Hydro*
Ministry of Culture	*Toronto Hydro Telecommunications*
Ministry of Municipal Affairs and Housing	*Enbridge Gas Distribution*
Ministry of Municipal Affairs and Housing	*Rogers Cable Inc.*
Ministry of Natural Resources	*Bell Canada*
Ministry of the Environment	*Toronto and Region Conservation Authority*
Ministry of Tourism and Recreation	*Canadian National Railway*
Ministry of Transportation	*Canadian Pacific Railway*
Ontario Realty Corporation	*GO Transit*
Government Review Agencies	***Technical Agencies***
Ministry of Health Promotion	*Toronto District School Board*
Ministry of Energy and Infrastructure	*University of Toronto Scarborough Campus*
Ministry of Health and Long-Term Care	*Ontario Provincial Police*
	City of Toronto Fire Department Services
	City of Toronto Police Services
	Toronto Emergency Medical Services

Meetings with major stakeholder agencies including the Toronto and Region Conservation Authority (TRCA), the Ministry of Transportation of Ontario (MTO) and the University of Toronto Scarborough Campus (UTSC) were held to discuss the potential impacts and mitigation measures regarding the proposed LRT facility. The TRCA were interested in Regulated Areas, TRCA Program & Policy Areas and Provincial & Federal Program Areas located within the study area. MTO input focused on infrastructure crossing agreements, and the use of full transit signal priority and traffic operation near their facilities. Input was provided by the UTSC on their current and future facility and operational plans. The correspondence with external agencies and the meeting minutes are included in Appendix I.

7.1.2 SUMMARY OF COMMENTS

Exhibit 7-1 summarizes comments received from external agencies and the study team's responses. The comments received throughout this study and the response / future course of action for technical agencies and public are provided in Exhibits 7-1. Commitments made over the course of this study are listed in Section 5.

Exhibit 7-1: Agencies Comments and Responses

Agencies Involved	Comment/Issue	Response / Future Course of Action
TRCA	Natural environment impacts on TRCA Program and Policy areas	A Natural Heritage Report has been prepared to determine the impacts and the associated mitigation measures in consultation with TRCA.
	Vegetation habitat impacts within Morningside area	A Natural Heritage Report is completed to identify the potential impact and to provide the mitigation measures in consultation with TRCA. Compensation for a ratio at 3:1 will be provided for the vegetation loss. In a larger impact area, TTC will explore other compensation opportunities (such as offsite wetland creation and forest enhancement) to offset the impact to/loss of wetland and forest communities. Details of protection and restoration / compensation plans will be addressed during detailed design. Discussions with the City of Toronto Urban Forestry division will be

Agencies Involved	Comment/Issue	Response / Future Course of Action
		undertaking during the detailed design to develop an invasive species control program for the Morningside ANSI/Highland Forest ESA area.
	Terrestrial Natural Habitat System Impacts due to LRT facilities	A Natural Heritage Report is completed to identify the potential impacts and to provide mitigation measures in consultation with TRCA. During detailed design, the TTC will identify opportunities to incorporate TRCA restoration projects into the overall natural heritage improvement activities for the project.
	Deer crossing	Potential deer crossing impacts associated with the LRT operations were discussed with TRCA. Deer crossing fencing is being proposed in this study. The effectiveness of the fencing will be monitored during the LRT operations.
	Historic MNR records for the Redside Dace	A record of this species from 1928 was reported in the NHIC database. According to the TRCA, it is likely that the species is not found within the Highland Creek watershed at present. Notwithstanding this, one of the long-term goals of a recovery strategy for Red Side Dace in Ontario is to restore viable populations by 're-introducing Red Side Dace to sites of former distribution where feasible' (Red Side Dace Recovery Team, 2005). Highland Creek is within this strategy.
	Potential archaeological resource along Highland Creek	A Stage 1 Archaeological Assessment has been undertaken as part of this study. Areas, including the Highland Creek, that require a Stage 2 Archaeological Assessment are identified and documented in the Stage 1 report.
	Erosion and sediment impacts	An erosion and sediment control plan for the entire area of disturbance will be prepared during the detailed design.
	Retaining wall installation adjacent to Highland Creek area	The details and design drawings of the proposed retaining walls will be prepared during the design phase
	Pier protection for the new structure	Given the dynamic nature of the Highland Creek, the pre-emptive pier protection will be constructed to provide additional protection of the piers against channel migration as per TRCA comment.
	Hydraulic assessment of the proposed structure	A detailed hydraulic analysis, including the hydraulic modeling and documentation, will be provided to TRCA for review and approval during the detailed design phase. The TTC will review the modeling results, provide confirmation of floodplane delineation and bubble information through the area, and revise the flood lines and bubble information, where necessary. The analysis will be undertaking by using the latest information provided by the TRCA. The details of the required analysis will be discussed with the TRCA during the detailed design phase. A commitment on this issue has been documented in the Environmental Project Report Section 9.6.
MTO	Obtaining MTO Encroachment Permit to construct LRT in Highway 401 area	A MTO Encroachment Permit(s) are required prior to any construction taking place. Encroachment Permits are also required for any Pre-Construction work (i.e. survey, bore holes, etc.) taking place within the Highway R.O.W. All engineering drawings and reports will be submitted to MTO for review and approval. A legal agreement between TTC and MTO will be in place to address construction, financial and maintenance responsibility prior to the issuance of MTO Permit(s).
	Traffic operational impact in the Highway 401 area	A traffic operations report has been completed in this study and demonstrates that adverse traffic impacts can be mitigated as noted in Section 5.4. Additional traffic simulation analysis (eg. VISSIM analysis) will be undertaken during the detailed design phase to finalize the traffic operations requirements. Left turn lane capacity for the 5-10 year horizon after project completion will also be examined during the detailed design phase. The development in the southeast quadrant of the Morningside Avenue and Highway 401 interchange will be incorporated into the traffic analysis. The TTC will be operating transit signals through the ramp terminal intersections. The signal maintenance agreement may require modification to accommodate the transit signals. The temporary / permanent signal design drawings (PHM-125) and signal timings will be provided to MTO for approval. Emergency vehicles will be able to mount, cross and drive along the LRT right-of-way if required. Double-left and double-right receiving lanes will be 2.5 lanes wide to accommodate turning paths, and divisional islands may need to be pulled back.
	Potential safety concern for traffic going through the eastbound through lane to Cinemart Drive at Highway 401 north Terminal	Provision of special track treatment at the ramp terminal intersection area will be investigated during the detailed design phase. The provision of the LRT alignment will flatten the crown along the middle of the track bed. This will be investigated in more details during the detailed design.
	Urban design landscaping	An urban design / landscaping plan will be prepared during the detailed design. The details of the landscaping treatment in the Highway 401 area will be reviewed with MTO during the detailed design phase.
	Provision of bicycle lanes on Morningside Avenue in the Highway 401 area	As presented to the MTO, given the width constraint of the Highway 401 bridge, bicycle lanes at the interchange area have not been proposed in the study. Further consideration regarding potential bicycle lane arrangements will be undertaken during the detailed design phase.
	Structural impact to existing structure in the Highway 401 area	A preliminary structural analysis was undertaken for the Highway 401 structure and indicated that girders will require strengthening to accommodate the LRT facility. Through consultation with MTO, it is agreed that the required structural improvements, the selection of the track bed material, the future bridge rehabilitation strategy and the maintenance of the expansion joints will be further discussed during the detailed design phase.
	Power supplies design	The TTC will confirm whether separate power supplies will be needed for the TTC infrastructure and the MTO lighting and signal infrastructure.

Agencies Involved	Comment/Issue	Response / Future Course of Action
UTSC	Potential development at University of Toronto Scarborough Campus	The University of Toronto is developing a master plan in the Ellesmere Road / Military Trail area. Consultation was undertaken with UTSC to develop the preferred alignment that will provide LRT service to the UTSC campus via Ellesmere Road and Military Trail.
MOE	Potential Noise and Vibration Impacts	A detailed noise and vibration analysis was completed for the noise sensitive areas within the study corridor. The projected noise level changes, as a result of the implementation of the SMLRT, are forecast to be less than 5dBA at any receptor locations. Therefore, the consideration of noise mitigation is not required in accordance with the MOE/TTC criteria. As the locations of the electrical substations have not been determined at this time, additional noise and vibration modeling will be completed during the detailed design phase to determine any potential impacts. Consideration will be given to any required mitigation at this time.
Transport Canada	Navigable Water issue at Highland Creek	Transport Canada confirmed that the Highland Creek is navigable in the Morningside Avenue area. This is expected trigger a CEAA Environmental Assessment Process. A CEAA screening report has been prepared, and will be submitted to Transport Canada during the detailed design phase. A permit under the Navigable Waters Protection Act will be obtained as part of the detailed design of the project.
Utility Companies	Potential utility impacts	An inventory of the existing utility plant has been prepared. Utility companies were contacted to provide the information during the TPAP. The potential utility impacts have been identified as part of this study. All utility companies will be contacted again during the detailed design phase to confirm plant relocation strategies and cost sharing agreements.

7.2 General Public

One of the key components of the TPAP process is public consultation throughout the study. Information panels and audio-visual presentations were provided at the Public Open Houses. The project team including representatives from TTC, City of Toronto, IBI Group/Arup (prime consultant) and Lura Consulting (Public Consultation Unit) attended to answer questions regarding the study.

Letters and/or emails were sent directly to individuals on the Project Team's mailing list, and to all residents and businesses within the Scarborough-Malvern Corridor. This list included representatives from external agencies, municipalities, and members of the public within the study area or affected by the project, and the public who requested to be added to the mailing list.

From the beginning of the study, the following methods were set up for the public to submit their comments or obtain project information at any time:

Telephone: 416-392-6900
TTY: 416-397-0831
Fax: 416-392-2974
Email: malverntransit@toronto.ca
Mail: Public Consultation
City of Toronto
Metro Hall, 19th Floor
55 John Street
Toronto, ON M5V 3C6
Web: http://www.toronto.ca/involved/projects/malvern_lrt/index.htm

Exhibit 7-2: Main Points of Contact

Period		Date	Main Points of Contact
Preliminary Planning Phase	Public Open House No. 1	July 9, 2008	80,741 notices mailed to all property owners within approximately 1.5 kilometres of the study route..
		July 10, 2008	Invitation letters for the first Public Open House were distributed to the government agencies, potential interest groups and utility companies.
		July 11 & 18, 2008	Notice of first Public Open House was published in the Scarborough Mirror
		July 23 and July 24, 2008	First Public Open House was held at the Scarborough Village Recreation Centre and University of Toronto Scarborough Science Wing Meeting Place.
	Public Open House No. 2	May 6, 2009	59,166 potential affected property owners within 1 kilometre of the study route were contacted by letter regarding the second Public Open House.
		May 8, 2009	Notice of second Public Open House was distributed to the government agencies, potential interest groups and utility companies.
		May 8 and 13, 2009	Notice of second Public Open House was published in the Scarborough Mirror.
		May 20 and May 21, 2009	Second Public Open House was held at Bliss Carman Public School and West Hill Public School.
Transit Project Assessment Phase	Public Open House No. 3 and Notice of Commencement	June 17, 2009	29,907 notices mailed to all property owners within 500 metres of the study route for third Public Open House.
		June 19, 2009	Notice of Commencement and the invitation for the third Public Open House were distributed to the government agencies, potential interest groups and utility companies.
		June 19 and 24, 2009	Notice of Commencement and third Public Open House was published in Scarborough Mirror
		June 29, 2009	Third Public Open House was held at Qssis Banquet Hall
	Notice of Study Completion	October 16, 2009	Notice of Study Completion was published in the Scarborough Mirror and was distributed to the government agencies, potential interest groups and utility companies.

7.2.1 METHODS OF CONSULTATION

7.2.1.1 Public Open House No. 1

Two public open houses were held on July 23 and July 24, 2008 as part of the first Scarborough-Malvern LRT public consultation. The purpose of the open house was to share information about the project with the community and to gather feedback on preliminary project plans.

The following information was presented to the public in Public Open House No. 1:

- The study area;
- The study objectives and the new Transit Project Assessment Study process;
- The study background and supporting planning policies;
- The existing conditions in the study area;
- The assessment and the recommended alternative corridors between Kingston Road and the Malvern Community;
- The alternative and recommended transit solution; and
- The next steps and activities of the study.

Eighty-six participants signed in on the July 23rd open house at Scarborough Village Recreation Centre, and 35 participants signed in on July 24th at University of Toronto Scarborough Science Wing Meeting Place. The open house included 36 detailed display boards, a Frequently Asked Questions handout, a continuous loop slide show with voice over, and an open invitation to ask questions and discuss the plan with the many project team members present.

Participants were invited to write down their ideas and opinions on comment forms and submit them at the registration table. Thirteen comment forms were received on the 23rd and ten on the 24th.

In addition to the comment forms, project team members and the public consultation staff also recorded participant comments on clip boards. Three comments were recorded in this manner on the 23rd and approximately 40 on the 24th. Up to July 31st the TTC also received 23 comments via email and telephone, many of which were questions and/or requests to be added to the mailing list.

Key issues and comments raised are presented below, with more detailed comments provided in a public consultation report as included in Appendix I.

- A mix of concern and support over the number of stops and the distances between them;
- Routing concerns and alternative routing suggestions;
- Concern over potential increased traffic delays along major roads used by the LRT;
- Concern over left-turn restrictions;
- Support for bicycle lanes;
- The need for additional commuter parking;
- Suggestions for consistent types of vehicles between LRT, SRT and street car lines;
- General support and encouragement for the project; and
- Assorted questions and comments relating to other transit issues.

7.2.1.2 Public Open House No. 2

Two public open houses were held on May 20 (at Bliss Carman Public School) and May 21 (at West Hill Public School), 2009 as part of the second series of Scarborough-Malvern LRT open houses. The purpose of the open house was to share information about the project with the community and to gather feedback on the preferred design concept, the associated impacts and proposed mitigation measures.

The following information was presented to the public in Public Open House No. 2:

- The study objectives and the new Transit Project Assessment Study process;
- The study background and supporting planning policies;
- Project Schedule;
- Preferred design including features, typical cross-section
- The assessment of the preferred design including Traffic, Property and Environmental (Natural Heritage, Air Quality, Noise and Vibration, Archaeological Resources, Cultural and Built Heritage and Socio-economic)
- The construction staging and project benefit
- The next steps and activities of the study.

Fifty participants signed in at the May 20th open house, and 145 participants signed in at the open house that took place on May 21st. The open house included 49 detailed display boards, a Frequently Asked Questions handout a continuous loop slide show with voice over, and an open invitation to ask questions and discuss the plan with the many project team members present.

Participants were invited to write down their ideas and opinions on comment forms and submit them at the registration table. Twelve comment forms were received on the 20th and twelve on the 21st. At the open house held on the 21st, in addition to the comment forms received, project team members and Lura staff also recorded 39 participant comments on clip boards. The TTC received one open house comment form via fax and one form via email. This report summarizes all the comments received.

Key issues and comments raised are presented below, with more detailed comments provided in a public consultation report included in Appendix I:

- Concern with the elimination of left turn lanes, especially at the Morningside Avenue and Kingston Road intersection
- Concern about potential traffic infiltration into neighbourhoods on local roads;
- Concern that the LRT stops will be too far from each other;
- Concern with the impact this project will have on surrounding property;
- Concern over potential increased traffic along major and local roads;
- Concern over increased traffic with lane reductions;
- General support and encouragement for the project; and
- Assorted questions and comments relating to other transit issues.

7.2.1.3 Notice of Study Commencement

The Notice of Study Commencement with the notice of the third Public Open House was placed in Scarborough Mirror on June19, 2009. A copy of the notice is included in Appendix I. The notice advised the public of the commencement of the Transit Project Assessment Study and the third Public Open House on June 29, 2009.

7.2.1.4 Public Open House No. 3

One public open house was held on June 29, 2009 as part of the third series of Scarborough-Malvern LRT open houses. The purpose of the open house was to share information about the project with the community and to gather feedback on the preferred design concept, the associated impacts and proposed mitigation measures. The Open House No. 3 was originally scheduled to be held at Scarborough Village Recreation Centre. However, due to the City of Toronto Labour Disruption, the Open House location was changed to Qssis Banquet Hall. A designated person was to standby at the Scarborough Village Recreation Centre and directed public to go across the road to Qssis Banquet Hall. No complaints were received in regards to this arrangement.

The information material that was presented at Public Open House No. 3 was the same as at Open House No. 2. An additional panel describing commitment from TTC to further review on left turn restrictions at the Kingston Road / Morningside Avenue intersection during the detailed design was provided in the third public Open House.

Participants were invited to write down their ideas and opinions on comment forms and submit them at the registration table. Twelve comment forms were received on the Public Open House No. 3. Key issues and comments raised are presented below, with more detailed comments provided in a public consultation report as included in Appendix I. The responses to the public comments are provided in Exhibit 8-2. Major public issues included:

- Support for implementation of the project at an earlier date
- Concern over potential increased traffic delays on Kingston Road and Eglinton Avenue caused by lane reductions
- Preference for maintaining the left turn lanes at Eglinton Avenue and Danforth Road
- Concerns over property acquisitions
- Accessibility of stops and stations, in terms of both design and distance from seniors' residences
- Scepticism for the use of bicycle lane
- The need for additional commuter parking and connections to other transit routes

7.2.1.5 Additional Public Meetings

Besides the Open Houses, additional meetings with the Project Team met were held as follows:

- The Coronation Community of West Hill on May 5, 2009 at Toronto Police 43 Division Community Room
- Town Hall Meetings arranged by the Councillor for Ward 43 on June 25, 2009 at West Hill Collegiate Institute
- Town Hall Meetings arranged by the Councillor for Ward 42 on June 19, 2009 at the Malvern Recreation Centre.

The purpose of the meetings was to provide an opportunity for the public to discuss the proposed project. Over 150 residents attended these question and answer meetings, where questions concerning left turn restrictions, potential traffic infiltration, roadway congestion (particularly on Kingston Road), preference for a subway and property impacts were raised.

7.2.2 SUMMARY OF COMMENTS

Exhibit 7-3 summarizes the comments received and the responses provided. More detail is included in Appendix I. Commitments made during the course of this project are listed in Section 5.

Exhibit 7-3: Public Comments and Responses

Category	Comment/Issue	Response / Future Course of Action
Traffic	Left turns are not being provided at some major signalized intersections	A detailed traffic analysis was completed in this study as documented in the Traffic Operations Report. Recommended changes to the left turn movement arrangements can ensure effective and safe LRT operation and pedestrian movements. Alternative U-turn opportunities are being provided at other nearby locations.
	Traffic infiltration concerns due to the reconfiguration of intersections	A traffic monitoring program will be undertaken by the City's Transportation Services Division before project construction. The monitoring program relating to local traffic impacts will be an ongoing initiative. It is not possible to be definitive at this time regarding the specific measures (such as turn prohibitions) that would be implemented as a result of the monitoring program, because the exact nature and magnitude of the traffic effects is uncertain. However,

Category	Comment/Issue	Response / Future Course of Action
		Transportation Services staff will work with City Councillors and the community to address any local traffic issues. Should any residents/businesses have existing traffic/operation concerns they are encouraged to contact Transportation Services.
	Existing traffic congestion along Eglinton Avenue and Kingston Road. Any lane reduction will make it worse.	The purpose of the project is to provide an attractive alternative to private auto use, achieved by re-allocating road space to create reserved transit lanes. With the construction of the LRT, the overall people movement capacity of the corridor will increase. Re-allocation of road space for transit may increase congestion at specific locations, which may be mitigated with changes to travel behavior (i.e. alternative travel modes, routes, and / or times).
Stop Location	The proposed stop locations are too far away	Stop locations were carefully examined as part of the study. The stop locations were recommended based on consideration of the transit ridership generated, LRT operations performance, proximity to adjacent intersections, roadway gradient, physical constraints and traffic impacts.
Noise and Vibration	Concern with the noise impacts	A detailed noise analysis was completed for the noise sensitive areas within the study corridor. The projected noise level changes as a result of the implementation of the SMLRT are forecast to be less than 5dBA at any receptor locations. Therefore, consideration of noise mitigation is not required in accordance with the MOE/TTC criteria.
LRT System	Preferred subway rather than LRT	The forecast ridership demand indicates that LRT will be a more cost-effective transit solution for the corridor.
Property Impacts	Concern about the property impacts due to the LRT facilities	Compensation will be provided for temporary and permanent property requirements. For permanent property taking, compensation will be provided at fair market value, which is determined at the time of purchase with a property appraisal report forming the basis for negotiations. Compensation will also be provided for the temporary property requirements. Upon completion of construction, temporary property will be returned to the owner and as near as reasonable possible restored to its original condition.
Bicycle Lanes	The utilization of bicycle lanes	The provision of bicycle lanes along SMLRT supports the vision of the Toronto Official Plan and the City's policies to provide road users an alternative transportation mode to commute. Providing bicycles lanes along Transit City routes can create a bicycle friendly environment that encourages the future use of bicycles for everyday transportation and enjoyment.

7.3 Aboriginal Communities

This TPAP has addressed the new Ontario Regulation 231/08 requirement to involve and consult with involved First Nations communities. The City of Toronto established a protocol to address the First Nations Consultation, included in Appendix I. The following government agencies at the federal and provincial level were notified of the SMLRT TPAP preliminary planning on July 10, 2008, and asked for information on potentially interested First Nation Communities:

- Ontario Ministry of Aboriginal Affairs (MAA)
- Indian and Northern Affairs Canada (INAC)
    - Specific Claims Branch
    - Litigation Management & Resolution Branch
    - Comprehensive Claims Branch

INAC responded indicating that they would only provide written responses to the City should the claims circumstances affecting the City of Toronto change.

7.3.1 METHOD OF CONSULTATION

In correspondence dated March 19, 2009, INAC also confirmed that other than the Mississaugas of the New Credit, there are no other First Nations in the vicinity of the City. In a further correspondence dated April 11, 2009, INAC indicated that they were aware of only one active litigation claim "in the area of part of Eastern Toronto" by the eight (8) First Nations Communities making up the Williams Treaty Bands. In a correspondence dated August 28, 2009, the TTC notified these Bands of the TPAP study and asked them to provide the nature of any interest they may have in the SMLRT in writing. They were also invited to meet with the TTC to discuss any such interests.

As of September 24, 2009, no Williams Treaty Bands indicated any interest in the project. A meeting with the Bands will again be offered should they express any interest or concern.

On January 10, 2007, Public Consultation staff from the City of Toronto met with Director Margaret Sault and Chief Bryan LaForme of the Mississaugas of the New Credit First Nations to discuss the best method of consulting with the community for all Environmental Assessments conducted by the City of Toronto. The City was asked to notify Ms. Sault of all Environmental Assessments undertaken by the City, but should not expect a written response from the Mississaugas. Furthermore, they wish to be contacted immediately should any First Nations archaeological material be found, and construction stopped temporarily until a mutually acceptable agreement is reached on how to proceed.

For the SMLRT study, the preliminary planning notice, notice of the first and second Public Open Houses and request for any expression of interest were mailed to the Mississaugas of the New Credit on July 10, 2008 and May 6, 2009. The notice of TPAP commencement and third Public Open House was then mailed on June 17, 2009. As of September 24, 2009, the Mississaugas of the New Credit have not expressed any interest in the SMLRT project.

7.3.2 SUMMARY OF COMMENTS

No comments were received from Aboriginal Communities.

7.3.3 COMMITMENTS

A meeting with First Nations officials will be offered should they express any interest or concern.

7.4 Public Review Period/Notice of Completion

With the completion of this Environmental Project Assessment Report,

- A Notice of Completion of the Environmental Project Report (EPR) will be published on October 16, 2009.
- The public, regulatory agencies, Aboriginal communities and other interested persons will have 30 days to review the EPR.
- The Ministry of the Environment (MOE) will have 35 days to act if there was a potential for a negative impact on a matter of Provincial importance that relates to the natural environment or has cultural heritage value; is of interest to, or has an impact on a constitutionally protected Aboriginal or treaty right.
- A Statement of Completion will be issued by the proponent as noted in the following Section.

7.5 Project Approval – TTC/City

During the Transit Project Assessment Process period, the following approvals have been obtained in order to complete the study.

- TTC Commission, August 26, 2009
- City of Toronto Planning and Growth Management Committee, September 16, 2009
- Toronto City Council, September 30, 2009

7.6 Statement of Completion

The Transit Project Assessment Process (TPAP) is completed when the proponent submits a Statement of Completion to the Director of the Environmental Assessment and Approvals Branch of the Ministry of the Environment and the Ministry of the Environment Regional Director, excluding any unforeseen circumstances that may require a change to the transit project.

The proponent will submit the Statement of Completion under one of the following circumstances:

1. The Minister gives a notice allowing the proponent to proceed with the project in accordance with the EPR;
2. The Minister gives a notice allowing the proponent to proceed with the project in accordance with the EPR, subject to conditions;
3. The Minister gives a notice requiring further consideration of the transit project and subsequently gives a notice allowing the proponent to proceed with the project in accordance with a Revised EPR; or
4. The Minister gives no notice within 65 days of the proponent giving the Notice of Completion.

The Statement of Completion must indicate that the proponent intends to proceed with the transit project in accordance with either:

- The EPR;
- The EPR subject to conditions set out by the Minister; or
- The Revised EPR.

The proponent will also post the Statement of Completion on its project website. Construction or installation of the transit project subject to the TPAP cannot begin until the requirements of the TPAP have been met. Subject to these requirements, the transit project may proceed subject to any other required approvals.

8. CONCLUSION

This Environmental Project Report presents the results of a study for implementing LRT in the Scarborough-Malvern corridor. It conforms to the requirements of the new Transit Project Assessment Process.

This project was found to be feasible with no major impediments or unacceptable environmental impacts. The route will use existing arterial roads. No major environmental impacts were identified.

Because of the lack of major structures, this line could be implemented in a relatively short time. There are no tunnel sections and only one new structure, the Highland Creek LRT Bridge.

Much of the route has been foreseen in the Toronto Official Plan where the roads used have been designated for transit priority measures.

The line will serve major generators including the educational complex centered on the University of Toronto Scarborough Campus and the Centennial College Ellesmere Campus.