Toronto Transit Commission

Ashbridges Bay Light Rail Vehicle (LRV) Maintenance and Storage Facility – Draft Environmental Project Report Executive Summary

Date: May 2010

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1. Introduction

The Toronto Transit Commission (TTC) is undertaking Conceptual Design and Environmental Assessment (EA) for a new Maintenance and Storage Facility (MSF) for Light Rail Vehicles (LRVs). This facility will service and store LRVs schedule to operate in 2013. In addition, new non-revenue service tracks are required to provide a connection from the proposed facility to the existing streetcar tracks along Queen Street East.

The new LRVs will replace the streetcars that TTC currently operates throughout Toronto. The existing streetcars are between 30 and 40 years old and are nearing the end of their functional use. Compared to the existing streetcars, the new LRVs:

- Are nearly twice as long with the ability to carry more passengers per vehicle – reducing crowding;
- Are wheelchair accessible;
- Are designed with a strong focus on safety, security and customer convenience in all aspects of design;
- Provide bright and easy to read LED route/destination signs;
- Include improved interior and exterior lighting and air conditioning; and
- Accommodate bicycles and baby strollers in the passenger compartment.

The existing Roncesvalles and Russell Carhouses will not be able to accommodate the new LRVs. Both facilities have insufficient space to service and store the new vehicles, and would have required rebuilding and expanding existing facilities into adjacent residential neighbourhoods. The new facility will be located on an approximately 22 acre parcel of land located in the south-east corner of Lake Shore Boulevard East and Leslie Street, is in close proximity to the existing streetcar network, no relocations of existing business and their facilities are required and there are no crossings of existing railroad tracks.

The new maintenance and storage facility will accommodate 100 LRVs with the potential of 85 vehicles being deployed into service on a daily basis. The new LRVs are expected to begin revenue service operation in 2013. The LRVs would generate approximately 230 trips per weekday along Leslie Street, in mixed traffic, between the maintenance and storage facility and existing Queen Street East streetcar tracks. The portion of Leslie Street that the LRVs will operate on would not be part of a TTC revenue service route.

The Environmental Assessment is being conducted under Ontario Regulation 231/08 following the Transit Project Assessment (TPA) Process which, for projects such as this, exempts the proponent from the requirements under Part II of the EA Act. The TPA Process is a proponent-driven, self-assessment process that provides a defined framework for the proponent to follow in order to complete the accelerated assessment of the potential environmental effects and decision-making within the 120 day assessment timeline.

1.1 Policy and Context Planning

The development of the Ashbridges Bay LRV MSF was established based on the City, TTC, and Province's Planning Policies. The following sections provide descriptions of the policies, plan and regulations that are relevant to this study.

1.1.1 City of Toronto Official Plan (September 2007)

The City of Toronto Official Plan established general principles and policies, and site specific policies, which guide land use planning and development of the subject site. Included in the Official Plan are policies pertaining to Employment Areas and Transit, all of which directly relate to the proposed use of the subject site.

The Official Plan's schedules designate areas of the City as Employment Districts and Employment Areas. These designations play an important role in the City's growth management strategy. Land uses within these designations are largely comprised of manufacturing, warehousing, industrial, and offices, and uses supportive thereof.

The promotion and provision of transit services in the City, and the integration of land use and transportation, are integral components of the Official Plan. The principles and policies of the Official Plan generally provide that:

- Future growth within Toronto will be directed to areas well served by transit;
- Growth areas are generally those with good transit access along bus and streetcar routes and at transit stations;
- Growth will be focused into a pattern of transit-supportive compact centres and corridors;
- Good transit service to Employment Districts is necessary to take advantage of their economic opportunities; and
- Lands beyond the rights-of-way be acquired to accommodate necessary transportation network features, such as transit facilities.

The Ashbridges Bay LRV MSF will assist with achieving a number of key policy objectives outlined in the City of Toronto planning policies, including those pertaining to intensification, sustainable transportation, creating "complete communities", encouraging public transit, employment uses, and encouraging less automobile dependence. Within the local area, the City of Toronto Official Plan identifies Leslie Street, Cherry Street and Commissioners Street as future Higher Order Transit Corridors (Toronto Official Plan, Map 4, June 2006). Further, the City's Official Plan made provisions to protect a 40 metre right-of-way along Leslie Street south of Lake Shore Boulevard East for long-term LRV passenger service.

1.1.2 Streetcar Maintenance and Repair Facilities Master Plan

Recognizing the need for additional storage area and facilities to repair and maintain the new LRVs, TTC conducted the "Streetcar Maintenance and Repair Facilities Master Plan"[1]. The Master Plan study reviewed the existing maintenance facilities to develop options and recommended strategies for maintaining and storing the fleet of new LRVs that would replace the existing streetcar fleet.

The Master Plan concluded that the existing carhouses and yard facilities cannot be modified to maintain the new LRVs due to structural (seismic) and spatial limitations. In addition, the storage track requirements for the new LRV fleet will be much greater than those of the existing fleet with storage track deficiencies beginning to occur in 2013 and continue to escalate proportionally with the addition of the new vehicles. As a result, the report concluded that it will be necessary to construct a new maintenance facility to meet the needs of the 204 Fleet Replacement vehicles (downtown fleet) and provide additional storage track capacity to accommodate 100 new vehicles.

1.2 Study Area

The study area for the proposed Ashbridges Bay Light Rail Vehicle (LRV) Maintenance and Storage Facility is located north of the existing Ashbridges Bay Wastewater Treatment Plant, west of Leslie Street and south of Lake Shore Boulevard East. In addition, the study area includes the Leslie Street corridor between Commissioners

1. *"Streetcar Maintenance and Repair Facilities Master Plan" by Parker & Associates Inc. (PAI) and Totten Sims Hibicki Associates Limited (TSH), 2008*

Street and Queen Street East for the establishment of the connecting tracks between the proposed LRV Maintenance and Storage Facility and the existing streetcar tracks along Queen Street East. **Figure 1** illustrates the study area in more detail.

1.3 Site Selection Process and the Ashbridges Bay Site

The TTC undertook a property search to identify potential locations to accommodate the proposed maintenance and storage facility. Several factors were considered in the site selection process. Fundamentally, the site had to be of a sufficient size to accommodate all of the facility components (approximately 22 acres) and be in close proximity to the existing streetcar network. In addition, the property selected should minimize the relocation of existing businesses and the crossing of existing rail road tracks.

Fourteen potential sites, extending from Mimico to Ashbridges Bay were initially assessed. Six of these sites met the minimum property requirements established for the MSF. Further screening of the six properties was based on key criteria including community considerations, operational issues, post and potential for the site to be developed and in service by the end of 2012.

Three sites were identified as those that could meet the project requirements and scheduled completion date of 2012. Two of those sites – Eastern Avenue and Ashbridges Bay – were identified as being able to meet the operational requirements. TTC hosted three pre-consultation public open house meetings on June 16, 17 and 18, 2009 to engage residents about the site options. Potential alignment of the track required to connect the Maintenance and Storage Facility to Queen Street were also presented.

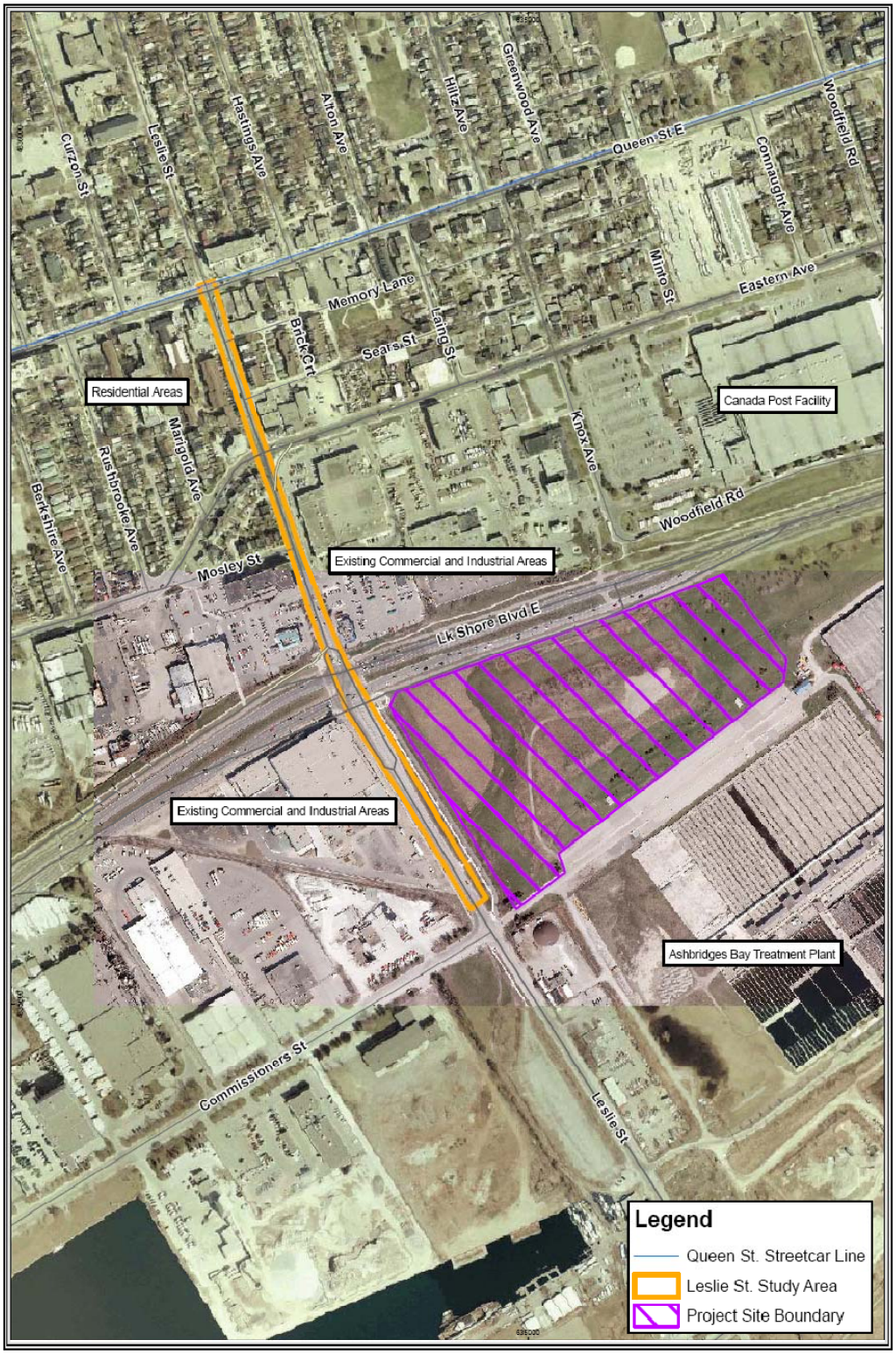
Based on the completion of site evaluation, the Unwin site was considered too costly because of additional expenses attributed to extra connection tracks, the need to construct a new bridge on Unwin Avenue (to replace the one lane bridge the City had just installed one year earlier), and additional operational (deadhead) costs for the additional 1 kilometre of track between Commissioners Street and the Unwin site. TTC also raised concerns that the tracks leading to the Unwin site would cross existing Class 1 railway tracks multiple times. The Eastern Avenue option was excluded from consideration because it had higher capital costs than the Ashbridges Bay site and was located immediately adjacent to a residential community.

As a result, TTC identified the Ashbridges Bay as the technically preferred site. The recommended site is located at the southeast corner of Leslie Street and Lake Shore Boulevard East immediately north of the Ashbridges Bay Wastewater Treatment Facility. Key advantages of the Ashbridges Bay site include:

- The site is close to the existing Queen Street East streetcar tracks minimizing non-revenue deadhead operating costs;
- It is the most cost effective site relative to capital and operational costs;
- It meets the minimum requirements for property size; and
- The construction of the facility will not result in displacements of residence and/or businesses.

On December 1, 2009, City Council approved a settlement with the Toronto Port Authority that would transfer ownership of the required property to the City for the TTC. On December 16, 2009, TTC Commission approved location of the Fleet Replacement maintenance and storage facility at the Ashbridges Bay site.

Figure 1. Study Area



2. Existing Conditions

As a key element of the Transit Project Assessment Process, existing conditions within the study area were documented.

2.1 Natural Environment

2.1.1 Terrestrial and Wildlife Natural Heritage

Vegetation

The proposed site consists of abandoned industrial land located in a heavily industrialized area of Toronto. As such, it has a history of intensive land use and therefore is very disturbed. The site contains disturbed and imported soils that have regenerated to field vegetation. The majority of the trees and shrubs which exist on site appear to have been planted, with some natural regeneration of Manitoba Maple and American Elm (*Ulmus americana*). Consequently the vegetation on the site is not considered natural. Few of the plant species found on-site are locally indigenous. The field species are also predominantly non-native. A Tree Inventory and Assessment was conducted for the proposed Ashbridges Bay LRV MSF site which documented 388 trees or groups of trees on the site, their size and condition (excellent, fair or poor).

Further, background review using GIS Natural Resources Values Information System (NRVIS) data found that there are no Environmentally Significant/Sensitive Areas (ESAs) on or immediately adjacent to the site. In addition, no provincially significant species have been recorded on site, nor are any likely to occur given the heavily disturbed history of the site.

Wildlife

The site contains some anthropogenic (i.e., human influenced) vegetation that only provides limited habitat for wildlife because it is an isolated area that is not well linked to other natural areas. The site is likely used to some extent for feeding and resting by migratory birds during spring and autumn migration, because of its proximity to the Lake Ontario shore and the Leslie Street Spit, and because it essentially forms an 'island of green' among surrounding industrial lands. Several migrant birds were observed during the October site visit including: American Kestrel (*Falco sparverius*), Eastern Phoebe (*Sayornis phoebe*) and White-throated Sparrow (*Zonotrichia albicollis*).

A few common adaptable bird species such as Red-winged Blackbird (*Agelias phoeniceus*) and Song Sparrow (*Melospiza melodius*) undoubtedly breed on-site, but the diversity and density are likely to be low. A few common mammals such as Meadow Vole (*Microtus pennsylvanicus*) and Raccoon (*Procyon lotor*) likely inhabit the site.

There are no water features on site other than a drainage ditch that carries temporary flow after storm events or spring runoff; therefore there is no fish habitat.

2.1.2 Hydrogeology and Groundwater

The proposed site is not considered a significant source groundwater recharge or discharge. Surficial soils at the site consist of silty sand fill overlying sand and gravel, which overlies shale bedrock. In summary:

- Groundwater flow is interpreted be to the southeast towards Lake Ontario.
- Groundwater table elevation is between 4.93 and 8.25 metres below ground surface (mbgs).

- Exceedances of Table 1 and Table 3 of O.Reg 153 criteria were found in groundwater samples for Metals/Inorganics, PAHs and VOCs and visible product was noted be covering the water level probe when removed from each well.
- These exceedances and presence of an observed hydrocarbon-like substance within each well may be of concern if the depth of construction activities intersects the water table, and the need for dewatering during construction arises.

2.1.3 Contaminated Soils

Prior to the development of the Ashbridges Bay Treatment Plant (ABTP) in the early 1900s, the site was part of Lake Ontario, namely, Ashbridges Bay. The site and surrounding area were slowly in-filled with various materials, including soil and fill, slag, sludge, and ash. In addition, some by-products of the ABTP operations, including miscellaneous sewage treatment plant debris, were dumped on the site after the construction of the ABTP in the early 1900s until at least the 1960s. By 1965, an on-ramp for the Gardiner Expressway was built on the northwest portion of the Property, which was dismantled in 2002. While sludge or similar ABTP debris are not deposited on the site, the site continues to be used as a storage area for construction debris and fill, from the ABTP and other construction projects in the area. The in-filling activities have resulted in a mound on the site, comprised entirely of miscellaneous fill material and construction debris.

Results of the soil sampling and laboratory analytical testing program indicate that the soil samples that are representative of the fill materials are impacted with the following:

- Metal and inorganics
- Volatile Organic Compounds (VOCs)
- Petroleum hydrocarbons
- Polycyclic Aromatic Hydrocarbons (PAHs)

These impacts have been identified in samples of the fill material across most of the site.

Results of the laboratory analysis of deeper soil samples collected from the native soils underlying the fill were all within the Site Conditions Standards in accordance with Table 3 of Ontario Regulation 153/04 – Records for Site Condition, Part XV.1 of the Environmental Protection Act (EPA). These results indicated that the soil impacts at the site are primarily limited to the imported fill materials and do not extend into the underlying native soils.

The impacts that are present within the fill materials at the site may in part be related to the historical industrial activities that have occurred on the adjacent lands; however, the primary source of the environmental impacts appear to be related to the quality of the fill materials that were initially used to infill the former Ashbridges Bay marsh in the early 1900s, as well as the fill materials that were later imported onto the site and placed in the fill mound starting sometime after 1965.

Methane gas monitoring was conducted as part of the assessment, which indicated that elevated concentration of methane were measured in the subsurface at the gas probe locations and in a number of monitoring wells. Methane concentrations ranged from 1.0 to 85.6 vol % which exceeds the generally applicable threshold that has been established by O. Reg 232/998 for on-site buildings, and areas immediately outside the foundations of buildings or structure that are either accessible to people, contain electrical equipment or other potential sources of ignition. Methane gas can be found in localized pickets in the Toronto area and more specifically the area south of Lake Shore Boulevard in the vicinity of the site as the subsurface conditions typically include organic deposits from the old lake bottom.

2.2 Social Environment

2.2.1 Land Use Environment

The Toronto Official Plan designates the project site as Employment Area and Parks and Open Space. The majority of the project site is designated Employment, and strips of land fronting on Leslie Street and Lakeshore Boulevard East are designated Parks and Other Open Space. The Employment Areas are "places of businesses and economic activity", and is the primary designation for industrial-type land uses, such as is proposed for the project site and related supporting uses. The Parks and Other Open Space designations permit a variety of public uses, including public transit where supported by appropriate assessment.

The proposed development of the project site conforms to the policies of the City of Toronto Official Plan and will not require an Official Plan Amendment. The I3 zoning provides regulations to limit density to a maximum of two times the lot area. The proposed development will consist of two buildings (the streetcar facility will be primarily one storey in height, but with a partial second storey for offices, and the substation building will be one storey in height) within the 2x density limit. All other regulations in the I3 zone are satisfied in the concept site plan for the property. As such, the proposed development of the project site as provided on the September 25, 2009 concept site plan will not require a Zoning By-law amendment or minor variance.

2.2.2 Community Features

The study area borders the Leslieville (Ward 30) and the Beaches-Easy-York (Ward 32) neighbourhoods in the City of Toronto. Collectively, the two communities comprise 106,645 residents and 31,114 employees (City of Toronto, 2006).

Parks located in the vicinity of the study area include Jonathan Ashbridge Park (located near Eastern Avenue and Woodfield Road) and the entrance to Toronto's Tommy Thompson Park is located in the southernmost portion of Leslie Street. Further, the Martin Goodman Trail stretches along the western and northern portions of the proposed project site along Leslie Street and Lake Shore Boulevard East respectively. The Martin Goodman Trail is one of the most heavily-used recreational and commuter trails in Toronto, and serves as the primary east-west cycling and pedestrian route across the City's waterfront. Extending across the length of the Port Lands, the Martin Goodman Trail is used for walking, cycling and rollerblading. It connects to other waterfront trails and recreational areas, including Tommy Thompson Park.

Toronto Bikeway #4 is primarily an east-west trail located on the north side of Lake Shore Boulevard East. The trail extends between Don Roadway (west) and Woodbine Park (east). The trail provides a direct link to several other trails leading downtown and to the waterfront.

There are no recreational facilities and/or community centres, schools, libraries, major hospitals, emergency care facilities or religious institutions in the immediate study area. The City of Toronto EMS Training Centre is located within the study area at the southwest corner of the Knox Avenue and Eastern Avenue intersection. In addition, the Avondale Retirement Residence and Physiotherapy Clinic is located within the study area at the corner of Leslie Street and Queen Street East.

Residential neighbourhoods within the study area are located along Leslie Street north of Lake Shore Boulevard East. The nearest homes exist at the corner of Leslie Street and Eastern Avenue, approximately 240 metres from the proposed LRV Maintenance and Storage Facility. In total, Leslie Street comprises 48 single family units and

53 multi-family residential properties between Queen Street East and Lake Shore Boulevard East. South of Lake Shore Boulevard East, the area is primarily industrial and commercial.

2.2.3 Cultural Heritage Resources

There is one cultural heritage resource in the study area which was previously identified and listed on the City of Toronto's Inventory of Heritage Properties. A field review in combination with a review of historic mapping resulted in the identification of seven additional cultural heritage resources in the vicinity of the study area. No cultural heritage properties located within the study area have been designated under the *Ontario Heritage Act*. The eight identified cultural heritage resources are located along the northern portion of the study area, along Leslie Street between Queen Street East and Lake Shore Boulevard East.

2.2.4 Archaeology

The Stage 1 archaeological assessment determined that no archaeological sites have been registered within or immediately adjacent to the study area. The Ashbridges site (AjGt-1), known as the Ashbridge Estate, was identified as being located within 1 kilometre of the study area. A review of the geography, as well as local knowledge of the study area's nineteenth century land use, suggested that the potential for the recovery of Aboriginal or early Euro-Canadian cultural material within the proposed project site is low.

2.3 Air Quality

The air quality inventory of existing conditions addresses both local air quality, as monitored by the Ministry of the Environment (MOE), and local air emission sources within 1,000 metres of the proposed project site.
Air quality data was assessed based on monitored data from the two MOE stations that best represent the study area: the Downtown AQ Station at Bay Street and Wellesley Street, and the Toronto East AQ Station at Kennedy Road and Lawrence Avenue East.

The 1,000-metre local air quality area was selected based on requirements in the MOE Land Use Compatibility Guidelines. These guidelines define industrial classes based on their air quality impact potential and recommend potential impact influence areas. The recommended potential influence area for the industrial class with the most potential to impact air quality is 1,000 metres. The minimum separation distance for these industries is 300 metres.

Based on the air quality monitoring information, the air quality within the study area is good to very good at least 76% of the time but is occasionally moderate to poor. Regarding local air emissions sources, there are a number of facilities within 1,000 metres of the proposed site with some potential to emit air contaminants - but none that should constrain the proposed development.

2.4 Noise and Vibration

A review of the site and surrounding land uses was completed using a combination of on-site observations as well as aerial photography. The dominant source of noise and vibration in the area was observed to be vehicular traffic from Leslie Street and Lake Shore Boulevard East. The following were determined to be the closest noise and vibration receptors to the proposed site and their locations are illustrated in **Figure 2** below.

- Residences along Leslie Street (R1), located approximately 240 metres from the Ashbridges Bay LRV MSF;
- Residences along Eastern Avenue (R2), located approximately 325 metres from the Ashbridges Bay LRV MSF; and
- The marina along Ashbridges Bay Park Road (R3), located approximately 570 metres from the Ashbridges Bay LRV MSF.

Although the MOE does not consider a park as a noise sensitive receptor, Tommy Thompson Park (CR4) was analyzed to identify potential noise and vibration effects at that location. For this analysis, Tommy Thompson Park was identified as a day-time receptor only, since it is not a campground with regular overnight uses. The analysis was completed at the park entrance on Leslie Street, the closest point to the proposed TTC facility. These receptors are classified as stationary sources.

Stationary noise sources at the streetcar facility are required to comply with MOE publication NPC-205/232. Stationary noise sources located at the facility include streetcars while on TTC property, mechanical equipment associated with any building located on-site, PA systems or any other non-emergency noise-generating activity that may be associated with the streetcar facility. The noise assessment includes only activity from moving streetcars throughout the track. Secondary noise sources such as mechanical equipment related to the building structures, PA systems or any other sources are required to be in compliance with the MOE publication NPC- 205 as well. The combined impact of moving streetcars and other equipment located on-site should be determined as part of the detailed design of the project.

Figure 2. Noise and Vibration Receptors and Monitoring Locations

The MOE guidelines state that the hourly equivalent sound level (LEQ) limit at a receptor is the greater of the current ambient background sound level or the minimum sound level limit applicable to the receptor's acoustical class. The site falls under the MOE's "Class 1 - Urban" classification in MOE Publication NPC-205 with minimum sound level limits shown in **Table 1**.

Community Ambient Sound Monitoring

Three community ambient sound monitors, identified as M1, M2, and M3, were configured to measure energy-averaged hourly equivalent sound levels (see **Figure 2**). M1 and M2 measured for nine days were installed at locations M1 and M2 between September 30th and October 24th, 2009. Monitor M3 performed measurements for 6 days between February 4th, and February 10th, 2010. The location of monitor M1 was selected to accurately measure traffic sound from Lake Shore Avenue. The location of monitor M2 was selected to have a setback from Leslie Street similar to the property line of residences backing onto Leslie Street. Monitor M3 was selected to have a setback from Eastern Avenue similar to the property line of residences fronting onto Eastern Avenue.

The recorded minimum background One Hour Equivalent Sound Level (LEQ), measured by the noise monitors is shown in **Table 1**.

Table 1. Ambient Monitor Measurement Summary

Monitor Location / **Time Period**	**MOE Sound Level Limits** *Class 1 – Urban*	*M1*	*M2*	*M3*
Daytime (07:00-19:00)	50	58*	59*	61
Evening (19:00-23:00)	47	57*	62*	62
Night-time (23:00-07:00)	45	50*	55*	58

*Note: * Sound level monitors at locations M1 and M2 were placed adjacent to hard reflecting surfaces. As a result, the values presented are 3dB less than actual measured values.*

Lake Shore Avenue road traffic dominates the ambient sound levels at monitor location M1, whereas Leslie Street and Eastern Avenue road traffic dominate the ambient sound levels at monitor locations M2, and M3, respectively. The results indicate that receptor on Leslie St. and Eastern Avenue (R1 and R2) can support higher sound level limits than the MOE minimum. The marina along Ashbridges Bay Park Road (R3) is located more than 150 metres away from Lake Shore Blvd East and receptor CR4 in Tommy Thompson Park is also located away from a major road. As such, the baseline MOE sound level limits were used for R3 and R4.

The resulting stationary source sound level limits for all receptors during any time of day and night are presented in **Table 2**. The noise impact of the proposed TTC facility on these receptors is required to meet the applicable MOE sound level limits listed, with the exception of the receptor CR4 (Tommy Thompson Park).

Table 2. Receptor Sound Level Limits for Stationary Source

Time Period	**Sound Level Limit (dBA)**			
	R1	**R2**	**R3**	**R4**
Daytime (07:00-19:00)	59	61	50	50
Evening (19:00-23:00)	62	62	45	N/A
Night-time (23:00-07:00)	55	58	45	N/A

Sound Level Limits for Transportation Sources

The MOEE/TTC Protocol for Noise and Vibration Assessment for the Proposed Waterfront West Light Rail Transit Line, dated November 11, 1993, was used as guideline criteria for transportation sound sources. The criterion outlined in the protocol is that the sound level limit at a point of reception during daytime operation is the higher of 55dBA or the 16-hour Leq (Leq16). For night-time, the protocol criterion is that the sound level limit at a point of reception is the higher of 50dBA or the eight-hour Leq (Leq8). The limit for a single vehicle operating alone during a pass-by is 80dBA excluding wheel squeal and noise caused by special track work.

Based on ambient monitoring data collected at monitor location M2, the Leq16 and Leq8 are greater than the 55dBA and 50dBA minimum, respectively. The transportation source sound level limits at Leslie Street receptors (R1) are shown in **Table 3**.

Table 3. Receptor Sound Level Limits for Transportation Sources

Time Period	Sound Level Limit (dBA)
	R1
Daytime (07:00-23:00)	63
Night-time (23:00-7:00)	59

Stationary and Transportation Source Vibration Criteria

All vibration sources at the maintenance and storage facility, as well as the new LRVs operating on Leslie Street should comply with ISO 2631-2, *Evaluation of human exposure to whole-body vibration – Part 2: Continuous and shock-induced vibration in buildings*. This publication sets a maximum RMS velocity limit of 0.14 mm/s or 83dB (re 10 nm/s) at frequencies between 10 and 100 Hz within residential buildings during night time. This limit corresponds to 1.4 times the threshold of human perception for vibration. Typically, streetcar vibration does not produce vibration levels below 10 Hz. This criterion applies to all receptors.

It should be noted that many residents can perceive vibration levels at and below the 83dB (re 10 nm/s) velocity limit as being unsatisfactory. Furthermore, even at levels below the ISO threshold, vibration-induced noise in the residential dwellings will likely be an issue before the vibration becomes perceptible. As such, it is expected that complaints may arise even when vibration levels are below the ISO threshold. Vibration levels above 83dB will be perceived as a severe problem by residents.

2.5 Traffic and Transportation

2.5.1 Existing Roads and Traffic

Existing roads within the study area include:

- Leslie Street – north-south arterial roadway with four through lanes from Queen Street East to Commissioners Street
- Lake Shore Boulevard East – east-west arterial roadway with six through lanes
- Queen Street East – east-west arterial roadway with four through lanes
- Eastern Avenue – east-west arterial roadway with two through lanes
- Commissioners Street – east–west, collector

Regarding existing traffic conditions, traffic generally operates well along Leslie Street; however, higher traffic volumes exist near the Leslie Street / Lake Shore Boulevard intersection – especially during the evening rush hour. **Table 4** depicts existing traffic volumes along Leslie Street at various hours of the day.

Table 4. Existing Traffic Volumes Along Leslie Street

Section	Analysis Periods (northbound/southbound)						
	5:00-6:00 am	*7:00-8:00 am*	*8:15-9:15 am*	*3:00-4:00 pm*	*4:30-5:30 pm*	*7:00-8:00 pm*	*11:00-12:00 am*
North of Queen Street East *(one-way – northbound only)*	26/0	62/0	103/0	170/0	234/0	185/0	82/0
Queen Street East to Eastern Ave	38/43	122/159	203/262	361/190	494/260	392/207	170/152
Eastern Avenue to Plaza Entrance/ Loblaws Entrance	44/81	202/384	312/587	565/306	661/357	438/248	232/181
Plaza Entrances to Lake Shore Boulevard East	43/98	244/556	353/803	713/399	742/415	453/276	201/106
Lake Shore Boulevard to Commissioners Street	27/40	151/226	217/326	321/208	334/216	204/132	101/101

To assess existing and future conditions during peak periods, a level of service (LOS) analysis was undertaken for the key intersections along Leslie Street Highlights of the analysis include the following findings:

- There are no operational deficiencies or "problem locations" identified along Leslie Street except at the Leslie Street/Lake Shore Boulevard East intersection during the morning and evening peak periods. It should be noted that a majority of LRVs will operate during off-peak periods; and
- The key intersections at each end of Leslie Street (i.e., Commissioners Street to the south and Leslie Queen Street East to the north) operate at high LOS ("A" and "B") and with volumes well within capacity for all peak periods.

2.5.2 Existing Transit

The area south of Lake Shore Boulevard East is currently served by TTC bus route 83, which travels along Leslie Street and Commissioners Road. This bus route connects with the TTC streetcar route 501, 502 and 503 that run east-west along Queen Street East. A limited service (TTC bus route 31B) operates along Eastern Avenue.

3. The Recommended Site Layout

The proposed site of the Ashbridges Bay Maintenance and Storage Facility will provide daily maintenance, repair, painting, and other service functions for the new LRV fleet. The facility will maintain 204 LRVs and store up to 100 LRVs when the new vehicles are not in service. The majority of the LRVs will be put into service early in the morning (± 85 over a two hour period), a small number will return or depart during the day as related to peak and off peak service (± 30 in between 9:00 am to 10:00 am and 30 out between 2:00 pm to 3:00 pm), and will return during the evening as the service terminates, approximately 45 LRVs between 7:00 pm to 9:00 pm and 40 LRVs between 1:00 am to 2:00 am.

The Preferred Site Layout and its various elements are illustrated in **Figure 3**.

More specifically, the proposed design features a 22,642 m^2 building that includes:

- Ground floor – 17,441 m^2
- Second floor: administration – 2,142 m^2
- Second floor: maintenance platforms – 3,041 m^2

The site also comprises a 700 m^2 electrical substation building. The maintenance and storage facility will be a state of the art complex. The building will be architecturally pleasing as well as designed to the Toronto Green Standards. The main carhouse of the facility will have a green roof. The area immediately surrounding the site will be green space and will be developed further through a landscape design competition (including public consultation) facilitated by the City and TTC.

The shop portion of the facility is proposed to be one storey (with internal maintenance platforms and catwalks) and average 13.5 metres in height, while the office portion of the maintenance facility is to be two storeys and 9.2 metres in height. The maintenance building is generally oriented in an east-west direction.

Various servicing and maintenance activities, schedules inspections and unscheduled repairs will be performed at the site, including:

- Daily Inspection
- Sand Replenishment
- Fare Extraction
- Compressed Air Blow-Down
- Scheduled Inspections
- Corrective Maintenance/Running Repairs
- Body Repairs
- Wheel Truing
- Brake Performance Rate Test
- Daily Sweep and Dust
- Exterior and Floor Washing
- Car Interior and Undercar Cleaning
- Carbon Inspections
- Life Cycle Maintenance
- Component Changeouts
- Vehicle Repainting
- Special Work Instructions
- Graffiti Removal

Site Access and Circulation

Site access will be restricted to the existing signalized intersection at Leslie Street and Commissioners Street in an effort to limit conflicts with the Martin Goodman Trail. Vehicles will access the site through the existing driveway into the Ashbridges Bay Sewage Treatment Plant and neighbouring City works yard. LRVs access to the site

maybe located immediately north of the existing driveway. However, in an effort to optimize traffic signal operations at the Leslie Street/Commissioners Street intersection, the LRV access may be located at the signalized intersection. In addition, employees will access the parking area along a dedicated road south of the carhouse. This access route does not cross the LRV tracks. A tree-covered walkway immediately north of the parking area will provide a protected pedestrian access route to a designated crosswalk, crossing the LRV tracks and service road, to the main building entry.

Service vehicles are required to cross the LRV tracks to access the service road immediately south of the carhouse. The service road will provide access to the Materials and Procurement Loading area, Truck unloading and other required access to the carhouse, the drop-off track, the Substation Building, the outdoor storage area, and the perimeter of the storage yard. LRV operators will access the vehicles from the Operators Waiting and Assembly Room at the west end of the carhouse building. Marked paths throughout the storage yard will define the access routes for the operators and maintenance personnel accessing the yard.

Parking

Preliminary calculations indicate the need for approximately 210 parking spaces. As the maintenance and storage facility is considered a public service use, parking requirements per the zoning by-law are not applicable.

Stormwater Management Pond

A wet pond will be located within the site as the principle stormwater best management practice to achieve the City's stormwater quality requirements. The wet pond is sized to achieve 80% annual average TSS removal (MOE Enhanced water quality). The total drainage area is 8.56 and 79% impervious.

Hydro One Duct

A concrete encased duct bank is a series of electrical cables housed in round ducts (typically PVC) and encased in concrete to protect the electrical lines that are beneath the ground from damage. An existing Hydro One cable currently crosses under the northwest corner of the proposed MSF site. In order to mitigate this, the cable will require relocation. As part of the development for the facility, a new concrete encased duct bank will be constructed with an alignment that is outside of the MSF property. Following construction of the duct bank, new cabling will be installed and the tied in to the existing maintenance chambers.

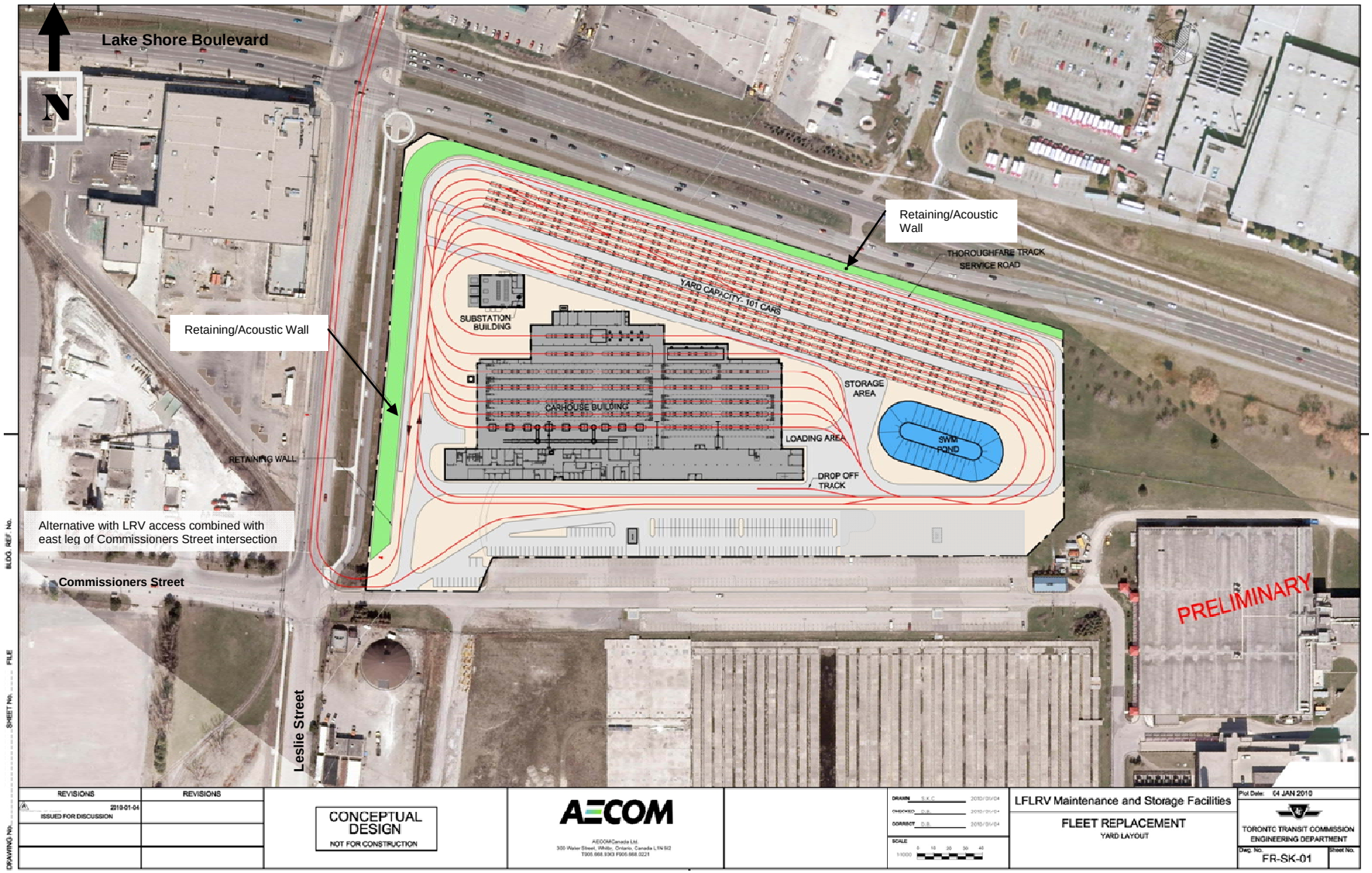


Figure 3. Ashbridges Bay MSF Site Layout

4. Effects Assessment of the Preferred Site Design

The following sections provide an overview of the potential environmental effects associated with the proposed Ashbridges Bay LRV MSF, as well as the recommended mitigation measures.

4.1 Natural Environment

4.1.1 Terrestrial Natural Heritage

Development on the site including tracks, carhouse building, substation and stormwater pond requires that all of the existing vegetation will need to be removed. The vegetation that is being removed is disturbed, of low natural significance and grows on fill soils. It does not qualify as being significant under any of the categories of the Provincial Policy Statement. As such its value in providing functional natural habitat is low and therefore no mitigation is required or recommended.

Further, trees located on the mound must be removed to accommodate the proposed development. Seven of the identified individual trees with a dbh measurement of 30 centimetres or higher will be removed. The seven removed trees within the proposed site development will be replaced with twenty-one trees (3:1 ratio) which will be distributed between the corners of the site

Stress to trees growing within the right of way from continuous exposure to salt, air pollutants, drought and nutrient deficiencies. The tree damage from the proposed adjacent construction will be minimized by cutting severed tree roots to minimize decay and entry points for disease. If roots will be exposed for more than a few hours, they should be protected from drying. Tree protection fencing should be installed as far as possible from the trunks of trees in order to preserve trees.

4.1.2 Hydrogeology and Groundwater

Groundwater

Overall, the site is not considered a significant groundwater recharge area given that it is located in close proximity to Lake Ontario in the lowest reaches of the watershed. No groundwater discharge has been observed on-site; as water levels obtained from observation wells located onsite indicate that the water table lies below the current and proposed finished ground surface. The long term operation of the MSF at this site is not anticipated to affect groundwater quality given that the majority of the area will be covered by impermeable material such as pavement and rooftops.

A number of mitigation measures are proposed to be implemented through design:

- A portion of the northwest corner of the site outside of the investigated fill area is being maintained as parkland that will not be covered by impermeable surfaces (i.e. pavement). However, given the groundwater quality at the site it is recommended that a liner to restrict the downward vertical migration of precipitation be emplaced to minimize the transportation of adversely impacted groundwater off-site.
- Since some of the impacted fill material will remain at the site following development, the use of a liner below the granular B fill is recommended during the design stage of the project. This would help to minimize the potential for the mobilization of contaminants remaining in the fill material off-site.

Stormwater Management

For the purposes of stormwater management, the site will be developed in accordance to the requirements of the Toronto Green Standard and to the requirements of the Toronto and Region Conservation Authority. Discharge rates from the site need to be controlled for up to the two year storm (post to pre) and water balance up to the reduction of 50% of the annual volume of runoff is required. The site is required to reduce the annual pollutant load of sediment up to 80% in accordance with the MOE enhanced water quality criteria.

Both stormwater quality and quantity reductions from the site will be addressed in a multi component approach utilizing low impact development (LID) BMPs and a wet pond. The implementation of LID BMPs will reduce the annual runoff volume by 50% and reduce the annual pollutant load.

As the site is located within the Lower Don Lands floodplain, proposed means to mitigate flood effects on the site will be accomplished when the final site grade is set at an elevation of 79.0 metres. The final finished grade is higher than the estimated regional flood water level of 77.4 metres.

The site drainage system will be designed to account for the partial submergence and sediment found in the Leslie Street storm sewer and Lake Shore Boulevard East storm sewer system. This will include connecting the site's storm sewer to t Lake Shore Boulevard East by matching pipe obverts in order to minimize backwater to the site. As the site is located at a much higher elevation than Lake Shore Boulevard East, the sewer system will be raised to a higher elevation to minimize the effects of back water.

It is recommended that the City periodically removes sediment from the Leslie Street and Lake Shore East Boulevard storm sewer systems to ensure that the existing sewer capacities are maintained.

4.1.3 Contaminated Soils

The contaminated nature of the soils on the site present challenges for the development of the site including:

- Transportation and disposal of excavated soils
- Health and Safety of Workers during excavation or construction
- Off-site migration of soils from surface erosion, and surface soil contamination of trucks and equipment
- Potential for dust generation from excavation and construction activities and dust migration beyond the construction zone
- Containment and treatment of groundwater may be necessary if dewatering is required
- Possible human health risk to the workers and occupants using the constructed facilities

Additional considerations are required in the development of the facility design, which must account for the extent of the contamination of the site and whether all the contaminated materials can be remediated or removed from the site prior to construction of the LRV Maintenance and Storage Facility.

Given the history and the extent of the contamination, it is probable that the majority of the fill materials used historically at this site are contaminated. It is likely not feasible to fully remediate the Site to MOE Table 3 standards. A due diligence Risk Assessment should be considered to allow contaminated materials above MOE Table 3 Standards to remain on site while protecting the ecology and human health. The Risk Assessment will

identify pathways that may adversely affect the ecology and human health and recommend Risk Management Measures to mitigate those risks. Risk Management Measures will likely include both administrative and physical controls for the site including:

- Special Health and Safety Procedures for workers
- Suitable hydraulic containment, cap or barrier to prevent contamination migration of associated vapours or dust to breathing air and groundwater to adjacent properties
- Development of site specific standards for soil and groundwater based on land use to protect ecology and human health. Some remedial actions may be necessary to reduce the contaminant concentration to below the site specific standard
- Long term monitoring of the site

The worst case soil information should be assessed by a health and safety specialist. The specialist should recommend proper personal protective equipment (PPE) and air monitoring requirements for workers during construction. Air monitoring may be required at the property boundaries of the construction site, and contingency measures should be in place to suppress dust if necessary.

Additional site controls will be required during construction to prevent the off-site migration of contaminated soils. An erosion and sediment control plan should be prepared and implemented during excavation and construction activities. Trucks and equipment should be visibly decontaminated prior to leaving the construction site. If dewatering is necessary for excavation or construction activities, the water should be contained, analyzed and treated if necessary. Discharge of water must meet municipal discharge by-laws (Toronto Municipal Code Chapter 681 - Sewers).

4.2 Social Environment

4.2.1 Land Use

The Toronto Official Plan designates the project site as Employment Area and Parks and Open Space. The majority of the project site is designated Employment, and strips of land fronting on Leslie Street and Lakeshore Boulevard East are designated Parks and Other Open Space.

The proposed development of the project site conforms to the policies of the City of Toronto Official Plan and will not require an Official Plan Amendment. In addition, the proposed development of the project site as provided on the September 25, 2009 concept site plan will not require a Zoning By-law amendment or minor variance.

4.2.2 Community Features

No displacement of existing residences, businesses and institutions are anticipated as a result of the proposed facility. Further, LRVs and vehicular traffic will cross the Martin Goodman Trail in the vicinity of the Leslie Street and Commissioners Street intersection to access the proposed site of the maintenance and storage facility. As a result, potential safety issues must be addressed to minimize opportunities for conflicts. Potential realignment of the trail at the site access point (the width and general configurations will remain unchanged) may be required in order to ensure safety of trail users. Mitigation measures will be incorporated into the trail design to control movements through the Leslie Street and Commissioners Street intersection. Additional measures to enhance trail safety may include, but would not be limited to, signal control, signs, bollards or gates, surface treatments on the path/sidewalk, flashing lights, gates, bollards, audible warnings (bells, horns) etc.

4.2.3 Cultural Heritage

No cultural heritage resources are located adjacent to the Ashbridges Bay LRV Maintenance and Storage Facility; subsequently, there are no anticipated effects.

4.2.4 Archaeology

The area for the proposed Ashbridges Bay LRV MSF has been previously disturbed, negating archaeological potential. There are no anticipated effects to any archaeological resources.

4.3 Air Quality

During construction of the facility there will be a potential for nuisance dust at the construction site, which could be tracked out onto public roads. A dust control program during construction would include dust suppression (water), road sweeping, and cleaning of vehicle tires before leaving the construction site to control track-out.

During operations, particulate generated from the compressed air cleaning will be controlled with a ventilation/dust capture and control system. Painting will be conducted inside the spray paint booth which will contain the emissions and will be equipped with an exhaust system with overspray filters and an exhaust stack. Welding stations will have fume capture and control systems. Energy conservation measures will be incorporated into the design and operation of the facility in order to reduce energy requirements and resultant combustion gas emissions. The operations of the touch-up painting of minor collision repairs, the maintenance welding and the heating of the building would be considered negligible sources of air contaminants with negligible net effects on air quality.

4.4 Interior Odour

The proposed site of the maintenance and storage facility would be located directly adjacent to the existing Ashbridges Bay Treatment Plant. The plant currently emits odours primarily emanating from its primary tanks, although the odour levels are within MOE guidelines.

The Ashbridges Bay Treatment Plant is expected to reduce odour effects in two main steps:

- Addressing aeration tank dispersion by sending air to the incinerator stack in 2010; and
- Reducing odours in two buildings (Buildings “D” and “P”) that house primary tanks in 2012 and 2014.

The first measure would be implemented in 2010, resulting in a significant drop in odours. The measures imposed on the primary tanks are anticipated to be undertaken in 2014. The results of dispersion modelling indicate that both mitigation measures will significantly reduce plant odours. However, as the maintenance and storage facility is scheduled to begin operating in 2013, and as a result some modest levels of odour may be detected until the primary tanks are fully addressed.

4.5 Noise and Vibration

4.5.1 Potential Noise Effects

The noise effect predictions were performed using the DataKustik CadnaA environmental noise prediction software. The calculations were based on established prediction methods, *ISO 9613-2: A Standard for Outdoor Noise Propagation* standard.

Table 5 and **Table 6** summarize the predicted sound levels at each receptor resulting from LRV noise at the Ashbridges Bay MSF. The data in **Table 6** identifies predicted levels without any mitigation provided by the proposed acoustic barrier. **Table 7** depicts predicted levels with mitigation provided by a 4.5 metre acoustic barrier. Noise effects that exceed the sound level limit are underlined and **bold**.

Table 5. Noise Effect Summary for Stationary Sources (*without acoustic barrier*)

Point of Reception ID	Point of Reception Description	Sound Level at Point of Reception (Leq) (dBA)			Performance Limit (Leq) (dBA)			Compliance with Performance Limit (Yes / No)
		Day	*Evening*	*Night*	*Day*	*Evening*	*Night*	
R1	Residences along Leslie Street	50	52	**59**	59	62	55	No
R2	Residences along Eastern Avenue	57	59	54	61	62	58	Yes
R3	Ashbridges Bay Marina	41	45	45	50	45	45	Yes
CR4	Tommy Thompson Park	**54**	N/A	N/A	50	N/A	N/A	No; however, R4 is not considered a sensitive receptor

Table 6. Noise Effect Summary for Stationary Sources (*with 4.5 metre acoustic barrier*)

Point of Reception ID	Point of Reception Description	Sound Level at Point of Reception (Leq) (dBA)			Performance Limit (Leq) (dBA)			Compliance with Performance Limit (Yes / No)
		Day	*Evening*	*Night*	*Day*	*Evening*	*Night*	
R1	Residences along Leslie Street	44	49	53	59	62	55	Yes
R2	Residences along Eastern Avenue	47	54	49	61	62	58	Yes
R3	Ashbridges Bay Marina	41	45	45	50	45	45	Yes
CR4	Tommy Thompson Park	**54**	N/A	N/A	50	N/A	N/A	No, however, R4 is not considered a sensitive receptor

The predicted noise effect at each receptor, shown in **Table 5 and 6**, is dominated by wheel screech sound, originating from LRV travelling along sharply curved sections of track. There is a 4dB excess of the MOE limits at receptors R1 and CR4 during the night-time with no acoustic barrier implemented. With the exception of receptor CR4, the predicted effect during all time periods is in compliance with the MOE sound level limits, provided that the 4.5 metre acoustic barrier is constructed. In this scenario, the predicted 4dB excess remains for receptor CR4. However since the park is not considered a sensitive receptor as per MOE, no noise mitigation is recommended.

During operations, noise effects will be mitigated by an acoustic barrier to be installed along the north and west borders of the site. As well, wheel screech could be mitigated through the use of turning enclosures and track-based technologies. With these mitigation measures, the predicted sound levels at each sensitive receptor around the site are predicted to be below applicable MOE sound level limits. If the selected mitigation measures for wheel screech prove less effective than anticipated, TTC is committed to investigating further mitigation measures.

It is anticipated that there would be potential short-term noise related effects due to construction. These effects will be short term and will be mitigated by standard mitigation measures and compliance with City of Toronto Noise By-law No. 111-2003 during construction.

4.5.2 Potential Vibration Effects

For both stationary and transportation sources, the vibration effect predictions were based on empirical data collected from previous projects involving legacy TTC Streetcars in the area surrounding the proposed MSF track expansion. Based on the collected data, the dominant energy produced by LRV vibrations is in the 40 to 50 Hz frequency range. The new LRVs are expected to only produce significant vibration levels within a distance of approximately 20 to 40 metres from the centre of the tracks. This assumes that the track within the MSF is properly maintained with joints that are in good condition.

The closest sensitive receptor to vibration for the proposed MSF is located approximately 240 metres from the closest track. As such, no significant stationary source vibration effect is expected at any receptor in the area. **Table 7** summarizes the results of the stationary source vibration impact predictions.

Table 7. Vibration Effect Summary for Stationary Sources

Receptor	Vibration Impact (dB re 10 nm/s)	Vibration Limit (dB re 10 nm/s)	Compliance?
All	<83	83	Yes

With regard to vibration, LRVs only produce significant vibration levels within a distance of approximately 20 to 40 metres. The closest sensitive receptor is located at a distance of approximately 80 metres. Therefore, no significant vibration affects are expected at any receptor.

4.6 Traffic and Transportation

The Ashbridges Bay LRV MSF will accommodate approximately 100 LRV with a potential of 85 streetcars in service at any one time. The LRVs are intended to provide revenue service along Queen Street East, and will enter into service from the facility via Leslie Street northbound early in the morning and will return to the facility via Leslie Street southbound primarily during the mid to late evening. That section of Leslie Street that the LRVs will operate on is not part of a TTC revenue service route; therefore, its use will be limited to trips to and from the maintenance and storage facility. LRV access to the facility will be provided via tracks located along the northern leg of the Leslie Street/Commissioners Street intersection, and the southbound to eastbound left turn movement (entering the facility) and the westbound to northbound right turn movement (exiting the facility) will be part of the intersection traffic control (signalized intersection).

Approximately 470 employees will work three shifts at the MSF, with the majority of workers (200) employed during the day. The shift times will start at 7:00 a.m., 3:00 p.m., and 11:00 p.m., with corresponding end times approximately eight hours later. Employee vehicular access for the facility will be provided via Commissioners Street east of Leslie Street. The intersection currently provides access to the City of Toronto Water Treatment Plant.

The majority of the LRVs will operate early in the morning (± 85 over a 120 minute period), a small number will return or depart during the day as related to peak and off peak service, and will return during the evening as the service ends.

The following mitigation measures may be required to alleviate circulation and access issues at the proposed MSF site, as well as at the Leslie Street / Lake Shore Boulevard intersection:

- Adjust signal timings to accommodate the higher traffic volumes within the study area; and
- Install LRV detection equipment to actuate any special signal phases or to provide longer green extensions to expedite LRV travel through the Leslie Street / Lake Shore Boulevard intersection.

- Extend storage lane lengths for the northbound left turn lane at Lake Shore Boulevard.
- Minor widening of Leslie Street at Commissioners Street to accommodate an exclusive southbound left turn lane.

5. Recommended Connecting Track on Leslie Street

5.1 Connecting Tracks Route Options

A total of nine connecting track route options were evaluated through a detailed screening process in order to determine the most feasible route to connect the Ashbridges Bay LRV MSF to the existing streetcar network.

The nine routes considered in the evaluation (see **Figure 4**) are described as follows:

- **Coxwell Avenue / Lake Shore Boulevard / Leslie Street** (approximately 1.95 km) – form Queen Street East south to Lake Shore Boulevard East along Coxwell Avenue, west to Leslie Street and south to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Connaught Avenue / Eastern Avenue / Leslie Street** (approximately 1.47 km) – from Queen Street East south to Eastern Avenue, west to Leslie Street and south to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Connaught Avenue / Eastern Avenue / Woodfield Road/ Lake Shore Boulevard East** (approximately 1.65 km) – from Queen Street East south to Eastern Avenue, east to Woodfield Road, south to Lake Shore Boulevard East, west to Leslie and south to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Connaught Avenue / Eastern Avenue / Knox Avenue** (approximately 0.82 km) – form Queen Street East south to Eastern Avenue, west to Knox, south to Lake Shore Boulevard East, west to Leslie and south to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Leslie Street** (approximately 0.81 km) – from Queen Street East to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Carlaw Avenue / Commissioners Street** (approximately 1.94 km) – south from Queen Street East and east along Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Carlaw Avenue / Lake Shore Boulevard East** (approximately 1.7 km) – south from Queen Street East, east along Lake Shore Boulevard East and south on Leslie Street to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Pape Avenue / Eastern Avenue / Leslie Street** (approximately 1.6 km) – south from Queen Street East, east on Pape Avenue and south on Leslie Street to Commissioners Street, connecting to the Ashbridges Bay LRV MSF.
- **Cherry Street / Commissioners Street** (approximately 3.71 km) – south from the existing King Street streetcar service along Cherry Street and east along Commissioners Street, connecting to the Ashbridges Bay LRV MSF.

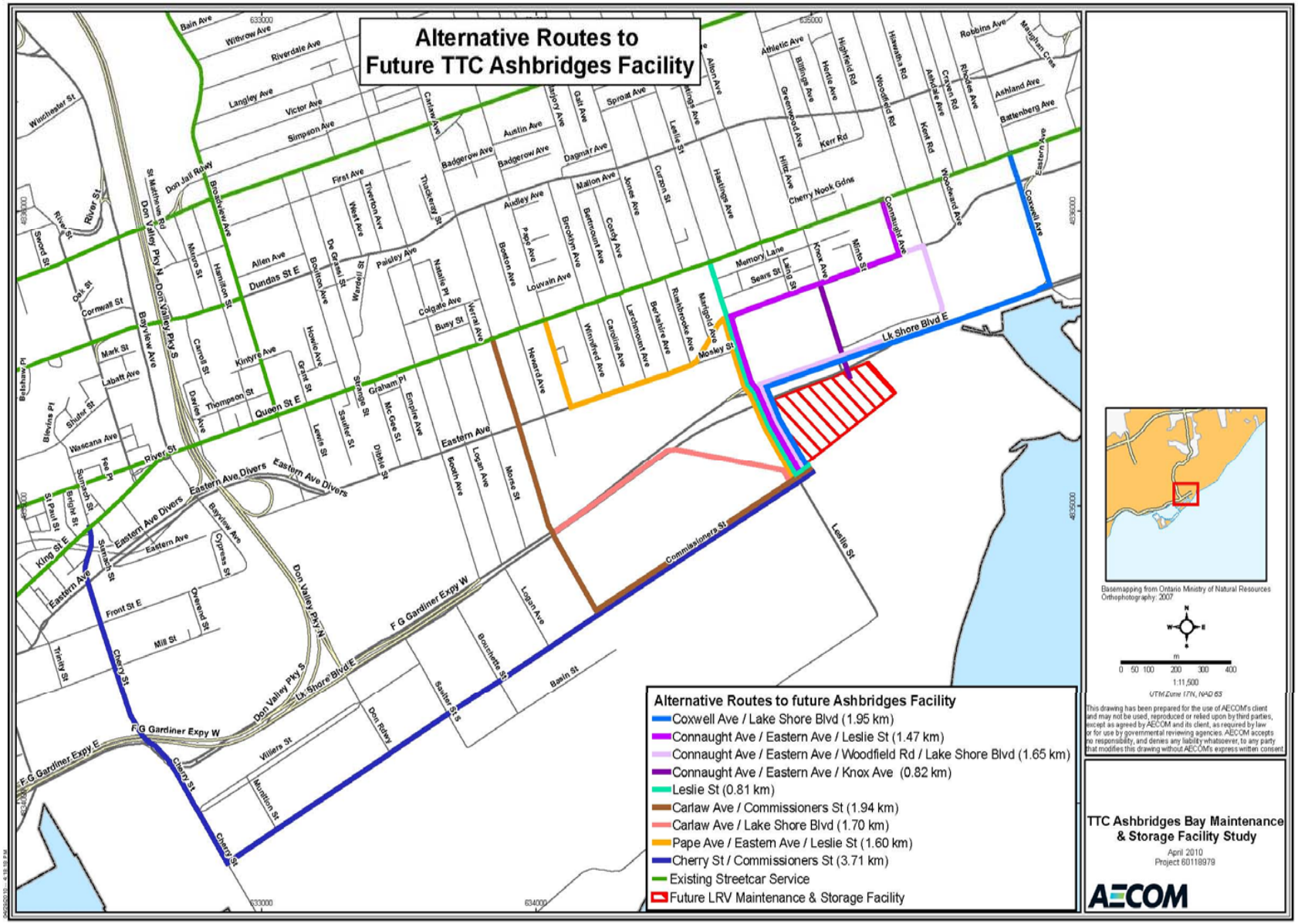


Figure 4. Alternative Routes to Future Ashbridges LRV MSF

The connecting track route options were evaluated based on the following factor areas and criteria:

- **Access and Property Effects**
  - Number of access points traversed (i.e., driveways, parking lots, etc.)
  - Number of single family dwelling units adjacent to the route
  - Number of multi-family dwelling units adjacent to the route
  - Potential displacements or property effects;
- **Pedestrian /Cycling**
  - Key pedestrian locations (excluding trails);
  - Potential effect on the Martin Goodman Trail;
  - Potential effect on other trails, on-street cycling lanes;
- **Land Use / Planning**
  - Existing land use designation;
  - Projected new development;
  - Consistency with the City of Toronto Official Plan;
- **Transit/ Traffic Operations**
  - Route length (km);
  - Existing roadway width(s);
  - Right-of-way width(s);
  - Number of travel lanes;
  - Roadway(s) classification;
  - Street parking (times and restrictions);
  - Potential corridor for revenue service;
  - Estimated travel time between Ashbridges Bay MSF and existing streetcar service;
  - Existing traffic conditions;
  - Potential operational challenges, number of signalized intersections traversed;
  - Ability to construct connecting tracks by 2013;
- **Social, Cultural and Ecological Factors**
  - Community facilities adjacent to the route;
  - Number of cultural and heritage features adjacent to the route (identified in the City of Toronto's Inventory of Heritage Properties);
  - Adjacent sensitive environmental features;
- **Economic/Financial Factors**
  - Capital costs
  - Operation and maintenance costs

5.2 Technically Preferred Connecting Track Option – Leslie Street

The selection of the connecting track routes was guided by the "Reasoned Argument Approach". The Reasoned Argument Approach provides a clear and thorough rationale of the tradeoffs between the various evaluation factors and criteria and the reasons why one option is technically preferred over another.

The selection of the recommended connecting tracks route was guided by the following key issues:

- No property displacements and limited community impact
- Cost-effective
- Operates on roads that are suitable for higher order transit service
- Potential future revenue transit corridor
- Can be built in 2013 to support new Ashbridges Bay LRV MSF
- Compliance with the City of Toronto Official Plan

In evaluating the nine connecting track route options, a mixed-traffic Leslie Street route was identified as the technically preferred route as it was the most balanced and reasonable options relative to potential community, traffic and economic considerations.

Of the nine options, Leslie Street provides the most direct route between the future Ashbridges Bay maintenance and storage facility and existing streetcar service along Queen Street East. This would result in lower capital and operation and maintenance costs associated with construction and operation of the track. Most of the other track route options would incur expenditures nearly twice the cost of Leslie Street.

In addition, the Leslie Street track option will have minimal effects on traffic operations and no effects on on-street parking. In its existing and future configurations, Leslie Street is designed to accommodate modest traffic levels and higher-order transit such as light rail - which is also consistent with the City of Toronto's Official Plan, September 2007. Leslie Street does have its operational challenges, specifically queuing at the Lake Shore Boulevard East / Leslie Street intersection, which can be addressed by transit signal priority or other measures. It is important to recognize that the majority of the LRVs will operate during off-peak periods, thus traffic effects would be minimized.

Overall, Leslie Street was selected as the technically preferred connecting track route as it would experience minimal operational challenges, enable more efficient service between the proposed maintenance and storage facility and existing streetcar network, and would result in reasonable capital and maintenance costs.

5.3 Preferred Connecting Track Design – Mixed Traffic

Two potential design options were considered for the connecting track on Leslie Street; a mixed-traffic design or a partially-exclusive lane design option that would physically separate LRV operations from automobile travel. Guided by the Reasoned Argument Approach, a mixed-traffic scenario was identified as the technically preferred design to accommodate LRVs along Leslie Street. The mixed-traffic scenario demonstrated clear advantages from the exclusive lane option, including:

- Allowing four lanes of general purpose traffic to operate along Leslie Street at all hours of the day; the exclusive lane option would restrict travel on two lanes, resulting in significant traffic delays along Leslie Street and parallel north-south roads – even during off-peak periods.
- Ensuring all on-street parking on Leslie Street would be maintained; the exclusive lane option would require the displacement of all parking on Leslie Street.
- Ensuring access to all driveways and parking lots is maintained; the exclusive lane option would eliminate access from the opposite lane (no left turns).
- Preserving all left-turn operations; the exclusive lane option would prohibit left turns from Leslie Street to Mosley Street, Sears Street and Memory Lane.

The connecting tracks along Leslie Street would pass through an entirely urban area and no effect on terrestrial habitat is anticipated.

5.3.1 Hydrogeology and Groundwater

Construction of the tracks will not occur below the water table, and there will be no change to the overall footprint of Leslie Street. Thus, no significant changes to groundwater recharge, groundwater flow, groundwater quality and aquifer/wells are anticipated with the preferred Leslie Street connecting track design.

5.3.2 Stormwater Management

The catchment area will not increase in size and the level of imperviousness will not change. Thus, no potential effects to stormwater quantity are anticipated as a result of the track connection.

5.3.3 Contaminated Soils

There is the potential for soil contamination resulting from twelve identified potential sources along Leslie Street and Queen Street East. If contaminated soils are identified within the construction limits, the excavated contaminated soils will be removed and disposed at a facility licensed to accept the waste. If soils contain hazardous waste, stabilization may be applied before off-site disposal. Contamination identified during the preliminary soil investigations within the construction limits will be assessed by a health and safety specialist to determine if special health and safety procedures and site controls are required.

5.4 Social Environment

5.4.1 Community Features

No displacement of existing residences, businesses and institutions are anticipated as a result of the preferred Leslie Street connecting track design.

5.4.2 Cultural Heritage

Since the preferred mixed-traffic Leslie Street connecting track design will be confined to the existing road right-of-way, between Lakeshore Boulevard and Queen Street, there are no anticipated effects on cultural heritage resources.

5.4.3 Archaeology

There are no anticipated effects to any archaeological resources associated with the preferred connecting track design.

5.5 Air Quality

During construction of the connecting tracks, there is a potential for nuisance dust as a result of material handling and construction site track-out onto the public roads. Mitigation of dust during construction would include dust suppression (water), road sweeping, and cleaning of vehicle tires before leaving the construction site to control track-out. During operation of the tracks, there will be no potential air quality effects, as the electric LRVs have no equivalent tailpipe emissions.

5.6 Noise and Vibration

5.6.1 Potential Noise Effects

Sound level calculations were performed in accordance with the Ministry of Environment Guidelines outlined in Reference 4 and by the Guidelines of the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) using STAMSON prediction software. A speed of 40 km/hr and an existing streetcar, vehicle type of CLRV, was used in the prediction calculations. It should be recognized that improving on the existing streetcar design, new LRVs will be equipped with bogie skirts around the wheels to reduce wheel noise. As well, the new LRVs will have a semi-soft wheel which helps reduce the transmission of noise and vibration into the ground.

Table 8 summarizes the impact at the nearest receptors resulting in LRVs travelling along Leslie Street. Noise effects that exceed the sound level limit are underlined and **bold**.

Table 8. Noise Effect Summary for Transportation Sources

	Noise Effect (Leq) (dBA)	Sound Level Limit (Leq) (dBA)
Receptor ID	R1	
Description	Residences along Leslie Street	
Day (0700-1900)	61	63
Night (2300-0700)	67	59
Compliance (Yes / No)	No	

The predicted night time effect of LRVs at receptor R1 exceeds the sound level limits by 8dBA. Thus, receptors along Leslie Street located within seven metres of the proposed streetcar track centreline will observe a noise impact higher than the sound level limit at night. At distances of 15 m from the proposed streetcar track centreline, predicted night time noise effects would exceed the sound level limit by 5 decibels and 2 decibels at a distance of 30 m from the centreline. As described in the TTC/MOEE protocol, mitigation should be considered for impacts exceeding the sound level limits by greater than 5dBA where it is determined to be technologically, economically, and administratively feasible to implement.

Measures will be implemented to avoid, minimize or mitigate adverse effects and noise generated by the LRV operations will be attenuated, if required, to meet MOE standards.

5.6.2 Potential Vibration Effects

The centreline of the LRV track running along Leslie Street is expected to run within 7 metres of receptors R1. The transportation source vibration impact is predicted to be 88dB (re 10 nm/s) at 50Hz. This exceeds the limit defined in the ISO-2613-2 standard by 5dB. Receptors located along Leslie Street within 15 metres of the proposed LRV track centreline will be exposed to vibration levels exceeding the ISO sound level limit. At further distances, the occasional streetcar pass-by may generate vibration levels above the ISO limit in the event of a streetcar that requires maintenance is still operating in service. The variations between the ISO sound level limit and the projected vibration effects from different distances are summarized below:

- Day or night, the projected vibration effects would exceed the MOE limits by 5 decibels from 7 metres away
- Day or night, the projected vibration effects would fall just below the MOE limits from 15 metres away
- Day or night, the projected vibration effects would fall below the MOE limits from 30 metres away

Similar to the mitigation of noise effects, potential vibration effects from the operation of the LRVs will be attenuated, if required, to meet MOE standards.

It should be noted that detailed analysis of any mitigation measure is recommended to ensure that the vibration limits will be achieved. The feasibility of the proposed mitigation measures should be assessed further in conjunction with the track and structures departments of the TTC.

Alternatively, other mitigation measures should also be explored provided that the acoustic effectiveness is determined prior to installation. Administrative mitigation options may also be considered in conjunction with the aforementioned measures, such as a speed limitation which would further reduce the potential for vibration effect. Other additional mitigation options include the use of continuous welded track and placing any necessary joints away from residential receptors along Leslie Street.

With appropriate mitigation measures in place, the net effects on residences along Leslie Street from noise and vibration associated with the proposed LRV tracks will comply with applicable standards.

5.7 Traffic and Transportation

Overall, there are minimal operational deficiencies anticipated for Leslie Street during times when the LRVs will be most active along the corridor (outside of the morning and evening rush hour periods). The Leslie Street/Lake Shore Boulevard East intersection is projected to continue to operate at acceptable levels of service (LOS “C”) during these time periods. The intersections at each end of the service line (i.e., Commissioners Street and Queen Street East) are projected to continue to exhibit good traffic flow.

The following mitigation measures should be explored further to enhance the safety of Leslie Street during the operation of the LRVs, including:

- Adjustments to signal timings to accommodate LRV operations and higher traffic volumes;
- Streetcar detection equipment to actuate any special signal phases or to provide longer green extensions for LRVs to clear major intersections.
- Extend storage lane lengths for the northbound left turn lane at Lake Shore Boulevard.
- Minor widening of Leslie Street at Commissioners Street to accommodate an exclusive southbound left turn lane.
- Potential realignment of the Martin Goodman trail at the site access point (the width and general configurations will remain unchanged) may be required in order to ensure safety of trail users. Mitigation measure will be incorporated into the trail design to control movements through the Leslie Street and Commissioners Street intersection. Additional measures to enhance trail safety may include, but would not be limited to, signal control, signs, bollards or gates, surface treatments on the path/sidewalk, flashing lights, gates, bollards or audible warnings (bells, horns).

With the appropriate measures in place, traffic along Leslie Street will continue to operate well at hours when most of the LRV operate to and from the proposed MSF site.

6. Consultation

TTC engaged residents, public and private agencies, and other interest groups during the study as well in the pre-planning stage prior to study commencement. Project information was posted on a web site, and a dedicated TTC Community Liaison Officer actively participated in the study process. TTC hosted one Public Open House after the study had officially commenced. During the pre-planning stage, TTC held two workshops with residents and stakeholders to gauge their interest in the study, discuss the Transit Project Assessment Process in more detail, and present information on the need for the new MSF and low-floor LRVs.

Below is a summary of the consultation that occurred during the pre-planning stage.

6.1 Public Consultation Activities

6.1.1 Project Web-site and TTC Community Liaison Officer

TTC managed a dedicated website (www.toronto.ca/involved/projects/lrv) designed to keep the public up-to-date on the latest developments of the Ashbridges Bay LRV MSF, provide notices of upcoming workshops or other public meetings, serve as a virtual library for materials presented at the public events, and provide a means for the public to comment on the project.

A Community Liaison Officer served as the direct link to the project team, and assisted residents and stakeholders with information relevant to the project.

6.1.2 Public Open House – Pre-Consultation Activities – February 18, 2010

The City of Toronto and the Toronto Transit Commission (TTC) hosted a Public Open House on February 18, 2010 at the EMS Academy (895 Eastern Avenue), to gather feedback on preliminary designs for the MSF and connecting track to link the facility to Queen Street East. The Public Open House was a follow-up to the three June 2009 public events which were held to present the site options identified for the proposed facility. The February 18 Open House introduced the proposed MSF project, including potential layouts, existing site conditions and criteria to be used in the future Transit Project Assessment Process.

Methods of notifying the public about the February 18 Public Open House included:

- Posting on the project website;
- 18,141 flyer notices were delivered within the area of Kingston Road to Gerrard Street to the north, Lee Avenue to the east, Logan Avenue to the west, and south to the Lake;
- 400 notices were mailed to individuals who requested to be notified with further information on the MSF. Those individuals who provided email addresses were emailed notification of the event, as well (approximately 200 individuals);
- Direct mailing to all federal, provincial and municipal agencies, municipal councillors, and other interested stakeholders in advance of the Public Open House on February 5, 2010;
- Publication in the *Beaches Mirror* (February 4, 2010);

Over the course of the Open House, a total of 119 (signed in) participants attended the meeting and 22 comment forms were submitted. The public was also able to provide comments online or via telephone. Between February 18 and March 15, TTC received 103 comments via email and telephone.

Key issues and comments raised included the following:

- Site should be maintained for Ashbridges Bay Treatment Plant purposes
- Opposition to the proposed location of the Ashbridges MSF.
- Support for the relocation of the MSF site to the south of Lake Shore.
- General opposition and concern - from Leslie Street residents in particular - regarding non-revenue streetcar track route on Leslie Street to the Maintenance and Storage Facility (MSF).
- Recommendation from Leslie Street residents to evaluate alternative track connections.
- Concern regarding the frequency of trips by LRVs using Leslie Street to access the MSF during the day and night.
- Preference of Connecting Track Option 1 (mixed traffic) over Option 2 (exclusive LRV lane).
- Concern that this project will lead to an increase in traffic throughout the neighbourhood.
- Concern about the potential increase in noise and vibration due to new tracks, cars and MSF.
- Concern for potential loss of street parking and green space.
- Concern about environmental effects of the new MSF site and additional LRVs.
- Request for cycling lanes between Queen Street East and Lake Shore Boulevard East., including improved bike connection to the Martin Goodman Trail.
- Need to include safe walking and cycling connections from Dundas Street to the Martin Goodman trail, Tommy Thompson Park and to the retail destination at Lake Shore and Leslie Street
- Concern about potential decrease in property values along Leslie Street.
- Concern that some stakeholders did not receive notice of the public meeting.
- Preference for a traditional public meeting and Q&A format.
- Preference for Ashbridges site as opposed to the Eastern Avenue site.

6.1.3 Public Open House # 2 April 8th

The City of Toronto and the Toronto Transit Commission (TTC) hosted a Public Meeting on April 8th at the EMS Academy (895 Eastern Avenue, Toronto), to discuss the route to be taken by the new streetcars from the Queen Street East tracks to the Ashbridges Facility. The Public Meeting was a follow-up to the February 18th, 2010 open house where concerns were expressed by local residents regarding the use of Leslie for the connection track. A presentation was given by TTC which summarized the analysis undertaken to assess the connection track route options. Participants were invited to write down their ideas and opinions on comment forms, located within a booklet that was distributed to the public as they arrived to the meeting. The booklet detailed information on the project such as: project overview, new vehicles (noise reduction methods: wheels, wheel-axle assembly, and suspension), site selection process and routing options.

A total of 257 (signed in) participants attended the meeting and 59 comment forms were submitted. Between April 8 and 20, TTC received 35 comments via email and telephone, many of which were questions, comments and/or requests to be added to the mailing list.

Methods of notifying the public about the April 8th Public Open House included:

- Posting on the project website;
- 18,141 flyer notices (English and Chinese) were delivered within the area of Kingston Road to Gerrard Street to the north, Lee Avenue to the east, Logan Avenue to the west, and south to the Lake;
- 400 notices were mailed and/or emailed to all who expressed interest to date;
- On March 31 and April 1, 2010; E-mail and door to door delivery of additional Meeting Notice with the alternative Route Map (English and Chinese) to all potential routes and project e-mail list;
- Publication in the *Beaches Mirror* (March 25, 2010);
- Publication in the Metro on Tuesday, March 30, 2010;
- Community postering(English and Chinese) on March 24, 2010 distributed on Queen Street East from Pape to Coxwell;
- Mailing of 2470 meeting notices to all potential routes.

Key issues and comments raised included the following:

- **Routing Options**
  - Many comments were opposed to the Leslie Street and Connaught Avenue routing options. Opposition was due to various factors such as: traffic management, safety concerns, residential disturbances, noise and vibration levels from transit vehicles and loss of parking/front yard impacts (which are specific to the Connaught option)
  - Those who favoured the Leslie Street routing option included the following: less residential disturbance compared to other routes, cost effective and a useful passenger / revenue route.
  - Other favourable routing options included the Coxwell Avenue and Commissioners Street routing options. Reasons were: less residential disturbance compared to other routes, better TTC access to the Beaches. Also, specific to Commissioners Street, many comments urged TTC to find a solution to going over Cherry Street lift-bridge at Keating Channel as this would be a good option.
  - In general, comments indicated that the route with the least impacts to residents makes the most sense.
- **Maintenance and Storage Facility Location**
  - Many comments were opposed to the Lake Shore and Leslie location. The main reason indicated that the opposition was due to the residential setting.
  - Many comments indicated that the site should be located somewhere on Unwin Street.
- **Consultation and Project Analysis**
  - In regards to project analysis, project thinking is short-term, but it requires a long-term vision.
  - Creativity is necessary to find an optimal solution.
  - Assessment is not objective but is rather being conducted to suit the TTC's plans.
  - Justifications for project decisions are weak, since they seem to be dictated only by costs.
- **Environment and Safety Concerns**
  - Many felt that access to the waterfront parks and bike trail would be obstructed and that the TTC should not use green space for a TTC yard.
  - Concerns regarding pedestrian and cyclist safety at Leslie and Lake Shore.
- **Traffic and Other Concerns**
  - Traffic congestion concerns due to increased streetcar traffic.
  - Noise and vibration concerns.
- **Support**

- Although there are no optimal solutions, the project is important for the greater public good.
- General praise for LRV design.

6.2 Key Stakeholder, Agency and Utility Consultation Activities

Consultation was carried out with a number of key stakeholders, agencies and utilities throughout the study process through meetings and written correspondence. In addition, all relevant stakeholders, agencies and utilities were circulated invitations to the Public Open Houses and will be notified of the Notice of Commencement, and Notice of Completion. The following provides a summary of the agencies contacted.

- Bell Canada
- Canadian Environmental Assessment Agency
- City of Toronto – City Planning,
- City of Toronto – Parks, Forestry and Recreation
- City of Toronto – Public Health
- City of Toronto – Real Estate
- City of Toronto – Toronto Fire Department Services
- City of Toronto – Transportation Planning
- City of Toronto – Transportation Services
- City of Toronto – Urban Forestry
- City of Toronto Police Services
- Emergency Medical Services
- HydroOne
- Ministry of Culture
- Ministry of Energy and Infrastructure
- Ministry of Municipal Affairs and Housing
- Ministry of Natural Resources
- Ministry of the Environment
- Ontario Provincial Police
- Rogers Cable
- Toronto and Region Conservation Authority
- Toronto Cycling Committee
- Toronto Hydro-Electric System Limited
- Toronto Pedestrian Committee
- Loblaws

6.3 Aboriginal Communities Consultation

The following Aboriginal communities, as identified by the MOE, were consulted for the Ashbridges Bay LRV MSF:

- Alderville First Nation;
- Beausoleil First Nation;
- Chippewas of Georgina Island First Nation;
- Chippewas of Rama First Nation;
- Mississaugas of Scugog First Nation;

- Curve Lake First Nation;
- Hiawatha First Nation;
- Mississaugas of the New Credit First Nation; and
- Moose Deer Point First Nation.

7. Other Permits and Approvals Required

A number of permits and approvals were required for the proposed Ashbridges Bay Fleet LRV Maintenance and Storage Facility. The required permits and approvals, along with the anticipated submission date, are indicated in **Table 9** below.

Table 9. List of Required Permits and Approvals

Approval/Permit Name	Purpose of the Approval/Permit
Planning Approval/Notification	Ensure the City is aware of the project
Tree Removal Permit (Urban Forestry)	Required for the removal of trees from the property
TRCA Permit /Approval	Property lies in a floodplain
Certificate of Approval	Required for site remediation
Notice of Project	Required by the MOL
Roadway Occupancy Permit	Required to repair damaged caused to the city roads
Signage Permit	Required by the City
Site Plan Approval	Method of reviewing design and technical aspects of a proposed site to ensure a quality product is being developed
TRCA Fill Permit	Portion of the property is within a floodplain
Building Permit	Required by the City
Water-Sanitary Connection	Required for site operations
Road Cut Permit	Required by the City
ESA Permit	Required for inspections to occur
Utility Encroachment Agreement	Formal acknowledgement by the city to all the structure to remain as is
MOL Pre Start Health and Safety Review	Required prior to equipment start-up

8. Commitments to Future Work

8.1 Hydrogeology and Groundwater

<u>During Design</u>

To minimize the potential mobilization of existing adversely effected soil and groundwater, the possibility of using a clay liner below the Granular B fill is recommended to limit the amount of recharge water that contacts the remaining affected fill and minimize potential migration of affected groundwater off-site.

<u>During Construction</u>

Prior to the construction phase, all required permits related to groundwater or groundwater taking (i.e., Permit to Take Water), must be obtained. All discharge water generated during construction dewatering should be analyzed for parameters of concern and compared with municipal discharge by-laws (Toronto Municipal Code- Chapter 681-

Sewers) prior to discharge off-site in order to determine whether treatment of the discharge water and/or storage and removal of adversely affected water is required. In addition, all monitoring wells and boreholes that are not being used for monitoring or may be destroyed during construction must be decommissioned in accordance with O'Reg 903.

During Operation

During operation of the site, Best Management Practices (BMPs) for road salt application should be followed. All runoff generated within the proposed rail car storage area and maintenance facility should be analyzed for parameters determined to be of concern prior to discharge from the stormwater pond.

8.2 Contaminated Soils

During Design

Contaminated soils may influence the design of the facility and will most likely alter the construction procedures of the facilities. A Due Diligence Risk Assessment should be considered to protect the ecology and human health and the Risk Management Measures identified will have to be included into the design of the facility. A clean soil cap will likely be part of the solution to mitigate dermal contact and ingestion of affected materials. If VOCs are identified as a risk, the soil cap or building(s) will likely require a vapour barrier and/or a venting system to mitigate breathing air risk for the facility users. Some remedial measures may be required prior to construction (such as additional excavation) depending on the risk levels and level of contamination in the sub-surface. Additional schedule and budgets should be considered to include a Risk Assessment and the implementation of remedial and risk management measures.

During the design stage, methods to address the potential build up of methane gas on the site, such as installing a venting system will be investigated to mitigate the potential impact.

During Construction

The Risk Assessment will likely not be complete prior to excavation of the mound material scheduled in 2010. The worst case soil information should be assessed by a health and safety specialist. The specialist should recommend proper personal protective equipment (PPE) and air monitoring requirements for workers during construction. Air monitoring may be required at the property boundaries of the construction site, and contingency measures should be in place to suppress dust if necessary.

Additional site controls will be required during construction to prevent the off-site migration of contaminated soils. An erosion and sediment control plan should be prepared and implemented during excavation and construction activities. Trucks and equipment should be visibly decontaminated prior to leaving the construction site. If dewatering is necessary for excavation or construction activities, the water should be contained, analyzed and treated if necessary. Discharge of water must meet municipal discharge by-laws (Toronto Municipal Code Chapter 681 - Sewers).

Consideration should be given to ensuring that contractor(s) has the experience and qualifications to work on contaminated sites to protect the health and safety of the workers and the public. Soil imported to the site should meet Table 1 Standard from the *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (Ministry of the Environment, July 27, 2009).

During Operation

Future commitments during operation of the facility will depend on the outcome of a Risk Assessment. It is likely that regular inspection of the soil cap will be necessary for the lifetime of the facility. Depending on the specific contaminants and risk, indoor air monitoring may also be required.

8.3 Archaeology

The Stage 1 archaeological assessment report should be submitted to the Ministry of Culture to ensure that any concerns may be addressed prior to the design phase.

8.4 Noise and Vibration

During Construction

The following mitigation measures will be implemented during construction:

- Ensure there is no excessive idling of construction equipment;
- Ensure all construction equipment is property maintained and complies with MOE guidelines;
- Ensure noise muffling devices are properly installed;
- Ensure all construction activities comply with City of Toronto Noise By-law No. 111-2003;
- As per the City of Toronto Noise By-law No. 111-2003, ensure all construction activities only occur between 7:00 am and 7:00 pm, Monday to Friday, and between 9:00 am and 7:00 pm on Saturdays, Sundays and statutory holidays. If construction is to take place outside of these times, an exemption must be sought prior to commencement of construction; and
- Consider additional noise control measures and implement as appropriate should noise related complaints arise during construction.

During Detailed Design

During the detailed design stage, mitigation measures will be developed to minimize the impact of wheel screech on sensitive receptors. Mitigation approaches that can accomplish this include: Turning enclosures and track-based technologies. If selected mitigation measures prove less effective than anticipated, TTC is committed to investigating further mitigation measures.

Measures will be implemented to avoid, minimize or mitigate adverse effects of the project, if required, to meet government agencies regulations or standards.

8.5 Traffic Management

A traffic management plan will be developed during the detail design stage of the project. The effectiveness of these mitigation measures will be further evaluated during construction of the facility and the connection track and when the Ashbridges Bay LRV MSF is operation and modified as necessary.

8.6 Property Requirements

As of May 10, 2010, no permanent property requirements have been identified or are anticipated for the construction of the facility of the non-revenue track connection. Any temporary property requirements for construction of the Ashbridges by MSF and/or connection track will be confirmed during design.

8.7 Summary

The TTC and City have worked with the technical agencies to address environmental concerns and issues associated with the Ashbridges Bay MSF and connection track. The potential effects on traffic and transit operations, the natural environment, the socio-economic environment (including noise and vibration, traffic and air quality) and cultural environment (including archaeology and built heritage), have been identified and assessed along with practical mitigation measured to minimize negative effects. The design process may lead to refinement or modification of the proposed conceptual design. It is anticipated that such changes will be minor and will not alter the original project intent or commitments to the public and involved agencies.

Through the implementation process, construction methods and staging will be evaluated to minimize effects to the surrounding properties. This will include mitigation measures to address traffic staging, noise, air quality and other potential effects (if any). Ongoing liaison with technical agencies and the community is anticipated. The TTC and City of Toronto will comply with regulatory government agencies' regulations, standards and directives.