

Existing and Future Conditions

3 EXISTING AND FUTURE CONDITIONS

In order to generate the design alternatives and assess the potential impacts due to the SRT Extension, all significant features and sensitive areas along the corridor were identified. Data sources included field surveys, previously published and unpublished studies, governmental and technical agencies. This data collection was used to summarize existing conditions, as well as to investigate how these conditions would be likely to change in the future. The natural resources section includes designated natural areas, vegetation, fisheries, wildlife, geology, ground water and surface water. The emissions section includes air quality, noise, vibration and stray current. The Socio-economic section includes land use, local parks and community facilities, property, utilities, archaeology and cultural heritage. The final section is transportation which includes automobile traffic and transit service, pedestrian and cyclists, navigable waterways and emergency services and access.

Each section is then separated into existing and future conditions sections which discuss each of the environmental features mentioned above in a more detailed manner. The study area for this Transit Project Assessment consists of three major zones for each of the project components. As illustrated in Exhibit 3-1, the study limits for each section are as follows:

Kennedy Station

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

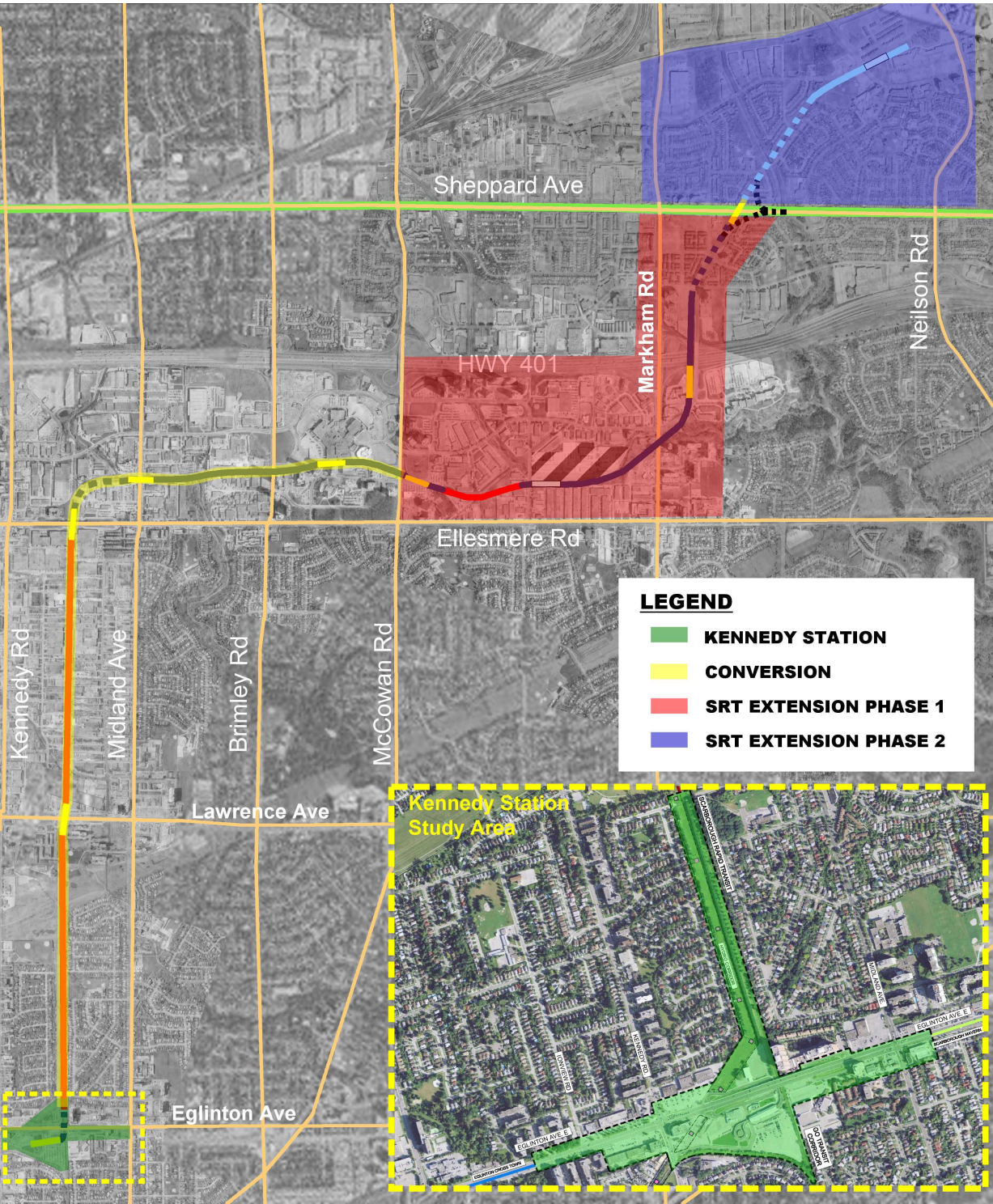
Conversion – Phase 1

The conversion component is limited to retrofit works on the existing line with the emphasis on changes at each of the existing stations, namely Lawrence East, Ellesmere, Midland, Scarborough Centre Station and McCowan Station. Based on the scope of works as identified in Chapter 2, the intent of the transit project within this section is to modify and upgrade the facility only as required. Modification of the stations is required due to the change in vehicle technology. Assessment of existing and future conditions was undertaken within a very narrow band that follows the existing SRT as the conversion works rarely extend beyond the footprint of the existing facility.

Extension

For the extension, the study area covers the area bounded by McCowan Road, Ellesmere Road, Neilson Road, the CP Agincourt subdivision, Markham Road and Highway 401. As preliminary planning activities were considering an extension to Malvern (i.e. not developed in stages), the inventory work described in this chapter and contained in the associated appendices address a consolidated extension study area.

Exhibit 3-1: Study Area



3.1 Natural Environmental Features

The natural environment includes species of special concern and their habitat, a wetland, woodlands, habitat of wildlife or other natural heritage area, or a stream, creek, river or lake containing fish and their habitats.

All aquatic, vegetation and wildlife investigations were completed by LGL Limited. All detailed information can be found in Appendix B.

3.1.1 Kennedy Station: Designated Natural Areas, Vegetation, Fisheries and Wildlife

3.1.1.1 Designated Natural Areas

Designated natural areas include areas identified for protection by the MNR, TRCA and the City of Toronto. Based on a review of the MNR Natural Heritage Information Centre, TRCA watershed plans and mapping, and the City of Toronto Official Plan and Schedules, there are no Provincially Significant Wetlands (PSWs), Environmentally Significant Areas (ESAs) or Areas of Natural or Scientific Interest (ANSIs) present within the study area. Lord Robert Woods located at the northern limit of the study area is not a designated natural area; however, it is part of the City of Toronto’s natural heritage system.

3.1.1.2 Vegetation and Vegetation Communities

A field investigation of natural/semi-natural vegetation was conducted by LGL Limited on March 2, 2010 for the proposed re-development of Kennedy Station at Eglinton Avenue East and Kennedy Road. A full report is located in Appendix B.

Vegetation Communities

There are no naturally occurring, non-culturally influenced vegetation communities located within the study area.

A total of three Ecological Land Classification (ELC) vegetation community types have been identified by LGL Limited within the study area. They have established as secondary growth on previously disturbed/cleared land. These communities include:

- cultural plantation (CUP3)
- cultural woodland (CUW); and
- cultural savannah (CUS).

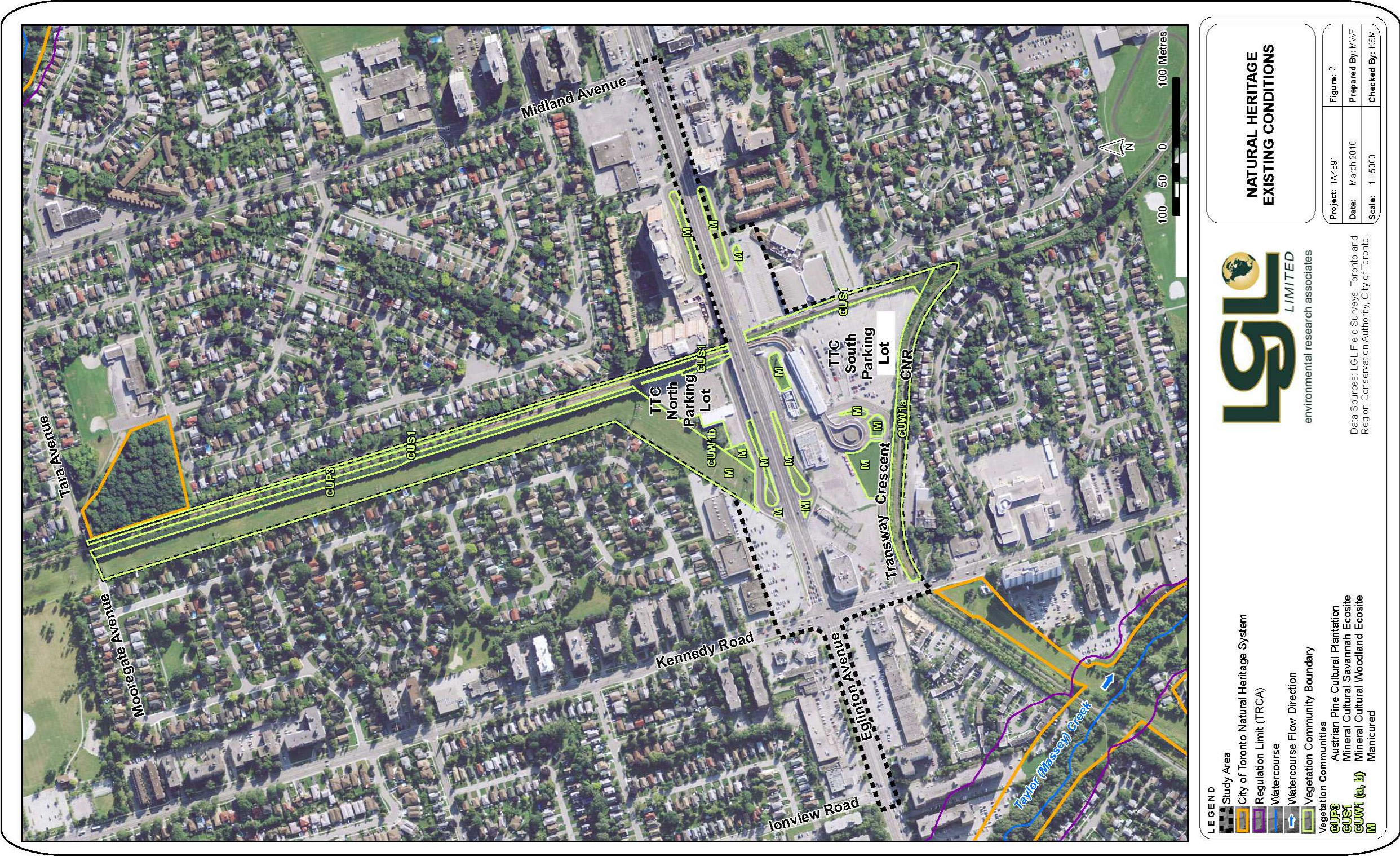
The cultural plantation (CUP3) is a linear vegetation community and is located west of, and parallel to, the existing SRT corridor. It extends from the TTC North Service Road Parking Lot, north to the pedestrian overpass that connects Mooregate Avenue (west side of corridor) to Tara Avenue (east side of corridor).

There are two cultural woodland communities located within the study area. The first community (CUW1a) extends along the most southern boundary of the study area adjacent to Transway Crescent. The

vegetation community is found on both sides of the CNR/GO corridor but it is separated from Transway Crescent by a chain link fence. The cultural woodland community (CUW1b) is located adjacent to the hydro corridor on the western edge of the North TTC Parking Lot.

The cultural savannah (CUS1) community runs alongside the CNR/GO on the east and west sides, north and south of Eglinton Avenue. These vegetation communities are delineated on Exhibit 3-2.

Exhibit 3-2: Vegetative Communities surrounding Kennedy Station



There are several manicured areas in the study area. Most of these areas contain mown grass; however, the small mown area south of the TTC subway PPUDO on the south side of Eglinton Avenue contains planted, cultivated juniper shrubs (*Juniperus spp.*) These mown areas also contain planted trees in some locations, for example, along Eglinton Avenue east of Kennedy Road. There are also boulevard trees located along the Eglinton Avenue right-of-way west of Kennedy Road.

Flora

To date, a total of 33 vascular plant taxa have been recorded within the study area. Nineteen, or 57 percent of the recorded flora, are considered introduced and non-native to Ontario. The number of vascular plants identified was limited by the time of year of botanical surveys.

Species at Risk

There are no species recorded within the study area that are regulated under the federal *Species at Risk Act* or the Ontario *Endangered Species Act*, 2007.

Honey locust (*Gleditsia triacanthos* var. *Inermis*) is present within the cultural woodland (CUW1a) ELC vegetation community, located south of the existing Kennedy Station along the rail corridor. While honey locust is designated as an S2 ranked species (see Appendix B for ranking information), the species within the study area is actually a cultivated species *Gleditsia triacanthos* var. *inermis* and not the native honey locust, *Gleditsia triacanthos*. It is therefore not considered a provincially or regionally rare species.

3.1.1.3 Fisheries and Aquatic Habitat

The study area is located within the Don River Watershed, and is under the jurisdiction of the Toronto and Region Conservation Authority (TRCA) and the Ministry of Natural Resources (MNR), Aurora District. Taylor (Massey) Creek, a tributary of the East Don River, is located west of Kennedy Station approximately 200 m west of Ionview Road.

The TRCA administers Ontario Regulation 166/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. No portions of the study area are located within the TRCA Regulation Limit.

3.1.1.4 Wildlife and Wildlife Habitat

Field investigations were conducted by LGL Limited on all lands associated with the proposed Kennedy Station on March 5, 2010 to document wildlife and wildlife habitat and to characterize the nature, extent and significance of animal usage within the project limits.

Wildlife Habitat

All of the available wildlife habitat in the study area can best be characterized as being of poor quality, low structural diversity, low habitat diversity and would not support a high diversity of resident wildlife species. The City of Toronto Official Plan, Natural Heritage Systems (Map 9) does not identify this area as a component of the natural heritage features.

Fauna

European starlings were the most abundant species observed during the site visit. A cohort of approximately 75 individuals were continuously moving between the cultural woodlot along the CNR/GO corridor, located to the south of the study area, and the hydro towers that are located in the parking lots adjacent to Transway Crescent. Rock pigeons were observed utilizing the support structures under the Eglinton Avenue Bridge and under the elevated section of the LRT. Three pairs of mourning doves (*Zenaida macroura*) were seen along the edge of where the hydro corridor abuts the parking lot on the north side of Eglinton Avenue. City staff indicated that there may be an active Common Grackle (*Quiscalus quiscula*) nest located in the rafters of the existing Kennedy Station.

A total of 27 terrestrial vertebrates have been recorded as occurring in the proposed Kennedy Station study area. This includes one reptile, 19 birds and seven mammals and is typical of a disturbed urban environment.

Species at Risk

No species of wildlife recorded within this study area are regulated under the *Species at Risk Act* or the *Endangered Species Act*, 2007. However, 11 of the 19 species of birds recorded are protected under the *Migratory Birds Convention Act* (MBCA) while the Blue Jay (*Cyanocitta cristata*) is regulated under the *Fish and Wildlife Conservation Act* (FWCA). Five of the seven mammal species are also regulated under FWCA. Two of the bird species recorded are considered as priority species for conservation in Metropolitan Toronto by Bird Studies Canada (BSC).

3.1.2 Conversion: Designated Natural Areas, Vegetation, Fisheries and Wildlife

3.1.2.1 Designated Natural Areas

Designated natural areas include areas identified for protection by the MNR, TRCA and the City of Toronto. Based on a review of the MNR Natural Heritage Information Centre, TRCA watershed plans and mapping, and the City of Toronto Official Plan and Schedules, there are no Provincially Significant Wetlands (PSWs), Environmentally Significant Areas (ESAs) or Areas of Natural or Scientific Interest (ANSIs) present within the study area.

3.1.2.2 Vegetation and Vegetation Communities

The majority of the lower half of the SRT corridor, between Kennedy Station and Lawrence Station, passes through open space associated with hydro corridors. Immediately south of Lawrence Station, the corridor borders a narrow strip of meadow that separates it from a residential development.

The upper half of the SRT corridor, from Lawrence Station to just north of Ellesmere Station, is bordered by industrial development and as such, wildlife habitat is virtually non-existent. The only species present would be represented by opportunistic, casual visitors such as American crow, rock pigeon, common grackle and European starlings.

3.1.2.3 Fisheries and Aquatic Habitat

There are at present two watercourse crossings of West Highland Creek tributaries. The Dorset Park Branch flows in a southeast direction under the existing SRT alignment approximately 300m north of the Lawrence Avenue East Station. The second crossing is over the Bendale Branch, approximately 350m east of the Midland Avenue Station. Details can be found in Appendix B-2.

3.1.2.4 Wildlife and Wildlife Habitat

Wildlife utilizing these habitats are species that are tolerant of human disturbance and include mammalian species such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and gray squirrel (*Sciurus carolinensis*) as well as avian species such as chipping sparrows (*Spizella passerine*), song sparrows (*Melospiza melodia*), American crow (*Corvus brachyrhynchos*), rock pigeon (*Columba livia*), common grackle (*Quiscalus quiscula*), European starlings (*Sturnus vulgaris*), American goldfinch (*Carduelis tristis*) and others.

The 'elevated' section of the SRT does not provide wildlife habitat on the upper platform.

3.1.3 Extension: Designated Natural Areas, Vegetation, Fisheries and Wildlife

Natural Environment includes species of special concern and their habitat, a wetland, woodland, habitat of wildlife or other natural heritage area, or a stream, creek, river or lake containing fish and their habitats.

The SRT Extension study area can be classified as being mostly urban, with the exception of the East Highland Creek area, which is the most sensitive area in terms of natural environment. In support of this project, LGL Limited conducted a natural heritage investigation in the spring and summer of 2008. An inventory of the existing natural environment conditions for fisheries and aquatic ecosystem, vegetation and vegetation communities, wildlife and wildlife habitat and designated natural areas are provided in the following sections. A copy of the report is included in Appendix B-3.

3.1.3.1 Designated Natural Areas

Designated natural areas include areas identified for protection by the MNR, TRCA and upper and lower tier municipalities. There are no Provincially Significant Wetlands (PSWs) present in the study area; however, Morningside Park Forest ESA #77, also designated as an ANSI, is located on a short section of the Malvern Branch and all of the East Branch of Highland Creek- between 401 & Ellesmere east of the Centennial College campus.

The City of Toronto Official Plan identifies the Markham Branch and the Malvern Branch as "Natural Heritage Areas" in the Land Use Schedules contained in the Official Plan.

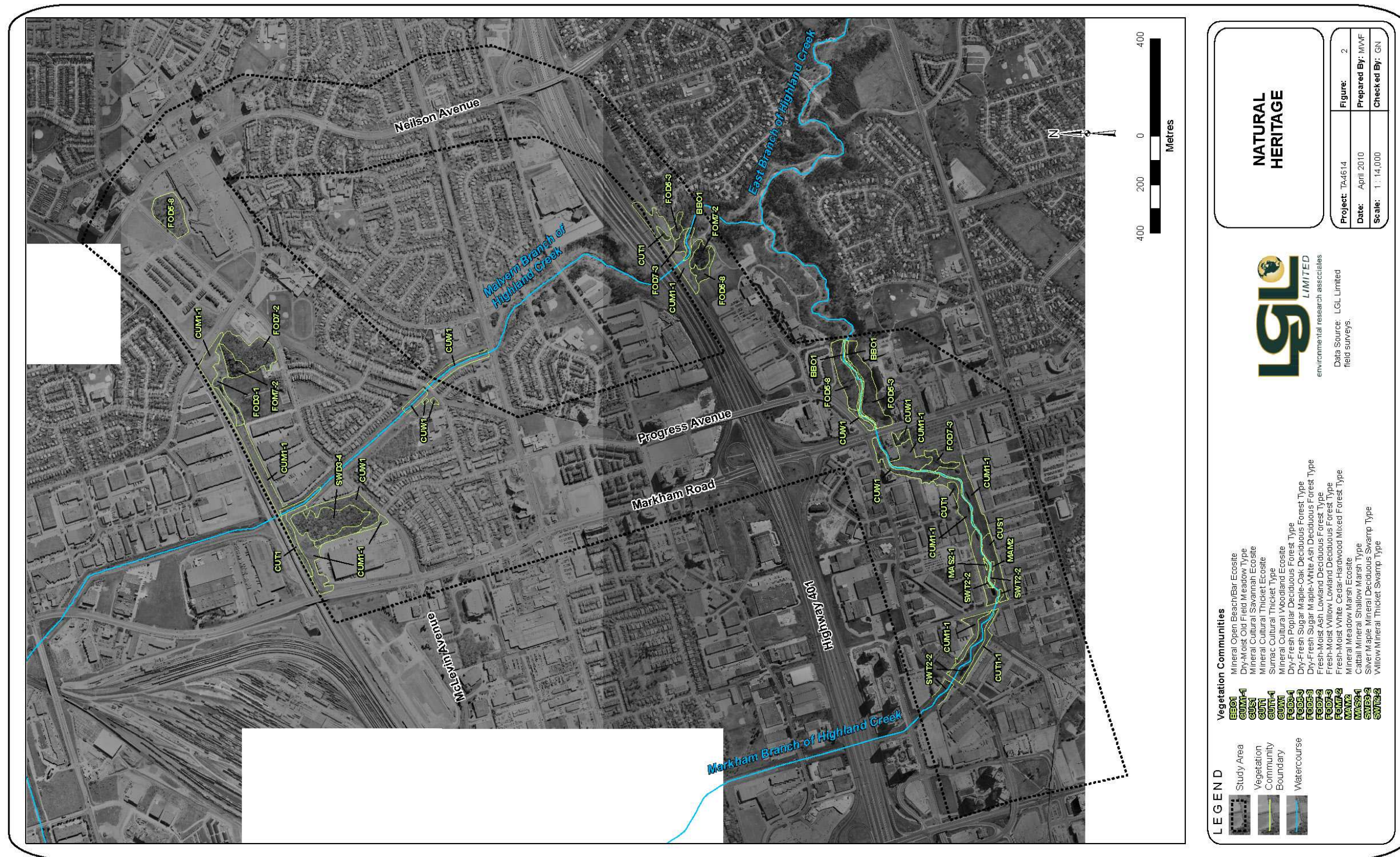
3.1.3.2 Vegetation and Vegetation Communities

Vegetation communities along the proposed SRT alignment consist of a mix of open beach/bar, forest, cultural and wetland communities. The forests in the study area are typical of those arising from secondary growth on previously disturbed/cleared areas. Bordering the natural vegetation communities, the land has

been cleared of all original forest cover to accommodate various anthropogenic land uses like rail, industrial, commercial and residential.

As identified in Exhibit 3-3, a total of sixteen ELC community types have been identified by LGL Limited within the study limits. These communities include: open beach/bar (BB01); mixed forest (FOM7-2); deciduous forests (FOD3-1, FOD5-3, FOD5-8, FOD7-2 and FOD7-3); cultural meadow (CUM1-1); cultural thickets (CUT1 and CUT1-1); cultural savannah (CUS1); cultural woodland (CUW1); deciduous swamp (SWD3-4); thicket swamp (SWT2-2), meadow marsh (MAM2-2) and shallow marsh (MAS2-1). BBO1 vegetation community is designated L3, which means that this community is of regional concern; restricted in occurrence and/or requires specific site conditions; generally occurs in natural rather than cultural areas.

Exhibit 3-3: Vegetative Communities within the Extension Study Area



Flora

To date, a total of one-hundred and ninety-six (196) vascular plant taxa have been recorded within the study area. Ninety-one taxa, or 46 percent of the recorded flora, are considered introduced and non-native to Ontario.

Species at risk

Kentucky coffee-tree (*Gymnocladus dioicus*), was found planted within a CUW1 vegetation community, near Malvern and Mammoth Hall. Kentucky coffee-tree is considered threatened (T) by COSEWIC and MNR; and S2 (Imperiled) by the NHIC.

The study area contains twenty-one plant species that are considered regionally rare to uncommon in Toronto.

3.1.3.3 Fisheries and Aquatic Habitat

The study area is located within the Highland Creek watershed, specifically the Markham and Malvern Branches of the East Highland Creek subwatershed. Three crossings of the Markham Branch (Progress / Markham area) and two crossings of the Malvern Branch (Mammoth Hall Trail area) are proposed. These watercourses are under the jurisdiction of the Toronto and Region Conservation Authority (TRCA) and the Ministry of Natural Resources (MNR) Aurora District.

Table 3-1 lists the fish collected historically in the watercourses within or adjacent to the study area.

Table 3-1: Fish Collected historically in the Watercourses within or adjacent to the Study Area

Scientific Name	Common Name	COSEWIC	MNR	Provincial	Legal Status	Watercourse*	
						Markham Branch	Malvern Branch
<i>Salmo trutta</i>	Brown Trout	-	-	SE	-	X	
<i>Semotilus atromaculatus</i>	Creek Chub	-	-	S5	-	X	
<i>Rhinichthys cataractae</i>	Longnose Dace	-	-	S5	-		X
<i>Luxilus cornutus</i>	Common Shiner	-	-	S5	-		X
<i>Notropis stramineus</i>	Sand Shiner	-	-	S4	-	X	
<i>Catostomus commersoni</i>	White Sucker	-	-	S5	-	X	
<i>Noturus flavus</i>	Stonecat	-	-	S4	-		X
<i>Ambloplites rupestris</i>	Rock Bass	-	-	S5	-		X
<i>Lepomis gibbosus</i>	Pumpkinseed	-	-	S5	-	X	

The *Draft Highland Creek Watershed Fisheries Management Plan* (TRCA 1998) was not readily available and a new draft document is currently under development. It is anticipated that the Markham Branch and Malvern Branch would be classified as “small riverine warmwater” streams that support a tolerant fish community. The management target for these two streams would likely be darter species.

Species at Risk

All species historically recorded within or near the study area are considered to be either very common in Ontario (provincial rank of S5), common (provincial rank of S4) or non-native (provincial rank of SE). According to the Natural Heritage Information Centre (NHIC) database, no aquatic species at risk have been found within or adjacent to the study area.

3.1.3.4 Wildlife and wildlife Habitat

Field investigations were conducted on May 5, May 7 and October 10, 2008 to document wildlife and wildlife habitat and to characterize the nature, extent and significance of animal usage within the project limits. Investigations were focused on the habitats associated with the Markham and Malvern Branches of the East Highland Creek subwatershed as well as any isolated woodlots occurring within the project limits. Direct observations, calls, tracks, scats, runways and scents were used to record the wildlife. The locations of wildlife corridors were recorded to determine areas of concern.

In general terms, the available wildlife habitat that is present in the study area can best be characterized as being of minimal quality; as having low structural and habitat diversity; and as supporting mainly opportunistic species that are tolerant human disturbances. Notwithstanding the quality of habitat that is available, a reasonable diversity of wildlife species was observed. A total of 51 species are listed as occurring in the study area, including 37 species of birds, 11 mammalian species and three, herpetofauna. Although the majority of the study area is urban, ten different ecosite types that are found along the valley systems of Markham Branch and Malvern Branch as well as a few isolated woodlots, provide small parcels of different habitat types which accounts for the reasonable wildlife diversity that was observed.

3.1.4 Future Conditions: Designated Natural Areas, Vegetation, Fisheries and Wildlife

The future condition investigates the changes in aquatic, vegetation and wildlife in the future if the project is not implemented.

3.1.4.1 Kennedy Station

There are no changes expected to the local natural environment.

3.1.4.2 Conversion

No major changes to the natural environment are expected with respect to fish, wildlife, vegetation, and designated areas over the next 20 years.

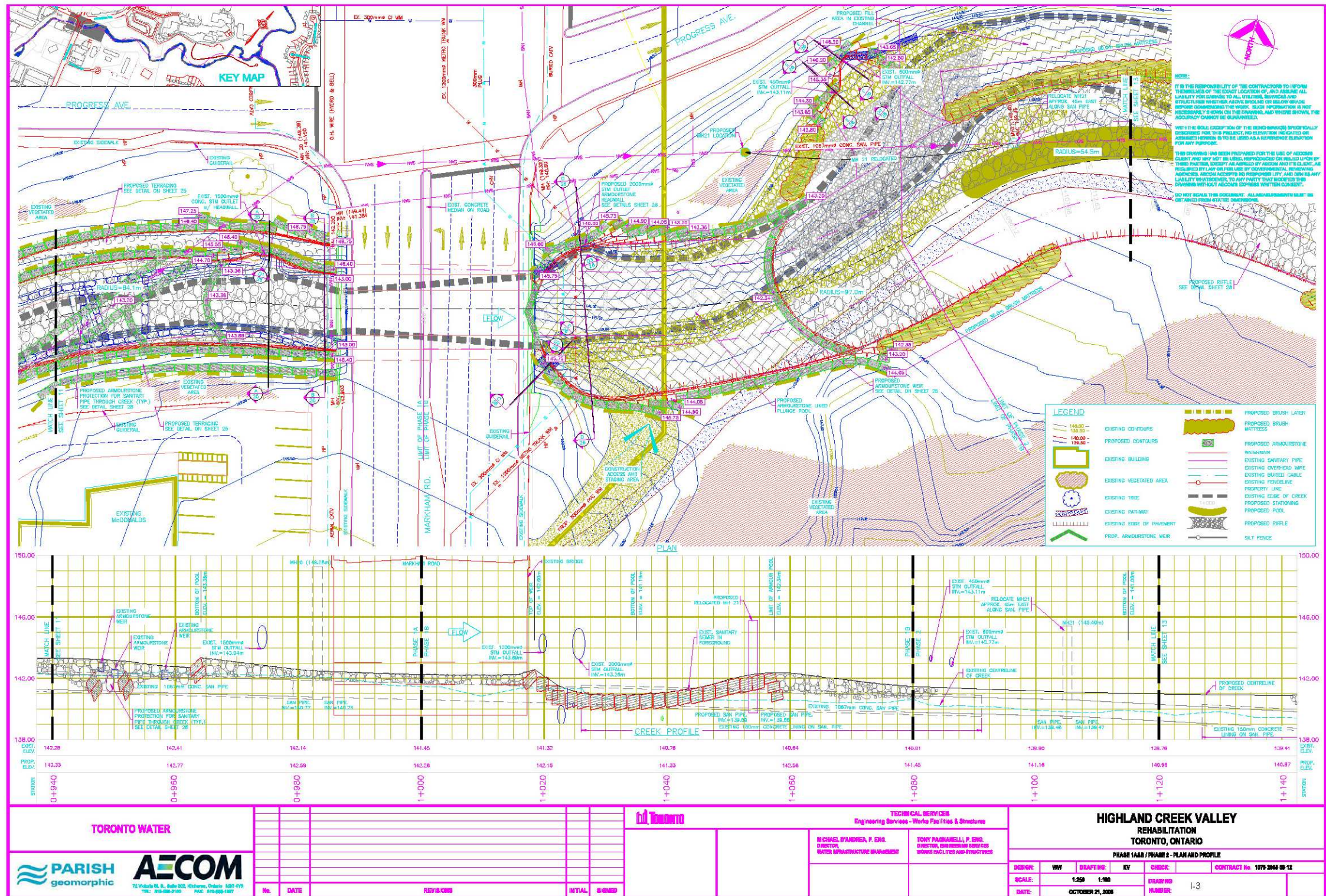
3.1.4.3 Extension

In August 2005, a 2 to 3 hour storm event concentrated on the area between Highway 401 and Steeles Avenue caused significant damage throughout the City of Toronto. Erosion occurred within the Highland Creek ravine with the worst sections resulting in the collapse of the Highland Creek Trunk Sanitary Sewer.

Remedial works within the Highland Creek subwatershed is ongoing. The Highland Creek segment 4/4a Class Environmental Assessment Study began in 2005 and the focus has been on the valley segment that extends from upstream of Markham Road to the Malvern Branch of Highland Creek. Now in the detailed design stage, Toronto Water will be undertaking extensive restoration works, which will include creek realignment (Exhibit 3-4) and the enhancement of habitat through the introduction of riffle pools and other features. Vegetation in the area that must be removed to facilitate the works will be replaced. The SRT extension has been planned in concert with these plans.

SCARBOROUGH RAPID TRANSIT ENVIRONMENTAL PROJECT REPORT CHAPTER 3 – EXISTING AND FUTURE CONDITIONS

Exhibit 3-4: Proposed Toronto Water Stream Works in the vicinity of Markham Road



3.1.5 Geology, Soils and Groundwater

This section summarizes the preliminary investigation undertaken in support of this transit project. A variety of sources of data were used to categorize all geology, soils and groundwater issues within the study area. Detailed documents, including results from field investigations are appended to this report.

3.1.5.1 Kennedy Station

3.1.5.1.1 Geology

A map of the Bedrock Geology of Southern Ontario, Map 2441, was reviewed to determine the site bedrock geology.

The bedrock consists of gray shale with limestone interbeds of the Georgian Bay Formation. A map of the Quaternary Geology of Toronto and Surrounding Area (southern Ontario), Map 2204, was reviewed to determine the soil types for the Property and Extended Study Area. According to Map 2204, the soil in the study area consists of clayey silt till.

Natural Resources Canada topographic base maps indicate that the study area is at an elevation of approximately 170 metres above sea level (masl). From Kennedy Station, the land gradually decreases in elevation towards the southwest until Taylor Creek, which is approximately 150masl, and is located 575m southwest of the Property. The portion of the study area directly north of Kennedy Station is also 170masl, with gradual decreases in elevation, east of Midland Avenue and west of the Eglinton Avenue East overpass.

3.1.5.1.2 Ground Water

The inferred local groundwater flow direction based on topography of the area appears to be to the southwest towards Taylor Creek. The inferred regional groundwater flow direction is to the southeast towards Lake Ontario.

3.1.5.1.3 Contaminated Soil

In March 2010 a review of historical aerial photography, published inventories, title search and assessment rolls, documentation review, interviews and site visit were completed to identify actual and potential sources of contamination associated with Kennedy Station, comprised of 2455 and 2457 Eglinton Avenue East in Toronto, Ontario (the Property) and properties along Eglinton Avenue East between Ionview Road (west of Kennedy Road) and Midland Avenue, and along Lord Roberts Drive and Treverton Drive, north of Eglinton Avenue East (the Extended Study Area). See Appendix H for full report.

Kennedy Station Property

The records reviewed of the area immediately surrounding the Property generally did not indicate any potential environmental concerns to the Property from the surrounding properties with respect to historical and current surrounding property land uses. A gasoline station and a dry cleaning facility were identified approximately 200m to the northeast of the Property and have been in operation since approximately 1960

and 1981, respectively. Considering that these facilities are located up-gradient with respect to the local groundwater flow direction to the southwest, they may have posed potential environmental impact toward the site. In addition, an Ontario Spills record indicated that 100L of diesel fuel was spilled on the parking lot of the Canada Post building at 2439 Eglinton Avenue East from a transport truck in 1994. According to the record, the spill was cleaned and did not enter the local sewer. However, due to the proximity of the spill to the Property, it presents a potential environmental concern to the west of the Property and to the north of the passenger drop-off and pick-up area.

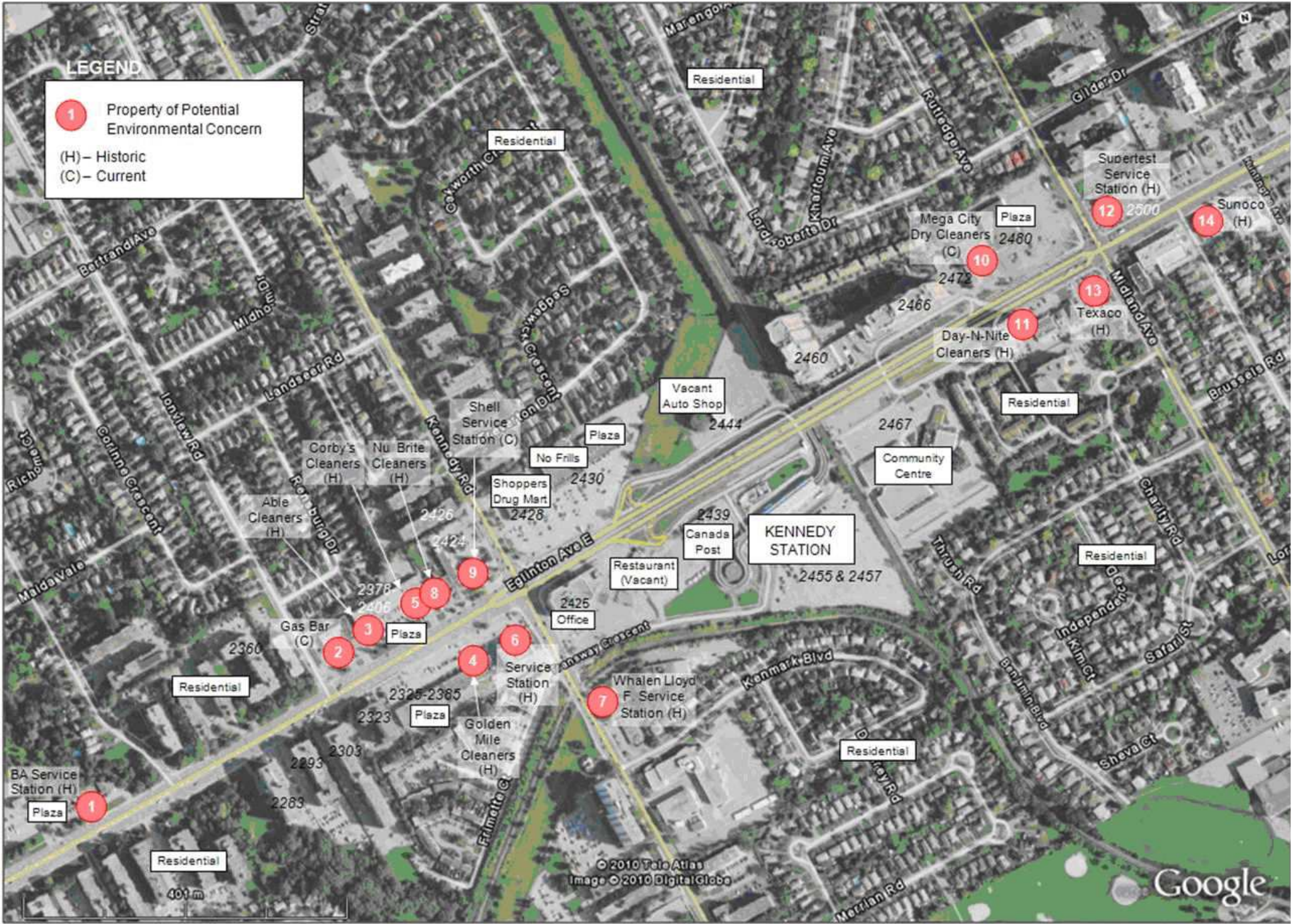
Extended Study Area

Several potential environmental concerns were identified in the Extended Study Area. Historical records indicated that numerous service stations and dry cleaners were present along Eglinton Avenue East and Kennedy Road within the Extended Study Area since at least 1960. The following table presents the fourteen (14) properties of potential environmental concern identified in the Extended Study Area. The key criteria used to assess environmental records in order to select the properties with the highest potential environmental concern were: spill history; operational history (i.e. type and length of historical land use); and current operations. The locations of the properties with highest potential environmental concern are presented for reference on Table 3-2 and Exhibit 3-5.

Table 3-2: Sites in the vicinity of Kennedy Station with High Potential Environmental Concern:

Figure ID	Address	Land Use /Company	Location	Details
1	2300 Eglinton Ave E	Historic: BA Service Station Current: L & J Restaurant	N of Eglinton Ave E, W of Creek	<ul style="list-style-type: none"> Service station in 1960's
2	2376 (2372) Eglinton Ave E	Historic: Service Station Current: Famous Food & Gas Bar	NE corner of Eglinton Ave E & Ionview Rd	<ul style="list-style-type: none"> Service station since at least 1960's Norfinch Construction private fuel tank registry Fuel Storage Tank records indicate that there are currently four (4) gasoline single wall USTs installed in 1991, total capacity of 22,730L Private and Retail Storage Tanks records indicate a total capacity of 90,800L on-site
3	2378 Eglinton Ave E	Historic: Able Cleaners & Coin Laundry Current: Commercial Plaza	N of Eglinton Ave E, 60m east of Ionview Rd	<ul style="list-style-type: none"> Former dry cleaner and waste generator of halogenated solvents
4	2383 Eglinton Ave E	Historic: Golden Mile Cleaners Current: Commercial Plaza	S of Eglinton Ave E, 115m west of Kennedy Rd	<ul style="list-style-type: none"> Former dry cleaner and waste generator of halogenated solvents
5	2392 Eglinton Ave E	Historic: Corby's Cleaners Current: Apartments	N of Eglinton Ave E, 145m W of Kennedy Rd	<ul style="list-style-type: none"> Dry cleaner in 1960's
6	2411 Eglinton Ave E	Historic: Service Station (Cross-Roads / Ainsworth's) Current: Commercial Plaza	SW corner of Eglinton Ave E & Kennedy Rd	<ul style="list-style-type: none"> Former service station from at least 1960's to 1970
7	733 Kennedy Rd	Historic: Whalen Lloyd F. Service Station, Karbelt Speed Custom Current: Cemetery	E of Kennedy Rd, 160m S of Eglinton Ave E	<ul style="list-style-type: none"> Former service station in 1960 and automotive centre from 1980's to 1992/93
8	2404 Eglinton Ave E	Historic: Nu_Brite Cleaners Current: Convenience Store	N of Eglinton Ave E, 125m W of Kennedy Rd	<ul style="list-style-type: none"> Former dry cleaner and waste generator of halogenated solvents
9	2424 Eglinton Ave E	Historic: Beaver/Shell Service Station Current: Shell Service Station	NW corner of Eglinton Ave E & Kennedy Rd	<ul style="list-style-type: none"> Service station since at least 1960's Currently three (3) gasoline single wall USTs installed in 1982, total capacity of 40,000L 15L & 7L gas to station lot from hole in corroded vehicle tank
10	2480 Eglinton Ave E	Historic: Venus Dry Cleaners Current: Mega City 1 Hour Cleaners	N of Eglinton Ave E, 130m west of Midland Ave	<ul style="list-style-type: none"> Dry cleaner and waste generator of halogenated solvents
11	2495 Eglinton Ave E	Historic: Toronto Linen Rental , Day-N-Nite Cleaners Current: Sylvan Learning, Beginnings Beauty Supply	S of Eglinton Ave E, 60m west of Ionview Rd	<ul style="list-style-type: none"> Former dry cleaner and waste generator of halogenated solvents
12	2500 Eglinton Ave E	Former: Supertest Service Station Current: Restaurants	NE corner of Eglinton Ave E & Midland Ave	<ul style="list-style-type: none"> Service station in 1960's
13	2507 Eglinton Ave E	Historic: Texaco Service Station Current: Hertz Canada Inc.	SW corner of Eglinton Ave E & Midland Ave	<ul style="list-style-type: none"> Service station since at least 1960 to early 1980's Waste generator of oils and sludges
14	2563 Eglinton Ave E	Historic: Spiros Sunoco Service Centre Current: The Sankanai Furniture & Mattress	S of Eglinton Ave E, 125m east of Midland Ave	<ul style="list-style-type: none"> Former service station licensed until 1996 with a total capacity of 122,742L

Exhibit 3-5: Sites in the vicinity of Kennedy Station with High Potential Environmental Concern



3.1.5.2 Conversion

The degree of interaction with subsurface conditions is limited. The conversion will rely to a large extent on existing footings and foundations. Any changes or new subsurface impacts will be minor in nature and will be thoroughly investigated as part of the detailed design phase. Based on this characterization, no geotechnical investigations have been undertaken in support of this Transit Project Assessment Process.

3.1.5.3 Extension

3.1.5.3.1 Geology

The Quaternary deposits of the Toronto region consist predominantly of glacial till, glaciolacustrine and glaciofluvial sand, silt, and clay deposits and beach sands and gravels. These deposits were laid down by glaciers and associated glacial rivers and lakes. Recent deposits of alluvium are found in river and stream valleys and their flood plains. The Quaternary soil deposits overlie the bedrock of the Georgian Bay Formation which consists predominantly of shale with interbeds of limestone and siltstone. This bedrock is generally found in the study area at between Elevations 80 and 60 m. A surficial geology map of the study area is shown on Exhibit 3-6.

The Quaternary soil deposits overlying the bedrock are believed to have been deposited during the Wisconsin glacial period which saw several glacial advances and retreats over the course of time. These fluctuations of the glacier front resulted in a complex distribution of glacial till layers separated by interstadial deposits of sands, silts and clays. After the retreat of the last ice sheet from the Toronto region, the meltwaters ponded and created shallow lakes, and the resulting lacustrine deposits consist of thin, localized accumulations of sand, silt and clay which overlie the uppermost till sheet.

The site is located in the physiographic region known as the Iroquois Plain where the Iroquois shoreline lies very close to the present shoreline of Lake Ontario. Eastward from the Scarborough Bluffs, the plain widens rapidly.

Sand plains at the old beach located in the southeast corner of the City of Scarborough were built up with the sand deposits carried downstream by the Highland Creek and Rouge River. The shallow overburden materials generally consist of alternating deposits of dense sands, silts, sand and gravels; at some locations, these granular deposits are overlain by or interlayered with clayey silt till and sandy silt till deposits.

3.1.5.3.2 Ground Water

The Scarborough area is dominated by two main watersheds – Rouge River, which flows through the eastern part of the area and Highland Creek, which flows through the western portion. Highland Creek is located within the project study area. Both watersheds empty into Lake Ontario at the eastern end of the Scarborough Bluffs.

As illustrated in Exhibit 3-6 the proposed SRT alignment crosses two tributaries of Highland Creek; crossing one tributary three times in the southwest section and crossing the second tributary once in the northern section of the proposed alignment.

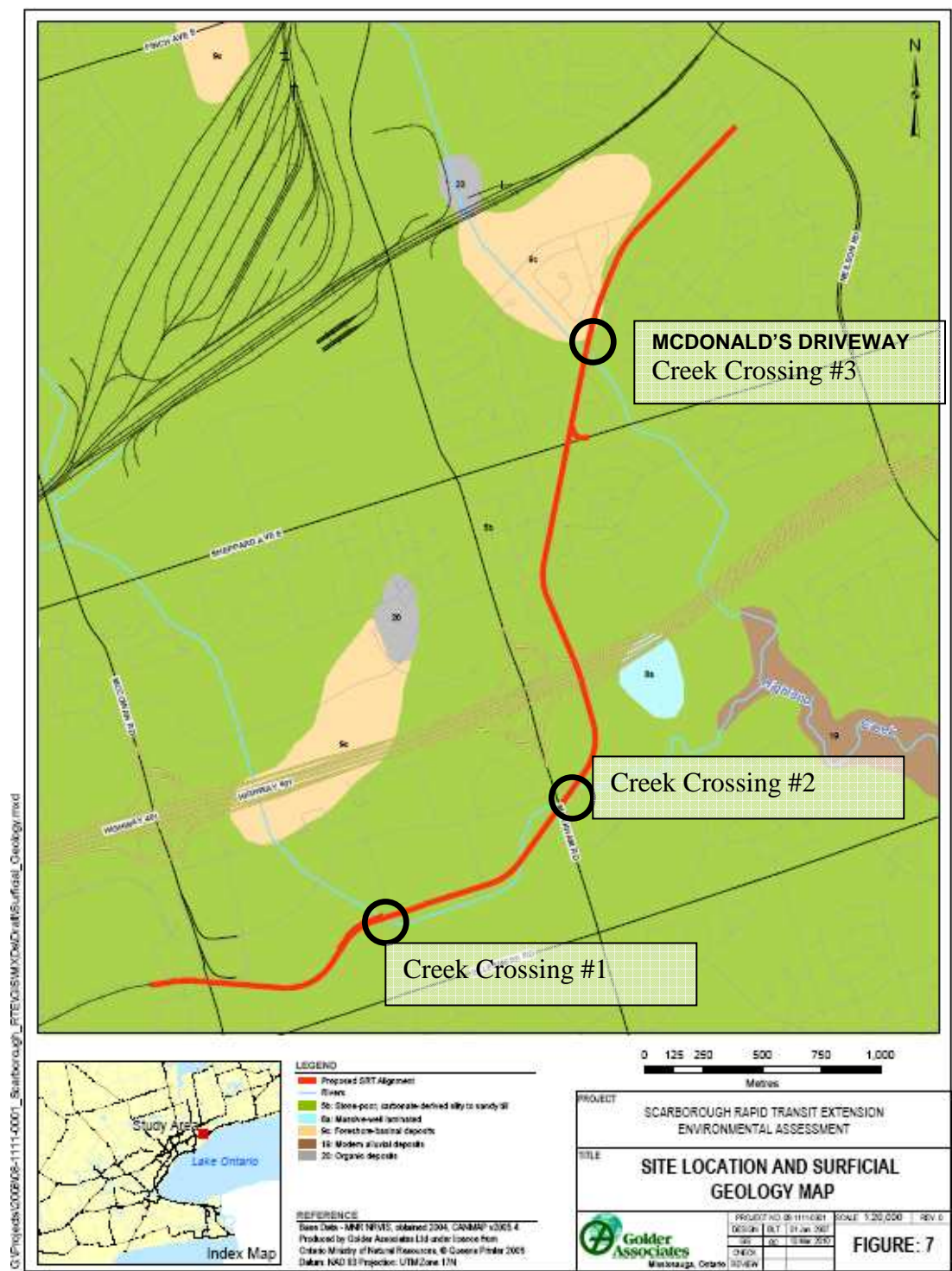
The first crossing in the southwest section is about half of distance along Bellamy Road between Progress Avenue and Ellesmere Road. The second crossing is a short distance west of Markham Road between Progress Avenue and Ellesmere Road and the third crossing is at the south west corner of Markham Road and Progress Avenue intersection. In the northern portion of the proposed SRT alignment, the crossing of the Highland Creek is a short distance north of Mammoth Hall Trail (north of Sheppard Avenue East).

The confluence of these two Highland Creek tributaries with the main branch of the Highland Creek is located downstream, south of Highway 401 between Markham Road and Neilson Road. The local topography is highly influenced by the Highland Creek watershed systems, with the ground surface typically sloping downwards towards the valleys of the creek.

An interpreted profile of the static groundwater level has been shown on the Simplified Geologic Profiles included in this report Appendix H. These profiles are based on data included in the City of Toronto Borehole Database as well as on the boreholes drilled as part of the geotechnical investigation carried out for the current phase of this study.

It should be noted, however, that groundwater levels within the database may not reflect true static conditions as the conditions at the time of data collection may have been influenced by drilling processes. In addition, groundwater conditions within the Greater Toronto Area can be complex with multiple subsurface aquifers within granular gravel, sand, and silt deposits separated by cohesive deposits of silt and clay or fine-grained glacial till.

Exhibit 3-6: Surficial Geology Map



3.1.5.3.3 *Slope Stability along Highland Creek*

Due to the proximity of the proposed alignment to the highland Creek, a special geotechnical investigation was completed. The alignment extends along the north valley slope of the East Highland Creek tributary which included the completion of a site visit and in-situ tests.

About 150-190mm of surficial topsoil was encountered at ground surface underlain by silty clay to silty sand fill materials. The fills are underlain by an extension glacial till deposit of consisting of dense to very dense silt and sand, trace to some clay and gravel.

The natural water contents of samples of the fill materials range from about 6 percent to about 15 percent. The natural water contents of samples of the sand deposit range from about 7 percent to about 9 percent and the natural water contents of a single sample of the clayey silt till deposit is about 14%.

Atterberg limits testing carried out on one sample of the silt and sand deposit measured a liquid limit of 15%, plastic limit of 11% and plasticity index of 3%. The Atterberg limits test results classify the deposit as silt of low plasticity.

Groundwater conditions were observed in open boreholes during the field investigation. The water level was recorded at depths of about 4.8m and 1.1m upon completion of drilling of boreholes. It should be noted that the water levels may not represent stabilized groundwater levels. However, the measured water level does reflect the decrease in creek water level between Bellamy Road North and Markham Road. The groundwater levels are anticipated to fluctuate as a result of seasonal variations in precipitation, runoff and temperature.

The stability component is dictated by the existing surface and subsurface conditions of the slope such as the slope geometry, soil strength and/or degree of bedrock weathering, groundwater conditions, condition of vegetation, loading, etc. The stability component may be derived based on generalized guidelines involving a setback gradient line which is dependent on the subsoil stratigraphy and is drawn upwards from the top of the slope to intersect the tableland.

Based on the subsurface information and site observations, the geotechnical stability setback distance has been established by carrying out limit equilibrium slope stability analyses using the commercially available program SLOPE/W. The results of the analysis indicate that the family of slip surfaces for a Factor of Safety (FoS) equal to or less than 1.5 fall within the slope face (i.e. Do not extend beyond the slope crest); therefore, the stability component for the entire study area may be taken as zero and the geotechnical setback line would be represented by the crest of the slope or by the erosion component.

There are five areas where there is a floodplain present between the immediate creek bank and the toe of the valley slope and the floodplain is up to 15m in width. Between these floodplain areas, the creek channel is at the toe of the valley slope and there is evidence of ongoing erosion of the creek channel banks and as such an erosion component must be included in the total geotechnical setback distance.

The boreholes encountered very dense silt and sand silt deposit at the elevation of the toe of the slope/creek channel. For these soil conditions, an erosion component equal to 6m is considered appropriate for the site.

Where the floodplain width at the toe of the slope is equal to or greater than 6m, the long term stable top of bank may be taken as the existing crest of slope. Where the cheek channel bank is adjacent to the toe of the slope (i.e. there is no floodplain), the long term stable top of bank should be located at 6m behind the crest of the slope. The exception to this would be where there is erosion protection in the form of armour stone at the toe of the scope. In this case, the erosion component should be taken as zero.

3.1.5.3.4 *Contaminated Soil*

Exhibit 3-7 provides a graphical summary of the risk rating assigned for all properties within the 200 m buffer zone around the proposed route, based on records found in the EcoLog ERIS Study Area report.

The table below summarizes the absolute number of properties assigned a low, moderate or high risk rating located within the 200 m buffer zone for the proposed route. It is important to note that these numbers include only those properties that are listed within at least one of the listed public or private databases.

Table 3-3: Summary Table of potentially contaminated sites for SRT Extension

Potential to Contribute to Environmental Contamination	Number of Sites
Low	23
Moderate	16
High	24
Total Number	63

The EcoLog ERIS reports do not provide a complete picture of the potential for environmental impact at each property, but are deemed suitable for this preliminary screening exercise. Further investigation using aerial photographs, historical searches, visual observation of the present operations and current conditions at the sites, and other suitable assessments should be undertaken to provide a more complete picture of the relative environmental risk associated with the proposed route. Should contaminated soils be encountered (in future study phases) the soils will be tested and handled in accordance with Part XV.I of the Environmental Protection Act (EPA) and Ontario Regulation 153/04, Records of Site Condition.