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GO Rail Network Electrification

Transit Project Assessment Process
Environmental Project Report

February, 2018

MORRISON HERSHFIELD

Gannett Fleming

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This Revised Final Environmental Project Report – Volume 2 has been updated to reflect the specific additions/revisions outlined in the Errata to the EPR, dated November, 2017. As such, it supersedes the previous version dated October, 2017.

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TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

- **Appendix A - Natural Environment Assessment Report**: is composed of two parts including *Part A1 - Natural Environment Baseline Conditions Report, and Part A2 - Natural Environment Impact Assessment Report.*
- **Appendix B – Preliminary Environmental Site Assessment (ESA) Reports:** is composed of two parts including: *Preliminary ESA Gap Analysis Report (Rail Corridors); and Preliminary ESA Report (Taps & Traction Power Facilities).*
- **Appendix C - Cultural Heritage Assessment Report:** is composed of two parts including *Part C1 – Cultural Heritage Screening Report, and Part C2 – Cultural Heritage Impact Assessment Report.*
- **Appendix D - Archaeological Assessment Report:** is composed of two parts including *Part D1 – Archeological Baseline Conditions Report, and Part D2 – Stage 1 Archaeological Assessment Report.*
- **Appendix E - Land Use and Socio-Economic Assessment Report:** is composed of two parts including *Part E1 – Land Use and Socio-Economic Baseline Conditions Report, and Part E2 – Land Use and Socio-Economic Impact Assessment Report.*
- **Appendix F - Air Quality Assessment Report:** is composed of two parts including *Part F1 – Air Quality Baseline Conditions Report, and Part F2 – Air Quality Impact Assessment Report.*
- **Appendix G - Noise and Vibration Modelling Reports:** is composed of six parts including *G1 – USRC Impact Assessment Report, G2 – LSW Impact Assessment Report, G3 – Kitchener Impact Assessment Report, G4 – Barrie Impact Assessment Report, G5 – Stouffville Impact Assessment Report, G6 – LSE Impact Assessment Report*
- **Appendix H - Visual Assessment Report:** is composed of two parts including *Part H1 – Visual Baseline Conditions Report, and Part H2 – Visual Impact Assessment Report.*
- **Appendix I - Utilities Report:** is composed of two parts including *Part I1 – Utilities Baseline Conditions Report, and Part I2 – Utilities Impact Assessment Report.*
- **Appendix J - Electromagnetic Interference/Electromagnetic Fields (EMI/EMF) Report:** is composed of two parts including *Part J1 – EMI/EMF Baseline Conditions Report, and Part J2 – EMI/EMF Impact Assessment Report.*
- **Appendix K – Preliminary Stormwater Management Report (Traction Power Facility Sites):** summarizes the results of carrying out the preliminary Stormwater Management (SWM) Assessment for each of the Tap and Traction Power Facility sites; it is composed of: an overview of background data collected/reviewed, results of initial SWM analysis for each tap/traction power facility site, and recommendations for further work.
- **Appendix L - Consultation Record:** summarizes the consultation activities carried out by Metrolinx and Hydro One as part of the GO Rail Network Electrification TPAP including the various consultation events held, feedback/comments received from review agencies, Aboriginal Communities, and other stakeholders including members of the public, and how those comments were considered as part of the TPAP.

- **Appendix M – Cultural Heritage Evaluation Reports (CHERs),Heritage Impact Assessment Reports (HIAs) and Statements of Cultural Heritage Value (SCHVs):** includes copies of the CHERs, HIAs, and SCHVscarried out for various heritage properties as part of the GO Rail Network Electrification TPAP.
- **Appendix N - Conceptual electrification corridor plans**. Conceptual electrification corridor plans were developed to illustrate the Overhead Contact System (OCS) Impact Zone and Vegetation/Tree Removal Zone along each of the corridors to be electrified.
- **Appendix O - Conceptual Traction Power Facility Plans.** Conceptual Traction Power Facility Plans were developed to illustrate the Traction Power Facility sites and 25kV Feeder Routes.
- **Appendix P – P1: Mapping of Ecological Land Classification Areas and P2: Mapping of Terrestrial and Aquatic Features** along each rail corridor within the GO Rail Network Electrification Study Area have been included for reference.
- **Appendix Q - Mapping of IdentifiedCultural Heritage Resources**. Mapping of Identified Cultural Heritage Resources within the GO Rail Network Electrification Study Area have been included for reference.
- **Appendix R - Mapping of Land Use Designations.** Mapping of Land Use designations along each rail corridor within the GO Rail Network Electrification Study Area have been included for reference.
- **Appendix S - Mapping of Noise/Vibration Receptors and Recommended Locations for Noise/Vibration Mitigation.** Mapping of Noise and Vibration Receptors that were examined in the Noise and Vibration modelling study, as well as areas where noise and vibration mitigation locations were identified along each rail corridor within the GO Rail Network Electrification Study Area have been included reference.
- **Appendix T - Mapping of Viewsheds and Potential Visual Impact Areas.** Mapping of viewsheds and potential visual impact areas along each rail corridor within the GO Rail Network Electrification Study Area have been included for reference.
- **Appendix U – List of Technical Reports and Studies Reviewed.** Contains a list of the various technical reports/studies that were reviewed as part of carrying out the TPAP.
- **Appendix V – Groundwater Assessment Report**. Summarizes the results of carrying out the preliminary groundwater assessment, including potential groundwater effects and effects on wells.

Glossary of Terms

Term	Definition
230kV Aerial Connection	Overhead electrical high voltage connection line from the existing Hydro One tap to the new traction power substation (TPS).
AAQC	The acronym for the Province of Ontario's Ambient Air Quality Criteria.
AC	Alternating Current. Alternating Current is an electric current in which the flow of electric charge periodically reverses direction, whereas in direct current (DC, also dc), the flow of electric charge is only in one direction.
AFP	Alternative Financing and Procurement. An AFP model brings together private and public sector expertise in a unique structure that transfers the risk of project cost increases and scheduling delays typically associated with traditional project delivery.
AG	Agriculture as defined by the Ecological Land Classification System.
ANSI	Area of Natural and Scientific Interest.
APTA	APTA stands for American Public Transportation Association.
Area of Potential Environmental Concern (APEC)	An area within the Study Area where one or more contaminants are potentially present, as determined through the Contamination Overview Study including identification of past or present land uses of concern and/or identification of a Potentially Contaminating Activity (PCA).
AREMA	American Railway Engineering and Maintenance-of-Way Association. AREMA is the organization that represents the engineering function of the North American railroads.
Autotransformer	Apparatus which helps boost the overhead contact system (OCS) voltage and reduce the running rail return current in the 2 X 25kV autotransformer feed configuration. It is a single winding transformer having three terminals. The intermediate terminal located at the midpoint of the winding is connected to the rail and the static wires, and the other two terminals are connected to the catenary and the negative feeder wires, respectively.
Bare wires	Conductive wires which do not have insulation. These wires may be solid or stranded and are normally self-supporting.
Best Practices	Professional procedures that are accepted or prescribed as being correct or most effective.
Bonding	A low impedance path obtained by permanently joining all normally-non-current carrying conductive parts to ensure electrical continuity and having the capacity to conduct safely any current likely to be imposed on it.
CA	Acronym for Conservation Authority.
CAAQS	Canadian Ambient Air Quality Standards.
Cantilever	A beam that is supported by a pole at only one end and carries the load of the electrification equipment on top of tracks. At multiple track locations where cantilever frames are not practical, portal structures should be utilized.
Catenary System	An assembly of overhead wires consisting of, as a minimum, a messenger wire, carrying vertical hangers that support a solid contact wire which is the contact interface with operating electric train pantographs, and which supplies power from a central power source to an electrically-powered vehicle, such as a train.

Term	Definition
CEAA	Canadian Environmental Assessment Act.
CGL	Green Lands as defined by the Ecological Land Classification System.
Ch	The contraction of Chainage, measurement in kilometres along the rail corridors, starting at the center of Union Station and radiating outwards along the corridors.
Circuit	A conductor or system of conductors which form an electrical section between two switching points.
Class EA	Under the Ontario Environmental Assessment Act (EA Act), Class Environmental Assessments are those projects that are approved subject to compliance with an approved class environmental assessment process (e.g., Class EA for Minor Transmission Facilities, GO Transit Class EA, etc.) with respect to a class of undertakings.
CLOCA	Central Lake Ontario Conservation Authority.
Combustion	The chemical process where a substance reacts with oxygen to release energy.
Combustion Emissions	The emissions released from the combustion of fossil fuels. These include carbon dioxide (CO_2), carbon monoxide (CO), oxides of nitrogen (NOx), particulate matter, and volatile organic compounds (VOCs).
Conceptual Design	The conceptual design phase of a project is defined as the first design stage. This stage includes creating ideas and taking into account the pros and cons of those ideas. This is done to minimize project risks and evaluate the overall potential success of the project.
Conditional Heritage Property	A property, including buildings and structures on the property, that is determined to potentially have cultural heritage value or interest and that is not owned by Metrolinx.
Contact Wire	A solid grooved, bare aerial, overhead electrical conductor of an overhead contact system (OCS) that is suspended above the rail vehicles and which supplies the electrically powered vehicles with electrical energy through roof-mounted current collection equipment - pantographs - and with which the current collectors make direct electrical contact.
Control Centre	The building or room location that is used to dispatch trains and control the train and maintenance operations over a designated section of track.
Control Point	An established coordinate location for a physical feature. Control points are used as the basis for improving the spatial accuracy of all other points to which they are connected and for generating other points within an established distance or area around the control point.
COS	Contamination Overview Study.
COSEWIC	Committee on the Status of Endangered Wildlife in Canada.
COTS	Commercial Off-the-Shelf.
Cross Bonds	The method of tying tracks together electrically to equalize traction return currents between tracks. This is done to minimize touch potential.
Cross Feeding System	Overhead feeder lines are provided between the main gantry and strain gantry across the electrified track to feed power to the overhead contact system (OCS) wires.

Term	Definition
Cultural Heritage Evaluation Report (CHER)	A report prepared by, or with advice from a qualified heritage professional, who gathered and recorded, through research, site visits and public engagement, enough information about the property to sufficiently understand and substantiate its cultural heritage value.
Cultural Heritage Resource (CHR)	Includes archaeological resources, built heritage resources and cultural heritage landscapes.
Cultural Heritage Screening Report (CHSR)	A report prepared with advice by a qualified person who gathered and recorded, through research, site visits and public engagement enough information about the study area to identify those properties that have potential or known cultural heritage value.
Cultural Heritage Value or Interest	Cultural heritage value or interest: means the cultural heritage value or interest of a property determined in accordance with the "Criteria for Determining Cultural heritage value or interest" set out in Ontario Regulation 9/06 made under the Ontario Heritage Act or, in respect of properties of provincial significance, determined in accordance with the "Criteria for Determining Cultural Heritage Value of Provincial Significance" set out in Ontario Regulation 10/06 made under the Ontario Heritage Act and, for archaeological resources, means the cultural heritage value or interest of any archaeological resource as determined in accordance with the Standards and Guidelines for Consultant Archaeologists prepared and published by MTCS under the Ontario Heritage Act.
CUM	Cultural Meadow as defined by the Ecological Land Classification System.
CUW	Cultural Woodland as defined by the Ecological Land Classification System.
CV	Constructed Lands as defined by the Ecological Land Classification System.
CVC	Commercial and Institutional Lands as defined by the Ecological Land Classification System.
CVC Authority	Credit Valley Conservation Authority.
CVI	Transportation and Utilities as defined by the Ecological Land Classification System.
CVR	Residential Lands as defined by the Ecological Land Classification System.
Data Gap Analysis	An analysis conducted on previously available studies and research to see what information is missing in order to determine what requires further study.
dB/dBAa	A-weighted decibels, abbreviated dBA, or dBa, or dB(a), are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced, compared with unweighted decibels, in which no correction is made for audio frequency.
Deadhead Movements	Deadhead movements are considered to be empty train movements required to reposition a train before or after revenue service. (Revenue service entails train movements that carry fare paying passengers). Deadhead movements are also referred to as "unproductive moves" as they incur the costs of train operations, but are not offset by any revenue from passengers.
Detailed Design	The detailed design phase of a project is defined as the phase of the project where design is refined past the conceptual phase, when plans, specifications, and estimates are created. This will take place after the TPAP is completed and before the construction phase.

Term	Definition
DFO	Department of Fisheries and Oceans.
Disconnect Switches	An electrical switch for disconnecting electrical power from a line section.
Distribution Line (DL)	Electrical line conveying electricity at voltages less than 50kV.
DMU	Diesel Multiple Unit; a train comprising single self -propelled diesel units.
Double Stacked Freight (DSF)	Freight trains carrying double stack containers.
Duct Bank	A duct bank is an assembly of electrical conduits that are either directly buried or encased in concrete. The purpose of the duct bank and associated conduit is to protect and provide defined routing of electrical cables and wiring. It also provides physical separation and isolation for the various types of cables.
ELC	Ecological Land Classification. The system in place in Ontario for defining ecological units on the basis of bedrock, climate, physiology, and vegetation.
Electric Traction Facility	A traction substation, paralleling station, or switching station.
Electrical Potential	A measurement of the voltage (or potential difference) between two points in a system. For UP Express electrification, electrical potential is the electrical charge difference between the electrified UP Express railway and the ground. The unit for electrical potential is expressed in volts.
Electrical Section	This is the entire section of the overhead contact system (OCS) which, during normal system operation, is powered from a traction power substation (TPS) circuit breaker. The TPS feed section is demarcated by the phase breaks of the supplying TPS and by the phase breaks at the nearest SWS or line end. An electrical section may be subdivided into smaller elementary electrical sections.
Elementary Electrical Section	The smallest section of the overhead contact system (OCS) power distribution system that can be isolated from other sections or feeders of the system by means of disconnect switches and/or circuit breakers.
ELF	Extremely Low Frequency. ELF is the International Telecommunication Union (ITU) designation for electromagnetic radiation (radio waves) with frequencies from 3 to 30 Hz, and corresponding wavelengths from 100,000 to 10,000 kilometers.
EMC	Electromagnetic Compatibility. Electromagnetic compatibility is the ability of a device, equipment, or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.
EMF	Electric and Magnetic Field. Electric and magnetic fields arise from natural forces and permeate our environment. In addition to natural background EMF, anthropogenic sources include electric fields which arise anywhere electricity or electrical components are used and magnetic fields which arise wherever there is a flow of electric current. Common manmade sources of EMF include: electronics, power stations, transmission lines, telecommunication infrastructure, electric motors, etc. The strength of man-made EMF depends on the characteristics of the source including amongst others, voltage, current strength and frequency.
EMI	Electromagnetic Interference. Electromagnetic interference is a disturbance that affects an electrical circuit due to either electromagnetic induction or radiation from an external source.

Term	Definition
EMI Noise	Unwanted electrical signals that produce undesirable effects in the circuits of the control system in which they occur.
EMU	Electric Multiple Unit; a train comprising single self-propelled electric units.
END	Endangered, a designation for a Species at Risk.
EPR	Environmental Project Report. The proponent is required to prepare an Environmental Project Report to document the Transit Project Assessment Process followed, including but not limited to: a description of the preferred transit project, a map of the project, a description of existing environmental conditions, an assessment of potential impacts, description of proposed mitigation measures, etc. The EPR is made available for public review and comment for a period of 30 calendar days. This is followed by a 35-day Minister's Decision Period.
ESA	Environmentally Significant Area. These are natural areas which are particularly significant or sensitive requiring additional protection to preserve their environmental qualities and significance.
ESA, 2007	The *Ontario Endangered Species Act, 2007*.
ESAs	Environmental Site Assessments The study of a property to determine if contaminants are present and, if so, the location and concentration of these contaminants. This study includes a phase one environmental site assessment and where required a phase two environmental site assessment.
Feeder	A current-carrying electrical connection between the overhead contact system and a traction power facility (substation, paralleling station or switching station).
Flash Plate	A flash plate is a conductive plate installed above a bare energized wire and below reinforced concrete. The intent is to prevent 'flash over' which is where current finds its way into the reinforcing steel. Usually this is via water dripping, ice, or animals making the bridge between wire and concrete. The plate is bonded to the static wire.
FOD	Deciduous Forest as defined by the Ecological Land Classification System.
FOM	Mixed Forest as defined by the Ecological Land Classification System.
Fossil Fuels	A group of combustible materials that have been formed from decayed plants and animals. These materials are often used as fuel by combusting them to release energy. Fossil fuels include oil, coal, and natural gas.
FTA	FTA stands for Federal Transit Administration, a United States federal agency.
FWCA	Fish and Wildlife Conservation Act.
Gantry	The feeder wires from the traction power substation (TPS) will be connected to the overhead contact system (OCS) with the help of gantries. The main gantry (also referred to as the catenary feeding gantry) is the one parallel to the track and closest to the TPF. Gantries are also used for traction power distribution. The feeder wires from the facility will be connected to the OCS with the help of gantries.
GIS	Geographic Information Systems. GIS systems are designed to capture, store, visualize, manipulate, analyze, manage, and present spatial or geographical data.
Greenhouse Gases	Greenhouse gases are those gases that absorb infrared radiation emitted from the Earth thus containing the energy within the atmosphere. Total greenhouse gases are typically expressed as carbon dioxide equivalent (CO_2e), which is the total mass

Term	Definition
	of CO_2 that would have the same impact on climate change as a mixture of greenhouse gases.
Grounding	Connecting to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to limit the build-up of voltages to levels below that which may result in undue hazard to persons or to connected equipment.
Grounding Grid	A system of horizontal ground electrodes that consists of a number of interconnected, bare conductors buried in the earth, providing a common ground for electrical devices or metallic structures, usually in one specific location.
Heavy Maintenance	Heavy maintenance includes: replacement of engine traction motors, replacement of diesel engines on DMUs, replacement of transformers and ac propulsion systems on EMUs and replacement of wheel sets on engines. On railcars, heavy maintenance includes the replacement of wheel sets, repairs to windows and brake lines, and body repairs.
HiRail Vehicle	A road-rail vehicle which can operate both on rail tracks and a conventional road.
HRCA	Halton Region Conservation Authority.
HV	High Voltages, high voltages refers to electrical energy at voltages high enough to cause injury and harm to human beings and living species. Voltages over 1000 for alternating current, and 1500 V for direct current is considered high voltage.
Hydro One	Hydro One Incorporated delivers electricity across the province of Ontario. Hydro One has four subsidiaries, the largest being Hydro One Networks. They operate 97% of the high voltage transmission grid throughout Ontario.
ICNIRP	International Commission on Non-Ionizing Radiation Protection. The ICNIRP is an international commission specialized in non-ionizing radiation protection. ICNIRP is an independent nonprofit scientific organization chartered in Germany. It was founded in 1992 by the International Radiation Protection Association (IRPA) to which it maintains close relations.
Immunity	The ability of equipment to perform as intended without degradation in the presence of an electromagnetic disturbance.
Impedance Bonds	An electrical device located between the rails consisting of a coil with a centre tap used to bridge insulated rail joints in order to prevent track circuit energy from bridging the insulated joint, while allowing the traction return current to bypass the insulated joint. The centre tap can also be used to provide a connection from the rails to the static wire and/or traction power facilities for the traction return current.
Insulated Wires	Conductive wires which are covered in a layer of insulating material to provide protection that will increase safety and efficiency, and is used to stop the passage of electricity, heat, or sound from one conductor to another. These wires are normally supported on a weight-carrying messenger wire.
IPCC	The Intergovernmental Panel on Climate Change.
kV	Abbreviation for kilovolt (equal to 1000 volts).
LIO	Land Information Ontario.
LSRCA	Lake Simcoe Region Conservation Authority.

Term	Definition
LV	Low Voltage, according to the International Electrotechnical Commission (IEC) voltages between 50-1000 V for alternating current, and between 120-1500 V for direct current is considered low voltage.
MA	Marsh as defined by the Ecological Land Classification System.
Main Gantry	These 25kV feeders from the traction power facility (TPF) will be connected to the overhead contact system (OCS) with the help of main and strain gantries and a cross feeder arrangement. The main gantry also referred to as the catenary feeding gantry is the one parallel to and toward the TPF side of the track.
Maintenance Facility	A mechanical facility for the maintenance, repair, and inspection of engines and railcars.
MAM	Meadow Marsh as defined by the Ecological Land Classification System.
MAS	Shallow Marsh as defined by the Ecological Land Classification System.
MBCA	Migratory Birds Convention Act.
MEM	Mixed Meadow as defined by the Ecological Land Classification System.
Messenger Wire	In catenary construction, the overhead contact system (OCS) Messenger Wire is a longitudinal bare stranded conductor that physically supports the contact wire or wires either directly or indirectly by means of hangers or hanger clips and is electrically common with the contact wire(s).
Mi.	The contraction of Mileage, measurement in miles along the rail corridors. This is determined by historical corridor ownership and is not consistent throughout the network.
Mid-span	Area between two overhead contact system (OCS) registration points.
Milligauss	In electricity, a practical unit of magnetic induction equal to a thousandth of one gauss or of one c. g. s. electromagnetic unit.
Minister	Ontario Minister of the Environment and Climate Change.
Mitigation Measure	Actions that remove or alleviate, to some degree, the negative effects associated with the implementation of an alternative.
MNRF	Ontario Ministry of Natural Resources and Forestry.
Modelling	The process of using collected data and information to generate rational predictions regarding the future implementation of project components.
MOECC	Ontario Ministry of the Environment and Climate Change.
MTCS	Ontario Ministry of Tourism, Culture and Sport is responsible for the administration of the Ontario Heritage Act and may determine policies, priorities and programs for the conservation, protection and preservation of Ontario's heritage.
MTO	Ontario Ministry of Transportation.
MVA	Megavolt-Ampere. This is a unit for measuring the apparent power in an electrical circuit equivalent of one million watts.
NAPS	National Air Pollution Surveillance program.
Negative Feeder	Negative feeder is an overhead conductor supported on the same structure as the catenary conductors, which is at a voltage of 25kV with respect to ground but 1800 out-of-phase with respect to the voltage on the catenary. Therefore, the voltage between the catenary conductors and the negative feeder is 50kV nominal. The

Term	Definition
	negative feeder connects successive feeding points, and is connected to one terminal of an autotransformer in the traction power facilities (TPF) via a circuit breaker or disconnect switch. At these facilities, the other terminal of the autotransformer is connected to a catenary section or sections via circuit breakers or disconnects.
NEP	Niagara Escarpment Plan areas, part of the Greenbelt Plan.
Net Effect	The effect (positive or negative) associated with an alternative after the application of avoidance/mitigation/compensation/enhancement measures.
NHIC	Natural Heritage Information Centre.
NIEHS	National Institute of Environmental Health Sciences, a division of the United States National Institute of Health (NIH).
Notice of Commencement	The Proponent is required to prepare and distribute a Notice of Commencement, which "starts the clock ticking" for the 120-day portion of the transit project assessment process. Proponents must prepare and distribute a Notice of Commencement to indicate that the assessment of a transit project is proceeding under the transit project assessment process. Proponents must complete their documentation (the Environmental Project Report) of the transit project assessment process within 120 days of distributing the Notice of Commencement.
Notice of Completion	The Notice of Completion must be given within 120 days of the distribution of the Notice of Commencement (not including any "time outs" that might have been taken). The Notice of Completion of Environmental Project Report signals that the Environmental Project Report has been prepared in accordance with section 9 of the regulation and indicates that the Environmental Project Report is available for final review and comment (for 30 calendar days). Following the 30-day public review period, there is a 35-day Minister's decision period.
OA	Open Water as defined by the Ecological Land Classification System.
OAO	Open Aquatic Area
OBBA	Ontario Breeding Bird Atlas.
Ohms	Unit of electrical resistance. A low electrical resistance indicates a strong path which current can easily flow.
Ontario Heritage Act (OHA)	The Ontario Heritage Act provides the framework for provincial and municipal responsibilities and powers in the conservation of cultural heritage resources. See https://www.ontario.ca/laws/statute/90o18
OP	Municipal Official Plan.
Open Route	An area of tracks where there is no vertical conflicts to the overhead contact system (OCS).
ORMCP	Oak Ridges Moraine Conservation Plan.
ORRA	Ontario Reptile and Amphibian Atlas.
Overhead Contact System (OCS)	The acronym for the Overhead Contact Systems (OCS), which is comprised of: 1.The aerial supply system that delivers 2x25kV traction power from traction power substations to the pantographs of Metrolinx electric trains, comprising the catenary system messenger and contact wires, hangers, associated supports and structures including poles, portals, head spans and their foundations), manual and/or motor operated disconnect switches,

Term	Definition
	insulators, phase breaks, section insulators, conductor termination and tensioning devices, downguys, and other overhead line hardware and fittings. 2. Portions of the traction power return system consisting of the negative feeders and aerial static wires, and their associated connections and cabling.
Overhead Contact System (OCS) Impact Zone	The defined zone within which Overhead Contact System (OCS) infrastructure will be built (e.g., OCS foundations, portal/cantilever poles, etc.).
Overhead Structure	A structure that allows a road to cross over a railway underneath.
Overpass	A structure that allows a railway to cross over a road or watercourse underneath.
OWES	Ontario Wetland Evaluation System.
Pantograph	Device on the top of a train that slides along the contact wire to transmit electric power from the catenary to the train.
Paralleling Station (PS)	This type of traction power facility contains an autotransformer which helps support the overhead contact system (OCS) voltage in the electrified system.
Particulate Matter (PM)	Microscopic solid or liquid matter suspended in the atmosphere.
Performance Standards	General specifications and criteria that define the parameters and requirements of a particular system.
Phase Break	An arrangement of insulators and grounded or non-energized wires or insulated overlaps, forming a neutral section, which is located between two sections of overhead contact system (OCS) that are fed from different phases or at different frequencies or voltages, under which a pantograph may pass without shorting or bridging the phases, frequencies, or voltages.
Phase Break	An arrangement of insulators and grounded or non-energized wires or insulated overlaps, forming a neutral section, which is located between two sections of overhead contact system (OCS) that are fed from different phases or at different frequencies or voltages, under which a pantograph may pass without shorting or bridging the phases, frequencies, or voltages.
Pipeline	A line that is used or to be used for the transmission of oil, gas or any other commodity and that connects a province with any other province or provinces or extends beyond the limits of a province or the offshore area and includes all branches, extensions, tanks, reservoirs, storage facilities, pumps, racks, compressors, loading facilities, interstation systems of communication by telephone, telegraph or radio and real and personal property, or immovable and movable, and works connected to them, but does not include a sewer or water pipeline that is used or proposed to be used solely for municipal purposes.
Polycyclic Aromatic Hydrocarbons (PAH)	A group of compounds that contain only carbon and hydrogen and are composed of multiple aromatic rings. They are released from the burning of fuels.
Portal	Portal is an overhead contact system (OCS) structure that spans over the tracks between two OCS support poles located on the sides of the tracks in order to support the electrification equipment. The portal structure is used at multiple track locations where cantilever frames are not practical.

Term	Definition
Portal Boom	Top steel section or truss/lattice at the top of the portal structure, supported by two columns placed either side of the railway. The "portal boom" provides support points for the overhead contact system (OCS) conductors.
Positive Train Control	A signaling system using on board and wayside equipment to automatically reduce the speed, or stop a train depending on the conditions on the track ahead.
Potential Effect	A possible or probable effect of implementing a particular alternative.
Potential Provincial Heritage Property (PPHP)	A property which has the potential to fulfill the requirements of a Provincial Heritage Property.
Potentially Contaminating Activity (PCA)	Use or activity at a site that has the potential to result in soil and/or groundwater contamination. Examples of PCAs are set out in Table 2, Schedule D of *O.Reg. 153/04.*
Preliminary Design	The design of a proposed project (including a detailed cost estimate) to a level that demonstrates that the project is buildable within the given parameters of the design scope.
Preventive Maintenance	Preventive maintenance includes items such as: replacing brake pads, measuring wheels, inspection of running gear, inspection and repair of central air conditioning, check radios and repair/replace, repair broken windows and doors, etc.
Proponent	A person who carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.
Provincial Heritage Property of Provincial Significance (PHPPS)	A provincial heritage property that has been evaluated using the criteria found in Ontario Heritage Act O. Reg. 10/06 and has been found to have cultural heritage value or interest of provincial significance.
Provincial Heritage Property (PHP)	A real property, including buildings and structures on the property, that has cultural heritage value or interest and that is owned by the Crown in right of Ontario or by a prescribed public body; or that is occupied by a ministry or a prescribed public body if the terms of the occupancy agreement are such that the ministry or public body is entitled to make the alterations to the property that may be required under these heritage standards and guidelines. (Standard and Guidelines for Conservation of Provincial Heritage Properties, OHA)
Provincially Significant Wetland (PSW)	Wetlands deemed by the province to be ecologically significant in nature and thus protected from all development activities.
Rail Potential	The voltage between running rails and ground occurring under operating conditions when the running rails are utilized for carrying the traction return current or under fault conditions.
Receptor	Locations, structures, or facilities that have the potential to be impacted by or interact with the project.
RER	Acronym for Regional Express Rail. RER is the 10 year transit plan for the Greater Toronto Hamilton Area that is being implemented by Metrolinx. Electrification is a component of the RER plan.

Term	Definition
Resilient Arm	A combined registration and support assembly with vertical resilience, used for support of catenary conductors in situations with restricted clearance such as tunnels and overhead bridges.
Resultant Flux Density	The mathematical computation from the combination of the measured X, Y, and Z readings of milligauss (mG). It could be approximated using a sum of squares of these readings and then taking the square root, but in the case of all readings shown in this report, the device used computed this number automatically and presented it as the Resultant Flux Density.
ROW	Right of Way, the portion of land adjacent to tracks owned by the Railway (Metrolinx, CP, CN, etc.). Can be synonymous with rail corridor.
Running Rails	Rails that act as a running surface for the flanged wheels of a car or locomotive.
SAR	Species at Risk. These are plants or animals that are considered by the Government of Ontario to be endangered, threatened, of special concern, or extirpated.
SARA	Species at Risk Act.
SC	Species Concern, a designation for a Species at Risk.
SCADA	System Control And Data Acquisition. SCADA is a control system that controls and monitors the status of the industrial processes and devices for the electrification system. These devices may include motor operated disconnect switch, relay, meter and circuit break, of the Electrification System.
Screening	The process of applying criteria to a set of alternatives in order to eliminate those that do not meet minimum conditions or requirements.
Secondary Voltage	Typically less than 750V.
Service Maintenance	Service maintenance is the light maintenance of engines (i.e., window cleaning, check oil levels and sand levels, clean engine cab, refill potable water, and empty washroom holding tanks).
Shield	As normally applied to instrumentation cables, refers to a conductive sheath (usually metallic) applied, over the insulation of a conductor or conductors, for the purpose of providing means to reduce coupling between the conductors so shielded and other conductors that may be susceptible to, or which may be generating, unwanted electrostatic or electromagnetic fields (noise).
Shielding	Shielding is the use of the conducting and/or ferromagnetic barrier between a potentially disturbing noise source and sensitive circuitry. Shields are used to protect cables (data and power) and electronic circuits. They may be in the form of metal barriers, enclosures, or wrappings around source circuits and receiving circuits. Additionally shielding is used to protect overhead transmission lines or overhead contact system (OCS) from incidents of lightning, in regions of high isoceraunic activity. Shield wire is located above the exposed current carrying wires to provide a 45 degree angle of protection. In sensitive applications, the angle is reduced to 30 degrees for more conservative design.
SHO	Open Shoreline as defined by the Ecological Land Classification System.
Signal System	The rail signal system is a combination of wayside and on board equipment and/or software to provide for the routing and safe spacing of trains or rail vehicles.

Term	Definition
Signal Bridges	A structure for mounting signals that spans one or more tracks. Signal bridges may be footed on both ends, or they may be 'cantilever signal bridges', footed only on one end.
Spur	A railroad track that diverges from the main track to service a specific location or industry.
Static Wire	A wire, usually installed aerially adjacent to or above the catenary conductors and negative feeders, that connects overhead contact system (OCS) supports collectively to ground or to the grounded running rails to protect people and installations in case of an electrical fault.
Strain Gantry	These 25kV feeders from the traction power facility (TPF) will be connected to the overhead contact system (OCS) with the help of main and strain gantries and a cross feeder arrangement. The strain gantry is located within the right-of-way (ROW) parallel to and on the opposite side of the track from the TPF, with footprints exactly equal to that of the main gantry.
Study Area	The study area references to geographic space that is being examined for the Metrolinx Network Electrification Environmental Assessment.
SW	Swamp as defined by the Ecological Land Classification System.
SWD	Deciduous Swamp as defined by the Ecological Land Classification System.
Switching Station (SWS)	Switching stations are traction power facilities that are required approximately mid-way between Traction Power Substations in order to split the electrical sections.
TAG	Treed Agriculture as defined by the Ecological Land Classification System.
THD	Deciduous Thicket as defined by the Ecological Land Classification System.
Third Rail	A third rail is a way of providing electric power to a railway train, through a semi-continuous rigid conductor placed alongside or between the rails of a railway track. Third rail systems are always supplied from direct current electricity as opposed to alternating current electricity.
THR	Threatened, a designation for a Species at Risk.
Top of Rail	Top of Rail is defined as the highest point in a running rail profile.
Touch/Step Potential	Touch potential is defined as the voltage between the energized object and the feet of a person in contact with the object. Step potential is defined as the voltage between the feet of a person standing near an energized grounded object.
Traction Power Return System	The traction power return system includes all conductors (including the grounding system) for the electrified railway tracks, which form the intended path of the traction return current from the electrified rolling stock to the traction power substations. Conductors may include: • Running rails • Impedance bonds • Static wires, and buried ground or return conductors • Rail and track bonds • Return cables, including all return circuit bonding and grounding interconnections • Ground • Negative feeders due to the configuration of autotransformer connections.

Term	Definition
Traction Power Facility (TPF)	A general term to classify Traction Power Substations, Paralleling Stations, and Switching Stations.
Traction Power Substation (TPS)	Part of the power supply components of the system; it is a traction power facility (TPF) that transforms the utility supply voltage for distribution to the trains via overhead contact system (OCS).
Transmission Line (TL)	Electrical line conveying electricity at voltages more than 50kV.
Transmission Tap	The point at which electric power is 'tapped' from the existing Hydro One power source.
TRCA	Toronto and Region Conservation Authority.
Underground Feeder Connection	An underground conduit carrying electrical connection between the overhead contact system and a traction power facility (i.e., traction power substation, paralleling station or switching station).
Utility	A utility is an entity that generates, transmits and/or distributes electricity, water and/or gas from facilities that it owns and/or operates, including electrical transmission and distribution companies, communication companies, community antenna distribution systems and regional / municipal authorities.
View-shed	The area of visual influence of the project components.
Volatile Organic Compounds (VOCs)	A class of chemicals that contain carbon, hydrogen, and oxygen atoms and have high vapour pressures at room temperature, and therefore exist predominantly in the gas phase.
Wayside Power Control Cubicles (WPCs) and Signal Cases	A wayside installation that houses remote terminal unit (RTU) and dc power supply unit for motor operated disconnect switches at locations other than traction power facilities.
WOD	Woodland as defined by the Ecological Land Classification System.

Executive Summary

Introduction

In accordance with the *Transit Projects and Metrolinx Undertakings (Transit Projects Regulation) O*.Reg 231/08, an assessment of baseline conditions within the Study Area (see **Figure E- 1)** was conducted for the GO Rail Network Electrification Transit Project Assessment Process (TPAP). Accordingly, this volume provides a summary of the baseline environmental conditions within the GO Rail Network Electrification Environmental Assessment (EA) Study Area. For information on project design and technical components refer to Environmental Project Report (EPR) Volume 1.

The purpose of preparing a baseline study is to establish a snapshot of the conditions of the Study Area during a specific period of time, depending on the scope of the study. The baseline conditions form the basis from which the impact assessment is carried out, as described in EPR Volume 3.

Further details of baseline conditions are contained in each of the respective supporting reports/studies (included as Appendices to this EPR). Generally, baseline conditions data was collected through a combination of: 1) review of background information/reports, and 2) field investigations (as required) and was summarized in order to characterize the existing conditions within the Study Area. Specific methodologies used to collect data for each discipline are summarized in this volume and described in full in the respective supporting reports.

Project Study Area and Components

The Study Area is defined as follows:

1. **Union Station Rail Corridor (USRC)** – From Union Pearson (UP) Express Union Station to Don Yard Layover
2. **Lakeshore West Corridor** – From just west of Bathurst Street (Mile 1.20) to Burlington
3. **Kitchener Corridor** – From UP Express Spur (at Highway 427) to Bramalea GO Station
4. **Barrie Corridor** – From Parkdale Junction (off Kitchener Corridor) to Allandale GO Station
5. **Stouffville Corridor** – From Scarborough Junction (off Lakeshore East Corridor) to Lincolnville GO Station
6. **Lakeshore East Corridor** – From Don Yard Layover to Oshawa GO Station

Within the scope of the GO Rail Network Electrification undertaking[1] there are 16 traction power facilities (TPF), which include Traction Power Substations (TPS), Switching Stations (SWS) and Paralleling Stations (PS) and five (5) Tap locations, as shown in **Table E-1**. A conservative 30 metre buffer area was established

[1] *Three additional traction power facilities, i.e., Ordnance PS, Eglinton PS, CityView TPS were previously assessed as part of the Metrolinx Union Pearson Express Electrification TPAP (June 2014)*

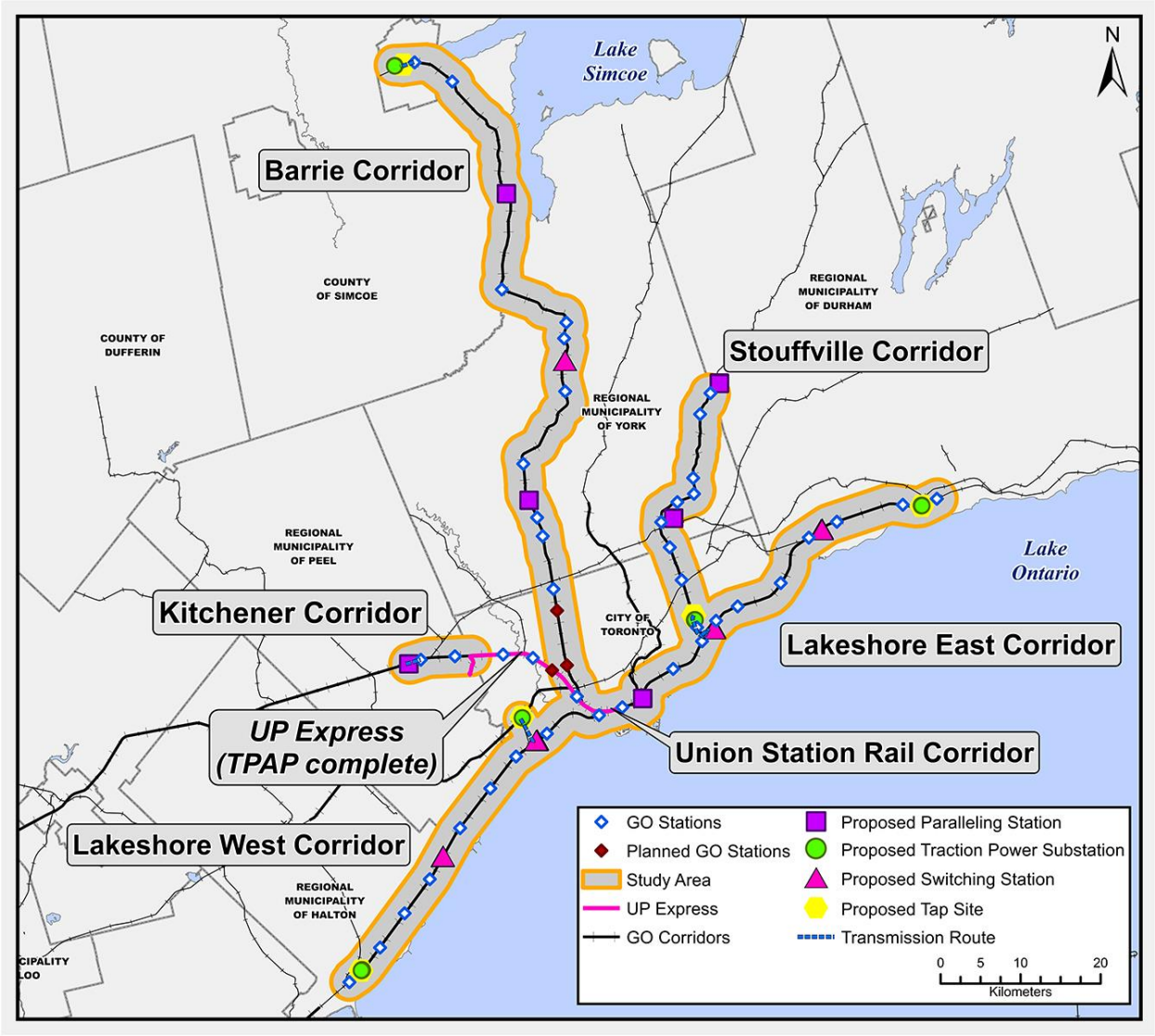
around these elements of the Study Area at the baseline conditions phase to allow for comprehensive baseline data collection.

Table E-1: Summary of Traction Power Facilities by Corridor

GO Corridor	Type of Facility	Location(s)
Union Station	Tap Point	• None
	TPS	• None
	SWS	• None
	PS	• None
	Feeder Route	• None
Lakeshore West	Tap Point	• Burlington Tap • Mimico Tap
	TPS	• Burlington • Mimico
	SWS	• Mimico • Oakville
	PS	• None
	Feeder Route	• Canpa 25kV Feeder Route
Kitchener	Tap Point	• None
	TPS	• None
	SWS	• None
	PS	• Bramalea
	Feeder Route	• Bramalea 25kV Feeder Route
Barrie	Tap Point	• Preferred Allandale Tap • Alternative Allandale Tap
	TPS	• Allandale
	SWS	• Newmarket
	PS	• Gilford • Maple
	Feeder Route	• Barrie-Collingwood Railway 25kV Feeder Route
Stouffville	Tap Point	• Scarborough Tap
	TPS	• Scarborough
	SWS	• None
	PS	• Unionville • Lincolnville
	Feeder Route	• Scarborough 25kV Feeder Route
Lakeshore East	Tap Point	• East Rail Maintenance Facility (ERMF) Tap
	TPS	• ERMF
	SWS	• Scarborough • Durham

GO Corridor	Type of Facility	Location(s)
	PS	• Don Yard
	Feeder Route	• Scarborough 25kV Feeder Route

Figure E- 1: Study Area Map



Technical Disciplines

The following disciplines prepared Baseline Condition Reports to summarize their findings (included as **Appendices A1-J1**):

- Natural Environment;
- Contaminated Lands;
- Cultural Heritage;

- Archaeology;
- Land Use and Socio-economics;
- Air Quality;
- Noise and Vibration;
- Visual;
- Utilities; and
- Electromagnetic Interference/Electromagnetic Fields.

Baseline conditions for the following disciplines were also summarized in combined baseline conditions and impact assessment reports (included as **Appendices K and V)**:

- Stormwater Management (for TPF sites only); and
- Groundwater and Wells.

Natural Environment

In order to identify and document existing terrestrial and aquatic conditions within the Study Area, the boundaries and existing natural features were defined, described and delineated. The desktop review consisted of an assessment of existing background information and a Data Gap Analysis. Utilizing the results of the desktop review (background review and Data Gap Analysis) field investigations or aerial photographic interpretation were conducted to update or augment presently available terrestrial baseline information. Aerial photography was used for vegetation community interpretation and delineation. The Land Information Ontario (LIO) Woodland and Wetland layers were overlaid on aerial photography to assist with confirmation of woodland and wetland features. Detailed Aquatic assessments were not completed at this stage, as it is anticipated that impacts to aquatic habitat as a result of the Project will be minimal.

Preliminary Environmental Site Assessment

Two Preliminary Environmental Site Assessment Studies were completed in order to assess the potential subsurface contamination within the Study Area. To aid in the identification of areas of potential subsurface contamination for each of the 16 identified TPF properties (the six TPSs, four SWSs and six PSs, a Preliminary Environmental Site Assessment Study was conducted on adjacent lands within 30 m. A separate Preliminary Environmental Site Assessment Study of the rail corridors and existing maintenance facilities was also completed.

Archaeology

A comprehensive review of the existing archaeological conditions within the Study Area based on a review of available secondary source information (i.e., previously completed archaeological assessment reports/studies) was undertaken. This included a Data Gap Analysis along the corridors to identify where previous archaeological assessment work has not yet been undertaken. The purpose of this review exercise was to inform the next step in the process which will entail completion of Stage 1 Archaeological

Assessments (provided as **Appendix D2** of the EPR) at those specific locations where no previous archaeological assessment work has been undertaken.

Land Use and Socio-economic

A background information review was conducted whereby available mapping data and other information were collected and reviewed to identify existing and planned land uses. A Data Gap Analysis was conducted to identify sections of the Study Area that do not have publically available mapping of land use and zoning.

Mapping was created for all of the rail corridors based on the background information reviewed. These maps identified land uses adjacent to the rail corridors and proposed traction power facilities, as well as sensitive receptors on either side of the rail corridors within 40 metres based on a potential zone of influence.

Air Quality

The air quality study used data from nine urban monitoring locations, nine suburban monitoring locations, and two rural monitoring locations. The concentrations from these locations were assumed to be representative of air quality in the vicinity of rail corridors that travel through urban, suburban, and rural areas. The study was limited by the availability of recent monitoring data.

The baseline Air Quality assessment completed a background review of air quality data for the corridor, using data from monitoring stations. Air quality was classified into three categories:

- Urban: characteristic of urban areas or dominated by emissions from major highways;
- Suburban: influenced by surrounding neighbourhoods but not from major emission sources and highways; and,
- Rural: representative of background levels in less populated areas without influence from significant human activities.

Noise and Vibration

Present day ambient conditions were modelled to determine “baseline conditions” for the entire Study Area. Representative receptors throughout the corridors as well as existing rail traffic and noise barriers were identified and used as key inputs to the modelling exercise.

Visual

The analysis relied heavily on available aerial photography and the availability of existing GIS mapping layers to described baseline conditions, as well as previous EAs completed by Metrolinx along the rail corridors. Features shown on aerial photographs and GIS maps, as well as those described in past studies, were strategically ground-truthed to ensure that all potentially impacted features were accurately located on the maps.

Utilities

As part of the GO Rail Network Electrification TPAP, existing buried and overhead utilities data, and information on planned utility expansions to the 2025 build out horizon, were collected within the Study Area. Utility baseline data were collected within an area of 5 m on either side for the existing rail ROW. Utility data provided by Metrolinx were augmented with data collected from third party utility owners through data requests.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

The description of baseline conditions relating to EMI/EMF involved two components: 1) identification, via desktop analysis, of potential EMI-sensitive sites within the Study Area; and, 2) establishment of present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area.

Stormwater Management

Baseline Conditions were established for Stormwater Management at each of the proposed Traction Power Facility sites by utilizing information collected as part of field investigations and from background information review. The Baseline Stormwater Management Condition assessment provides information regarding existing drainage patterns, existing drainage features, potential outfall locations for the minor and major flows from the site area, existing land use, and estimated runoff coefficient and soil type.

Groundwater and Wells

Baseline conditions for groundwater and wells were established by identifying all water supply wells, Wellhead Protection Areas, and groundwater dependent natural heritage features within 500 m of each rail corridor and traction power facility proposed as part of the GO Rail Network Electrification project.

Union Station Rail Corridor (USRC)

Taps, Traction Power Facilities (TPFs) & Feeders

There are no Taps, TPFs or Feeder Routes within the USRC.

Natural Environment

Based on the Natural Environment Baseline Investigation, there are no identified wetlands within this portion of the Study Area and generally minimal canopy cover (i.e., < 10%). There is one watercourse within the study area, the Don River. There are also no designated natural areas within this Study Area, however a total of one Species at Risk (SAR) with suitable habitat *and* potential to occur within the USRC, one bird (Chimney Swift - Threatened).

Preliminary Environmental Site Assessment

The Corridor Preliminary Environmental Site Assessment Study determined that two previous Phase II Environmental Site Assessments (ESAs) were completed in 2000 and identified several areas of contamination in this corridor and concluded that the extent of contamination was relatively minor and the risk is low due to lack of exposure pathways.

Two portions of this corridor, totalling 1.8 km in length of the 2.8 km long corridor, were not covered in the ESA studies. Additional contamination studies are required for contaminated lands in order to understand the nature of the contamination.

Cultural Heritage

A total of nine (9) resources (e.g., buildings, subways, bridges with heritage value) were subject to heritage screening. Of these, seven (7) were identified as Provincial Heritage Property (PHP) and/or Provincial Heritage Property of Provincial Significance (PHPPS), and two (2) were identified as protected heritage properties adjacent to the study area.

Union Station is a National Historic Site (2006 and 2007) and was identified by Metrolinx as a Provincial Heritage Property of Provincial Significance (2016). A Heritage Impact Assessment (HIA) has also been completed for Union Station for electrification modifications to the train shed.

Archaeology

A review of the historic land use of the USRC indicates that it has been occupied by Aboriginal peoples for thousands of years. The potential for the survival of any Aboriginal archaeological remains in primary contexts within this corridor is essentially nil. Such sites will not have survived the historic development activities that have removed or heavily altered all elements of the original topography. There is some potential for Euro-Canadian Settlement sites in this area. Only 1 ha of the corridor was subject to assessment during previous overlapping projects, therefore the remainder of the corridor was subject to Stage 1 Archaeological Assessment for this TPAP to confirm which lands have further archaeological potential and require Stage 2 Archaeological Assessment.

Land Use and Socio-economic

USRC is completely within the City of Toronto, and generally classified as an urban environment with mixed use apartment neighbourhoods and multiple municipal expressways adjacent to the rail corridor. Recreational amenities of note near the USRC include Corktown Common and the multi-use Lower Don Trail and Martin Goodman Trail. Secondary Plans which may influence the Study Area lands are the King-Parliament Secondary Plan; the Central Waterfront Secondary Plan; and the Lower Sherbourne Street Pedestrian Promenade Plan. An approval for a connecting section of the Lower Don Recreational Trail is within the USRC Study Area. Additionally, the corridor will be within proximity to the proposed Don Landing Re-design, within the Lower Don Trail area.

There are 23 sensitive receptor facilities (schools, child care centres, long term care centres and hospitals) in the vicinity (i.e., within approximately 500 m) of the USRC. Of the 23 sensitive receptor facilities, only one (1) is less than 40 m from the rail corridor.

Air Quality

Using the three Air Quality classifications discussed above, USRC was classified as *Urban*.

Noise and Vibration

Predicted baseline noise levels range from 50.4 dBA to 65.5 dBA as shown in **Table E- 2**.

Table E- 2: Predicted Baseline Noise Levels for USRC

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R07	Daytime	59.2
	Nighttime	58.5
R08	Daytime	65.5
	Nighttime	63.5
R09	Daytime	65.1
	Nighttime	63.2
R10	Daytime	60.1
	Nighttime	58.1
R11a	Daytime	56.2
	Nighttime	53.8
R11b	Daytime	53.1
	Nighttime	50.4

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Present day vibration levels were modelled to determine "baseline conditions" for the USRC Study Area. Predicted baseline vibration levels range from 0.11 mm/s to 1.70 mm/s as shown in **Table E- 3**.

Table E- 3: Predicted Baseline Vibration Levels for USRC

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s) [2]
Go Train	R09	49	No	22	0.30
VIA Train		47			0.11
Freight Train		24			1.7

[1] See Figure 2a for receptor location of Appendix G.
[2] Vibration levels are presented in mm/s root-mean-square (RMS) in the vertical direction.

Visual

The USRC passes through a portion of downtown Toronto, the St. Lawrence Market area, and the Distillery District. The views from a number of low- and mid-rise residential buildings may be affected by the introduction of electrification infrastructure along the rail corridor. Historic buildings in the Distillery District also have direct views over the rail corridor, though views from some of these buildings are already compromised by billboards between them and the tracks.

There are no road bridges over the railroad in this section. However, there are rail bridges where roads pass under the railroad which have heavily-used sidewalks and views from the approaches which may be altered by the introduction of electrification infrastructure across these bridges. The only GO Station in this section is Union Station.

Utilities

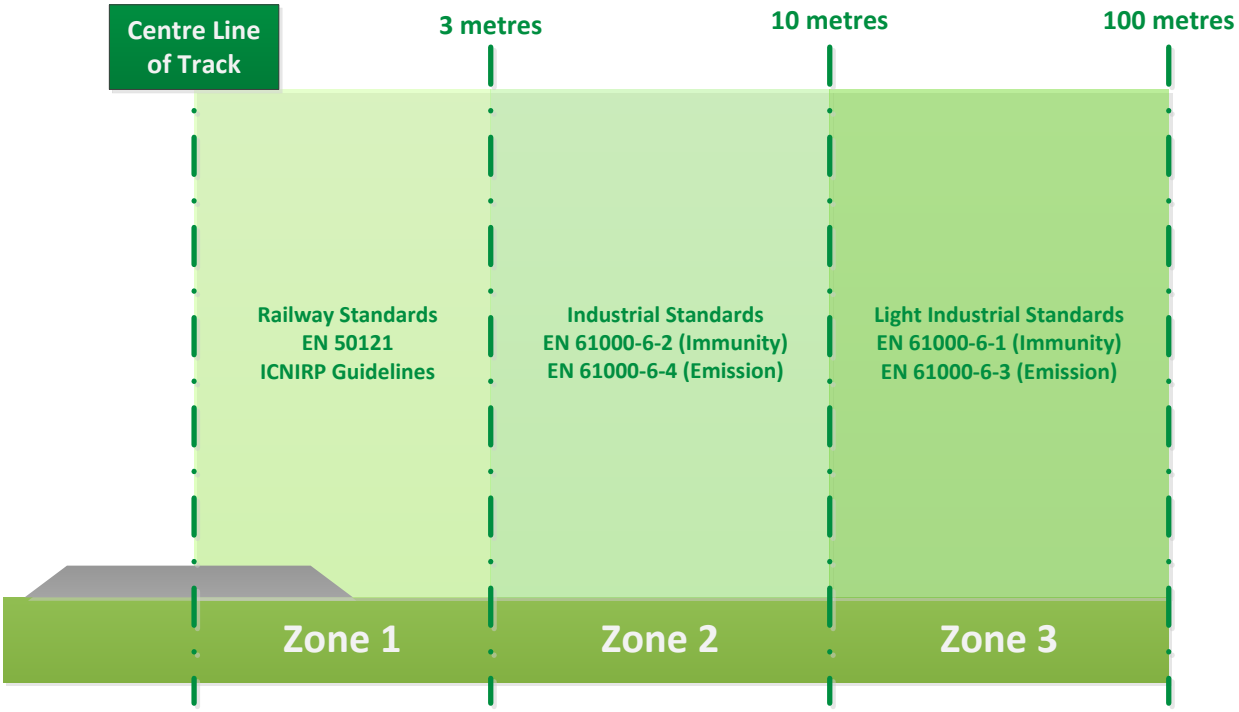
A number of utilities cross or occur within the Right-of-Way (ROW). These crossings include both subsurface and overhead hydro transmission (Hydro One, Enwave), hydro local distribution (Toronto Hydro, Toronto Transit Commission (TTC)), watermains (Enwave), sanitary sewers (Enwave), stormwater sewers (Enwave), gas mains (Enbridge Gas), and communications lines (Allstream, Bell/360, Bell, Bell Mobility, Rogers, Sprint). The impact assessment stage will determine the potential conflicts between the project and any identified utilities in the corridor.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

Electrification can introduce higher frequency EMI, which can interfere with the proper functioning of EMI-sensitive equipment such as medical imaging equipment and airport navigation systems. EMI receptors in the vicinity of the GO Rail network were thus classified into four broad categories (airports, hospitals, medical imaging facilities, and heliports) and mapped to identify those near to the Study Area which may be affected by electrification. For the purposes of describing baseline conditions, areas along the corridors and near Traction Power Facility sites were divided into three zones as shown in **Figure E- 2**:

- **Zone 1**: Existing Metrolinx and the neighbouring right-of-way railway systems and equipment up to 3 m from the centreline of the outermost track.
- **Zone 2**: Metrolinx and external third party systems and equipment, located on the right-of-way and/or outside the right-of-way but in close proximity to the tracks up to 10 m from the centreline of the outermost track.
- **Zone 3**: External third-party EMI-sensitive sites (airports, hospitals, medical imaging facilities, and heliports) located between 10 m and 100 m from the centerline of the outermost track and/or from the proposed Traction Power Facility Sites.

Figure E- 2: Electromagnetic Compatibility (EMC) Investigation Zones & Applicable Standards



As part of the EMI/EMF Impact Assessment phase, background EMI measurements were completed at locations that represent typical locations for EMI-sensitive sites, based upon the lists and maps developed during this task.

The measurement of EMF baseline conditions focused on Extremely Low-Frequency (ELF) EMF, which is expected to exist along the corridors already. A quantification of EMF ELF and verification that it is within safe ranges for both commercial and residential cases provides assurance that construction can proceed without undue concern. Locations that were identified as having a baseline level of this energy above Background Levels (i.e., Resultant Flux Density magnitude >1.0 mG) were identified, and those defined as being >10 mG were flagged as locations for post-electrification measurement of ELF EMF. It should be noted that the ELF EMF survey results indicate that there are no areas within the Study Area which exceed EMF Guidelines for human exposure.

Based on the baseline mapping for the USRC, one EMI-sensitive site was identified within Zone 3 or closer (i.e., less than 100 m from the closest track). This was added to the list of candidate sites at which to collect baseline EMI scans during the Impact Assessment phase.

There were three high-ELF (> 10 mG) areas along this section of the corridor, with resultant flux density magnitude (mG) of 11.0, 19.4. And 19.4. These are locations where post-electrification measurement of ELF EMF is recommended.

Stormwater Management

There are no Traction Power Facilities proposed within the Union Station Rail Corridor as part of the GO Rail Network Electrification Project, therefore no further investigation or analysis was undertaken.

Groundwater and Well

There are no traction power facilities (TPF) or Tap locations within the Union Station Rail Corridor. There are two (2) waterbodies, Lake Ontario and Don River, located within 500 m of the rail corridor. There are no water supply wells within 500m of this corridor.

Lakeshore West Corridor

Taps, Traction Power Facilities (TPFs) & Feeders

Burlington Tap Location and TPS

The Burlington Tap/TPS is to be located on a parcel of land situated east of 845 Laurentian Drive in Burlington, and includes the existing Hydro One Cumberland Transformer Station (TS). The site is accessed via Cumberland Avenue, which does not cross the railroad and terminates at the Cumberland TS. The parcel is currently a parking lot, short driveway, the Cumberland TS with associated transmission lines, and some open space/vegetation. It is located between a building supply operation to the east and a manufacturer of transformers to the west. A permit has been issued to expand the existing Hydro One TS, and a site plan has been approved for the empty lot to the north of the TPS/Tap site, which is now in building permit stage.

The site is generally hidden from views from the surrounding area, assuming it does not invade the Cumberland Avenue right-of-way. However, immediately to the west of this shopping centre there is a vacant parcel of land on Fairview Street which allows views across the railroad to the Tap and TPS.

The site has limited wildlife habitat and no aquatic features. There is low potential for Butternut (Endangered) to be present within Deciduous Thicket (THD) communities and low potential for Monarch (Special Concern) to occur within CUM communities at the site.

Lands in the vicinity of the site have potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as such a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken. The site has no heritage properties.

The air quality for the site has been classified as Urban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the Burlington Tap site include the Hydro One substation and transmission towers, watermains, buried gas mains, and communications infrastructure. ELF EMF levels were measured as Background only (i.e., < 1.0 mG), indicating that they are not a concern at this site.

Mimico Tap Location and TPS

The Mimico Tap and TPS is located approximately 3 km north of the Lakeshore West Corridor along the Milton Corridor. It is currently vacant lot/open space, with a building and associated parking lots/storage areas. The site is bordered by a rail corridor to the east, the Milton Corridor to the north and northwest, commercial/industrial buildings to the west, and a train layover yard and associated facilities to the south. The Mimico Tap and TPS facility will be visible from an existing high-rise residential building and a residential complex under construction to the north of the Milton Corridor; however, most of the existing building's windows do not overlook the site.

The Tap and TPS location does not contain specialized habitat for wildlife, and there are no aquatic features on the site. Lands in the vicinity of the site have potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as such a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken. The site has no heritage properties.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the Mimico Tap and TPS site include Hydro One overhead wires. ELF EMF levels were measured as 3.5 mG, which is low enough (<10 mG) to not warrant further investigation at this site.

Mimico SWS

The Mimico SWS is to be located on a parcel of land at 36 Towns Road in Toronto, just west of the GO Transit Willowbrook Rail Maintenance Facility and north of the rail corridor. Towns Road is an industrial cul-de-sac, and the parcel is surrounded by industrial development. The parcel is currently being used as an industrial storage area, with some vegetation cover adjacent to the rail corridor.

The Mimico SWS site has limited vegetation areas, and there are no aquatic features or wildlife habitat on the site. The site has a high risk ranking for contamination, and a Phase I ESA and subsurface investigation are recommended to determine if contamination is present. The site has potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as such a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken. The site has no heritage properties.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the Mimico SWS site include watermains, sanity sewers, stormwater sewers, and buried conduits. ELF EMF levels were measured as Background Only (i.e., < 1.0 mG), indicating that they are not a concern at this site.

25kV Feeder Route (Canpa Rail ROW)

A 25kV Feeder Route will be located from the Mimico Tap/TPS location to the Mimico SWS. The feeders will be aerial, and will be located along the Canpa rail ROW that connects the Milton and Lakeshore West

Corridors. The rail ROW is surrounded almost entirely by commercial and industrial areas, the exception being a park just north of Horner Avenue.

The feeder route has no aquatic features or significant wildlife habitat. The site has a low risk ranking for contamination, and it is recommended that the quality of excess soil generated during installation be characterized to determine management options. The feeder route has no potential for archaeological sites, and no heritage properties.

Utilities on or near the site include overhead and buried hydro utilities, watermains, sanitary sewers, stormwater sewers and communications infrastructure. ELF EMF levels were measured as Background Only (i.e., < 1.0 mG), indicating that they are not a concern at this site.

Oakville SWS

The Oakville SWS is to be located on a parcel of land at 560 Maple Grove Drive in Oakville. The site is southeast of the rail corridor and is currently an intermodal facility (parking/storage area), with a shopping plaza and office buildings to the south.

The Oakville SWS site does not provide suitable wildlife habitat, and there are no aquatic features present at the site. The site has a low risk ranking for contamination, and a Phase I ESA and limited subsurface investigation are recommended to determine if contamination is present. The site has potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as such a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken. The site has no heritage properties.

The air quality for the site has been classified as Urban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include a Hydro One transformer station, buried pipelines, watermains, sanitary sewers, gas mains, and buried conduits. ELF EMF levels were measured as 3.7 mG, which was found to be below the conservative 10 mG threshold identified for further investigation in the impact assessment phase

Natural Environment

Based on the Natural Environment Baseline investigation, there are four Provincially Significant Wetlands, or PSWs (Lower Humber River Wetland Complex, Credit River Mashes Wetland Complex, Oakville Creek Wetland Complex, Lower Bronte Creek PSW Complex), four Areas of Natural and Scientific Interest or ANSIs (Humber River Coastal Marsh Candidate ANSI, High Park Oaks Woodlands Life Science ANSI, Credit River Coastal Marsh ANSI, Lorne Park Prairie Life Science ANSI), and one evaluated wetland (Fudger's Marsh) within the Lakeshore West Corridor Study Area.

The following watercourses are also within the Study Area: Lower Humber River, Mimico Creek, Etobicoke Creek, Applewood Creek, Cooksville Creek, Serson Creek, Mary Fix Creek, Kenollie Creek, Credit River, Tecumseh Creek, Lornewood Creek, Birchwood Creek (East and West), Turtle Creek, Sheridan Creek, Avonhead Creek, Joshua's Creek, Wedgewood Creek, Morrison Creek, Sixteen Mile Creek, Fourteen Mile

Creek, McCraney Creek, Bronte Creek, Sheldon Creek, Appleby Creek, Shoreacres Creek, Tuck Creek, Roseland Creek, and Indian Creek.

Based on aerial photo interpretation, vegetation communities within the Lakeshore West Study Area range from containing limited canopy cover (i.e., > 10 %) to intermediate cover (20 to 70%).

A total of 33 SAR with suitable habitat *and* potential to occur are found within the Lakeshore West Corridor. These include five (5) vascular plants, fifteen (15) birds, five (5) herpetofauna, one (1) insect, four (4) mammals, and three (3) fish.

Preliminary Environmental Site Assessment

The Corridor Preliminary Environmental Site Assessment Study determined that a Phase II ESA was completed in 2011 which identified several areas of contamination. These ESAs showed elevated concentrations of metals between Strachan Avenue and Dufferin Street and around the Mimico GO Station, as well as elevated metal and hydrocarbon concentrations near Grand Avenue Park and near the Willowbrook Rail Yard. Approximately 37 km of this 48.1 km corridor have not been subject of site assessment. Additional contamination studies are required for contaminated lands in order to understand the nature of the contamination.

Cultural Heritage

A total of thirty-eight (38) resources were subject to heritage screening. Of these, twenty-five (25) were determined to be non-heritage properties, nine (9) were identified as PHP and/or PHPPS, and four (4) were identified as protected heritage properties adjacent to the study area.

Specifically, as part of this TPAP Cultural Heritage Evaluation Reports (CHERs) were undertaken for eleven (11) of the resources: Sunnyside Pedestrian Walkway, Gardiner Expressway Bridge, Topiary Signs, Islington Avenue Bridge, Willowbrook Maintenance Facility, Credit River Bridge, Joshua Creek Bridge, Sixteen Mile Creek and Cross Avenue Bridges, Etobicoke Creek Bridge, Bronte Creek Bridge, and the Drury Lane Pedestrian Bridge.

In addition, CHERs have previously be completed under separate Metrolinx undertakings for Dufferin Street Bridge and the Humber River Bridge.

Archaeology

A review of the historic land use of the Lakeshore West Corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. The corridor also includes both historic features and transportation routes. The corridor has been subject to at least 10 previous archaeological assessments, and approximately 11.3 ha has been previously assessed. As there is some potential for the Study Area to overlap with features which may provide archaeological value (areas of Euro-Canadian settlement, historic transportation routes, historic features, previously registered archaeological sites, and watercourses), and given its proximity to cemeteries, further archaeological assessment is required as

described in **Appendix D1**. A Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

Land Use and Socio-economic

From Union Station, the Lakeshore West Corridor is primarily urban, passing through the south west end of Toronto, then through the City of Mississauga, Town of Oakville and City of Burlington. The route includes two Regional municipalities (Peel Region and Halton Region).

There are 109 sensitive receptor facilities (schools, child care centres, long term care centres and hospitals) in the vicinity (i.e., within approximately 500 m) of the Lakeshore West Corridor. Of these, three are less than 40 m from the rail corridor.

A number of parks the Pan Am Path multi-use and Etobicoke Valley Trails are adjacent to the rail corridor, and the following Secondary Plans may influence the Study Area lands: Swansea Secondary Plan, Lakeview Local Area Plan, Clarkson Village Local Area Plan, and Southdown Local Area Plan.

Air Quality

Using the Air Quality classifications discussed above, air quality within the Lakeshore West Corridor was classified as changing from Urban (from just west of Bathurst Street (Mile 1.20) Ave to Mimico Station) to Suburban (from Mimico Station to Clarkson Station) and back to Urban (from Clarkson Station to Burlington Station).

Noise and Vibration

Present day ambient conditions were modelled to determine "baseline conditions" for the entire Lakeshore West Corridor Study Area. Representative receptors throughout the corridor as well as existing rail traffic and noise barriers were identified and used as key inputs to the modelling exercise.

Predicted baseline noise levels range from 50.0 dBA to 80.7 dBA, as shown in **Table E- 4**.

Table E- 4: Predicted Baseline Noise Levels for the Lakeshore West Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R01	Daytime	79.0
	Nighttime	71.9
R02	Daytime	80.7
	Nighttime	73.7
R03	Daytime	63.6
	Nighttime	62.5
R04	Daytime	60.2
	Nighttime	57.5
R05	Daytime	64.7
	Nighttime	62.3
R06	Daytime	56.9
	Nighttime	55.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R07	Daytime	61.3
	Nighttime	60.8
R08	Daytime	60.1
	Nighttime	59.5
R09	Daytime	62.6
	Nighttime	60.6
R10	Daytime	62.1
	Nighttime	60.2
R11	Daytime	67.6
	Nighttime	64.0
R12	Daytime	59.3
	Nighttime	57.9
R13	Daytime	60.2
	Nighttime	58.5
R14	Daytime	55.0
	Nighttime	51.3
R15	Daytime	55.0
	Nighttime	54.1
R16	Daytime	55.0
	Nighttime	50.0
R17	Daytime	55.0
	Nighttime	50.0
R18	Daytime	59.7
	Nighttime	57.1
R19	Daytime	58.2
	Nighttime	55.4
R20	Daytime	61.6
	Nighttime	59.6
R21	Daytime	58.3
	Nighttime	56.4
R22	Daytime	56.2
	Nighttime	54.3
R23	Daytime	62.5
	Nighttime	59.8
R24a	Daytime	55.0
	Nighttime	52.3
R24b	Daytime	70.1
	Nighttime	66.3
R24c	Daytime	58.5
	Nighttime	55.0
R24d	Daytime	71.1
	Nighttime	66.8
R25	Daytime	67.4
	Nighttime	63.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R26	Daytime	67.4
	Nighttime	65.2
R27	Daytime	66.8
	Nighttime	64.6
R28	Daytime	65.2
	Nighttime	63.1
R29	Daytime	69.4
	Nighttime	66.5
R30	Daytime	55.0
	Nighttime	56.0
R31	Daytime	69.2
	Nighttime	66.6
R32	Daytime	63.6
	Nighttime	61.0
R33	Daytime	60.2
	Nighttime	58.4
R34	Daytime	63.6
	Nighttime	61.7
R35	Daytime	65.2
	Nighttime	61.8
R36	Daytime	66.0
	Nighttime	62.7
R37	Daytime	62.8
	Nighttime	61.0
R38	Daytime	66.7
	Nighttime	64.6
R39	Daytime	59.6
	Nighttime	59.6
R40	Daytime	55.3
	Nighttime	57.9
R41	Daytime	60.0
	Nighttime	58.0
R42	Daytime	60.6
	Nighttime	59.3
R43	Daytime	58.8
	Nighttime	57.6
R44	Daytime	65.6
	Nighttime	63.4
R45	Daytime	66.5
	Nighttime	64.9
R46	Daytime	64.5
	Nighttime	62.9
R47	Daytime	55.0
	Nighttime	58.0

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R48	Daytime	65.4
	Nighttime	64.2
R49	Daytime	60.2
	Nighttime	58.8
R50	Daytime	66.1
	Nighttime	64.8
R51	Daytime	60.7
	Nighttime	59.5
R52	Daytime	55.0
	Nighttime	54.1
R53	Daytime	55.0
	Nighttime	50.0
R54	Daytime	55.0
	Nighttime	50.0
R55	Daytime	58.0
	Nighttime	56.4
R56	Daytime	59.7
	Nighttime	57.8
R57	Daytime	55.0
	Nighttime	53.9
R58	Daytime	62.5
	Nighttime	60.3
R59	Daytime	55.0
	Nighttime	51.7
R60	Daytime	55.0
	Nighttime	50.6
R61	Daytime	55.0
	Nighttime	51.4
R62	Daytime	55.0
	Nighttime	50.6
R63	Daytime	55.0
	Nighttime	50.0
R64	Daytime	55.0
	Nighttime	50.0
R65	Daytime	55.0
	Nighttime	54.1
R66	Daytime	55.0
	Nighttime	52.3
R67	Daytime	55.0
	Nighttime	53.7
R68	Daytime	57.4
	Nighttime	54.9
R69	Daytime	55.8
	Nighttime	53.4

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R70	Daytime	55.0
	Nighttime	52.4
R71	Daytime	55.0
	Nighttime	50.9
R72	Daytime	55.0
	Nighttime	52.6
R73	Daytime	55.0
	Nighttime	52.6
R74	Daytime	61.2
	Nighttime	58.1

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Present day vibration levels were modelled to determine "baseline conditions" for the Lakeshore West Corridor Study Area. Predicted baseline vibration levels range from 0.024 mm/s to 0.11 mm/s as shown in **Table E- 5.**

Table E- 5: Predicted Baseline Vibration Levels for the Lakeshore West Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
				Existing (m)	Existing (mm/s)
GO Train	R01	69	No	59	0.024
VIA Train		97			0.034
Freight Train		32			0.11

[1] See Figure 2a for receptor location in Appendix G.

Visual

The Lakeshore West Corridor passes through an area of residential development where views from residential buildings, the lakeshore, parks (e.g., High Park, along the Credit River, Hogs Back Park), golf courses (Toronto Golf Club, Lakeview Golf Course), and recreational trails (at Etobicoke Creek) to the corridor may be affected by the introduction of electrification infrastructure. Additionally, safety barriers and electrification infrastructure may affect views from road and pedestrian bridges over and under the corridor.

Views for passengers arriving and departing from GO Stations (Exhibition, Mimico, Long Branch, Port Credit, Clarkson, Oakville, Bronte, Appleby and Burlington) may be altered by the introduction of electrification infrastructure, catenary wires and support structures in the station areas.

Utilities

A number of utilities cross or occur within the ROW. These include the following categories: hydro transmission (Hydro One), hydro local distribution (Toronto Hydro, TTC, Enersource, Oakville Hydro,

Burlington Hydro), pipelines (Trans-Northern, Enbridge Pipelines, Suncor), watermains (City of Toronto, Peel Region, Halton Region), sanitary sewers (City of Toronto, Peel Region, Halton Region), stormwater sewers (City of Mississauga, Town of Oakville, City of Burlington), gas mains (Enbridge Gas, Union Gas), communications lines (Allstream, Telus, Bell, Bell Mobility, Rogers, Peel Region Public Sector Network, Cogeco Cable, Rogers Wireless, Bell/360), and grade separations (Town of Oakville). The impact assessment stage will determine the potential conflicts between the project and any identified utilities in the corridor.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

The description of baseline conditions relating to EMI/EMF involved two components: 1) identification, via desktop analysis, of potential EMI-sensitive sites within the Study Area; and, 2) establishment of present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area. These are more fully described under the USRC section of this Executive Summary.

Based on the baseline mapping for the Lakeshore West Corridor, one EMI-sensitive site was identified within Zone 3 or closer (i.e., less than 100 m from the closest track) from the corridor. This was added to the list of candidate sites at which to collect baseline EMI scans during the Impact Assessment phase.

There was one high-ELF (> 10 mG) area along this corridor, with a resultant flux density magnitude (mG) of 11.3. This is a location where post-electrification measurement of ELF EMF is recommended.

Stormwater Management

The baseline conditions for stormwater management for Traction Power Facilities within the Lakeshore West Corridor are summarized below (**Table E- 6**):

Table E- 6: Baseline Runoff Conditions for the Lakeshore West Corridor

Location	Area Type	Drainage Area (ha)	Runoff Coefficient	Percent Impervious
Burlington Tap/TPS	Undeveloped	0.42	0.2	0%
Mimico Tap/TPS	Undeveloped	1.40	0.2	0%
Mimico SWS	Undeveloped, Gravel	0.22	0.5	43%
Oakville SWS	Undeveloped	0.17	0.3	14%

Groundwater and Well

There are four (4) TPF's and two (2) Tap locations along the Lakeshore West Corridor. There are 27 domestic supply wells, one (1) agricultural supply well, 16 industrial/commercial supply wells, two (2) wells of unknown use, and 32 waterbodies located within 500m of this corridor.

Kitchener Corridor

Taps, Traction Power Facilities (TPFs) & Feeders

Bramalea PS

The Bramalea PS is to be located on a parcel of land situated at the southwest corner of Dixie Road and the rail corridor in Brampton. The parcel currently consists of vacant land, a silo, and the warehouses and parking lots of the Ford Parts and Distribution Centre. It is surrounded by other commercial uses. The lands of the Bramalea PS site are subject to the Bramalea West Industrial Secondary Plan, which encourages the continuing development of Community Structure "Villages", while maintaining the existing commercial and industrial areas.

There are no aquatic features or suitable wildlife habitat present within the Bramalea PS site, and the boundary of the eastern portion of the site touches the limits of TRCA's Regulated Areas. The site has a moderate risk ranking for contamination, and a Phase I ESA and subsurface investigation are recommended to determine if contamination is present.

The Bramalea PS site has potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as such a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken. The site was identified as a Conditional Heritage Property. A Cultural Heritage Evaluation Report (CHER) was recommended and subsequently undertaken for the site, which determined it to be a Non-Heritage Property.

The air quality for the site has been classified as Urban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include overhead hydro lines, watermains, sanitary sewers, stormwater sewers, and buried conduits / overhead lines for communications. ELF EMF levels were measured as 1.5 mG, which is low enough (<10 mG) to not warrant further investigation at this site.

Natural Environment

Based on the Natural Environment Baseline investigation, there are no designated areas within the Kitchener Corridor Study Area, and only one watercourse (Mimico Creek) which crosses the corridor.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain minimal (i.e. <10%) to limited (10 to 20%) canopy cover.

A total of 18 SAR with suitable habitat *and* potential to occur are found within the Kitchener Corridor. These include one (1) vascular plant, nine (9) birds, one (1) invertebrate, one (1) fish, four (4) mammals and two (2) herpetofauna.

Preliminary Environmental Site Assessment

The Corridor Preliminary Environmental Site Assessment Study found that a Phase I and II ESA was completed in 2009 to support a property acquisition for a portion of the CN Weston Subdivision. This

study identified several exceedances in the deeper soil in the vicinity of Derry Road East and Airport Road. Of the 6.5 km long corridor, a length of approximately 2.7 km, west of Highway 407, has not been assessed. The Phase II ESA was limited, and site specific investigations were recommended for further expansion of the GO Transit system.

Cultural Heritage

A total of nine (9) resources were subject to heritage screening. Of these, all nine (9) were determined to be non-heritage properties.

Archaeology

A review of the historic land use of the Kitchener corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. The corridor also includes both historic features and transportation routes. The corridor has been subject to at least two previous archaeological assessments, and approximately 2.2 ha has been previously assessed. As there is some potential for the Study Area to overlap with areas of Euro-Canadian settlement, historic transportation routes, historic features, and watercourses, further archaeological assessment is recommended as described in **Appendix D1**. In addition, a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

Land Use and Socio-economic

The small section of the Kitchener Corridor being evaluated in this study (Highway 427 to the Bramalea GO Station) passes through employment/industrial lands in the City of Mississauga and the City of Brampton towards the Bramalea GO Station. This section of the rail corridor is entirely within Peel Region.

There are two (2) sensitive receptor facilities (both schools) within the vicinity (i.e., within approximately 500 m) of the Kitchener Corridor. There are no child care centres, long term care centres or hospitals in the vicinity of the rail corridor.

Wildwood Park is the only recreational amenity adjacent to the rail corridor, and lands within the Study Area may be influenced by the Steeles Industrial Secondary Plan and Bramalea Road South Gateway Plan.

Air Quality

Using the Air Quality classifications discussed above, air quality within the Kitchener Corridor was classified as entirely Urban.

Noise and Vibration

Present day ambient conditions were modelled to determine “baseline conditions” for the entire Kitchener Corridor Study Area. Representative receptors throughout the corridor as well as existing rail traffic and noise barriers were identified and used as key inputs to the modelling exercise.

Predicted baseline noise levels range from 15.6 dBA to 59.4.4 dBA (**Table E- 7**).

Table E- 7: Predicted Baseline Noise Levels for the Kitchener Corridor

Receptor ID	Period a	Baseline Noise Levels (Existing) (dBA)a
R44	Daytime	59.4
	Nighttime	57.1
R45	Daytime	56.1
	Nighttime	53.2
R46	Daytime	20.5
	Nighttime	15.6

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Present day vibration levels were modelled to determine "baseline conditions" for the Kitchener Corridor Study Area. Predicted baseline vibration levels range from 0.04 mm/s to 0.31 mm/s as shown in **Table E- 8**.

Table E- 8: Predicted Baseline Vibration Levels for the Kitchener Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
				Existing (m)	Existing (mm/s)
Go Train	R13	128	No	30	0.093
Freight Train		40			0.31
Go Train	R30	129	No	65	0.04
Freight Train		40			0.13
Go Train	R36	128	No	40	0.07
Freight Train		40			0.22
Go Train	R45	128	No	50	0.05
Freight Train		40			0.16

[1] See Figure 2b, 2d and 2h for receptor locations in Appendix G.

Visual

The Kitchener Rail Corridor passes through an area of residential development where views from residential buildings may be affected by the introduction of electrification infrastructure. Additionally, safety barriers and electrification infrastructure may affect views from road and pedestrian bridges over and under the corridor.

The Malton and Bramalea GO Stations are in this corridor. Parking at the stations abuts the tracks and views for passengers arriving at or leaving the station may be altered by the introduction of electrification infrastructure.

Utilities

A number of utilities cross or occur within the ROW. These include the following categories: hydro transmission (Hydro One), hydro local distribution (Enersource), watermains (Peel Region), sanitary sewers (Peel Region), stormwater sewers (City of Mississauga, Peel Region), gas mains (Enbridge Gas), and communications lines (Allstream, Bell, Bell/360, Rogers, Peel Region Public Sector Network). The impact assessment stage will determine the potential conflicts between the project and any identified utilities in the corridor.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

The description of baseline conditions relating to EMI/EMF involved two components: 1) identification, via desktop analysis, of potential EMI-sensitive sites within the Study Area; and, 2) establishment of

present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area. These are more fully described under the USRC section of this Executive Summary.

Based on the baseline mapping for the Kitchener Corridor no EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) from the corridor.

There were two high-ELF (> 10 mG) area along this corridor, with resultant flux density magnitudes (mG) of 54.2 and 55.2. These are locations where post-electrification measurement of ELF EMF is recommended.

Stormwater Management

The baseline conditions for stormwater management for Traction Power Facilities within the Kitchener Corridor are summarized below (**Table E- 9**):

Table E- 9: Baseline Runoff Conditions for the Kitchener Corridor

Location	Area Type	Drainage Area (ha)	Runoff Coefficient	Percent Impervious
Bramalea PS	Undeveloped	0.32	0.3	14%

Groundwater and Well

There is one (1) TPF located west of the Kitchener Corridor. There are nine (9) domestic supply wells, one (1) agricultural supply well, five (5) industrial/commercial supply wells, two (2) wells of unknown use, and two (2) waterbodies located within 500m of this corridor.

Barrie Corridor

Taps, Traction Power Facilities (TPFs) & Feeders

Allandale Tap Location (Preferred)

The Preferred Allandale Tap location is predominately located on the north side of Tiffin Street, within the proposed Study Area for the Hydro One Essa Upgrade Class EA. The area is composed of small areas of vegetation/open space, and electrical transmission and distribution infrastructure including a hydro corridor, as well as some office, commercial/industrial buildings and parking areas. A small portion of the Tap Area extends south of Tiffin Street and meets the proposed TPS Area. One property, on the south side of Tiffin Street, at 329 Tiffin Street, is located within the Tap area and appears to be a residence. Three additional residential properties are a minimum of 50m from the proposed Tap Area on the north side of Tiffin Street.

The Allandale Tap Area is comprised of six (6) communities. It is largely located within a Commercial and Institutional (CVC) land, and extends to areas within Deciduous Forest (FOD), Cultural Meadow (CUM), Mixed Forest (FOM), Red Pine Coniferous Plantation (CUP), and Transportation and Utilities (CVI).

The Alternative Allandale Tap site has no heritage properties, and lands in the vicinity have the potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment documented in **Volume 3** and **Appendix G4**.

Utilities on or near the site include overhead hydro lines, watermains, sanitary sewers, stormwater sewers, and overhead and buried communications lines. ELF EMF levels were measured as Background Only (i.e., < 1.0 mG), indicating that they are not a concern at this site.

Allandale Tap Location (Alternative)

The Alternative Allandale Tap location is currently primarily open space, with some parking/storage areas and commercial buildings. The site is surrounded by the Barrie-Collingwood Railway, an outdoor industrial storage area, and commercial buildings. The backyard of some residential properties border the Barrie-Collingwood Railway to the south of the site, and although there is some existing vegetation, there are views from these homes of the proposed Tap site that may be altered by the construction of the electrification infrastructure.

The Alternative Allandale Tap site mainly contains Commercial and Institutional (CVC) vegetation communities and a small area of Deciduous Woodland (WOD). There are no aquatic features present within the site. There is moderate potential for Butternut (Endangered) and Red-headed Woodpecker (Special Concern) within the WOD community and low potential for Butternut within the CVC community.

The Alternative Allandale Tap site has no heritage properties, and lands in the vicinity have the potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment documented in **Volume 3** and **Appendix G4**.

Utilities on or near the site include overhead hydro lines, watermains, sanitary sewers, stormwater sewers, and overhead and buried communications lines. ELF EMF levels were measured as Background Only (i.e., < 1.0 mG), indicating that they are not a concern at this site.

Allandale TPS

The Allandale TPS site is located on a parcel of land situated at the northwest corner of Patterson Road and runs between Tiffin Street in the north and the rail corridor in the south. It currently consists of some commercial buildings, parking lots, storage areas and some vegetation.

Although there is some existing vegetation, there are views from these homes of the proposed TPS site that may be altered by the construction of the electrification infrastructure.

The Allandale TPS site contains CVI, CVC, Residential (CVR), and CUM communities, and there are no aquatic features present within the site. There is a low potential for Butternut (Endangered) within the CVR community. Within the CUM vegetation community there is limited habitat for wildlife.

The site has a low risk ranking for contamination, and a Phase I ESA and subsurface investigation are recommended to determine if contamination is present.

The Allandale TPS has no heritage properties, and has the potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include overhead transmission lines, local distribution pole lines, watermains, sanitary sewers, stormwater sewers and buried conduits for communications. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Barrie-Collingwood Railway 25kV Feeder Route

A 25kV Feeder Route will run from the Allandale TPS to the termination limit of electrification on the Barrie corridor, along Barrie-Collingwood Railway ROW. This route could be aerial or underground, and is adjacent to both commercial and residential uses, as well as a large vacant lot east of Highway 400.

The area for the proposed 25kV Feeder Route mainly consists of CVI and some small areas of CVC and CVR. There are no aquatic features present within the site, and a low potential for Butternut (Endangered) within the CVR community.

The site has a moderate risk ranking for contamination, and it is recommended that the quality of excess soil generated during installation be characterized to determine management options.

The 25kV Feeder Route has no heritage properties, and has no potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

Utilities on or near the site include overhead transmission lines, watermains, sanitary sewers, stormwater sewers, gas mains, and communication infrastructure. ELF EMF levels was found to be below the conservative 10 mG threshold identified for further investigation in the impact assessment phase

Newmarket SWS

The Newmarket SWS is to be located on a parcel of land at 590 Steven Court in Newmarket. Steven Court is an industrial cul-de-sac east of the rail corridor and south of Mulock Drive. The northern portion of the parcel is currently a public utility building (Newmarket Hydro) and associated parking lot/storage area. The southern portion is open space with some trees and manicured grass. The parcel is surrounded by industrial buildings, with a hydro corridor to the west.

The Newmarket SWS site contains CVC, CUM, and THD communities. There are no aquatic features and limited wildlife habitat present within the site. There is low potential for Butternut (Endangered) to be present within the THD community.

The site has a moderate risk ranking for contamination, and a Phase I ESA and subsurface investigation are recommended to determine if contamination is present.

The Newmarket SWS site has no heritage properties, and has the potential for the identification of Aboriginal and Euro-Canadian archaeological sites, as such a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include a pole line, de-energized pole line, sanitary sewers, and buried plant for communication. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Gilford PS

The Gilford PS is to be located on parcel of land situated at the southeast corner of Gilford Road and the rail corridor in Innisfil. It is comprised mostly of opens space with vegetation and trees. The site has residential homes to the north and east and vacant lots to the west with vegetationtrees. The Town of Innisfil has noted concerns with maintaining the agricultural viewscape within its boundaries, which would include the Gilford PS site.

The Gilford PS site contains CUM, CVR, CVI communities. There are no aquatic features present within the Study Area. There is low potential for Butternut (Endangered) to occur within the CUM community. The Gilford PS Study Area is located within a small portion of the LSRCA's Regulated Areas. The site has a low risk ranking for contamination, and a Phase I ESA is recommended, as well as a limited subsurface investigation to investigate fill materials on the site.

The Gilford site has no heritage properties, however ithas the potential for the identification of Aboriginal and Euro-Canadian archaeological sites. As such, a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

Utilities on or near the site include overhead hydro lines and communications lines. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Maple PS

The Maple PS is to be located on parcel of land along the west side of Keele Street, north of Teston Road in the City of Vaughan. The site is surrounded by industrial development to the east and agriculture to the north and west.

At the time of writing, the City of Vaughan was planning a new residential community (Block 27) through preparation of a secondary plan which would affect the Maple PS lands. The proposed PS is located on lands designated for a future GO Station/Local Centre Precinct and will be surrounded by a mix of commercial and residential uses.

The Study Area for Maple PS contains AG, Treed Agriculture (TAG), CUM, and CVI communities, and there are no watercourses present within the site. The site provides low potential for Eastern Meadowlark (Threatened) and Bobolink (Threatened) within the AG communities.

The site has a low risk ranking for contamination, and a Phase I ESA is recommended, along with a limited subsurface investigation.

The Maple PS site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites. The entire Maple PS has been subject to previous Stage 2 archaeological assessment, and includes lands modeled to possess potential for an ancestral Huron-Wendat Ossuary. It is also immediately adjacent to the Hope Primitive Methodist Cemetery. These lands should be protected and avoided from any planned impacts by the project.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include watermains, stormwater sewers, and communication lines. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Natural Environment

Based on the Natural Environment Baseline investigation, there are six PSWs (King-Vaughan Wetland Complex, Aurora (McKenzie) Marsh Wetland Complex, Holland Marsh Wetland Complex, Holland Marsh, Wilson Creek Marsh, Little Cedar Point; three ANSIs (Maple Uplands and Kettles, the Holland Landing Fen and Wetlands, Holland River Marsh); two evaluated wetlands (Rogers Reservoir, St. Paul's Swamp); and six conservation areas (Sheppard's Bush Conservation Area, Mabel Davis Conservation Area, Wesley Brooks Conservation Area, Bailey Ecological Park, Scanlon Creek Conservation Area, Luck Property) within the Barrie Corridor Study Area. In addition, portions of the corridor intersect the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan.

The following watercourses are also within the Study Area: Don River West Branch, Westminster Creek, East Humber River, Holland River East Branch, Holland River West Branch, Gilford Creek, White Birch Creek, Wilson Creek, Carson Creek, Belle Aire Creek, Strathallan Creek, Sandy Cove Creek, Burts Drain Creek, Leonard's Creek, White Birch Creek, Banks Creek, Hewitt's Creek, Lovers Creek and Whiskey Creek.

Based on aerial photo interpretation, vegetation communities within the Study Area range from minimal canopy cover (i.e. <10%) to intermediate (20 to 70%) canopy cover.

A total of 36 SAR with suitable habitat *and* potential to occur are found within the Barrie Corridor. These include two (2) vascular plants, twenty-two (22) birds, four (4) herpetofauna, two (2) invertebrates, two (2) fishes, and four (4) mammals.

Preliminary Environmental Site Assessment

The Corridor Preliminary Environmental Site Assessment Study determined that the Barrie Corridor appears to have had very limited ESA work completed along its alignment, with only a few small properties that have had Phase I and Phase II ESA studies. A Phase I ESA conducted in 2000 did identify areas of potential environmental concern, however the report did not provide any recommendations.

In 2015 Phase I and Phase II ESA studies were completed for the Davenport Community Rail Overpass between Dundas Street and St. Clair Avenue. This study found soil and groundwater contamination along the ROW, including petroleum hydrocarbons, chlorinated solvents, PAHs, PCBs and metals in excess of to exceed MOE Table 3 Standards. Additional contamination studies are required for contaminated lands in order to understand the nature of the contamination. Approximately 48 km of this 96 km corridor has not been subject to site assessment, and further work is required to determine if further contamination assessment is required.

Cultural Heritage

A total of forty (40) resources were subject to heritage screening. Of these, twenty-four (24) were determined to be non-heritage properties, six (6) were identified as PHP and/or PHPPS, and ten (10) were identified as protected heritage properties adjacent to the study area.

Specifically, as part of the TPAP CHERs were undertaken for five (5) of these resources: Dundas Street Bridge, Innes Avenue Pedestrian Bridge, Maple GO Station, Newmarket GO Station, and Holland River Bridge Mile 41.00 .

The National Cash Register Company Building, and York Beltline Trail are formally protected properties located adjacent to the rail corridor. CHERs are not required for these properties at this time. CHERs havepreviously been completed for the Aurora and Bradford GO Stations, as well as St. Clair Avenue West Bridge, Don River Culvert, Cox Mill Road Bridge, Tollendale Creek Bridge under separate Metrolinx undertakings.

Archaeology

A review of the historic land use of the Barrie Corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. The corridor also includes both historic features and transportation routes.

As there is some potential for the Study Area to overlap with areas of Euro-Canadian settlement, historic transportation routes, historic features, previously registered archaeological sites, well drained sandy soils, deeply-buried deposits, watercourses, adjacent cemeteries, proximity to an ancestral Huron-Wendat Settlement and an associated occupation of a known Ojibway settlement at Holland Landing, further archaeological assessment is required as described in **Appendix D1**. A Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

Land Use and Socio-economic

From USRC, the Barrie Corridor transitions from urban to suburban areas with a variety of residential, commercial, and employment uses. This continues until northern Vaughan where agricultural and rural uses begin to be more dominant and act as buffers between the suburban/urban centres of municipalities of the Township of King, the Town of Aurora, and the Town of Newmarket. The Towns of East Gwillimbury, Bradford/West Gwillimbury, and Innisfil present significantly more rural characteristics. The end of the rail corridor transitions to more urban development in the City of Barrie. The route passes through two Regional municipalities (York Region and Simcoe County).

There are 91 sensitive receptor facilities (schools, child care centres, and long term care centres) in the vicinity (i.e., within approximately 500 m) of the Barrie Corridor. Of these, three (3) are less than 40 m from the rail corridor.

A number of parks, conservation areas, and multi-use trails (West Toronto Rail Path, York Beltline Trail, Finch Hydro Corridor Trail, Langstaff Multi Use Trail, Tom Taylor Trail, Nokiidaa Bike Trail, and Trans Canada Trail) are adjacent to or cross the Barrie Corridor Study Area. The following Secondary Plans may influence lands adjacent to the Study Area: the Davenport Village Secondary Plan, Downsview Area Secondary Plan, Concord GO Centre Secondary Plan, Maple GO Station Secondary Plan, Yonge Street South Secondary Plan, Newmarket Urban Centres Secondary Plan, Green Lane Secondary Plan, Holland Landing Secondary Plan, Gilford Secondary Plan, Lefroy-Belle Ewart Secondary Plan, Alcona Secondary Plan, Stroud Secondary Plan, Lakeshore Secondary Plan, and Allandale Secondary Plan.

Air Quality

Using the definitions discussed above, air quality within the Barrie Corridor was classified as changing from Urban (from Parkdale Junction to Rutherford Station) to Suburban (from Rutherford Station to East Gwillimbury Station) to Rural (from East Gwillimbury Station to Barrie South Station), before returning to Suburban for the remainder of the corridor.

Noise and Vibration

Present day ambient conditions were modelled to determine “baseline conditions” for the entire Barrie Corridor Study Area. Representative receptors throughout the corridor as well as existing rail traffic and noise barriers were identified and used as key inputs to the modelling exercise.

Predicted baseline noise levels range from 16.5 dBA to 69.6 dBA, as shown in **Table E- 10**.

Table E- 10: Predicted Baseline Noise Levels for the Barrie Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R001	Daytime	47.1
	Nighttime	39.5
R002	Daytime	52.2
	Nighttime	43.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R003	Daytime	54.3
	Nighttime	45.9
R004	Daytime	65.0
	Nighttime	52.2
R005	Daytime	60.0
	Nighttime	51.4
R006	Daytime	68.3
	Nighttime	64.3
R007	Daytime	54.7
	Nighttime	50.6
R008a	Daytime	68.3
	Nighttime	64.4
R008b	Daytime	51.5
	Nighttime	47.6
R009	Daytime	50.7
	Nighttime	51.0
R010	Daytime	50.0
	Nighttime	42.4
R011	Daytime	56.7
	Nighttime	49.6
R012	Daytime	55.1
	Nighttime	48.2
R013	Daytime	57.4
	Nighttime	50.8
R014	Daytime	59.8
	Nighttime	53.3
R015	Daytime	60.0
	Nighttime	54.3
R016	Daytime	55.6
	Nighttime	49.7
R017	Daytime	52.3
	Nighttime	47.1
R018	Daytime	53.9
	Nighttime	48.8
R019	Daytime	60.7
	Nighttime	49.8
R020	Daytime	62.9
	Nighttime	49.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R021	Daytime	55.4
	Nighttime	49.5
R022	Daytime	52.9
	Nighttime	47.0
R023	Daytime	47.0
	Nighttime	39.7
R024	Daytime	48.4
	Nighttime	42.2
R025	Daytime	53.1
	Nighttime	48.5
R026	Daytime	51.9
	Nighttime	47.0
R027	Daytime	45.2
	Nighttime	46.0
R028	Daytime	52.5
	Nighttime	48.6
R029	Daytime	50.1
	Nighttime	50.2
R030	Daytime	60.3
	Nighttime	52.4
R031a	Daytime	49.9
	Nighttime	45.8
R031b	Daytime	50.9
	Nighttime	45.9
R032	Daytime	53.0
	Nighttime	47.7
R033	Daytime	58.7
	Nighttime	54.4
R034	Daytime	59.4
	Nighttime	55.2
R035	Daytime	50.8
	Nighttime	45.3
R036	Daytime	52.3
	Nighttime	48.2
R037a	Daytime	50.1
	Nighttime	43.1
R037b	Daytime	48.9
	Nighttime	44.7

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R038a	Daytime	50.2
	Nighttime	47.9
R038b	Daytime	57.4
	Nighttime	54.4
R039	Daytime	68.5
	Nighttime	66.7
R040	Daytime	59.8
	Nighttime	55.6
R041	Daytime	57.1
	Nighttime	55.5
R042	Daytime	57.5
	Nighttime	56.2
R043	Daytime	62.0
	Nighttime	60.5
R044	Daytime	47.5
	Nighttime	46.7
R045	Daytime	49.1
	Nighttime	45.0
R046	Daytime	46.1
	Nighttime	44.3
R047	Daytime	52.5
	Nighttime	48.1
R048	Daytime	59.2
	Nighttime	54.0
R049	Daytime	66.2
	Nighttime	57.2
R050	Daytime	64.3
	Nighttime	62.1
R051	Daytime	56.4
	Nighttime	55.0
R052	Daytime	53.4
	Nighttime	52.8
R053	Daytime	51.2
	Nighttime	49.9
R054	Daytime	44.9
	Nighttime	51.2
R055	Daytime	49.9
	Nighttime	48.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R056	Daytime	43.0
	Nighttime	42.6
R057	Daytime	49.1
	Nighttime	44.9
R058	Daytime	49.9
	Nighttime	47.9
R059a	Daytime	54.3
	Nighttime	52.0
R059b	Daytime	56.1
	Nighttime	51.8
R059c	Daytime	59.5
	Nighttime	57.6
R060	Daytime	60.4
	Nighttime	58.2
R061	Daytime	55.3
	Nighttime	50.5
R062	Daytime	53.0
	Nighttime	49.1
R063	Daytime	53.0
	Nighttime	51.8
R064	Daytime	52.0
	Nighttime	50.3
R065	Daytime	50.1
	Nighttime	46.3
R066	Daytime	49.0
	Nighttime	47.1
R067	Daytime	50.0
	Nighttime	45.3
R068	Daytime	58.0
	Nighttime	55.3
R069	Daytime	57.4
	Nighttime	50.7
R070	Daytime	60.5
	Nighttime	55.3
R071	Daytime	56.5
	Nighttime	55.2
R072	Daytime	60.3
	Nighttime	58.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R073	Daytime	51.9
	Nighttime	55.0
R074	Daytime	51.7
	Nighttime	51.7
R075	Daytime	60.9
	Nighttime	55.4
R076	Daytime	52.8
	Nighttime	47.3
R077	Daytime	58.4
	Nighttime	49.7
R078	Daytime	60.4
	Nighttime	54.0
R079	Daytime	56.6
	Nighttime	52.3
R080	Daytime	59.3
	Nighttime	59.1
R081	Daytime	54.5
	Nighttime	52.3
R082	Daytime	54.2
	Nighttime	52.0
R083	Daytime	61.4
	Nighttime	51.3
R084	Daytime	63.8
	Nighttime	55.7
R085	Daytime	69.6
	Nighttime	63.5
R086	Daytime	56.2
	Nighttime	51.5
R087a	Daytime	58.8
	Nighttime	52.4
R087b	Daytime	57.6
	Nighttime	56.4
R088	Daytime	65.8
	Nighttime	64.7
R089	Daytime	61.5
	Nighttime	58.2
R090	Daytime	65.3
	Nighttime	63.3

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R091	Daytime	62.1
	Nighttime	60.7
R092	Daytime	54.7
	Nighttime	50.8
R093	Daytime	55.0
	Nighttime	52.1
R094	Daytime	58.3
	Nighttime	57.0
R095	Daytime	56.0
	Nighttime	50.3
R096	Daytime	60.8
	Nighttime	59.2
R097	Daytime	60.2
	Nighttime	57.5
R098	Daytime	60.0
	Nighttime	56.0
R099	Daytime	60.3
	Nighttime	58.6
R100	Daytime	63.3
	Nighttime	54.0
R101	Daytime	64.7
	Nighttime	58.7
R102	Daytime	65.2
	Nighttime	61.1
R103	Daytime	66.2
	Nighttime	62.1
R104	Daytime	57.3
	Nighttime	54.9
R105	Daytime	55.4
	Nighttime	51.3
R106	Daytime	58.5
	Nighttime	57.1
R107	Daytime	58.0
	Nighttime	50.5
R108	Daytime	62.4
	Nighttime	58.3
R109	Daytime	56.3
	Nighttime	53.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R110	Daytime	57.3
	Nighttime	52.3
R111	Daytime	54.9
	Nighttime	49.9
R112	Daytime	62.6
	Nighttime	58.8
R113	Daytime	57.9
	Nighttime	54.5
R114	Daytime	61.7
	Nighttime	60.4
R115	Daytime	55.5
	Nighttime	53.5
R116	Daytime	62.5
	Nighttime	51.5
R117	Daytime	59.8
	Nighttime	56.2
R118	Daytime	62.6
	Nighttime	58.7
R119	Daytime	61.6
	Nighttime	53.3
R120	Daytime	64.1
	Nighttime	59.7
R121	Daytime	51.9
	Nighttime	49.9
R122	Daytime	53.8
	Nighttime	51.8
R123	Daytime	64.5
	Nighttime	58.0
R124	Daytime	64.9
	Nighttime	58.0
R125	Daytime	65.2
	Nighttime	63.3
R126	Daytime	65.2
	Nighttime	62.9
R127	Daytime	51.7
	Nighttime	48.3
R128	Daytime	61.2
	Nighttime	54.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R129	Daytime	52.2
	Nighttime	51.5
R130	Daytime	49.6
	Nighttime	46.5
R131	Daytime	52.9
	Nighttime	48.7
R132	Daytime	59.8
	Nighttime	59.2
R133	Daytime	16.7
	Nighttime	16.5

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Present day vibration levels were modelled to determine "baseline conditions" for the Barrie Corridor Study Area. Predicted baseline vibration levels range from 0.06 mm/s to 0.77 mm/s as shown in **Table E- 11**.

Table E- 11: Predicted Baseline Vibration Levels for the Barrie Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
Go Train	R015	96	No	19	0.11
Freight Train		56			0.77
Go Train	R032	120	No	42	0.06
Freight Train		32			0.16
Go Train	R014	96	No	20	0.11
Freight Train		56			0.73
Go Train	R039	96	No	25	0.09
Freight Train		32			0.32
Go Train	R049	96	No	30	0.07
Freight Train		32			0.25
Go Train	R027	120	No	38	0.07
Freight Train		56			0.32

[1] See Figure 2s for receptor location in Appendix G

Visual

The Barrie Corridor passes through areas of residential development and green space where views from residential buildings, parks (e.g., Langstaff Park, Highland Park, Sheppard's Bush, Allandale Station Park/South Shore Park), a golf course (St. Andrew's Valley Golf Course), and recreational trails (Finch Hydro Corridor Recreational Trail, Langstaff Park Trail, Nokiidaa Bike Trail) to the corridor may be affected by the introduction of electrification infrastructure. Additionally, safety barriers and electrification infrastructure may affect views from road and pedestrian bridges over and under the corridor.

Views for passengers arriving and departing from some GO Stations (Caledonia (planned), Downsview Park (planned), York University, Rutherford, Maple, King City, Newmarket, East Gwillimbury, Bradford, and Allandale Waterfront) may be altered by the introduction of electrification infrastructure, catenary wires and support structures in the station areas.

Utilities

A number of utilities exist within this corridor. These include the following categories: hydro transmission / local distribution (Hydro One, City of Barrie, City of Toronto, City of Vaughan, TTC, Toronto Hydro, Town of Aurora, InnPower, Town of Newmarket, York Region, York Region Telecom); watermains (Borough of North York, City of Barrie, City of North York, City of Toronto, City of Vaughan, Group Telecom, Town of Aurora, Town of Bradford, Town of East Gwillimbury, InnServices Utilities Inc., Town of Newmarket, York Region, York Region Telecom); sanitary sewers (Borough of North York, City of Barrie, City of North York, City of Toronto, City of Vaughan, Group Telecom, Town of Aurora, Town of Bradford, InnServices Utilities Inc., Town of Newmarket, York Region, York Region Telecom); stormwater sewers (Borough of North York, City of Barrie, City of North York, City of Toronto, City of Vaughan, Group Telecom, Town of Aurora, Town of Bradford, Town of East Gwillimbury, Town of Innisfil, Town of Newmarket, York Region, York Region Telecom); gas mains (Borough of North York, City of Barrie, City of Toronto, City of Vaughan, Enbridge Gas, Group Telecom, Sun-Canadian Pipelines, Suncor Pipelines, Town of Aurora, Town of Bradford, Town of East Gwillimbury, Town of Newmarket, Trans-Northern Pipelines, York Region, York Region Telecom); and communications lines (Allstream, Bell Canada, Borough of North York, City of Barrie, City of Toronto, City of Vaughan, Group Telecom, Rogers, TTC, Toronto Hydro, Town of Aurora, Town of Bradford, Town of East Gwillimbury, Town of Innisfil, Town of Newmarket, York Region, York Region Telecom).

Additionally, Level 3 Communications owns a structure near Lansdowne Avenue in the Study Area, and Alectra owns utility infrastructure in the Study Area.

The impact assessment stage will determine the potential conflicts between the project and any identified utilities in the corridor.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

The description of baseline conditions relating to EMI/EMF involved two components: 1) identification, via desktop analysis, of potential EMI-sensitive sites within the Study Area; and, 2) establishment of present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area. These are more fully described under the USRC section of this Executive Summary.

Based on the baseline mapping for the Barrie Corridor, no EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) from the corridor.

There were no high-ELF (> 10 mG) areas along this corridor, so there are no locations where post-electrification measurement of ELF EMF is recommended.

Stormwater Management

The baseline conditions for stormwater management for Traction Power Facilities within the Barrie Corridor are summarized below (**Table E- 12**):

Table E- 12: Baseline Runoff Conditions for the Barrie Corridor

Location	Area Type	Drainage Area (ha)	Runoff Coefficient	Percent Impervious
Allandale Tap	Undeveloped	0.4	0.2	0%
Allandale TPS	Undeveloped/Paved Area	0.73	0.5	43%
Gilford PS	Undeveloped	0.22	0.2	0%
Newmarket SWS	Undeveloped	0.43	0.3	14%
Maple PS	Undeveloped	0.18	0.25	7%

Groundwater and Well

There are four (4) TPF's and one (1) Tap location within the Barrie Corridor. There are 935 domestic supply wells, 39 agricultural supply wells, 87 industrial/commercial supply wells, 23 municipal supply wells, 20 wells of unknown use, and 30 waterbodies located within 500m of this corridor.

Stouffville Corridor

Taps, Traction Power Facilities (TPFs) & Feeders

Scarborough TPS and Tap Location

The proposed Scarborough TPS and Tap site is currently open space / hydro corridor, and is surrounded by the rail corridor, commercial / institutional buildings, a transformer station, and Jack Goodland Park. There are also residential areas in the vicinity of the site, to the northwest, southwest, east and south east of the site.

The Study Area for Scarborough TPS and Tap contains CVC, CVI, CGL, CUM, and CVR vegetation communities, and there are no watercourses present within the site. There is no identified potential habitat for species at risk at these sites.

The Scarborough TPS and Tap site has no heritage properties, and lands within the vicinity have the potential for the identification of Aboriginal and Euro-Canadian archaeological sites. A Stage 2 archaeological assessment will be necessary to confirm the presence of undisturbed (or minimally disturbed) archaeological resources that may be present. Construction of the hydro station on the site has removed any archaeological potential from that part of the site.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Watermains are the only utilities on or near the site. ELF EMF levels were measured at 4.8 mG, which is low enough (<10 mG) to not warrant further investigation at this site.

Unionville PS

The Unionville PS is to be located on a parcel of land that straddles Highway 407. The parcel is currently mainly open space / vacant lot with highways and roads, and includes some of the Unionville GO Station parking lot. It is surrounded by parking lots / vacant lots and commercial buildings, and surrounds (but does not include) a Power Stream hydro substation. The site is partially located within the Markham Centre Secondary Plan lands, which aims to promote a vibrant mixed use environment that is characterized by high-density residential use and a range of commercial uses.

The site for the Unionville PS contains CVI, CVC, CUM, TAG, Shallow Marsh (MAS), and AG vegetation communities, and there are no watercourses present within the site. The site provides low potential for Eastern Meadowlark (Threatened) and Bobolink (Threatened) within the AG communities and a low potential for Butternut (Endangered) to occur within the TAG community.

The site has a low risk ranking for contamination, and a Phase I ESA and limited subsurface investigation are recommended to determine if contamination is present.

The Unionville PS site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites. One previously registered archaeological site is located at the Unionville PS site, though it has previously been fully mitigated and requires no further archaeological assessment.

The air quality for the site has been classified as Urban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include overhead hydro lines, a Hydro One substation, watermains, stormwater sewers, and overhead and buried communications lines. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Lincolnville PS

The Lincolnville PS is to be located on a parcel of land at 13120 York Durham Line in Whitchurch-Stouffville. The parcel is primarily a vacant lot immediately north of the Lincolnville GO station behind the GO Transit Lincolnville Rail and Bus Facility, and includes parts of the rail and bus facility, driveway to the GO station parking lot, and the rail corridor. The parcel is surrounded by the Lincolnville GO Station / rail and bus facility and associated structures, rail corridor, and agricultural fields. The site is affected by the Stouffville Secondary Plan, which aims to maintain the “small town” character of the area while meeting growth targets and remaining environmentally conscious of surrounding resources. The site is also subject to OPA

137 (Town Secondary Plan Amendment) to the Town of Whitchurch-Stouffville's Official Plan and is proposed to change designation from Rural Area to Major Transit Station Area.

The Lincolnville PS site contains CVI, CVC, and CUM communities. AG communities are present east of the railway, and there are no aquatic features present within the site. There is low potential for Eastern Meadowlark (Threatened) and Bobolink (Threatened) within the CUM and AG communities.

The site has a low risk ranking for contamination, and a Phase I ESA and limited subsurface investigation are recommended to determine if contamination is present.

The Lincolnville PS site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

The air quality for the site has been classified as Rural. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include a hydro pole, watermains, and a telephone pole. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Natural Environment

Based on the Natural Environment Baseline investigation, there are no PSWs and no ANSIs within the Stouffville Corridor Study Area, however portions of the corridor intersect the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan, as well as Rouge National Urban Park (RNUP).

The following watercourses are within this Study Area: Southwest Highland Creek, West Highland Creek, Rouge River, Bruce Creek, Eckardt Creek, Unnamed Tributary of Rouge River, Robinson Creek, Mt. Joy Creek, Little Rouge Creek, and Stouffville Creek.

Aerial photo interpretation indicates that vegetation communities within this corridor range from containing minimal canopy cover (i.e., < 10%) to intermediate cover (20 to 70%).

A total of 20 SAR with suitable habitat *and* potential to occur are found within the Stouffville Corridor. These include one (1) vascular plant, thirteen (13) birds, one (1) herpetofauna, four (4) mammals, and one (1) fish species.

Preliminary Environmental Site Assessment

The Corridor Preliminary Environmental Site Assessment Study found that the majority of the Stouffville Corridor was the subject of a Phase I and Phase II ESA conducted in 1999 and 2001 respectively. These two reports were completed as part of the transfer of the rail corridor from Canadian National Railways (CNR) to GO Transit. These included:

1. Investigate of the ROW/track area at the Stouffville GO Station to determine extent of hydrocarbon impacted soils identified as exceeding the MOE Table B Industrial/Commercial guideline;

2. Investigate of the ROW/track area at the Markham GO Station to determine the extent of soils with high alkalinity;

3. Additional investigations of the ROW between Ellesmere Road and Lawrence Avenue to assess potential chemical contamination (petroleum hydrocarbons and PCBs) of soil and groundwater in this section of the corridor;

4. Further soil quality assessment at Agincourt GO Station to assess if actual lead contamination of the soil exists;

5. Further investigations near Scarborough Junction (west of Midland Avenue) to determine if actual hydrocarbon contamination of the soil or groundwater exists; and

6. Further groundwater and soil investigations of potential hydrocarbon contamination of the ROW northeast of the Markham GO Station.

Presently none of these recommendations have been implemented and compliance with these recommendations would be required for any components of electrification which occurred within the Study Area. A short segment of the 35 km corridor, which extends approximately 3.7 km north from the Stouffville GO Station to Lincolnville, has not been assessed. Additional contamination studies are required for contaminated lands in order to understand the nature of the contamination.

Cultural Heritage

A total of thirty-four (34) resources were subject to heritage screening. Of these, twenty-five (25) were determined to be non-heritage properties, one (1) was identified as PHP and/or PHPPS, and eight (8) were identified as protected heritage properties adjacent to the study area.

Specifically, as part of the TPAP a CHER was undertaken for one (1) resource: Markham GO Station.

Thomas Rivis House, the Hagerman Schoolhouse, The James Eckardt House, Unionville Heritage Conservation District (HCD), Unionville Train Station, Rouge National Urban Park, and the Markham Village Heritage Conservation District are protected properties located adjacent to the rail corridor. CHERs are not required for these properties at this time.

Archaeology

A review of the historic land use of the Stouffville corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. The corridor also includes both historic features and transportation routes. As there is some potential for the Study Area to overlap with features which may provide archaeological value (areas of Euro-Canadian settlement, historic transportation routes, historic features, previously registered archaeological sites, watercourses), and given the proximity of the corridor to an ancestral Huron-Wendat Settlement, further archaeological assessment is required as described in **Appendix D1**. As such, a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

Land Use and Socio-economic

From Scarborough Junction, lands adjacent to the Stouffville Corridor transition from urban development into a mix of suburban residential and employment uses. Employment uses become more prevalent towards the City of Markham. Though southern Markham land use is largely characterized by mixed use lands. In northern Markham, lands are generally characterized by rural and agricultural uses and this continues until the rail corridor passes through the suburban centres located in Whitchurch-Stouffville. It should be noted that the rail corridor does not actually cross into the Town of Uxbridge, but this municipality is included in the descriptions below due to the close proximity of the rail corridor to the municipal boundary. This rail corridor passes through one Regional municipality (York Region).

There are 103 sensitive receptor facilities (schools, child care centres, and long term care centres) in the vicinity (i.e., within approximately 500 m) of the Stouffville Corridor. Of these, three are less than 40 m from the rail corridor.

A number of parks and multi-use trails (e.g., Gatineau Trail) are adjacent to or cross the rail corridor, and the following Secondary Plans may influence Study Area lands: Agincourt Secondary Plan, Milliken Centre Secondary Plan, Markham Centre Secondary Plan, Markham Road Corridor-Mount Joy Secondary Plan, and Stouffville Secondary Plan. In addition, a portion of the the corridor passes through Rouge National Urban Park.

Air Quality

Using the definitions discussed above, air quality within the Stouffville Corridor was classified as changing from Suburban (from Scarborough Junction to Milliken Station) to Urban (from Milliken Station to Unionville Station), back to Suburban (from Unionville Station to Stouffville Station) and then to Rural (from Stouffville Station to Lincolnville Station).

Noise and Vibration

Present day ambient conditions were modelled to determine “baseline conditions” for the entire Stouffville Corridor Study Area. Representative receptors throughout the corridor as well as existing rail traffic and noise barriers were identified and used as key inputs to the modelling exercise.

Predicted baseline noise levels range from 35.3 dBA to 70.6 dBA **(Table E- 13**).

Table E- 13: Predicted Baseline Noise Levels for the Stouffville Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R01	Daytime	50.0
	Nighttime	41.2
R02a	Daytime	50.5
	Nighttime	42.2
R02b	Daytime	56.4
	Nighttime	47.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R03	Daytime	51.9
	Nighttime	43.9
R04	Daytime	52.8
	Nighttime	42.5
R05	Daytime	51.1
	Nighttime	41.8
R06	Daytime	53.2
	Nighttime	49.9
R07	Daytime	51.9
	Nighttime	50.0
R08a	Daytime	52.8
	Nighttime	40.1
R08b	Daytime	49.7
	Nighttime	40.7
R09a	Daytime	51.8
	Nighttime	43.0
R09b	Daytime	51.2
	Nighttime	42.9
R10a	Daytime	51.1
	Nighttime	45.1
R10b	Daytime	49.4
	Nighttime	44.4
R11	Daytime	53.2
	Nighttime	44.0
R12	Daytime	50.1
	Nighttime	42.1
R13	Daytime	51.9
	Nighttime	42.5
R14	Daytime	45.8
	Nighttime	40.2
R15	Daytime	42.5
	Nighttime	35.3
R16	Daytime	55.2
	Nighttime	47.0
R17	Daytime	58.5
	Nighttime	50.9
R18	Daytime	45.0
	Nighttime	37.3

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R19	Daytime	43.3
	Nighttime	35.5
R20	Daytime	43.9
	Nighttime	36.9
R21a	Daytime	53.6
	Nighttime	42.0
R21b	Daytime	48.3
	Nighttime	39.0
R22	Daytime	45.9
	Nighttime	35.4
R23	Daytime	56.3
	Nighttime	44.0
R24	Daytime	55.5
	Nighttime	41.9
R25	Daytime	62.1
	Nighttime	54.5
R26	Daytime	65.9
	Nighttime	50.3
R27a	Daytime	51.1
	Nighttime	40.9
R27b	Daytime	55.6
	Nighttime	57.2
R28	Daytime	53.3
	Nighttime	45.4
R29	Daytime	52.7
	Nighttime	53.5
R30	Daytime	64.5
	Nighttime	53.2
R31	Daytime	70.6
	Nighttime	62.9
R32	Daytime	60.1
	Nighttime	52.0
R33	Daytime	67.8
	Nighttime	60.8
R34	Daytime	64.6
	Nighttime	59.8
R35a	Daytime	64.0
	Nighttime	59.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R35b	Daytime	67.9
	Nighttime	56.6
R36	Daytime	63.5
	Nighttime	59.3
R37	Daytime	63.0
	Nighttime	60.4
R38	Daytime	53.4
	Nighttime	50.2
R39a	Daytime	44.6
	Nighttime	50.2
R39b	Daytime	64.2
	Nighttime	53.2
R40a	Daytime	62.8
	Nighttime	58.7
R40b	Daytime	60.1
	Nighttime	54.8
R40c	Daytime	62.3
	Nighttime	52.0
R40d	Daytime	61.1
	Nighttime	55.5
R41	Daytime	46.9
	Nighttime	42.8
R42a	Daytime	55.1
	Nighttime	50.5
R42b	Daytime	58.5
	Nighttime	51.3
R43	Daytime	61.4
	Nighttime	51.6
R44	Daytime	65.1
	Nighttime	55.5
R45	Daytime	62.7
	Nighttime	57.2
R46	Daytime	58.8
	Nighttime	56.3
R47a	Daytime	64.0
	Nighttime	59.5
R47b	Daytime	55.5
	Nighttime	46.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R47c	Daytime	62.4
	Nighttime	47.6
R48a	Daytime	66.4
	Nighttime	62.0
R48b	Daytime	56.9
	Nighttime	49.4
R49	Daytime	67.4
	Nighttime	50.3
R50	Daytime	50.8
	Nighttime	44.1
R51	Daytime	60.2
	Nighttime	50.9
R52	Daytime	63.0
	Nighttime	55.6
R53	Daytime	62.5
	Nighttime	55.4
R54	Daytime	62.0
	Nighttime	51.5
R55	Daytime	51.4
	Nighttime	42.6
R56	Daytime	59.7
	Nighttime	53.1
R57a	Daytime	65.0
	Nighttime	56.7
R57b	Daytime	62.3
	Nighttime	51.0
R58a	Daytime	57.7
	Nighttime	51.4
R58b	Daytime	63.1
	Nighttime	51.7
R59	Daytime	61.5
	Nighttime	57.5
R60	Daytime	62.1
	Nighttime	57.5
R61	Daytime	60.4
	Nighttime	51.2
R62	Daytime	60.5
	Nighttime	51.0

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R63	Daytime	61.6
	Nighttime	50.5
R64a	Daytime	65.5
	Nighttime	54.4
R64b	Daytime	56.0
	Nighttime	49.6
R65	Daytime	51.2
	Nighttime	42.8
R66	Daytime	52.6
	Nighttime	45.1
R67	Daytime	51.7
	Nighttime	42.2
R68	Daytime	53.4
	Nighttime	47.6
R69	Daytime	49.4
	Nighttime	42.3

a The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Present day vibration levels were modelled to determine "baseline conditions" for the Stouffville Corridor Study Area. Predicted baseline vibration levels range from 0.037 mm/s to 0.340 mm/s as shown in **Table E- 14**

Table E- 14: Predicted Baseline Vibration Levels for the Stouffville Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Closest Track	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s) r.m.s.
GO Train	R06	64	No	28	0.050
Freight Train		40			0.340
GO Train	R09	64	No	35	0.039
Freight Train		40			0.256
GO Train	R14	64	No	40	0.034
Freight Train		40			0.215
GO Train	R22	80	No	30	0.058
Freight Train		40			0.313
GO Train	R24	80	No	45	0.037

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Closest Track	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s) r.m.s.
Freight Train		40			0.186

[1] See Figures for receptor location in Appendix G.

Visual

The Stouffville Corridor passes through an area of residential development and recreational spaces where views from residential buildings and parks (e.g., Havendale Park, Austin Drive Park, Stargell Park, Markham Centennial Park, Cedar Valley Park, Mount Joy Lake Park, and Rouge National Urban Park) to the corridor may be affected by the introduction of electrification infrastructure. Additionally, safety barriers and electrification infrastructure may affect views from road and pedestrian bridges over and under the corridor.

Views for passengers arriving and departing from GO Stations (Kennedy, Agincourt, Milliken, Unionville, Centennial, Markham, Mount Joy, Stouffville and Lincolnville may be altered by the introduction of electrification infrastructure, catenary wires and support structures in the station areas.

Utilities

A number of utilities cross or occur within the ROW. These include the following categories: hydro transmission (Hydro One), pipelines (Trans-Northern, Enbridge, TransCanada), hydro local distribution (Toronto Hydro, Alectra), watermains (City of Toronto, City of Markham, York Region), sanitary sewers (York Region, City of Markham), stormwater sewers (City of Markham, Town of Whitchurch-Stouffville), gas mains (Enbridge), and communications lines (Allstream, Telus, Bell, Bell Mobility, Bell/360, Rogers, TTC, and York Telecom Network). The impact assessment stage will determine the potential conflicts between the project and any identified utilities in the corridor.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

The description of baseline conditions relating to EMI/EMF involved two components: 1) identification, via desktop analysis, of potential EMI-sensitive sites within the Study Area; and, 2) establishment of present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area. These are more fully described under the USRC section of this Executive Summary.

Based on the baseline mapping for the Stouffville Corridor, four (4) EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the corridor. These were added to the list of candidate sites at which to collect baseline EMI scans during the Impact Assessment phase.

There was one high-ELF (> 10 mG) area along this corridor, with a resultant flux density magnitude (mG) of 14.6. This is a location where post-electrification measurement of ELF EMF is recommended.

Stormwater Management

The baseline conditions for stormwater management for Traction Power Facilities within the Stouffville Corridor are summarized below (**Table E- 15**):

Table E- 15: Baseline Runoff Conditions for the Stouffville Corridor

Location	Area Type	Drainage Area (ha)	Runoff Coefficient	Percent Impervious
Scarborough Tap/TPS	Undeveloped	0.61	0.2	0%
Unionville PS	Undeveloped	1.45	0.25	7%
Lincolnville PS	Undeveloped	0.72	0.2	0%

Groundwater and Well

There are three (3) TPFs and one (1) Tap location within the Stouffville Corridor. There are 253 domestic supply wells, 18 agricultural supply wells, 48 industrial/commercial supply wells, two (2) municipal supply wells, seven (7) wells of unknown use, and 15 waterbodies located within 500m of this corridor.

Lakeshore East Corridor

Taps, Traction Power Facilities (TPFs) & Feeders

East Rail Maintenance Facility (ERMF) Tap Location and TPS

The ERMF TPS and Tap site is to be located on a vacant piece of land north of the rail corridor and east of Hopkins Street. The ERMF, which is currently under construction, will be located on the opposite side of Hopkins Street. All development in the surrounding area is industrial, with a hydro corridor bordering the site to the east.

The Tap towers of the proposed ERMF are located within CVC lands with no natural features. The underground duct banks associated with the Tap location are within the Meadow Marsh (MAM) community. There are no aquatic features within this proposed location.

The TPS site contains CVI, CVC, and MAM communities. The MAM community may provide breeding and overwintering habitat for amphibians, and has low potential for Snapping Turtle (Special Concern). There are no defined watercourses present, and the site is within Central Lake Ontario Conservation Authority's (CLOCA's) Regulated Area.

The ERMF TPS and Tap site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites. The entire ERMF TPS and Tap site has been subject to previous Stage 1 and 2 archaeological assessment for a GO Transit rail service expansion, though this assessment only addressed the proposed facility locations and new track segment.

The air quality for the site has been classified as Urban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include buried and overhead hydro lines. ELF EMF levels were measured as 1.4 mG, which was found to be below the conservative 10 mG threshold identified for further investigation in the impact assessment phase.

Scarborough SWS

The Scarborough SWS is to be located on a parcel of land situated to the north of 260 Brimley Road in Toronto, behind a high rise apartment complex off of Danforth Road. The parcel is currently open space / storage area and rail corridor, and is surrounded by open space, park, and storage areas, with high rise residential areas to the north and commercial warehousing to the south. It is within the vicinity of both Greystone Park and Glenshepard Park. In the future, the lands to the southeast of the site across the rail corridor will be redeveloped as a residential neighbourhood. A comprehensive residential development and subdivision are approved for all of these lands (at 260 Brimley Road) that currently do not hold residential uses.

The Scarborough SWS site contains CVI, CVC, CVR, CUM, and THD vegetation communities. There is low potential for Butternut to occur within the THD and CVI communities, and there are no aquatic features and limited wildlife habitat present within the site.

The site has a low risk ranking for contamination, and a Phase I ESA and limited subsurface investigation are recommended to determine if contamination is present.

The Scarborough SWS site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Communications lines are the only utilities on or near the site. ELF EMF levels were measured as 4.8 mG, which was found to be below the conservative 10 mG threshold identified for further investigation in the impact assessment phase.

Durham SWS

The Durham SWS is to be located on a parcel of land at 1610 Bayly Street in Pickering. The site is primarily open space / hydro corridor, with recreational buildings / amenities (Pickering Playing Fields) in the southeast corner. The northeast corner has some tree cover / vacant lots, with ponding of water in a man-made structure. The site is entirely surrounded by industrial development and Highway 401.

The site consists of CVC, CVI, Green Land (CGL), and CUM communities, with low potential for Butternut to occur within the CUM community. There are no aquatic features present and minimal wildlife habitat present within the site.

The Durham SWS site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites.

The air quality for the site has been classified as Urban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Utilities on or near the site include an existing and proposed hydro transmission lines and infrastructure, watermains, sanitary sewers, culverts, and buried and overhead communications lines. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Don Yard PS

The Don Yard PS is to be located on a rectangular parcel of land situated north of the rail corridor east of the Don Valley Parkway in Toronto. The parcel is currently treed area, and surrounded by parking lots / commercial buildings, further treed area, the rail corridor and the Don Valley Parkway and Don River. The site is within the current and future floodplain of the Don River, and flood proofing measures as part of the Don Mouth Naturalization and Port Lands Flood Protection Project (DMNP) will not protect this site from flooding. Additionally, the route of the planned Broadview Avenue extension may be located in the vicinity of the Don Yard PS site.

The Don Yard PS resides within the TRCA's proposed Don River Urban River Valley Area, as identified under the approved EA for the DMNP. The site consists of CVI and CVC vegetation communities. There is low potential for Butternut to occur within the CVI community, and no aquatic features within the site; however, the Don River is located approximately 30 metres west of the site.

The site has a moderate risk ranking for contamination, and a Phase I ESA and subsurface investigation are recommended to determine if contamination is present.

The Don Yard PS site has no heritage properties, and has potential for the identification of Aboriginal and Euro-Canadian archaeological sites. The entire site has been subject to previous archaeological assessment.

The air quality for the site has been classified as Suburban. Potential changes in noise and vibration levels associated with Traction Power Facilities will be discussed as part of the impact assessment.

Hydro transmission lines are the only utilities on or near the site. ELF EMF levels were measured as Background Only (i.e., <1.0 mG), indicating that they are not a concern at this site.

Natural Environment

Based on the Natural Environment Baseline investigation, there are seven PSWs (Highland Creek Wetland, Rouge River Marshes Wetland Complex, Frenchman's Bay Coastal Wetland Complex, Lower Duffins Creek Wetland Complex, Lynde Creek Coastal Wetland Complex, Whitby Harbour Wetland Complex, and Corbett Creek Coastal Wetland Complex) and seven ANSIs (East Point Bluffs, Frenchman's Bay Wetland, Frenchman's Bay Coastal Marsh Candidate Life Science ANSI, Rouge River Valley Life Science ANSI, Duffins Creek Coastal Marsh Candidate Life Science ANSI, Lynde Shores Coastal Wetlands Candidate Life Science ANSI, and Corbett Creek Coastal Marsh Candidate Life Science ANSI) within the Lakeshore East Corridor Study Area. In addition, portions of the corridor intersect the Greenbelt Plan.

The following watercourses are also within this Study Area: Don River, Highland Creek, West Highland Creek, Rouge River, Petticoat Creek, Amberlea Creek, Dunbarton Creek, Pine Creek, Kronso Creek, Duffins Creek, Millers Creek, Carruthers Creek, Kinsale Creek, Lynde Creek, tributary of Lynde Creek, Pringle Creek, tributary of Pringle Creek, tributary of Corbett Creek, and Corbett Creek.

Aerial photo interpretation indicated that vegetation communities within the Study Area range from containing limited canopy cover (10-20 %) to intermediate cover (20 to 70%).

A total of 27 SAR with suitable habitat *and* potential to occur are found within the Lakeshore East Corridor. These include two (2) vascular plants, fifteen (15) birds, three (3) herpetofauna, one (1) mollusc, four (4) mammals, and two (2) fish species.

Preliminary Environmental Site Assessment

The Lakeshore East Corridor from the Don River to Pickering (Frenchman's Bay near Bayly Street and St. Martins Drive) was the subject of a Phase I and Phase II ESA in 2011. These included:

1. Areas of PAH contamination in soil between Eastern and Queen Street;
2. PAH contamination in soil and groundwater and lead in soil south of Dundas Street;
3. Zinc in soil west of Victoria Park Avenue;
4. PAH is soil (borehole P18 BH11-5) between Midland Avenue and the proposed Scarborough SWS;
5. Volatile organic compounds (VOC) in groundwater west of McCowan Road;
6. VOC in groundwater west of Scarborough Golf Club Road;
7. VOC in groundwater east of Scarborough Golf Club Road;
8. VOC in soil west of Galloway Road;
9. VOC in soil and groundwater east of Galloway Road;
10. PAH and metals (Co, Cu & Ni) in soil east of Poplar Road;
11. PAH in soil west of Manse Road;
12. PAH in soil along Copperfield Road (west of J Horgan Water Treatment Plant);
13. Copper in soil and VOC in groundwater west of the Rouge Hill GO Station;
14. PAH in soil and VOC in groundwater east of the Rouge River bridge.

Approximately 20 km of this 48 km corridor have not been subject of site assessment. Further work is recommended to address the data gaps identified for the project footprint.

Cultural Heritage

A total of fifty-seven (57) resources were subject to heritage screening. Of these, forty-five (45) were determined to be non-heritage properties, six (6) was identified as PHP and/or PHPPS, and six (6) were identified as protected heritage properties adjacent to the study area.

Specifically, as part of the TPAP CHERs were undertaken for six (6) of these resources: Don River and Don Valley Bridge, Carlaw Avenue Bridge, Gerrard Street East Bridge, Pape Avenue Bridge, and Birchmount Road Bridge.

CHERs were previously completed for Eastern Avenue Bridge, Danforth Avenue Bridge, Petticoat Creek Culvert, Double Stone Creek Culvert, Dunbarton Subway, Highland Creek Bridge and Rouge River Bridge as part of a separate Metrolinx undertaking.

Archaeology

A review of the historic land use of the Lakeshore East Corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. The corridor also includes both historic features and transportation routes. The corridor has been subject to at least 15 previous archaeological assessments, and approximately 51.7 ha has been previously assessed. As there is some potential for the Study Area to overlap with areas of Euro-Canadian settlement, historic transportation routes, historic features, previously registered archaeological sites, watercourses, sandy soils, and deeply-buried deposits, further archaeological assessment is required as described in **Appendix D1**. In addition, a Stage 1 Archaeological Assessment (see **Appendix D2)** was subsequently undertaken.

Land Use and Socio-economic

From the USRC, land transitions from urban development into a mix of suburban residential and employment uses. This pattern generally continues through the City of Pickering and Town of Ajax until reaching a more employment/industrial section in eastern Whitby and western Oshawa. There are multiple sections of natural areas in Pickering, Ajax, and Whitby and a buffer of agricultural land between Ajax and Whitby. The route passes through Regional municipality (Durham Region).

There are 121 sensitive receptor facilities (schools, child care centres, long term care centres and hospitals) in the vicinity (i.e., within approximately 500 m) of the Lakeshore East Corridor. Of these, three (3) are less than 40 m from the rail corridor.

A number of parks (e.g., Monarch Park, Port Union Waterfront Park, Rouge National Urban Park), multi-use trails (Lower Don Trail, Waterfront Trail, Trans Canada Trail, Duffins Creek Trail, Joseph Kolodzie Oshawa Creek Bike Path, Michael Starr Trail) or other recreational amenities (Scarboro Golf and Country Club) are adjacent to or cross the rail corridor, and the following Secondary Plans may influence Study Area lands: West Whitby Secondary Plan and Port Union Village Community Secondary Plan.

Air Quality

Using the definitions discussed above, air quality within the Lakeshore East Corridor was classified as changing from Suburban (from Don Yard Layover to Guildwood Station) to Urban (from Rouge Hill Station to ERMF TPS).

Noise and Vibration

Present day ambient conditions were modelled to determine "baseline conditions" for the entire Lakeshore East Corridor Study Area. Representative receptors throughout the corridor as well as existing rail traffic and noise barriers were identified and used as key inputs to the modelling exercise.

Predicted baseline noise levels range from 50.0 dBA to 76.0 dBA (**Table E- 16**).

Table E- 16: Predicted Baseline Noise Levels for the Lakeshore East Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R001	Daytime	55.0
	Nighttime	50.8
R002	Daytime	66.8
	Nighttime	61.9
R003	Daytime	64.8
	Nighttime	60.1
R004	Daytime	59.0
	Nighttime	55.4
R005	Daytime	69.0
	Nighttime	64.0
R006	Daytime	63.0
	Nighttime	58.9
R007	Daytime	64.5
	Nighttime	60.2
R008	Daytime	64.1
	Nighttime	60.3
R009	Daytime	59.5
	Nighttime	55.5
R010A	Daytime	62.1
	Nighttime	57.7
R010B	Daytime	60.1
	Nighttime	55.9
R011	Daytime	58.2
	Nighttime	53.5
R012	Daytime	64.9
	Nighttime	61.8
R013	Daytime	64.4
	Nighttime	60.0
R014	Daytime	57.7
	Nighttime	53.3
R015	Daytime	63.7
	Nighttime	59.2
R016A	Daytime	62.6
	Nighttime	58.2
R016B	Daytime	59.0
	Nighttime	54.8
R017	Daytime	61.1

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	61.2
R018	Daytime	55.0
	Nighttime	50.0
R019A	Daytime	60.0
	Nighttime	56.0
R019B	Daytime	62.7
	Nighttime	59.3
R020	Daytime	62.6
	Nighttime	61.3
R021A	Daytime	62.8
	Nighttime	58.5
R021B	Daytime	67.5
	Nighttime	62.7
R022A	Daytime	63.3
	Nighttime	59.1
R022B	Daytime	61.7
	Nighttime	57.3
R023A	Daytime	63.5
	Nighttime	59.0
R023B	Daytime	64.1
	Nighttime	61.4
R024A	Daytime	56.1
	Nighttime	56.3
R024B	Daytime	55.0
	Nighttime	56.2
R025	Daytime	55.0
	Nighttime	51.1
R026	Daytime	60.9
	Nighttime	56.0
R027	Daytime	64.6
	Nighttime	60.0
R028A	Daytime	55.0
	Nighttime	50.0
R028B	Daytime	61.9
	Nighttime	57.7
R029	Daytime	60.2
	Nighttime	55.8
R030	Daytime	61.6

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	57.6
R031	Daytime	65.6
	Nighttime	61.0
R032	Daytime	67.3
	Nighttime	63.1
R033	Daytime	57.1
	Nighttime	53.1
R034	Daytime	61.2
	Nighttime	58.7
R035	Daytime	56.2
	Nighttime	53.0
R036A	Daytime	63.4
	Nighttime	59.8
R036B	Daytime	55.0
	Nighttime	50.0
R037A	Daytime	55.0
	Nighttime	55.5
R037B	Daytime	55.0
	Nighttime	53.6
R038	Daytime	55.0
	Nighttime	50.0
R039	Daytime	55.0
	Nighttime	50.0
R040	Daytime	55.0
	Nighttime	53.2
R041A	Daytime	56.3
	Nighttime	52.4
R041B	Daytime	61.3
	Nighttime	57.0
R042	Daytime	58.4
	Nighttime	54.2
R043	Daytime	63.0
	Nighttime	58.7
R044	Daytime	58.5
	Nighttime	54.7
R045	Daytime	62.7
	Nighttime	58.6
R046	Daytime	59.6

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	56.0
R047	Daytime	55.0
	Nighttime	50.0
R048	Daytime	60.7
	Nighttime	56.4
R049	Daytime	55.0
	Nighttime	50.0
R050	Daytime	55.0
	Nighttime	55.4
R051	Daytime	55.0
	Nighttime	50.3
R052	Daytime	57.3
	Nighttime	52.9
R053	Daytime	59.9
	Nighttime	56.9
R054	Daytime	60.1
	Nighttime	57.1
R055	Daytime	66.9
	Nighttime	62.6
R056	Daytime	55.0
	Nighttime	50.0
R057	Daytime	62.3
	Nighttime	59.2
R058	Daytime	59.4
	Nighttime	55.3
R059	Daytime	58.3
	Nighttime	54.1
R060	Daytime	60.3
	Nighttime	56.2
R061	Daytime	61.9
	Nighttime	58.2
R062	Daytime	57.0
	Nighttime	53.8
R063	Daytime	58.3
	Nighttime	55.2
R064	Daytime	60.6
	Nighttime	56.5
R065	Daytime	61.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	57.6
R066	Daytime	57.0
	Nighttime	53.1
R067	Daytime	56.3
	Nighttime	52.4
R068	Daytime	66.3
	Nighttime	62.3
R069	Daytime	58.4
	Nighttime	54.6
R070	Daytime	63.6
	Nighttime	60.5
R071	Daytime	61.8
	Nighttime	58.4
R072	Daytime	64.2
	Nighttime	60.0
R073A	Daytime	62.4
	Nighttime	58.9
R073B	Daytime	58.3
	Nighttime	54.6
R074	Daytime	63.8
	Nighttime	60.2
R075	Daytime	58.6
	Nighttime	58.4
R076	Daytime	63.9
	Nighttime	60.4
R077	Daytime	65.7
	Nighttime	62.6
R078	Daytime	55.0
	Nighttime	50.0
R079	Daytime	66.3
	Nighttime	64.0
R080	Daytime	70.2
	Nighttime	64.1
R081	Daytime	66.0
	Nighttime	60.5
R082	Daytime	76.0
	Nighttime	69.6
R083	Daytime	62.7

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	61.7
R084	Daytime	67.9
	Nighttime	64.3
R085	Daytime	73.8
	Nighttime	67.5
R086	Daytime	69.2
	Nighttime	66.0
R087	Daytime	66.2
	Nighttime	61.0
R088	Daytime	73.0
	Nighttime	66.7
R089	Daytime	66.4
	Nighttime	62.0
R090	Daytime	66.8
	Nighttime	62.9
R091	Daytime	61.3
	Nighttime	58.9
R092	Daytime	55.0
	Nighttime	50.0

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Present day vibration levels were modelled to determine "baseline conditions" for the Lakeshore East Corridor Study Area. Predicted baseline vibration levels range from 0.04 mm/s to 1.03 mm/s as shown in **Table E- 17**

Table E- 17: Predicted Baseline Vibration Levels for the Lakeshore East Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
Go Train	R021B	153	No	30	0.11
VIA Train		152			0.11
Freight Train		104			0.81
Go Train	R023B	153	No	35	0.09
VIA Train		152			0.09
Freight Train		104			0.66
Go Train	R037B	153	No	42	0.08

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
VIA Train		152			0.08
Freight Train		104			0.53
Go Train	R043	153	No	74	0.04
VIA Train		152			0.04
Freight Train		104			0.29
Go Train	R013	153	No	25	0.14
VIA Train		152			0.14
Freight Train		104			1.03
Go Train	R077	153	No	30	0.11
VIA Train		152			0.09
Freight Train		104			0.81
Go Train	R031	153	No	35	0.09
VIA Train		152			0.09
Freight Train		104			0.66
Go Train	R027	153	No	40	0.08
VIA Train		152			0.08
Freight Train		104			0.56

Visual

The Lakeshore East Corridor passes through an area of residential development and recreational space where views from residential buildings, the lakeshore, parks (e.g., Grey Abbey Ravine, Lower Highland Creek Park, East Point Park, Port Union Waterfront Park, Rouge National Urban Park and the Port Union Village Commons Park), and a golf course (Scarboro Golf and Country Club) to the corridor may be affected by the introduction of electrification infrastructure. Additionally, safety barriers and electrification infrastructure may affect views from road and pedestrian bridges over and under the corridor.

Views for passengers arriving and departing from GO Stations (Danforth, Scarborough, Eglinton, Guildwood, Rouge Hill, Pickering, Ajax, Whitby, and Oshawa) may be altered by the introduction of electrification infrastructure, catenary wires and support structures in the station areas.

Utilities

A number of utilities cross or occur within the ROW. These include the following categories: hydro transmission (Hydro One), hydro local distribution (Toronto Hydro, Veridian, Whitby Hydro), watermains (City of Toronto, Durham Region), sanitary sewers (Durham Region), stormwater sewers (City of Pickering, Durham Region), and communications lines (Allstream, Telus, Telus Mobility, Bell, Bell Mobility, G-TEL, Rogers, and Videotron). The impact assessment stage will determine the potential conflicts between the project and any identified utilities in the corridor.

Electromagnetic Interference (EMI) & Electric and Magnetic Field (EMF)

The description of baseline conditions relating to EMI/EMF involved two components: 1) identification, via desktop analysis, of potential EMI-sensitive sites within the Study Area; and, 2) establishment of present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area. These are more fully described under the USRC section of this Executive Summary.

Based on the baseline mapping for Lakeshore East Corridor, no EMI sensitive site was identified within Zone 3 or closer (i.e., less than 100 m from the closest track) from the corridor.

There were no high-ELF (> 10 mG) area along this corridor, so there are no locations where post-electrification measurement of ELF EMF is recommended.

Stormwater Management

The baseline conditions for stormwater management for Traction Power Facilities within the Lakeshore East Corridor are summarized in **Table E- 18.**

Table E- 18: Baseline Runoff Conditions for the Lakeshore East Corridor

Location	Area Type	Drainage Area (ha)	Runoff Coefficient	Percent Impervious
ERMF Tap/TPS	Undeveloped	0.45	0.2	0%
Durham SWS	Undeveloped	0.18	0.2	0%
Scarborough SWS	Undeveloped/Rail Corridor	1.5	0.3	14%
Don Yard PS	Undeveloped	0.31	0.2	0%

Groundwater and Well

There are four (4) TPF's and one (1) Tap location within the Lakeshore East Corridor. There are 50 domestic supply wells, seven (7) industrial/commercial supply wells, eight (8) wells of unknown use, and 29 waterbodies located within 500m of this corridor.

1 Baseline Conditions – Approach, Methodology and Organization

In accordance with the *Transit Projects and Metrolinx Undertakings (Transit Projects Regulation) O*.Reg 231/08, an assessment of baseline conditions within the Study Area was conducted for the GO Rail Network Electrification Transit Project Assessment Process (TPAP). Accordingly, this volume provides a summary of the baseline environmental conditions within the GO Rail Network Electrification Environmental Assessment (EA) Study Area. For information on project design and technical components refer to EPR Volume 1.

The purpose of preparing a baseline study is to establish a snapshot of the conditions of the Study Area during a specific period of time, depending on the scope of the study. The baseline conditions form the basis from which the impact assessment is carried out, as described in Volume 3.

Further details of baseline conditions are contained in each of the respective supporting reports/studies (included as Appendices to this Environmental Project Report (EPR)). Generally, baseline conditions data was collected through a combination of: 1) review of background information/reports, and 2) field investigations (as required) and was summarized in order to characterize the existing conditions within the Study Area. Specific methodologies used to collect data for each discipline are summarized in this volume and described in full in the respective supporting reports.

Baseline Conditions Reports were prepared for the following disciplines (included as **Appendices A1-J1** of this EPR):

- Air Quality;
- Archaeology;
- Preliminary Environmental Site Assessment;
- Cultural Heritage;
- Electromagnetic Interference/Electromagnetic Fields;
- Land Use;
- Natural Environment;
- Noise & Vibration;
- Utilities; and
- Visual.

Combined Baseline Conditions and Impact Assessment Report were prepared for the following disciplines (included as **Appendices K and V** of this EPR):

- Stormwater Management (TPF sites only); and
- Groundwater and Wells.

Sections 1.1 to 1.4 describe the Study Area and project components that provided the scope for the description of baseline conditions. A conservative 30 metre buffer area was established around these elements of the Study Area at the baseline conditions phase to allow for comprehensive baseline data collection.

1.1 GO Rail Corridors

1. Union Station Rail Corridor (USRC) – From Union Pearson (UP) Express Union Station to Don Yard Layover
2. Lakeshore West Corridor – From just west of Bathurst Street (Mile 1.20) to Burlington GO Station
3. Kitchener Corridor – From UP Express Spur (at Highway 427) to Bramalea GO Station
4. Barrie Corridor – From Parkdale Junction (off Kitchener Corridor) to Allandale GO Station
5. Stouffville Corridor – From Scarborough Junction (off Lakeshore East Corridor) to Lincolnville GO Station
6. Lakeshore East Corridor – From Don Yard Layover to Oshawa GO Station

1.2 Traction Power Facility Locations

There are 16 traction power facilities (TPFs) within the scope of the GO Rail Network Electrification undertaking. These consist of:

- Five Traction Power Substations (TPSs)
- Five Switching Stations (SWSs)
- Six Paralleling Stations (PSs)

1.3 Tap Locations

There are five Tap locations (points at which high voltage power will be 'tapped' from Hydro One's existing grid) required to support the GO Rail Network Electrification undertaking.

Table 1-1 summarizes the TPFs and Tap locations required along each corridor, and the locations of these project components are shown in Figures 1-1 to 1-16.

Table 1-1: Summary of Traction Power Facilities by Corridor

GO Corridor	Approx. Length of Corridor	Type of Facility	Location(s)
Union Station	2.6 km	Tap Point	• None
		TPS	• None
		SWS	• None
		PS	• None
		Feeder Route	• None
Lakeshore West	53 km	Tap Point	• Burlington Tap / Mimico Tap
		TPS	• Burlington/ Mimico
		SWS	• Mimico / Oakville
		PS	• None
		Feeder Route	• Canpa 25kV Feeder Route
Kitchener	6.5 km	Tap Point	• None
		TPS	• None
		SWS	• None
		PS	• Bramalea
		Feeder Route	• Bramalea 25kV Feeder Route
Barrie	100 km	Tap Point	• Preferred Allandale Tap • Alternative Allandale Tap
		TPS	• Allandale
		SWS	• Newmarket
		PS	• Gilford / Maple
		Feeder Route	• Allandale 25kV Feeder Route
Stouffville	50 km	Tap Point	• Scarborough Tap
		TPS	• Scarborough
		SWS	• None
		PS	• Unionville / Lincolnville
		Feeder Route	• Scarborough 25kV Feeder Route
Lakeshore East	48 km	Tap Point	• ERMF Tap
		TPS	• East Rail Maintenance Facility
		SWS	• Scarborough / Durham
		PS	• Don Yard
		Feeder Route	• Scarborough 25kV Feeder Route

1.4 25kV Feeder Routes

In cases where it was not possible/feasible to locate a TPS directly adjacent to or on the same site as the Hydro One Tap infrastructure (e.g., Mimico Tap and TPS), or where a TPS is not located in close proximity to the Metrolinx Right-of-Way (ROW) (e.g., Allandale), 2X25kV feeder routes are required. There are four cases where this is required as follows:

i. From the Mimico Tap and TPS location to the Mimico SWS, aerial along Canpa rail ROW **(Figure 1-17)**;
ii. From the Bramalea PS location to the termination limit of electrification on the Kitchener corridor, aerial along the Kitchener rail ROW (**Figure 1-19**);
iii. From the Allandale TPS to the termination limit of electrification on the Barrie corridor, along Barrie Collingwood Railway ROW (could be aerial or underground) (**Figure 1-18**), and
iv. From the Scarborough TPS location to the Scarborough SWS, aerial along the Stouffville and Lakeshore East rail ROW's (**Figure 1-20:)**.

Figure 1-1: Location of Proposed Burlington Tap Point and TPS

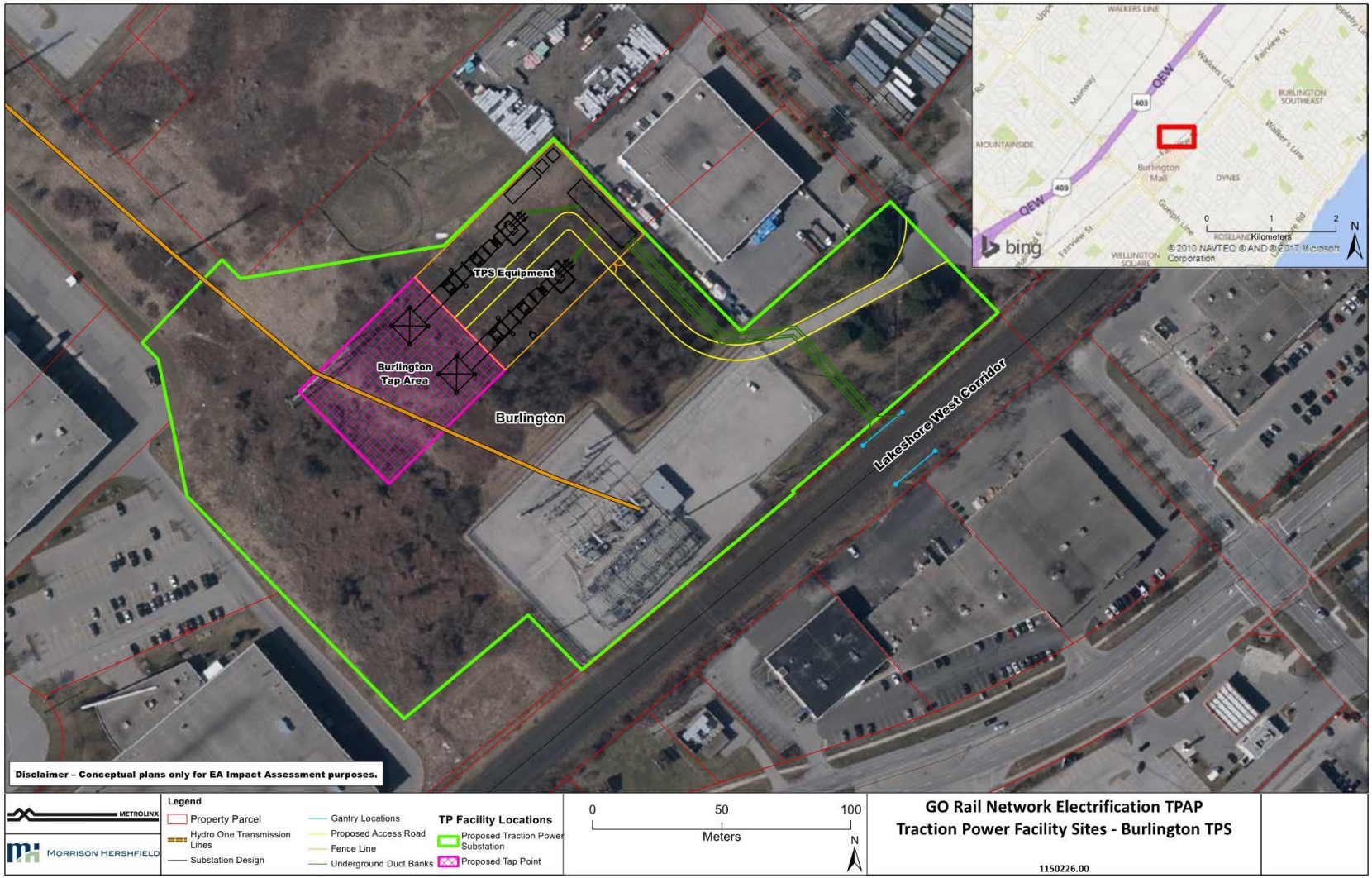


Figure 1-2: Location of Proposed Mimico Tap Point/TPS

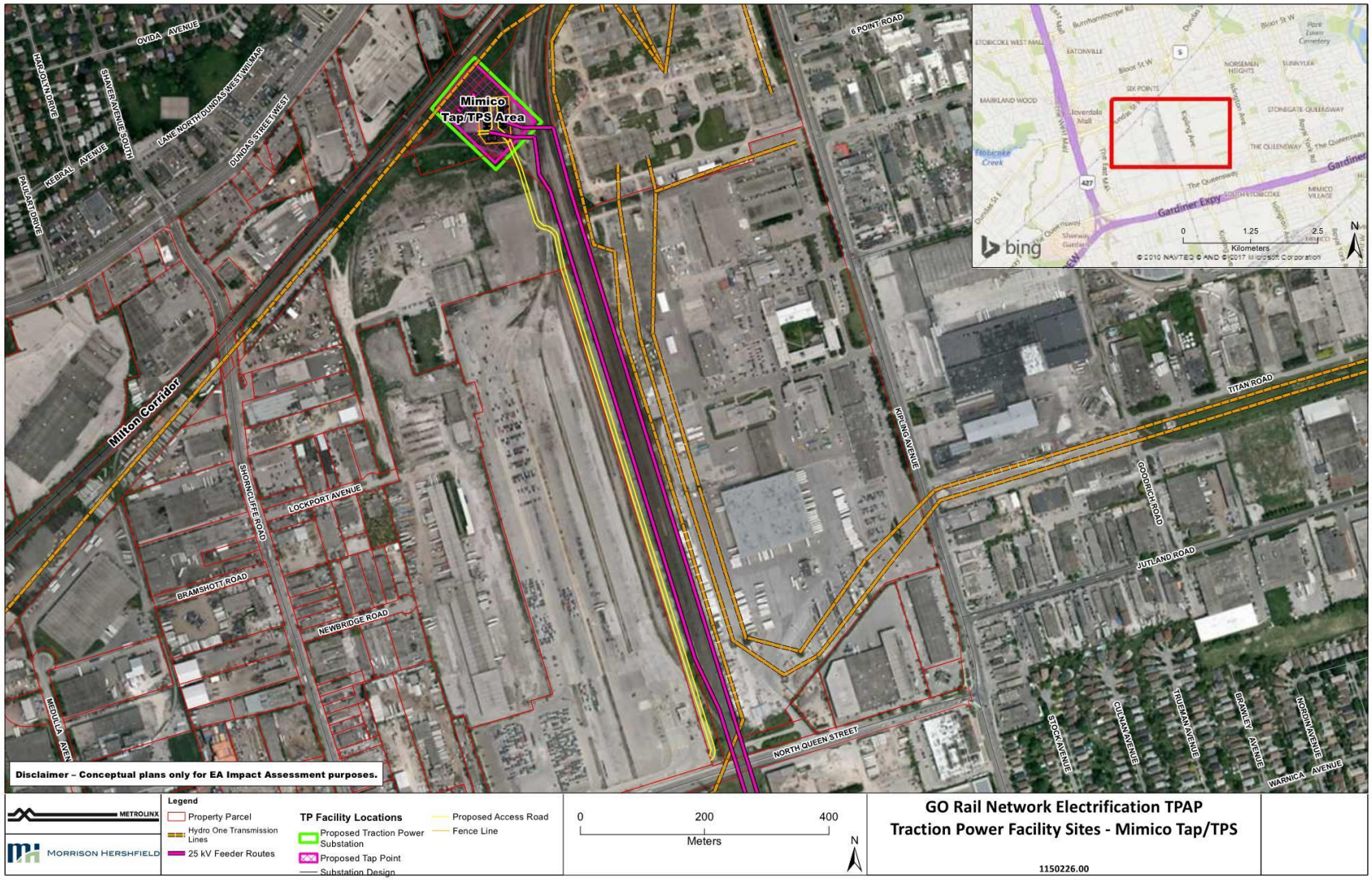


Figure 1-3: Location of Proposed Mimico SWS

Figure 1-4: Location of Proposed Oakville SWS

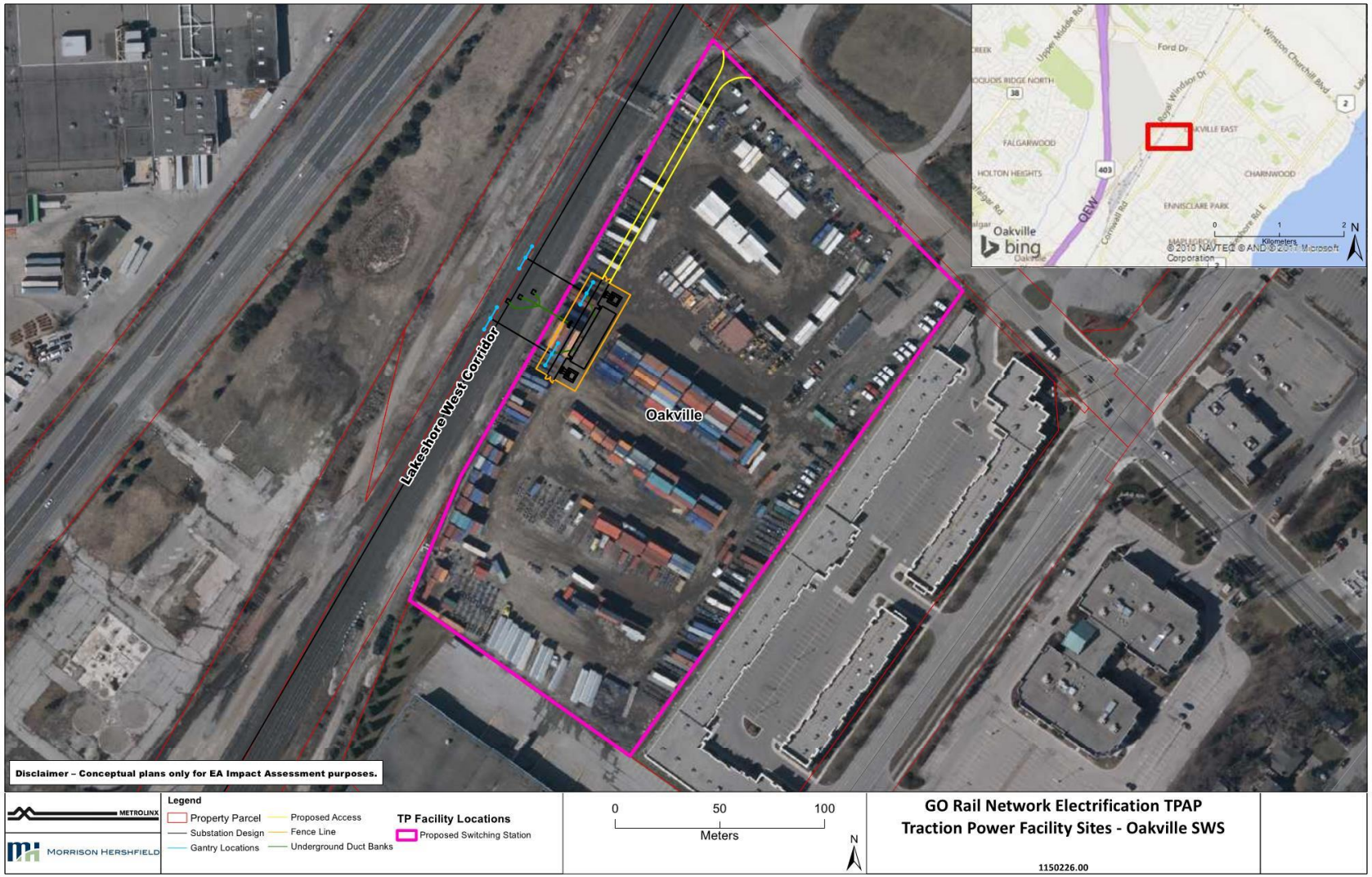


Figure 1-5: Location of Proposed Bramalea PS

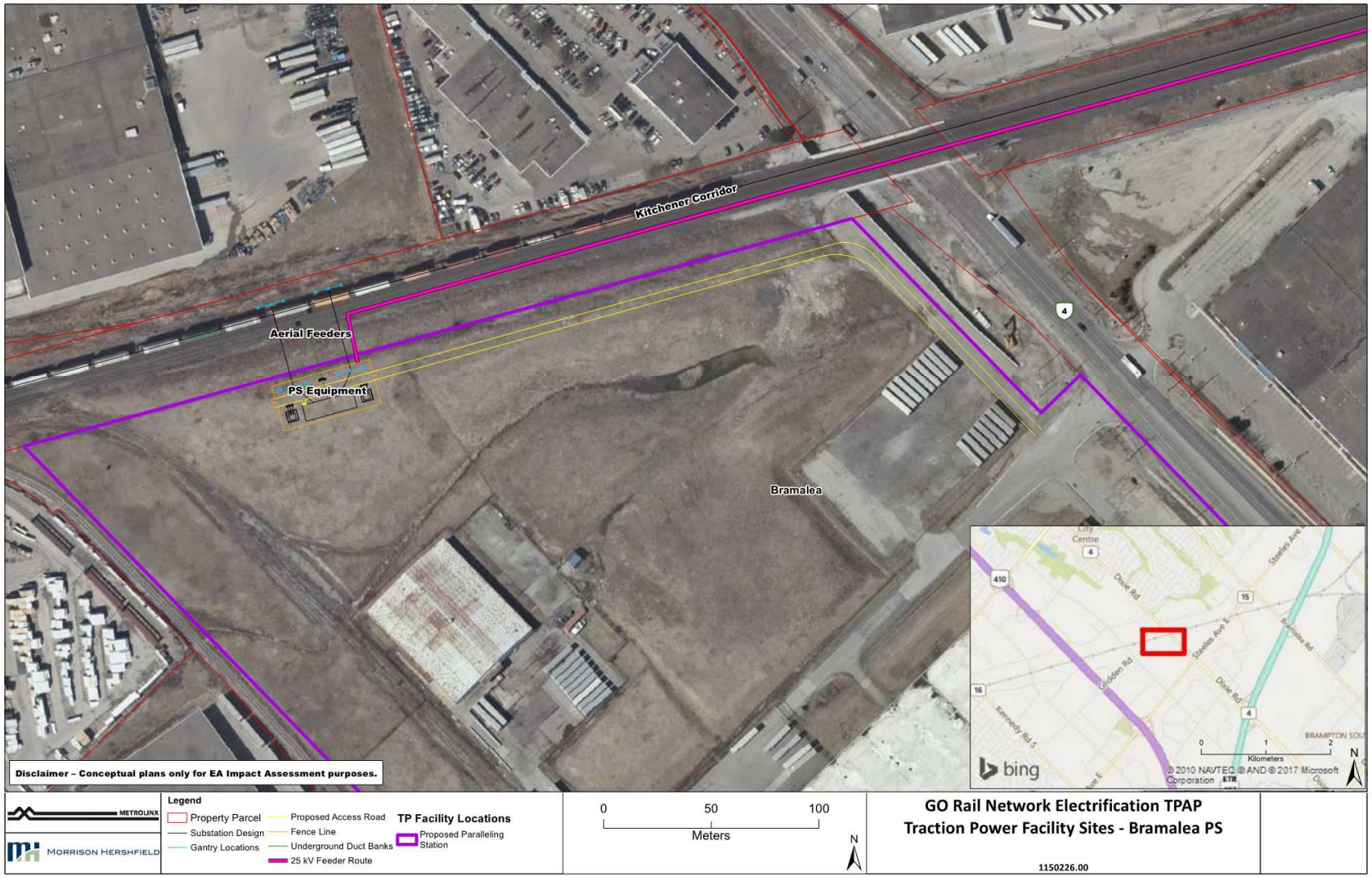


Figure 1-6: Location of Proposed Allandale Tap Points and TPS

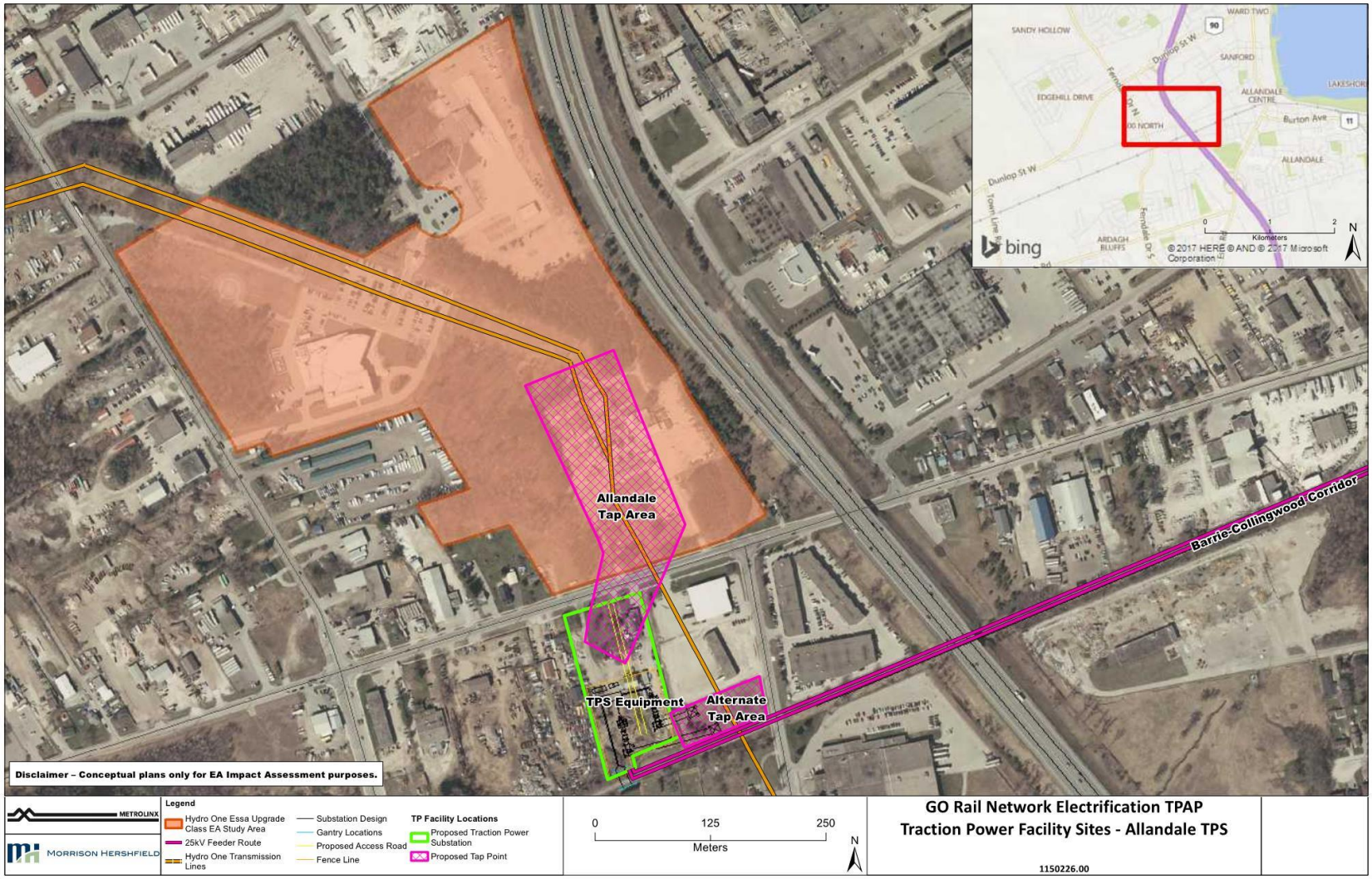


Figure 1-7: Location of Proposed Newmarket SWS

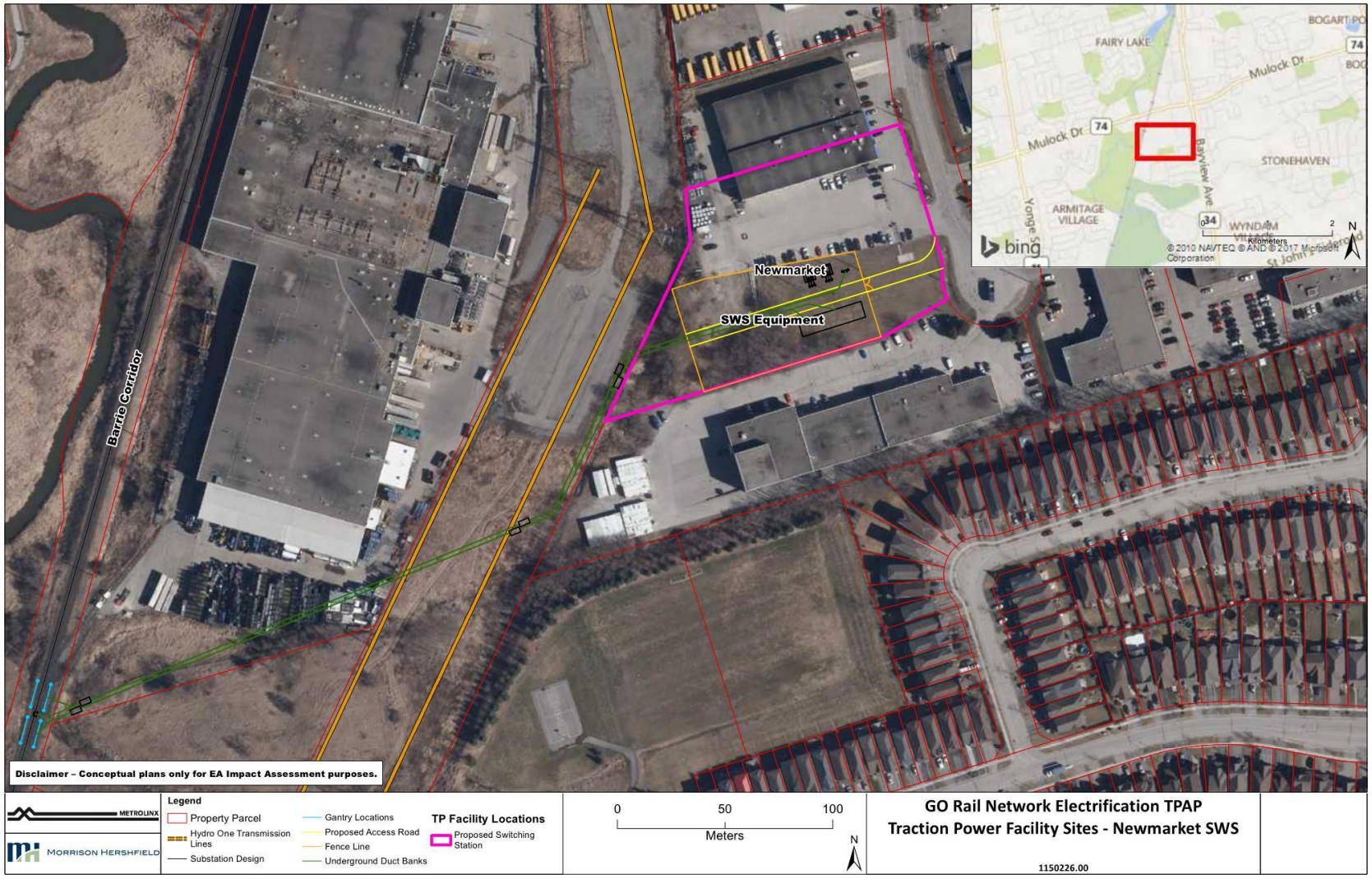


Figure 1-8: Location of Proposed Gilford PS

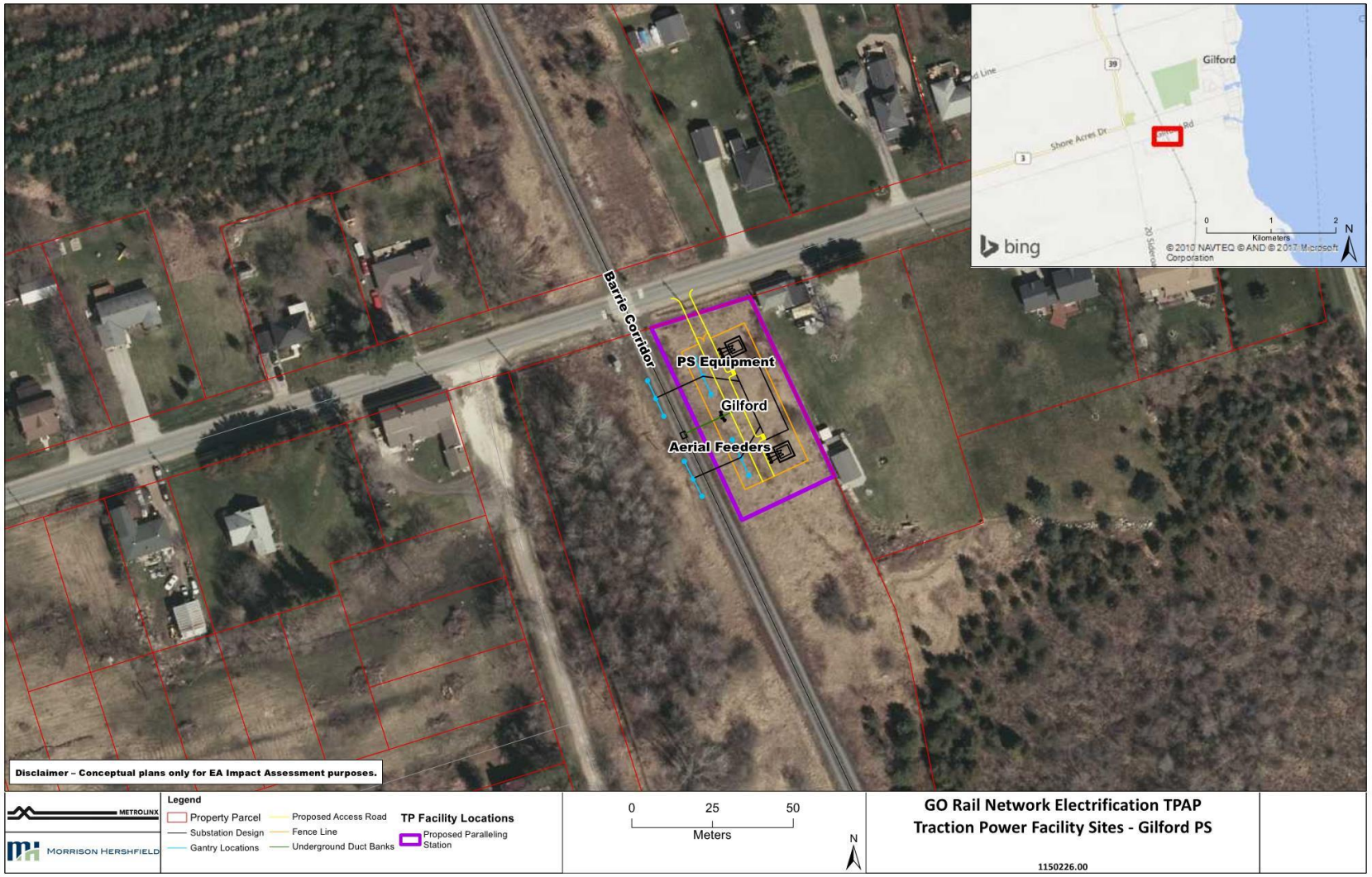


Figure 1-9: Location of Proposed Maple PS

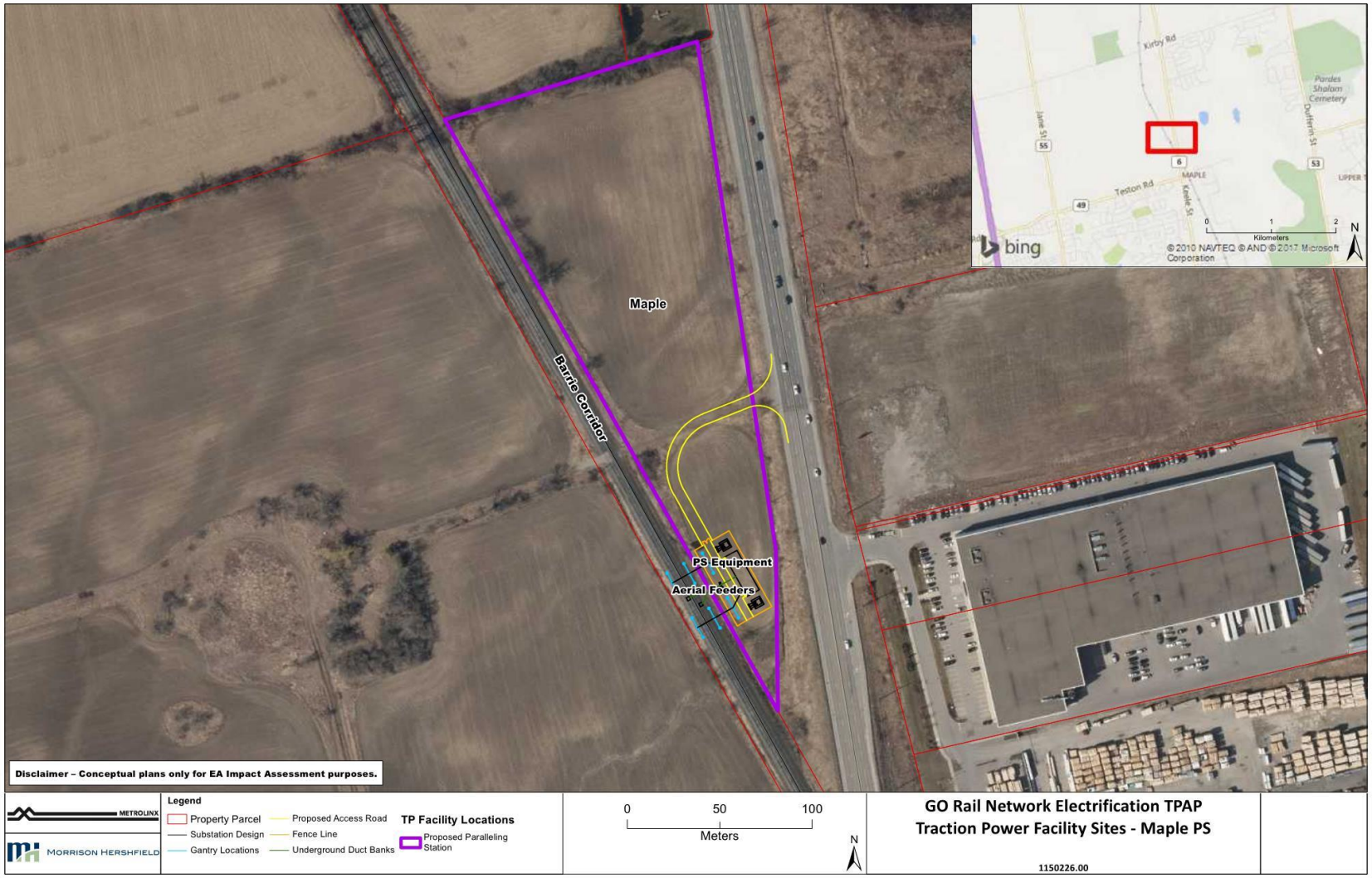


Figure 1-10: Location of Proposed Scarborough Tap Point and TPS

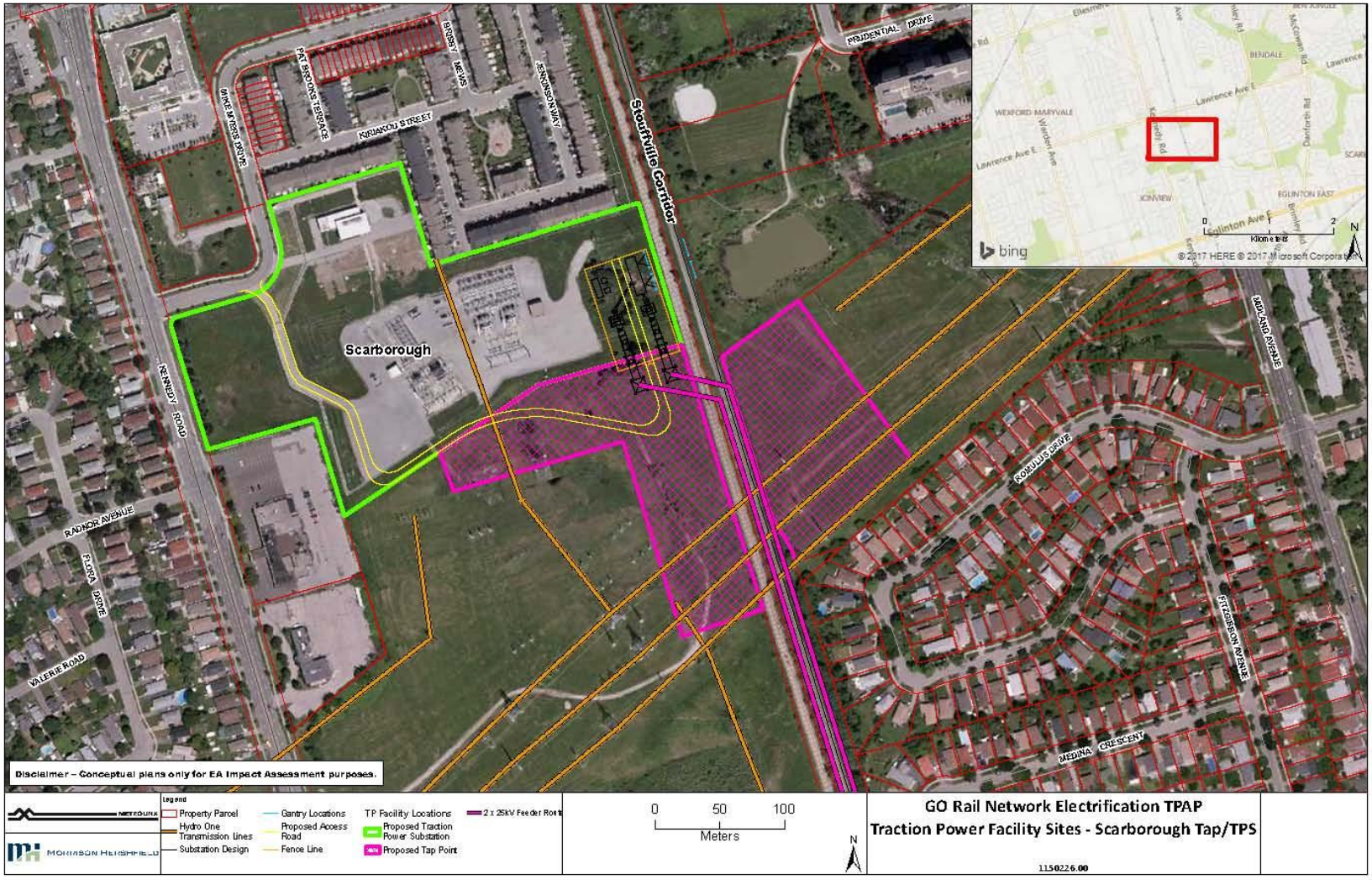


Figure 1-11: Location of Proposed Unionville PS

Figure 1-12: Location of Proposed Lincolnville PS

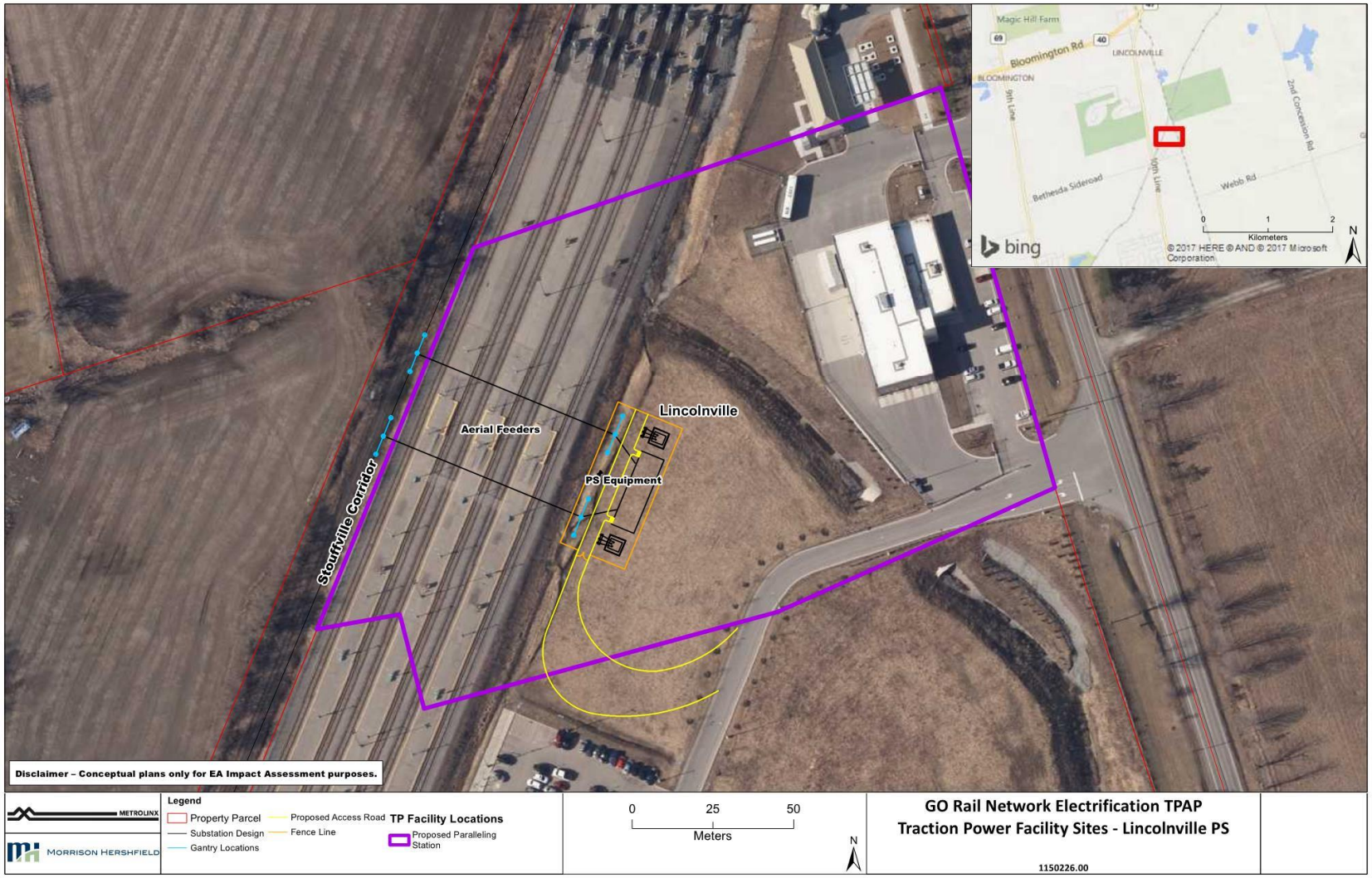


Figure 1-13: Location of Proposed ERMF Tap Point and TPS

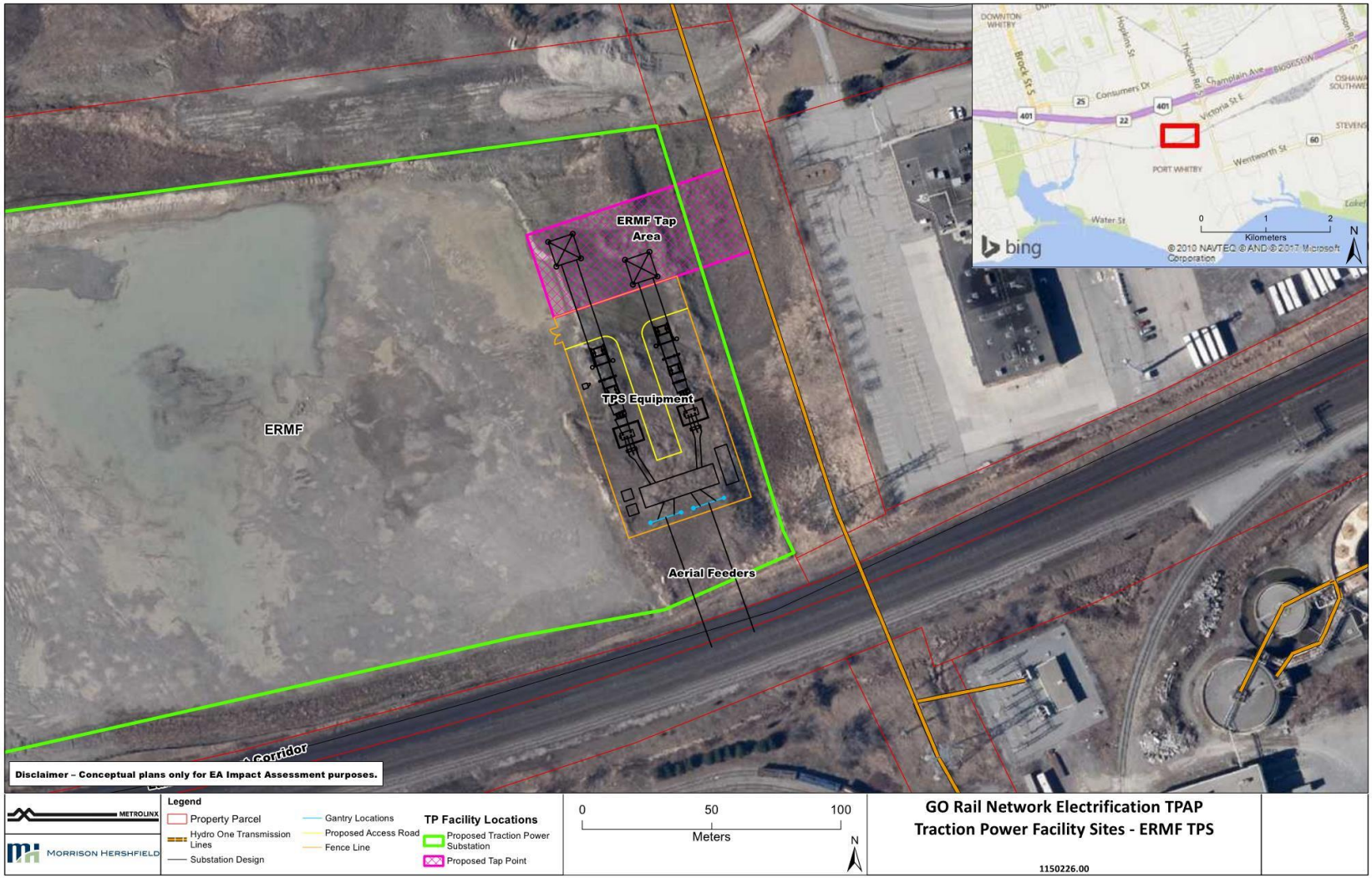


Figure 1-14: Location of Proposed Scarborough SWS

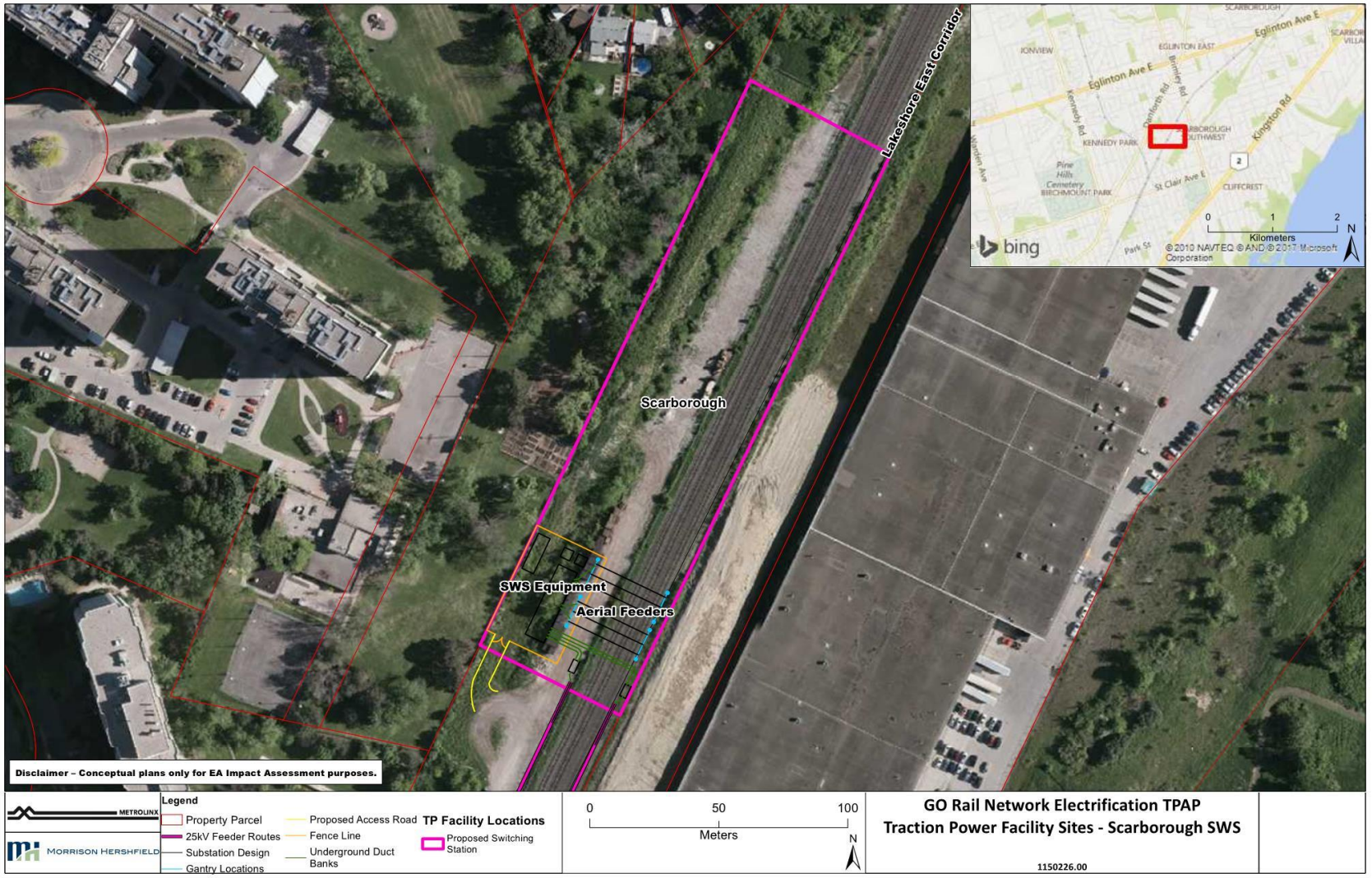


Figure 1-15: Location of Proposed Durham SWS

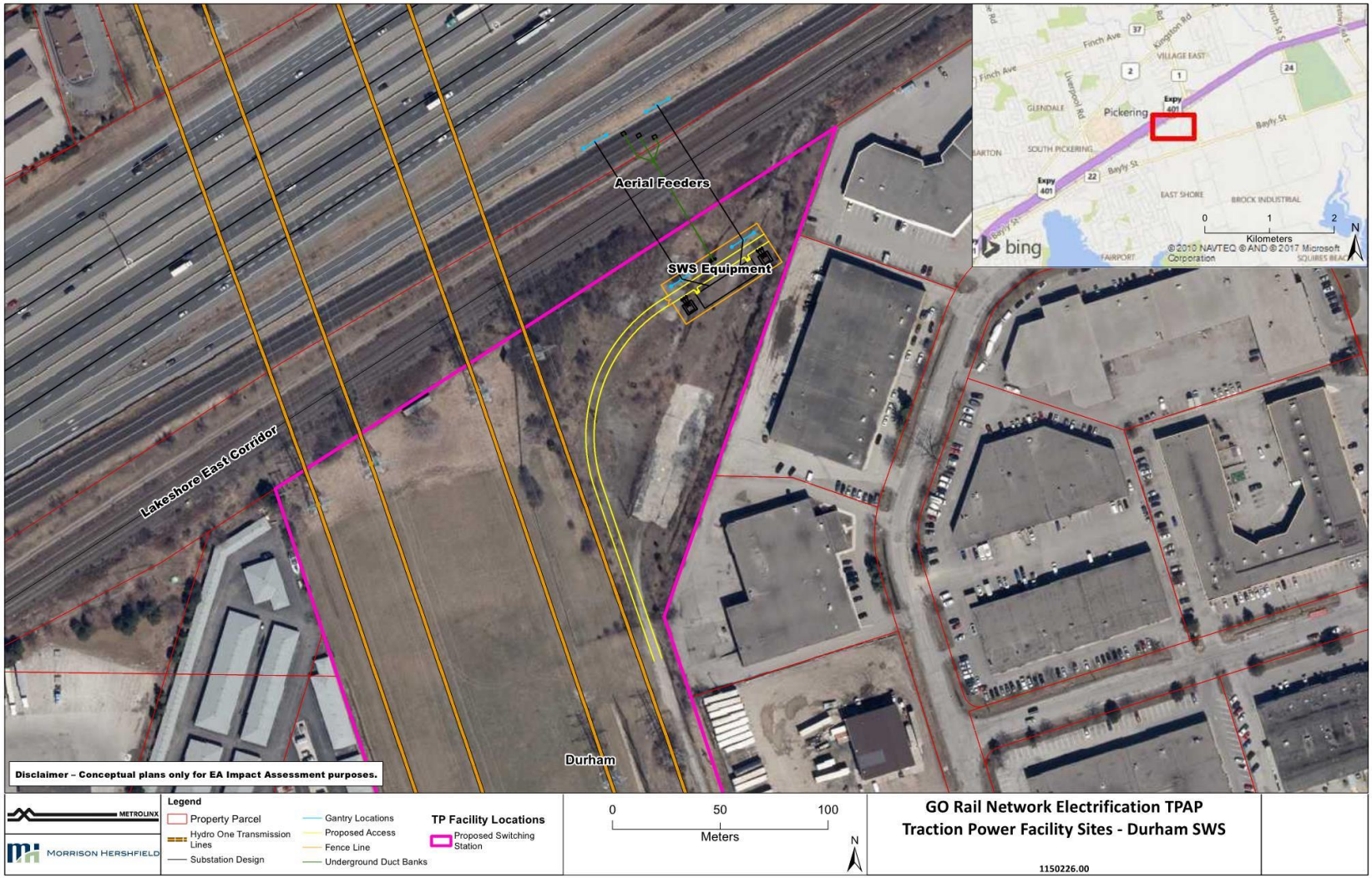


Figure 1-16: Location of Proposed Don Yard PS

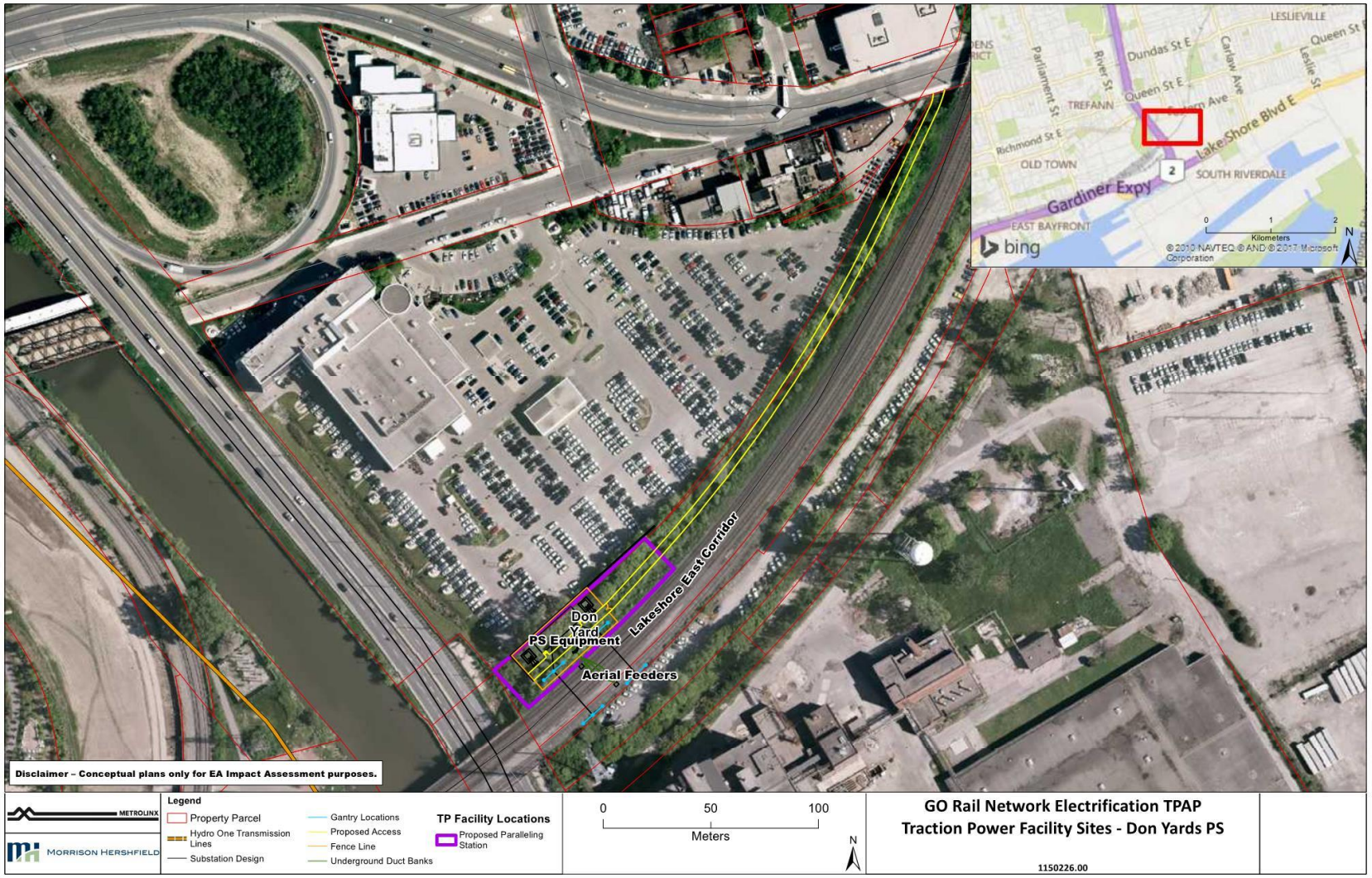


Figure 1-17: Canpa 25kV Feeder Route

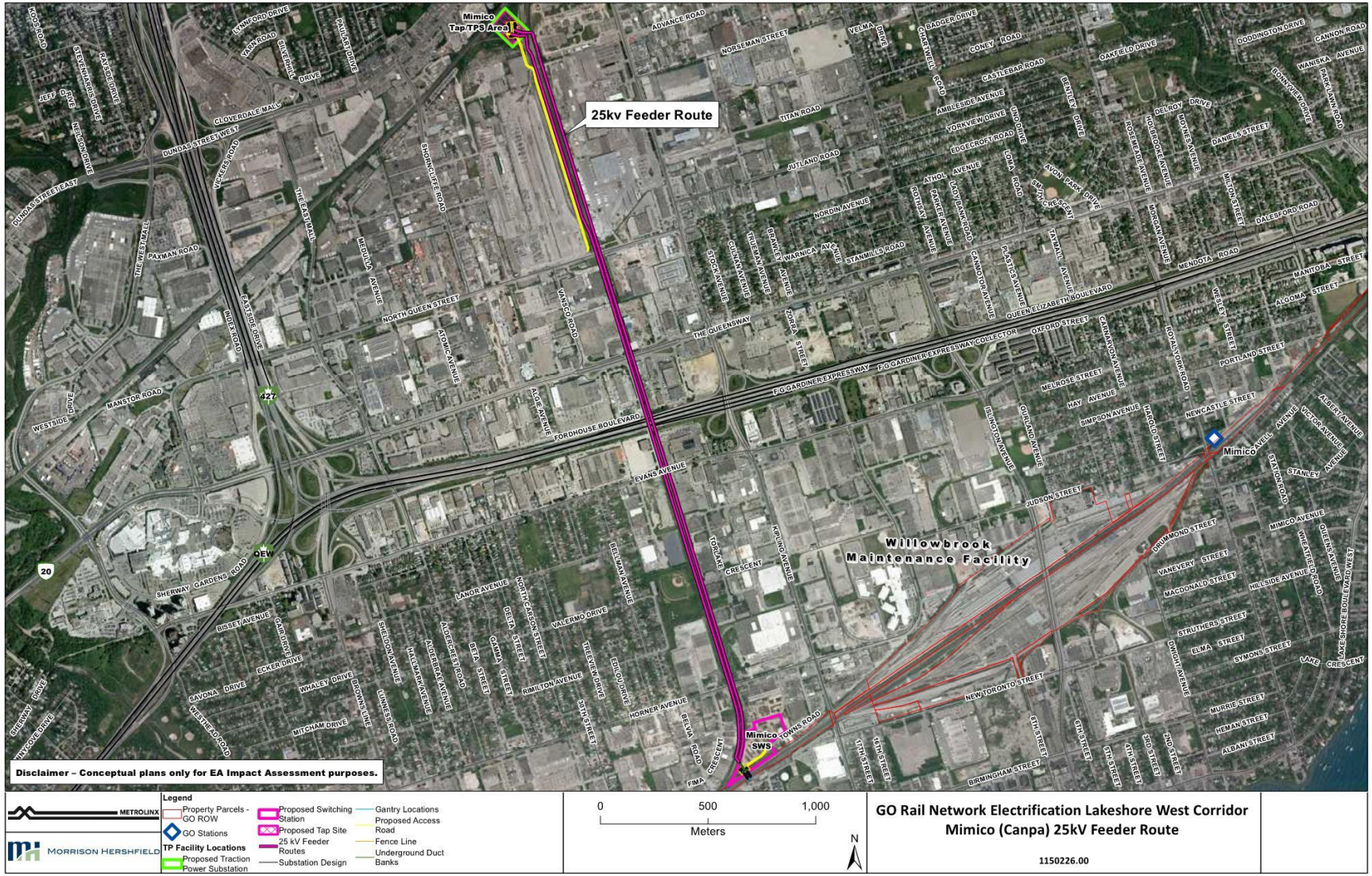


Figure 1-18: Barrie-Collingwood Railway 25kV Feeder Route

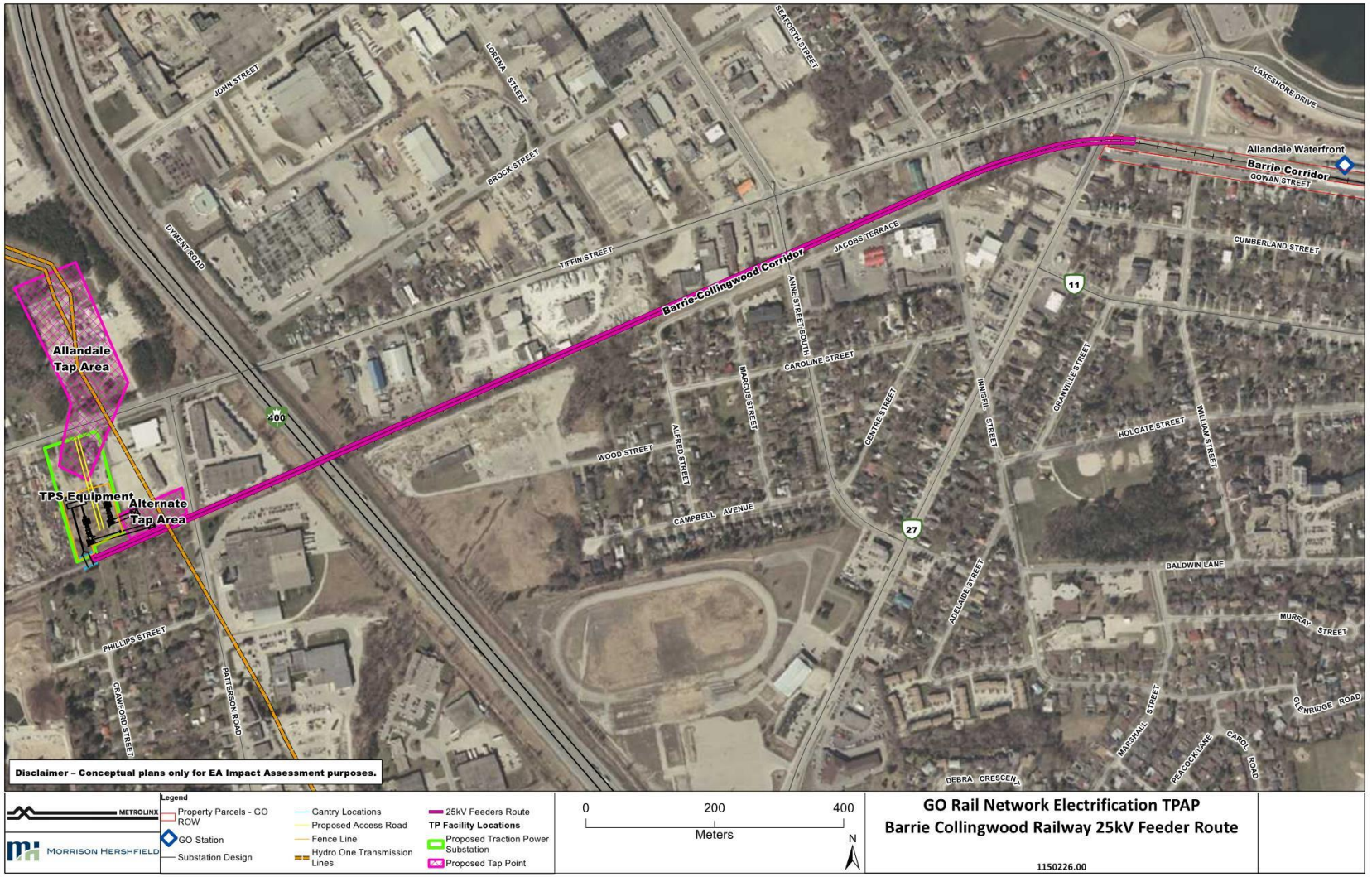


Figure 1-19: Bramalea 25kV Feeder Route

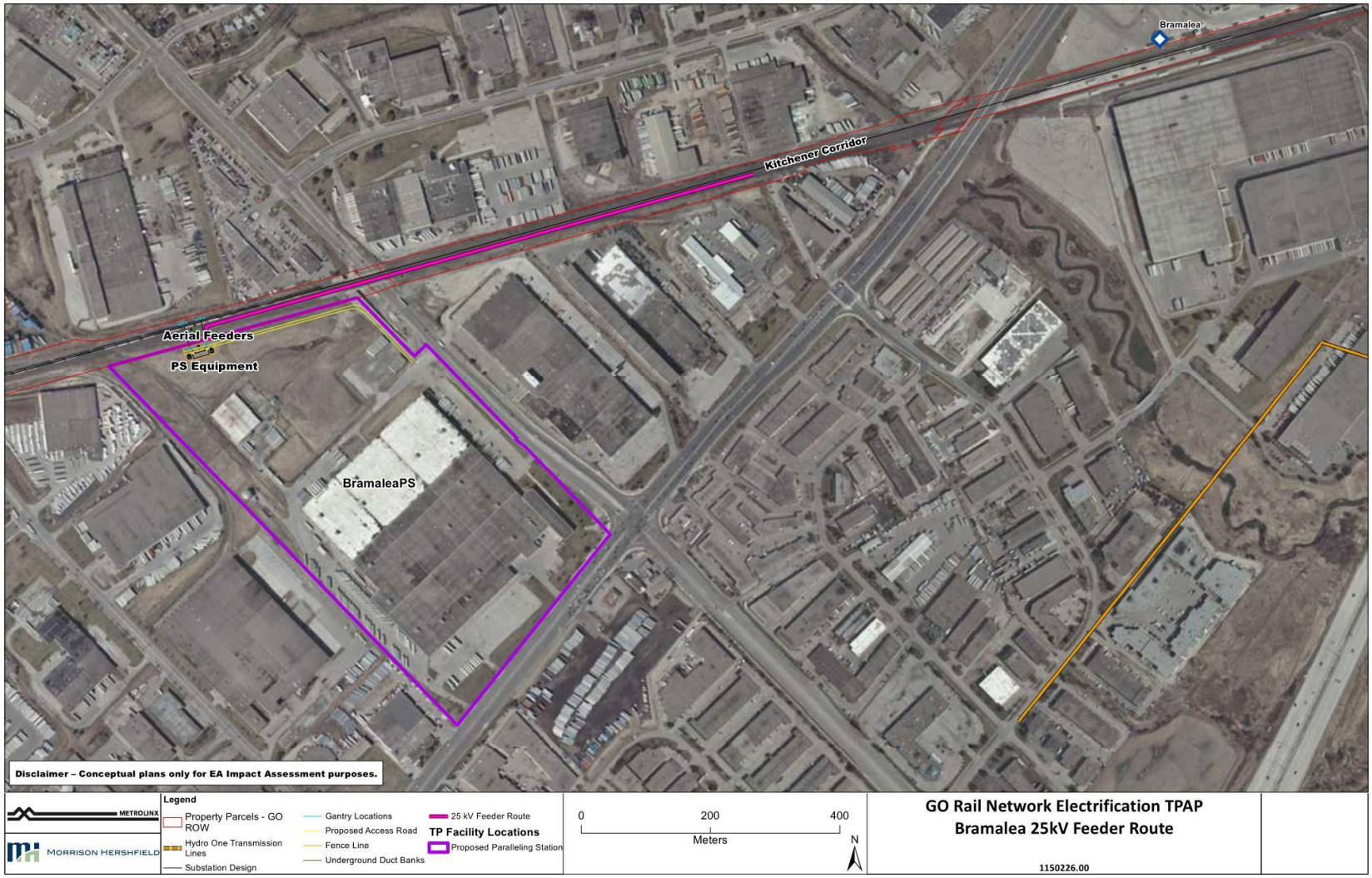
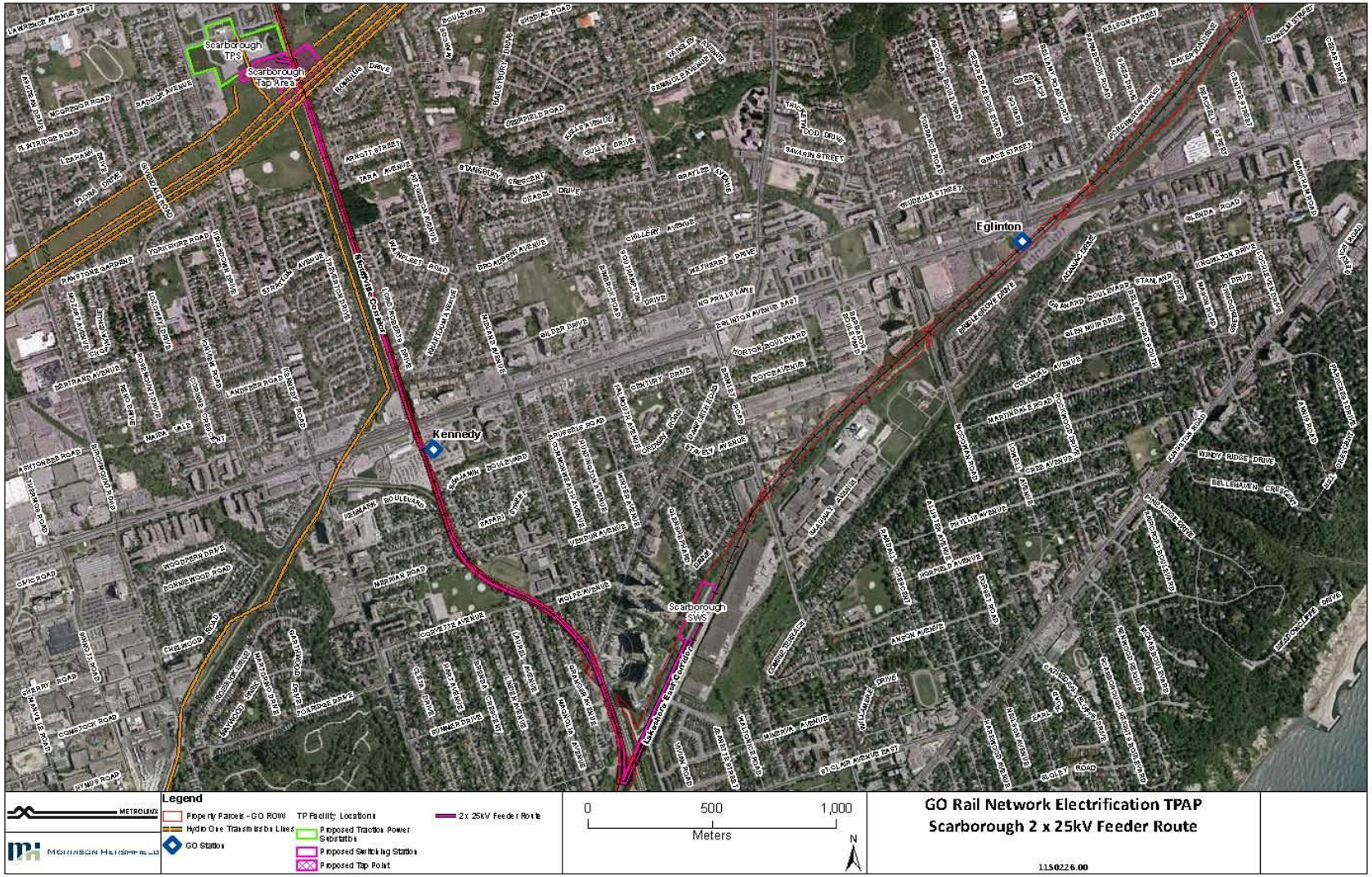


Figure 1-20: Scarborough 25kV Feeder Route



1.5 Baseline Data Collection and Analysis

Baseline data collection for each discipline generally involved a combination of Desktop Review (a review of relevant background reports and discussions with government agencies and other stakeholders) and Field investigations as required. Sections **1.5.1** to 1.5.12 summarize the methodologies used while Sections **2** to 7 describe the findings for each discipline.

For a more detailed description of the approach and methodologies followed to document baseline conditions, please refer to the discipline-specific technical reports contained in **Appendices A1 – J1, K and V**.

1.5.1 Natural Environment

In order to identify and document existing terrestrial and aquatic conditions within the Study Area, the boundaries and existing natural features were defined, described and delineated. As the initial component of this analysis a background information review was completed. This review included the collected information for a variety of sources with information pertaining to natural heritage such as previously completed Environmental Assessment (EA) studies provided by Metrolinx, direct communications with the Ministry of Natural Resources and Forestry (MNRF), Conservation Authorities (CAs) and other background information such as regulations, technical guides, aerial photography, reference mapping and municipal documents.

Following the background review a Data Gap analysis was conducted. Where data gaps were identified, primary source data (field surveys and aerial photography interpretation) was undertaken in order to update or augment what was presently available. Aerial photography was used to assist with vegetation community interpretation and delineation.

Utilizing the results of the desktop review (background review and Data Gap analysis) field investigations were conducted. These investigations are described in two parts: Terrestrial and Aquatic.

1.5.1.1 Terrestrial

Terrestrial field investigations were undertaken in the Fall of 2015 to supplement and confirm existing data on Species at Risk (SAR), woodlands, vegetated communities, wetland communities (provincial and locally significant), unevaluated wetlands, significant wildlife habitat (e.g., seasonal concentration areas, specialized wildlife habitats, rare vegetation communities, species/habitats of conservation concern and animal movement corridors) which were obtained from the MNRF, Land Information Ontario (LIO), Natural Heritage Information Centre (NHIC) and applicable CAs and municipal official plans (OPs).

Where adequate information from secondary sources was not available, field surveys were undertaken within a buffer area of 30 m of the GO Rail Network Electrification rail corridor ROW. All terrestrial vegetation communities within the Study Area were classified to community level based on aerial photo interpretation and field studies, according to the Ecological Land Classification (ELC) for Southern Ontario

(Lee *et al.*, 2009), and are identified in **Table 1-2**. ELC is the provincially accepted standard method for the identification, classification and mapping of ecological land units in Southern Ontario. The vegetated areas within the Study Area were delineated and defined to Ecosite level, and determined communities based on stand structure and composition. Tree cover within each corridor section was identified using an estimation of canopy cover. Canopy Cover was defined as limited (10-20%), intermediate (20-70%) or high proportion (>70%), in order to provide an indication of potential tree removals.

Table 1-2: Ecological Land Classification Acronyms

ELC Code	Community Classification	ELC Code	Community Classification
AG	Agriculture	**MAM**	Meadow Marsh
CGL	Green Land	**MAS**	Shallow Marsh
CUP	Red Pine Coniferous Plantation	**MEM**	Mixed Meadow
CUM	Cultural Meadow	**OA**	Open Water
CUW	Cultural Woodland	**SHO**	Open Shoreline
CV	Constructed	**SW**	Swamp
CVC	Commercial and Institutional	**SWD**	Deciduous Swamp
CVI	Transportation and Utilities	**SWM**	Mixed Swamp
CVR	Residential Lands	**TAG**	Treed Agriculture
FOD	Deciduous Forest	**THD**	Deciduous Thicket
FOM	Mixed Forest	**WOD**	Deciduous Woodland
MA	Marsh	**WOM**	Mixed Woodland

SAR with potential presence within the entire Study Area are summarized in table format in the first corridor section for each of the six corridors. SAR are further subdivided taxonomically into Vascular Plants, Birds, Herpetofauna, Insects, Fish and Mammals. A ranking system of low, medium and high was used for SAR based on the presence of suitable habitat combined with potential of species occurrence within a vegetation community, as follows:

- **Low Suitable Habitat Ranking:**
  - Species occurrence observations confirmed within the general area
  - Vegetation communities within the Study Area meet species habitat requirements
- **Moderate Suitable Habitat Ranking:**
  - Species occurrence observations confirmed within close proximity of the Study Area
  - Vegetation communities within the Study Area meet species habitat requirements
- **High Suitable Habitat Ranking:**
  - Species occurrence observations confirmed within or immediately near the Study Area

Wildlife habitat within each corridor section was assessed to determine the potential for Significant Wildlife Habitat according to the Significant Wildlife Habitat Technical Guide (OMNR, 2000). Wildlife habitat is considered significant when it is ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System. Wildlife habitats were identified for Ecoregions 6E and 7E which encompass the entire Study Area.

Designated Areas were also identified for each corridor segment, and include Evaluated Wetlands, Areas of Natural and Scientific Interest (ANSIs), Environmentally Significant/Sensitive Areas, Provincial Parks, Conservation Areas, and areas within the Greenbelt and Oak Ridges Moraine (refer to **Appendix A1** for further information on the designated areas).

1.5.1.2 Aquatic

Watercourses within each corridor section were identified using the Land Information Ontario (LIO) mapping of the hydrographic network. Fish species and habitat information for each watercourse was determined using previous Metrolinx reports, Conservation Authorities Fisheries Management Plans and Watershed Management Plans, Department of Fisheries and Oceans (DFO) mapping, and data collected from regulatory agencies.

Detailed aquatic assessments, including field investigations, were not completed at this stage, since it was anticipated that impacts to aquatic habitat due to the GO Rail Network Electrification undertaking would be minimal. Watercourses within each corridor were identified using the LIO mapping of the hydrographic network. Fish species and habitat information for each watercourse were determined using previous Metrolinx reports, Conservation Authorities' Fisheries Management Plans and Watershed Management Plans, DFO mapping, and data collected from regulatory agencies.

A copy of the Natural Environment Baseline Conditions Report is included as **Appendix A1**.

1.5.2 Preliminary Environmental Site Assessment

Two Preliminary Environmental Site Assessment Studies were completed in Fall 2015 and Spring 2016 in order to assess the potential subsurface contamination within the Study Area. To aid in the identification of areas of potential subsurface contamination for each of the 16 identified TPF properties (the five TPSs, five SWSs and six PSs) (see **Table 1-1**) a Preliminary Environmental Site Assessment Study was conducted on adjacent lands within 30 m. A separate Preliminary Environmental Site Assessment Study of the rail corridors and existing maintenance facilities was completed.

1.5.2.1 TPF Preliminary Environmental Site Assessment Study

The TPF Preliminary Environmental Site Assessment Study consisted of a broad level assessment of actual and potential sources of contamination for each TPF facility based on a review of readily available information regarding current and former land uses and activities on and within 30 m, along with visual

site reconnaissance. Based on this information, Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs) were identified along with a ranking of low, moderate and high potential for subsurface contamination. Based on these results, the need for further site- or issue-specific investigations, such as Phase I and II Environmental Site Assessments (ESAs), was identified.

With respect to the risk ranking, the following were considered when selecting the ranking for each site[2]:

- **Low Risk Ranking:**
  - contaminants are likely limited in extent and likely only present in surficial soil;
  - migration, exposure pathways and receptors are likely limited; and/or
  - impacts can likely be easily managed prior to or during construction.
    - Example: impacted fill is present at the site which would be disturbed during construction and require off-site disposal.
- **Moderate Risk Ranking:**
  - contaminants are likely to be present across a large portion of the site;
  - contaminants are likely present in soil and/or groundwater;
  - the source of the contamination is likely no longer present on- or off-site;
  - migration, exposure pathways and/or receptors may be present; and/or
  - impacts would need to be assessed and addressed prior to construction.
    - Example: soil and groundwater impacts are present on-site and would be disturbed during construction. The impacts could be excavated and disposed of off-site prior to construction or left in place with the implementation of appropriate management measures.
- **High Risk Ranking:**
  - contaminants are likely widespread across the site;
  - contaminants are likely present in soil and groundwater;
  - impacts are likely mobile and migrating across, onto and/or off the site;
  - source of impacts is likely still present;
  - there are several receptors and exposure pathways; and/or
  - impacts cannot be addressed in a cost-effective and timely manner prior to or during construction.
    - Example: impacted groundwater is migrating onto the site from an offsite source and there is the potential for worker exposure during construction.

Sites with a low ranking are likely to require a limited subsurface investigation to address soil and fill quality at the site. A site with a moderate risk ranking is likely to require a subsurface investigation that

[2] Risk Ranking is based on industry best practice and professional judgment.

addresses a larger area of the site including both soil and groundwater and potentially multiple sources of contamination. A site with a high risk ranking is likely to require a comprehensive subsurface investigation that addresses a large portion of the site including both soil and groundwater and potentially multiple contaminant sources and migration pathways.

In order to complete the Preliminary Environmental Site Assessment Study a background information review was completed which included a review of available aerial photographs, historical fire insurance plans, and standard EcoLog ERIS database search for each location. This was followed by a field reconnaissance in Fall 2015 for those sites which were publically accessible. Don Yards PS was not accessible and was therefore not visited during field reconnaissance. The reconnaissance focused on assessing the current land uses for the site and neighbouring properties, and assessing features of potential environmental concern including presence of storage tanks, waste materials, chemical handling, fill material and monitoring wells.

1.5.2.2 Corridor Preliminary Environmental Site Assessment Study

This study is based on a review of approximately 60 previous studies provided by Metrolinx. These includes Phase I and Phase II ESA reports which identify area of potential contamination or locations or areas where no previous ESA work has been conducted. The footprint of the rail corridors reviewed in this study is the area defined by the OCS Impact Zone. For most of the study area, the OCS Impact Zone lies within the corridor's ROW. However there are some locations where a portion of the OCS Impact Zone lies outside of the ROW (these were included in the scope of the current review).

Approximately 60 environmental related documents (including Phase I and II ESAs), remediation reports and geo-environmental investigations) were reviewed. To assess the scope and extent of previous assessments and findings, a systematic organization and review approach was completed as follows:

1. Initial review to cull duplicate documents;
2. Sorting of documents based on which rail corridor they applied to. Some documents were found to refer to lands outside of the study area (outside of the OCS Impact Zone), and were therefore not applicable and not reviewed. Furthermore, the previously assessed UP Express Corridor was not reviewed as part of this study;
3. Review of each applicable report & mapping of ESA extents relative to the proposed project footprint. The extent of the ESA studies were plotted on and compared to the OCS Impact Zone detailed corridor maps (based on the April 19, 2016 version) which form this report's appendices.
4. Identification and mapping of area or section of the rail corridors that had not been subject to previous environmental site assessment work (i.e. identification of data gaps); and
5. Where reports applied to the project footprint (OCS Impact Zone or associated TPF infrastructure), a more detailed review of the reports was conducted to locate areas of contamination identified in the reports.

Note that the most relevant previous work generally consisted of Phase II ESAs. A Phase II involves intrusive investigations with soil and groundwater quality testing to determine if contamination exists. All of the Phase II studies provided for review identified contamination within their respective study areas, however no additional work was completed to fully delineate the spatial extent of the impacts. Therefore the contamination areas shown on the maps typically represent general areas where contamination was identified and future work is required to define the specific extent of the contamination in this area. This is typically conducted at a later phase of project development.

A copy of the Preliminary Environmental Site Assessment Gap Analysis Report is included as **Appendix B**.

1.5.3 Cultural Heritage

The following methodology was applied in order to undertake the screening assessment within the GO Rail Network Electrification Study Area. The Cultural Heritage Screening Report, included as **Appendix C1**, was developed based on review of Metrolinx and provincial guidelines, previous EA study documents provided by Metrolinx, and information received during meetings with Metrolinx. The Screening Report is scoped to address all appropriate requirements specified in the document entitled *Cultural Heritage Resource Component of Environmental Assessments* (Ministry of Culture and Communications, 1992) and results in the preparation of a "Screening for Built Heritage Resources and Cultural Heritage Landscapes", as described in the document entitled *Metrolinx Heritage Guidelines for Consultant* (July 21, 2015).

The Screening Report addresses the area within which potential effects will be assessed (the Study Area). For the GO Rail Network Electrification TPAP, the Study Area includes: potentially affected bridges/structures along the rail corridor ROW, electrification facility (TPS, SWS, PS) sites, GO Stations and existing maintenance facilities that will be modified. The approach to screening bridges/structures along the rail corridor was scoped to address only those bridges/structures that are anticipated to be impacted by the proposed electrification infrastructure (e.g., due to an OCS attachment, clearance issue, etc.). With respect to culverts, while no impacts to culverts are anticipated, any known heritage culverts were automatically screened in. Similarly, any resources within the study area that are known PHPPS were also automatically screened in.

Further details on the methodology for the Cultural Heritage Screening Report can be found in **Appendix C1**.

1.5.3.1 Screening for Cultural Heritage Resources

For the purposes of the screening, the term cultural heritage resource describes both built heritage resources and cultural heritage landscapes.

In order to make a preliminary identification of existing cultural heritage resources within the Study Area, municipal, provincial, and federal sources were consulted, as listed in **Appendix C1**. These included heritage registers; official plans; heritage conservation plans; community plans; lists of heritage

conservation districts, bridges and historic plaques; and directories of designated railway stations, historic places, and heritage designations.

In addition, a Heritage Planner or member of the Planning department from each of the single or lower-tier municipalities within the Study Area was contacted directly to gather any information on cultural heritage resources within the Study Area. The Ministry of Tourism, Culture and Sport (MTCS) and the Ontario Heritage Trust were also contacted to gather specific cultural heritage resources data on properties within the Study Area, and Metrolinx provided a list of previously-conducted CHERs for heritage properties along the subject rail corridors.

A field review was then undertaken in November and December of 2015 and in March of 2016 to confirm the location and condition of previously identified cultural heritage resources and to identify cultural heritage resources that have not been previously identified by federal, provincial, or municipal databases/agencies.

Following research and documentation gathering, and application of screening questions to confirm recognized heritage value and to identify heritage potential, there are three possible outcomes for each screened property: Potential Provincial Heritage Property (PPHP); Conditional Heritage Property (CHP); or Adjacent Land (Adjacent). In accordance with the *Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes* (2014), CHERs were recommended for properties that are screened as PPHPs and CHPs.

Based on the recommendations, CHERs were prepared to identify the heritage value of the subject property. A CHER involves conducting research, gathering documentary evidence, and consultation with appropriate groups/agencies to identify the heritage value of the property. The subject property will then be evaluated against Ontario Regulation 9/06 and 10/06 to determine whether the property has local and/or provincial significance under the Ontario Heritage Act. If found to have cultural heritage value by the Metrolinx Heritage Committee (MHC), a Statement of Cultural Heritage Value (SCHV) is prepared to set out a description of the property, a statement of its heritage value, and a list of heritage attributes. Copies of the CHERs and SCHVs prepared have been provided in **Appendix M**.

The outcome of this screening process is documented in the appropriate corridor sections throughout this document, and is further elaborated in the Cultural Heritage Screening Report located in **Appendix C1** and which includes:

- Data Sheets and Screening Questions, completed for properties in the Study Area that are 40 years and older;
- Identified PPHP, Provincial Heritage Property (PHP), Provincial Heritage Property of Provincial Significance (PHPPS), CHP, and Adjacent Lands illustrated in location mapping;
- Interpretive plaques and Designation Bylaws; and,

- Data Sheets completed for identified PHP and PHPPS properties in the Study Area.
- Summarization of the information and results gathered as part the Heritage Evaluation process. This involved reviewing Metrolinx Heritage Committee (MHC) Decision Forms for Cultural Heritage Evaluation Reports conducted as part of the GO Rail Network Electrification TPAP, as well as other concurrent and previous TPAPs and Environmental Assessment studies.

As a result, the Cultural Heritage Screening Report identifies all known cultural heritage resources that have been recognized as a Provincial Heritage Property of Provincial Significance (PHPPS) or as a Provincial Heritage Property (PHP)[3] by the Metrolinx Heritage Committee through the Metrolinx Interim Cultural Heritage Management Process and which are located within the Study Area. The Cultural Heritage Screening Report also identifies protected heritage properties located adjacent to the Study Area.

1.5.4 Archaeology

A comprehensive review of the existing archaeological conditions within the study area based on a review of available secondary source information (i.e., previously completed archaeological assessment reports/studies) was undertaken. This included a Data Gap Analysis within the Study Area (along rail corridors, 25kV Feeder Routes and at TPF sites) where previous archaeological assessment work had not yet been undertaken. The purpose of this review exercise was to determine the specific locations where no previous archaeological assessment work had been undertaken, which required Stage 1 Archaeological Assessment (**Appendix D2**).

The background review component of this assessment included a review of previous archaeological fieldwork conducted within and in its vicinity, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and its current land use and field conditions.

Four sources of information were consulted to provide information about previous archaeological research in the study corridors:

- Archaeological assessments previously conducted on the Metrolinx rail network within the study area;
- The Ontario Archaeological Sites Database. This database is housed at the MTCS and contains detailed locations and information for all registered archaeological sites in Ontario; it was consulted for a list of all sites within 1 km of the study area limits, per the Standards and Guidelines for Consultant Archaeologists (S & G), Section 1.1.1 (MTCS 2015). The S & G is supervised by the MTCS and mandated under the Ontario Heritage Act in order to conduct archaeological assessments in Ontario;
- Published and unpublished documentary sources; and,
- Archaeological Services Inc. (ASI) archives and files.

[3] Also includes properties recognized as Provincial Heritage Property – Conditional.

In addition to the presence of or proximity to known archaeological sites and historic features, the state of the natural environment is an important indicator of archaeological potential. Presence of water, and other geographic characteristics such as distinctive land formations, historical features and physical indicators such as burials, structures or rock paintings can indicate archaeological potential.

Following the completion of the background review a Data Gap Analysis was performed. This analysis included a systematic review of the Study Area in order to indicate where archaeological assessments have been completed and where they may be required. Maps of the study corridors were created indicating the locations of previously assessed lands, archaeological sites, and other features such as cemeteries and ossuary potential within and in the immediate vicinity (50 m) of the Study Area Limits. These maps can be found in Appendix C of **Appendix D1**.

A copy of the Archaeological Baseline Conditions Report is included as **Appendix D1**.

1.5.5 Land Use and Socio-Economic

Given the vast geographic area covered by the Study Area, the analysis of land use and socio-economics relied heavily on the availability of existing spatial data/GIS mapping layers to describe baseline conditions, as well as previous EAs completed by Metrolinx along the rail corridors. Features shown on GIS maps and described in past studies were strategically ground-truthed.

A background information review was conducted whereby available mapping data and other information were collected and reviewed to identify existing and planned land uses. A Data Gap Analysis was conducted to identify sections of the Study Area that do not have publically available mapping of land use and zoning.

Mapping was created for all of the rail corridors based on the background information review. These maps identified land uses adjacent to the rail corridors and proposed traction power facilities using a 30 metre buffer, as well as sensitive receptors on either side of the rail corridors. For the purposes of the land use and socio-economic baseline data collection, “sensitive receptor facilities” were defined as the following: child care centres, schools, long term care centres, and hospitals. For the purposes of the assessment, sensitive receptor facilities located within 40 metres of the rail corridor were identified based on a potential zone of influence.

Where GIS layers did not exist or were not available, Official Plan maps were digitized and added to the land use baseline conditions maps. Field reconnaissance (Fall 2015) and discussions with municipal planning staff were also undertaken to further fill in data gaps wherever possible.

A copy of the Land Use and Socio-Economic Baseline Conditions Report is included as **Appendix E1**.

1.5.6 Air Quality

The Province of Ontario has established criteria for concentrations of airborne contaminants. The Ambient Air Quality Criteria (AAQCs) are effects-based levels in air, based on health and/or other effects. In addition to provincial AAQCs, the Federal Government has established Canadian Ambient Air Quality Standards (CAAQS). These are health-based air quality objectives for pollutant concentrations in outdoor air. These objectives are being phased in, with the final and most stringent objective becoming active in the year 2020. Since these assessments also concern future concentrations, they typically use the most stringent 2020 CAAQSs as the relevant objectives, as is the case here. For this study, the CAAQS only applies to particulate matter less than 2.5 µm in diameter, for which there is no AAQC. However, this study also examines a range of other contaminants such as:

- carbon monoxide;
- nitrogen dioxide;
- particulate matter less than 2.5 µm in diameter ($PM_{2.5}$);
- particulate matter less than 10 µm in diameter (PM_{10});
- formaldehyde;
- acetaldehyde;
- benzene;
- 1,3-butadiene; and
- benzo(a)pyrene.

The concentrations of these contaminants in the vicinity of the rail corridors can be established through ambient monitoring or from computer models. Several ambient monitoring stations are already in place within the Study Area, and being operated by the Ministry of the Environment and Climate Change (MOECC), Metrolinx and under the National Air Pollution Surveillance program (NAPS). Greenhouse gases are also of concern as they relate to climate change. However, baseline greenhouse gas emissions have not been discussed as part of baseline air quality for this project. Instead, they will be discussed at the impact assessment stage.

Acrolein has previously also been identified as a contaminant of concern in similar transportation studies, however ambient monitored concentrations of acrolein are very limited. Ambient monitoring of acrolein occurred at only one station within the study area, and this station became inactive in 2006. As this data is very limited and may no longer be representative of the air quality in the vicinity of the rail corridors, it was excluded from further analysis.

To characterize baseline conditions, monitoring stations were identified as belonging to one of three land use categories:

1. "Urban", where baseline air quality is characteristic of urban areas or dominated by emissions from major highways;
2. "Suburban", where baseline air quality is influenced by surrounding neighbourhoods but not from major emission sources and highways; and
3. "Rural", where baseline air quality is representative of background levels in less populated areas without influence from significant human activities.

This study used data from nine urban monitoring locations, nine suburban monitoring locations, and two rural monitoring locations. The concentrations from these locations were assumed to be representative of air quality in the vicinity of rail corridors that travel through urban, suburban, and rural areas. This study is limited by the availability of recent monitoring data.

The following is a brief discussion of the air quality conditions by land use category:

Urban

In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of $PM_{2.5}$ (respirable particulate matter), and PM_{10} (inhalable particulate matter) are slightly exceeded.

Suburban

Pollutant concentrations in the suburban areas are somewhat lower than those in the urban areas. However, annual average benzene and benzo(a)pyrene concentrations still exceed their criteria. Criterion for 24-hour concentration of $PM_{2.5}$ is slightly exceeded. Data on PM_{10} were unavailable for the suburban land use category.

Rural

Pollutant concentrations are lowest in the rural areas. All contaminants are within their applicable air quality criteria, with the exception of benzo(a)pyrene which, even in the rural areas, significantly exceeds its MOECC criterion for annual average concentration.

For a detailed description of the approach and methodologies followed to document air quality baseline conditions, please refer to the Air Quality Baseline Conditions Report, which is included as **Appendix F1**.

Appendix F1 provides station-by-station summaries of the air quality monitoring data. **Table 1-3 through Table 1-5** below show composite air quality statistics for each land use category (urban, suburban and rural), as well as the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQC for all contaminants except for $PM_{2.5}$ which has a CAAQS, as described in Section 3.2 of **Appendix F1**.

Table 1-3: Summary of Urban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
$PM_{2.5}$	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM_{10}	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 1-4: Summary of Suburban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	205	255	362	757	1-hr	229	2437	N/A	1509
Nitrogen Dioxide	400	200	-	-	18	27	47	80	1-hr	23	121	71	N/A
$PM_{2.5}$	-	27	8.8	-	5	8	14	28	1-hr	6.7	62	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.46	0.58	0.80	1.14	24-hr	0.57	N/A	1.77	N/A
1,3-Butadiene	-	10	2	-	0.03	0.05	0.07	0.12	24-hr	0.04	N/A	0.13	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	N/A	N/A	N/A	N/A	24-hr	0.00018	N/A	0.0036	N/A

Note: N/A – data not available

Table 1-5: Summary of Rural Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	N/A	N/A	N/A	N/A	1-hr	N/A	N/A	N/A	N/A
Nitrogen Dioxide	400	200	-	-	9	15	28	54	1-hr	13	81	51	N/A
$PM_{2.5}$	-	27	8.8	-	4	7	13	25	1-hr	5.8	47	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	1.96	2.55	3.89	5.06	24-hr	2.06	N/A	5.21	N/A
Acetaldehyde	-	500	-	500 (½-hr)	0.56	0.80	1.15	1.93	24-hr	0.64	N/A	2.18	N/A
Benzene	-	2.3	0.45	-	0.22	0.38	0.51	0.87	24-hr	0.28	N/A	1.03	N/A
1,3-Butadiene	-	10	2	-	0.00	0.01	0.01	0.04	24-hr	0.01	N/A	0.06	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.000013	0.000018	0.000031	0.000064	24-hr	0.000018	N/A	0.000067	N/A

Note: N/A – data not available

1.5.7 Noise and Vibration

The MOECC, formerly Ministry of the Environment and Energy (MOEE), and GO Transit developed a "Protocol for Noise and Vibration Assessment" in December 1994 (MOEE/GO Protocol) (MOEE, 1994). This document is used as the primary guideline document for assessment of the rail noise and vibration levels. The MOEE/GO Protocol stipulates the use of a model known as the Sound from Trains Environmental Analysis Method (STEAM) for predicting rail traffic noise levels, in the form of Equivalent Sound Level (LEQ) which uses 16 hour day and 8 hour night values. STEAM was developed by the MOECC (MOECC, 1990). As a result of consultations with Metrolinx, the present study deviated from this guidance, due to the complexity of the network, in that the rail traffic noise levels were modelled using the "Federal Noise and Vibration Impact Assessment" (FTA Protocol) (FTA, 2006) incorporated in Cadna/A. Cadna/A allows for the modelling of complex railway schemes including curves, parallel and intervening tracks which cannot be easily assessed using STEAM. Cadna/A is software that includes the implementation of the FTA noise propagation algorithms and as well as aspects of ISO 9613 algorithms (ISO 1994, ISO 1996).

Present day ambient conditions were modelled for the entire Study Area to determine the "baseline conditions" presented here. Topography was included in the Cadna/A model to take into consideration the elevation differences of the railway, receptors and the intervening terrain. High resolution (i.e., 5 m) topographical information was obtained from public databases (Ministry of Natural Resources and Forestry, 2016).

It is important to note that a general approach was taken with regards to modeling potential changes in noise levels at TPFs and Tap locations. This included determining at what distances there might be compliance issues and then using available information to see if there were any receptors within the 'buffer zone'.

All modelling assumptions are included in Appendix C of the Noise and Vibration Assessment Report which can be found in Appendix G, and all information provided and used as part of the noise and vibration assessment is included in Appendix D of Appendix G. Noise sources associated with diesel and/or electric rail activity include:

- Moving trains;
- Idling trains at each station (applicable to all trains);
- Road crossings signals (applicable to all trains);
- Crossovers and Switches (applicable to all trains);
- Wheel squeal (applicable to all trains); and
- Pantograph (applicable to electric trains only).

Vibration levels are expressed in terms of root-mean-square (RMS) velocity (mm/s) in the vertical direction, which is the dominant axis for vibration generated from mobile sources such as trains. The FTA

model predicts vibration levels for rail vehicles using adjustments to generalized base curves of vibration level versus distance. Adjustments were made to the curve to account for:

- Vehicle speed;
- Track type and track conditions;
- Type of locomotive power; and
- Condition of wheels (i.e. wheel wear).

Predictions were based on FTA generic soil conditions and the adjusted curve was established for diesel locomotive powered passenger trains. Existing distances between receptors and the track were identified as a key input to the modelling.

Further details can be found in the Noise and Vibration Assessment Report contained in **Appendix G**.

1.5.8 Visual

The following methodology was applied in order to assess and document baseline conditions of the visual environment within the GO Rail Network Electrification Study Area.

The analysis relied heavily on available aerial photography and the availability of existing GIS mapping layers to described baseline conditions, as well as previous EAs completed by Metrolinx along the rail corridors. Features shown on aerial photographs and GIS maps, as well as those described in past studies, were strategically ground-truthed to ensure that all potentially impacted features were accurately located on the maps.

The baseline conditions establishes a 'view-shed' for each of the corridors, which is the area of visual influence of the Project. The width of this view-shed varies depending on the topography and built features of each corridor and its surroundings. For example, where the rail corridor is in a cut or buildings back up close to the ROW line, the view-shed is a narrow strip not much wider than the ROW. In contrast, features that are tall in relation to their surroundings will have a larger view-shed. High rise residential buildings may look over single story buildings closer to the tracks so that residents have clear views up and down the rail corridor. Where the rail corridor crosses open land the view-shed expands and longer distance views of the corridors are possible. In these cases the edge of the view-shed is less defined but as distance increases the potential visual impact of electrification infrastructure diminishes.

From the viewpoint of the GO Train passengers, the stations where passengers wait for trains are the places where they are most likely to experience visual changes resulting from construction of OCS and other electrification elements. The visual impact analysis describes the existing visual environment of each station in order to later assess potential impacts and recommended mitigation strategies. Stations where visual changes may be experienced more strongly by stakeholders, such as those with high ridership, with a sensitive local environment or which are part of a public place, are noted.

Another area where GO Train passengers and road users might experience visual changes will be from roadway bridges over railroad tracks. To protect the public from energized equipment, barriers will be installed where the OCS passes under a bridge accessible to pedestrians. These bridge barriers will be two metres high, and shall extend at least three metres beyond any electrified wire(s) running under the bridge.

The most visually intrusive elements of the Project are the traction power facilities (TPSs, PSs and SWSs). Each of these facilities is separately identified and described with its own view-shed identified.

Further details can be found in the Visual Assessment Baseline Conditions Report contained in **Appendix H1**.

1.5.9 Utilities

As part of the GO Rail Network Electrification TPAP, existing buried and overhead utilities data, and information on planned utility expansions to the 2025 build out horizon, were collected within the Study Area. Utility baseline data were collected within an area of 5 m on either side for the existing rail ROW. Utility data provided by Metrolinx were augmented with data collected from third party utility owners through data requests. A utilities log (Appendix D of **Appendix I1**) was maintained that details each third party crossing identified during this stage and provides a corridor section reference. For navigability, the nearest intersecting streets are also noted. In addition, a series of site inspections were completed in October 2015 using HiRail vehicles. A GoPro camera was attached to the dashboard of the HiRail vehicle to provide a record of each inspection for future referencing. In addition, a log was maintained of each utility observed throughout the inspection. All observations were recorded in a Site Inspection Report provided for each corridor (see Appendix F of **Appendix I1**).

A LiDAR (light detection and ranging) survey has also been completed in all corridors to determine elevations of the single lowest line for overhead utilities.

A copy of the Utilities Baseline Conditions Report is provided as **Appendix I1**.

1.5.10 EMI & EMF

The process of establishing EMI/EMF baseline conditions involved:

1. Identification, via desktop analysis, of potential EMI sensitive sites within the Study Area; and
2. Establishment of present-day EMF baseline conditions for areas of concern along the GO rail corridors within the Study Area.

The reason for this methodology is two-fold. One, a specific type of EMF, Extremely Low-Frequency (ELF), is generated by the coupling of electrical current flow with available grounds. The current is due to induced current from electric drive motors and induced currents from adjacent power cabling. This type of energy, while not transmitted over long distances, is expected to exist along the corridor already, despite the lack

of electrification. A quantification of this energy and verification that it is within safe ranges for both commercial and residential cases provides assurance that construction/implementation of electrification can proceed without undue concern. A collection of locations where the baseline level of this energy is measured above negligible levels, should any exist, provides a set of locations for post-electrification implementation measurements of ELF EMF to confirm these results.

Secondly, it is possible that the installation of TPFs and high-power OCS lines could result in EMF above present day background levels. This EMF is introduced due to the addition of 60 Hz power lines, track currents and associated equipment. This is the primary reason for carrying out baseline EMF measurements. Electrification can also introduce higher frequency EMI, which is expected from associated control equipment. It is also expected that all additional control equipment would be compliant with the respective EMI/ Electromagnetic Compatibility (EMC) standards such as EN 50121, as cited in Appendix B of **Appendix J1**.

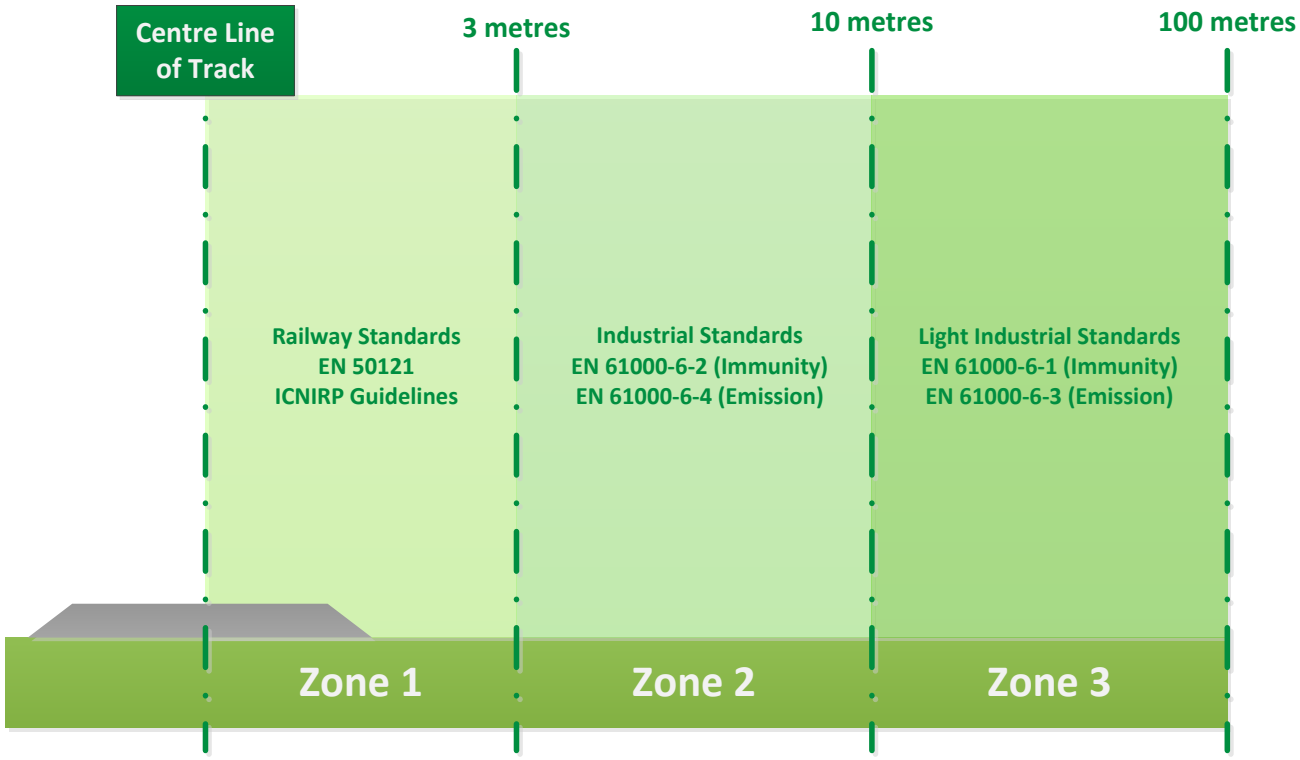
With this in mind, the collection of EMI/EMF baseline conditions entailed the following activities:

- Background review, including secondary sources, reports/studies, and gap analysis to assist in scoping data collection approach and field work;
- Identification of potential EMI & EMF sensitive sites in the Study Area, and development of corresponding aerial maps as required;
- Field data collection (Fall 2015) within the Study Area to document ELF EMF baseline conditions; and
- EMI baseline measurements.

For the purposes of describing baseline conditions, the areas along the corridors were divided into three zones as shown in **Figure 1-21**, which are based on various criteria specified in the relevant standards (see Appendix B in Appendix J1):

- **Zone 1**: Existing Metrolinx and the neighbouring right-of-way railway systems and equipment up to 3 m from the centreline of the outermost track.
- **Zone 2**: Metrolinx and external third party systems and equipment, located on the right-of-way and/or outside the right-of-way but in close proximity to the tracks up to 10 m from the centreline of the outermost track.
- **Zone 3**: External third-party EMI-sensitive sites (such as laboratories, hospitals, and airports) located between 10 m and 100 m from the centerline of the outermost track and/or from the proposed Traction Power Facility Sites.

Figure 1-21: EMC Investigation Zones & Applicable Standards



It should be noted that the baseline ELF EMF survey results (as presented in Sections 2-7 of this report) indicate that there are no areas within the Study Area which exceed EMF Guidelines for human exposure (**Table 1-6**).

Table 1-6: Exposure Limits for Fundamental Frequency Magnetic Fields

	ICNIRP[a] (mG)	IEEE[b] (mG)	ACGIH[c] (mG)
Occupational	10,000	27,100	10,000
Public	2,000	9,040	n/a
Workers with Medical Implants	n/a	n/a	1,000

a International Commission on Non-Ionizing Radiation Protection
b Institute of Electrical and Electronics Engineers
c American Conference of Governmental Industrial Hygienists

Further details can be found in the EMI/EMF Baseline Conditions Report contained in **Appendix J1**.

1.5.11 Stormwater Management

A Baseline Drainage Condition Assessment was undertaken for the property parcel of each Tap/TPF site utilizing available background information, which included the following:

- Previously completed EA Studies provided by Metrolinx;
- Background data and correspondence from Conservation Authorities (CAs), including: Central Lake Ontario Authority (CLOCA), Conservation Halton (HRCA), Lake Simcoe Region (LSRCA), and Toronto and Region Conservation Authority (TRCA);
- Available Municipal Site Plans;
- Ontario Soil Reports;
- Ontario Geological Survey, Preliminary Maps, by Ministry of Natural Resources, Ontario

Following the review of background data sources, where data gaps were identified, primary source data collection (including field investigations, topographic maps from First Base Solutions Inc. and aerial photography interpretation) was undertaken in order to update or augment currently available existing conditions information for each Tap/TPF Site. The Baseline Drainage Condition assessment summarized existing drainage patterns, existing drainage features, potential outfall locations for the minor and major flows from the site area, footprint area for future building and equipment area, existing land use, estimated runoff coefficient and soil type. Conservation Authorities were contacted to determine if any of the proposed TPF sites are within the regulated area.

A copy of the Preliminary Stormwater Management Assessment Report is provided as **Appendix K**.

1.5.12 Groundwater and Wells

As part of the GO Rail Network Electrification, baseline conditions for groundwater and wells were established by reviewing the information contained in the Natural Environment Baseline Conditions Report (**Appendix A1**). The scope of this evaluation also included identifying water supply wells, Wellhead Protection Areas, and groundwater dependent natural heritage features within 500 m of each rail corridor and/or other proposed Traction Power Facilities associated with the project.

Water wells were identified based on a search of the Water Well Information System database. Only wells identified as sources of potable water supply and wells that did not have a primary water use description were included in the assessment. The former comprised municipal supply wells, domestic supply wells, agricultural supply wells and industrial/commercial supply wells. It should be noted that the margin of error for the location of the well records is typically between 100 and 300 metres and therefore the exact well locations could not be ascertained.

The groundwater dependent natural heritage features consist of waterbodies identified based on the mapping completed as part of the Natural Environment Baseline Conditions Report (**Appendix A1**). The

waterbodies include surface water features such as lakes, rivers, creeks and wetlands. Wetlands include unevaluated wetlands, evaluated wetlands, and Provincially Significant Wetlands.

A copy of the Groundwater Impact Assessment Report is provided as **Appendix V**.

1.6 Baseline Data Organization

Sections 2 - 7 provide a summary of the baseline conditions present at the project components. These sections have been organized such that a description of the baseline conditions at each Tap site and traction power facility site are provided first, followed by a description of the rail corridor. The sections document the baseline conditions according to natural, social, and cultural environmental factors in the following order:

- **Natural Environment Factor:**
  - Terrestrial Features (i.e., vegetation, wildlife/wildlife habitat, etc.)
  - Aquatic Features (i.e., surface water, fish/fish habitat)
  - Hydrological Features (i.e. groundwater and wells)
  - Preliminary Environmental Site Assessment
- **Cultural Environment Factor:**
  - Cultural Heritage Features (i.e., built heritage features, cultural landscapes)
  - Archaeological Features
- **Social Environment Factor (including Built Environment):**
  - Land Use/Social-Economic Features
  - Property
  - Air Quality
  - Noise
  - Vibration
  - Visual
  - Utilities
  - Stormwater Management
- **Other**
  - Electromagnetic Fields
  - Electromagnetic Interference

For a more detailed description of the baseline conditions, please refer to the discipline-specific technical reports contained in **Appendices A1 – J1, K and V**.

2 Baseline Conditions – Union Station Rail Corridor (USRC)

2.1 Natural Environment

Please refer to **Section 1.5.1** for a description of the methodology followed for collection of natural environmental baseline conditions data. Baseline conditions within the USRC have been summarized below. Additional details can be found in the Natural Environment Baseline Conditions Report contained in **Appendix A1**.

Based on review of available background information **Table 2-1** lists all SAR with habitat within the immediate or general surrounding area of the USRC. SAR with suitable habitat *and* potential to occur within each portion of the Study Area are discussed in Section **2.1.1**.

Table 2-1: Summary of Potential Species at Risk within the Immediate and General Surrounding Area of the Union Station Rail Corridor

Species		Designations		Protection*		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
BIRDS						
Bank Swallow	*Riparia riparia*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; OBBA
Bobolink	*Dolichonyx oryzivorus*	No Status (No Sched)	THR	MBCA	ESA	OBBA
Chimney Swift	*Chaetura pelagica*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora; OBBA
Common Nighthawk	*Chordeiles minor*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
Eastern Wood-pewee	*Contopus virens*	No Status (No Sched)	SC	MBCA	-	OBBA
Eastern Meadowlark	*Sturnella magna*	No Status (No Sched)	THR	MBCA	ESA	OBBA
Wood Thrush	*Hylocichla mustelina*	No Status (No Sched)	SC	MBCA	-	OBBA
Peregrine Falcon	*Falco peregrinus*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora
Short-eared Owl	*Asio flammeus*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora
Red-headed Woodpecker	*Melanerpes erythrocephalus*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
HERPETOFAUNA						
Snapping Turtle	*Chelydra serpentina*	SC (Sched 1)	SC	-	-	MNRF Aurora; NHIC

Species		Designations		Protection*		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
MAMMALS						
Eastern Small-footed Myotis	*Myotis leibii*	-	END	-	ESA	MNRF Aurora
Little Brown Myotis	*Myotis lucifugus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Northern Myotis	*Myotis septentrionalis*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Tri-coloured Bat	*Perimyotis subflavus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora

END – Endangered; SC – Special Concern; THR – Threatened
* ESA: Endangered Species Act; FWCA: Fish and Wildlife Conservation Act; SARA: Species at Risk Act; MBCA: Migratory Birds Convention Act
** General prohibitions do not apply to species identified as Special Concern (SC) in Schedule 1 of the SARA
Note – The ESA (2007) supersedes the FWCA

2.1.1 Corridor and Bridges: Section USRC-1 – UP Express Union Station to Don Yard Layover

2.1.1.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

The baseline study concluded that there are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional (CVC) and Transportation and Utilities (CVI), with some Residential Lands (CVR). The vegetated community within this corridor section is limited to Deciduous Thicket (THD) and Green Land (CGL). Open Water (OA) is present at the Don River. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain minimal canopy cover (i.e., < 10%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**)..

Wildlife

This study area is mostly comprised of CVC, CVI and CVR lands and, as such, no Significant Wildlife Habitat is present within this corridor. However, the small THD and CGL communities may potentially provide nesting and foraging habitat for breeding birds.

2.1.1.2 Aquatic

There is one watercourse within the study area, the Don River. The Lower Don River consist of two habitat types: one that is riverine from the confluence with the Lower East Don, Lower West Don and Taylor/Massey Creek down to within the Don Narrows where there is a transition to estuarine. Species found in the Lower Don River Subwatershed between 2002 and 2005 include: Alewife, Gizzard Shad, Chinook Salmon, Northern Pike, White Sucker, Blacknose Dace, Longnose Dace, Bluntnose Minnow, Fathead Minnow, Emerald Shiner, Spottail Shiner, Common Carp, Grass Carp, Creek Chub, Brown Bullhead, Threespine Stickleback, Pumpkinseed, Walleye, Johnny Darter, Freshwater Drum, and Rainbow Smelt (TRCA, 2009).

2.1.1.3 Species at Risk (SAR)

A total of one SAR with suitable habitat *and* potential to occur are found within USRC-1. These are summarized in **Table 2-2**.

Table 2-2: Potential Species at Risk with Suitable Habitat and Potential to Occur within USRC-1

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Chimney Swift	*Chaetura pelagica*	• Low (CVC)

[a] CVC – Commercial and Institutional

2.1.1.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of Toronto and Region Conservation Authority (TRCA) and Aurora District MNRF. There are no Designated Areas within this segment of the Study Area.

2.2 Preliminary Environmental Site Assessment

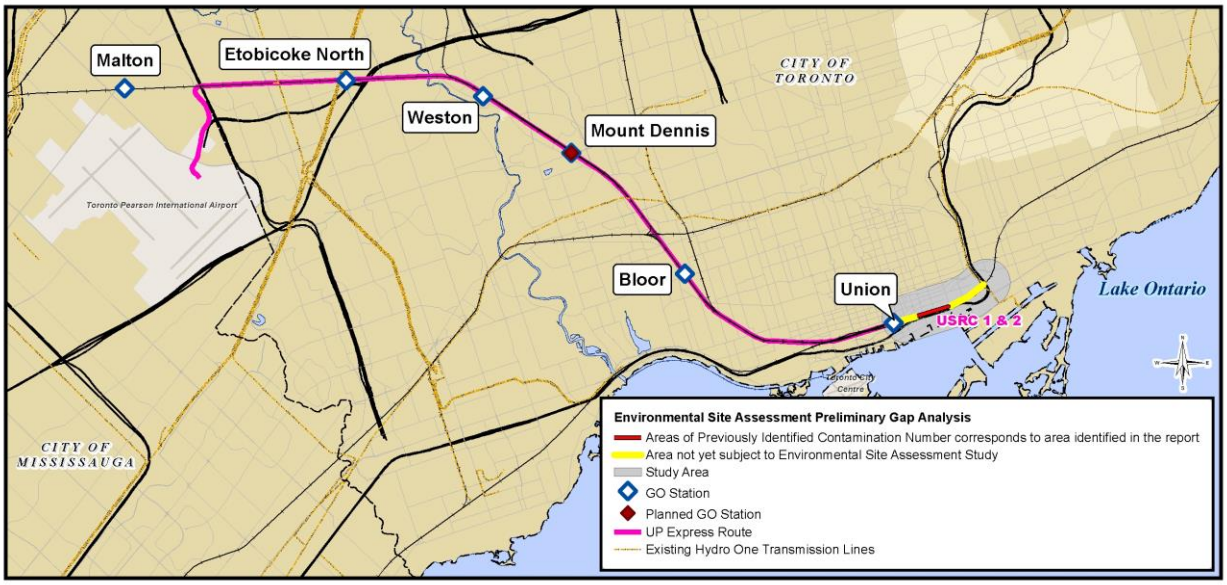
There are no TPSs or PSs associated with the Union Station Rail Corridor. The SWS site at Ordnance/ Bathurst was previously assessed as part of the UP Express Electrification EA.

Most of the USRC was the subject of Phase I and Phase II ESAs in 1999 and 2000 respectively. Three studies have been completed that were associated with the acquisition of the Toronto Terminal Railway (TTR) lands by GO Transit. The extent of previously assessed areas and those locations that have not been assessed (data gaps) are illustrated in **Figure 2-1** and described below.

Two portions of this corridor, 0.8 km and 1 km in length, were not covered in the ESA studies, and further information on the gap analysis is provided in **Appendix B**. Detailed maps of the extent of previous investigations and location of known or potential contamination found in previous studies are also provided in **Appendix B**. Future phases of work should review in detail the applicable studies identified in this report and determine what additional assessment or management measures are warranted. Further

work is recommended to address the data gaps identified to prepare a complete contamination overview study for the project footprint.

Figure 2-1: Union Station Rail Corridor Contamination Overview Map



The two Phase II ESAs completed in 2000 (Terrapex, 2000 and Peto MacCallum, 2000) identified several areas of contamination in this corridor. The study completed by Terrapex (2000) concluded that the extent of contamination was relatively minor and the risk is low due to lack of exposure pathways. However there are concerns with respect to health and safety of workers during construction activities and management of excavated materials during construction.

Contamination is associated with the presence of the following chemicals exceeding MOEE Table B guidelines of the time (1997):

1. Polycyclic Aromatic Hydrocarbons (PAH) in shallow soils in the corridor between Yonge and Cherry Streets; and
2. Lead and PAHs in groundwater below the corridor between Jarvis and Cherry Streets.

Additionally, the 2000 Phase II ESA report by Peto MacCallum identified PAH and lead contamination in soil samples collected from two boreholes.

2.3 Cultural Heritage

2.3.1 Corridor and Bridges: Section USRC-1 – UP Express Union Station to Don Yard Layover

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for

further detail). Eleven potential cultural heritage resources are located in this segment of the corridor. **Table 2-3** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports). The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. Following **Table 2-3**, a discussion of the approvals required for Union Station is provided, given the complex heritage designations of this building.

Table 2-3: Cultural Heritage Resources for Section USRC-1

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[4]	Metrolinx Heritage Recognition[5]
SECTION USRC-1 – UP EXPRESS UNION STATION TO DON YARD LAYOVER					
USRC-1-1	65 Front Street West, Toronto	Union Station	Provincial Heritage Property of Provincial Significance (Metrolinx Heritage Committee Decision Form March 29, 2016); Designated under Part IV and V of the Ontario Heritage Act (By-Law 948-2005 and By-Law 634-2006); National Historic Site; Designated under the Heritage Railway Stations Protection Act; Heritage Easement Agreement.	Provincial Heritage Property of Provincial Significance; CHER is not required	Provincial Heritage Property of Provincial Significance (MHC Decision, March 29, 2016)
USRC-1-2	Scott Street and the USRC, Toronto	Scott Street Interlocking Tower	Provincial Heritage Property of Provincial Significance	Provincial Heritage Property of Provincial Significance; CHER is not required	Provincial Heritage Property of Provincial Significance (MHC Decision, July 23, 2013)

[4] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

[5] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[4]	Metrolinx Heritage Recognition[5]
USRC-1-3	Cherry Street and the USRC, Toronto	Cherry Street Interlocking Tower	Provincial Heritage Property of Provincial Significance	Provincial Heritage Property of Provincial Significance; CHER is not required	Provincial Heritage Property of Provincial Significance (MHC Decision, July 23, 2013)
USRC-1-4	Lower Jarvis Street, Toronto	Lower Jarvis Subway	CHER previously completed. Determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC – SCHV, n.d.)
USRC-1-5	Lower Sherbourne Street, Toronto	Lower Sherbourne Subway	CHER previously completed. Determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC – SCHV, n.d.)
USRC-1-6	Parliament Street, Toronto	Parliament Subway	CHER previously completed. Determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC – SCHV, n.d.)
USRC-1-7	Cherry Street, Toronto	Cherry Street Subway	CHER previously completed. Determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC – SCHV, n.d.)
USRC-1-8	Toronto	Union Station Heritage Conservation District	Part V Designation Union Station HCD (By-law No. 634-2006)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property
USRC-1-9	40 Bay St., Toronto	Postal Delivery Building	Designated under Part IV of the OHA (By-Law 360-90)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

2.3.1.1 Union Station

Union Station is a National Historic Site (2006 and 2007). A CHER was completed for Union Station and approved by the Metrolinx Heritage Committee (MHC) in March 2016. The MHC determined that it meets O. Reg. 9/06 and 10/06 (MHC Decision Form 29 March 2016). As discussed with Metrolinx and MTCS, a Heritage Impact Assessment (HIA) (ERA 2017) has been completed for Union Station. Heritage protection of Union Station falls under both federal requirements established under applicable heritage easement and collateral agreements between Metrolinx, Parks Canada and the City of Toronto.

Easement Agreement and Collateral Agreement

As per the collateral agreement:

- The **Easement Agreement** was signed with Parks Canada when the City of Toronto and GO Transit purchased Union Station in 2000 from Toronto Terminal Railway (TTR)
    - The Easement Agreement is meant to protect the Heritage Elements of the Station Complex
- Alterations to Union Station are subject to the Collateral Agreement (dated May 1, 2006 and as amended) between Parks Canada, the City of Toronto and GO Transit (Metrolinx). The Collateral Agreement outlines a process for the City and Parks Canada to review and approve or refuse proposals that impact heritage elements of Union Station, with Parks Canada having final approval over proposals. Alterations to the trainshed will require review and approval through the Collateral Agreement process. In the event that Parks Canada approvals conflict with the work approved in the TPAP, Parks Canada's approval shall prevail.
- As Union Station was also identified as a PHPPS and Metrolinx is a public body prescribed under OHA, Approvals under the Collateral Agreement shall be coordinated with the Ministry of Tourism, Culture and Sport, as required (see *Provincial Approvals* below).

Federal Approvals

Electrification will entail modifications to Union Station's Train Shed. A HIA will be prepared and submitted to Parks Canada, City of Toronto and MTCS for review and for formal approval prior to completion of detailed design, as per Appendix F of the "Union Station, Toronto, Ont., Review of Heritage Zones" prepared by the Heritage Conservation Program Real Property Services Dedicated Unit (CH/EC). These site plans and plan views of Union Station indicate which components of Union Station are described as:

A. Protected Heritage Character Defining Area/Features;
B. Protected Area/Feature Contributing to Heritage Character;
C. Protected Area/Feature Where Heritage Character Could Be Enhanced; and,
D. Area/Feature with Negligible Heritage Character.

In particular, Drawing #2: Site Plan – Front St. & Platform Level, provides a plan of the Union Station Train Shed. It illustrates the following:

- The north, east and west portions of the train shed are identified as Protected Heritage Character Defining Areas/Features.
    - This includes the end facades of the train shed which display exposed arched trusses spanning columns over the tracks, and the smoke duct panels.
    - Original operational elevator shafts and penthouses are identified on the plan for long term retention.
- The central section is identified as Protected Area/Features contributing to Heritage Character; and,
- The southern section of the train shed over Tracks 11 and 12 is identified as an Area/Feature with negligible heritage character.

The Parks Canada Process for Review of Alterations (Stages 1, 2 and 3) document provides further information with regards to process for federal approvals (see **Appendix C1**).

Provincial Approvals

No heritage attributes at Union Station have been identified for removal or demolition as part of the Electrification TPAP. Should any heritage attributes be identified for removal or demolishion as part of detailed design, the Provincial Minister of Tourism, Culture and Sport would need to approve this work. Metrolinx will coordinate regulatory agencies review of the HIAs (Parks Canada, MTCS and the City – Heritage Preservation Services).

2.4 Archaeology

2.4.1 Corridor and Bridges: Section USRC–1 – UP Express Union Station to Don Yard Layover

A review of the historic land use of the Union Station Rail Corridor (USRC) indicates that it has been occupied by Aboriginal peoples for thousands of years. It is situated within the traditional territory occupied by the ancestral Huron-Wendat until the turn of the sixteenth century; subsequently occupied by the Seneca First Nation until the late seventeenth century; and, subsequently occupied by the Mississauga First Nation until 1805 (Benn 2008; Williamson 2008). The background research also acknowledges that, since the turn of the eighteenth century, the Métis have lived throughout the Province of Ontario but are often muted in the historical record (Métis Nation of Canada [MNC] n.d.; Stone and Chaput 1978: 607,608). Since 1805, the corridor has also been occupied by Euro-Canadian peoples and is situated within the former Township of York, County of York (Benn 2008). The potential for the survival of any Aboriginal archaeological remains in primary contexts with this corridor is essentially nil. Such sites will not have survived the historic development activities that have removed or heavily altered all elements of the original topography.

Section USRC-1 meets the following criteria which are indicative of potential for Euro-Canadian and, to a much lesser degree, Aboriginal archaeological sites depending on the amount of past disturbance and presence of physical features (see **Appendix D2**):

- Proximity to Euro-Canadian settlement (Toronto)
- Proximity to historic transportation route (Grand Trunk Railway)
- Proximity to deeply buried deposits or historic features (wharves)
- Proximity to water source (Lake Ontario)

At least two archaeological assessments have been completed for Section USRC-1 (ASI 2009d; 2010b). Approximately 1 ha has been previously assessed. No other known previous archaeological assessments have been completed within the USRC-1 section.

Based on the available background documents, the Union Station Rail Corridor includes areas not previously subject to archaeological assessment, and a Stage 1 archaeological assessment is required in order to confirm which lands require more detailed assessment. For details on the specific areas that will be further reviewed and assessed, please refer to Figures 7-1 and 7-7 of the Archaeological Baseline Conditions Report (Appendix D1).

2.5 Land Use and Socio-Economic

2.5.1 Corridor and Bridges: Section USRC–1 – UP Express Union Station to Don Yard Layover

All rail corridors within the GO Network originate from the USRC. For the purposes of this study, USRC is defined as the extent of the rail corridor between the UP Express Union Station east to the Don Layover Yard located on the west side of the Don River, north of the Gardiner Expressway. USRC is completely within the City of Toronto.

There are 23 sensitive receptor facilities (schools, child care centres, long term care centres and hospitals) in the vicinity (i.e., within approximately 500 m) of the USRC. Of the 23 sensitive receptor facilities, only one, the St. Lawrence Co-operative Day Care on Princess Street, is less than 40 m from the rail corridor (see Table 4-3 and Figures USRC-1 and USRC-2 in **Appendix E1**).

2.5.1.1 Existing Land Use

East of Union Station, the rail corridor is adjacent to high density Mixed Use lands on both sides. East of Yonge, adjacent land use is Mixed Use and Apartment Neighbourhood (St. Lawrence Market) on the north side to the Don Layover Yard, with the Gardiner Expressway to the south. Adjacent to the Don Layover Yard is Park to the north (Corktown Common) and Natural Areas to the south. Official Plan Land use designations along this section of the rail corridor are shown in Figures B-1 to B-2 in **Appendix E1**.

Recreational amenities in this section include Corktown Common, located to the north of the rail corridor west of the Don River, and the multi-use Lower Don Trail and Martin Goodman Trail. There is one sensitive receptor facility (St. Lawrence Co-Operative Day Care – Princess Street) within 40 m of the rail corridor.

2.5.1.2 Planned Land Use

Secondary Plans affecting lands adjacent to and within the Study Area are the King-Parliament Secondary Plan (west of the Don River); the Central Waterfront Secondary Plan, which has yet to be approved by the Ontario Municipal Board; and the Lower Sherbourne Street Pedestrian Promenade Plan, which is approved and construction began in 2015.

A connecting section of the Lower Don Recreational Trail, which runs adjacent to the rail corridor between Yonge Street and Parliament Street, has been approved and planned. Additionally, the corridor will be within proximity to the proposed Don Landing Re-design, within the Lower Don Trail area.

Under the City of Toronto Former General Zoning By-law 438-86 the rail corridor west of Union Station to the Don Layover Yard is zoned *Utility Corridor*.

2.6 Air Quality

The USRC has been classified as an Urban land use category. In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of PM2.5 (respirable particulate matter), and PM10 (inhalable particulate matter) are slightly exceeded. **Table 2-4** shows air quality statistics for the urban land use category. See Appendix F1 for station-by-station summaries of the air quality monitoring data.

Table 2-4 also shows the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQCs except for $PM_{2.5}$ which has a CAAQS, as described in Section 1.5.6.

Table 2-4: Summary of Urban Baseline Conditions

Contaminant	Criterion (µg/m3)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m3)	Maximum Concentration (µg/m3)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
PM2.5	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM10	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 2-5 summarizes the USRC rail corridor section and the air quality category for this corridor.

Table 2-5: Summary of USRC Air Quality Baseline Conditions

Corridor Section		Length (km)	Traction Power Facilities	Baseline Air Quality Category	Baseline Air Quality Table Reference
USRC-1	UP Express Union Station to Don Yard Layover	2.8	N/A	Urban	2-4

2.7 Noise and Vibration

Receptors of interest for this assessment include the following noise sensitive land uses:

- Residences;
- Hotels, motels and campgrounds;
- Schools, universities, libraries and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and
- Churches and places of worship.

Receptors of interest within the Study Area are mainly residential houses or residential high-rise buildings located adjacent to the USRC. In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Modelling was completed for all these receptors; however, results are presented for selected representative receptors. **Table 2-6** presents the predicted baseline noise levels for the USRC. Maps depicting the Receptor IDs identified in **Table 2-6** and **Table 2-7** are shown below.

Table 2-6: Predicted Baseline Noise Levels for USRC

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R07	Daytime	59.2
	Nighttime	58.5
R08	Daytime	65.5
	Nighttime	63.5
R09	Daytime	65.1
	Nighttime	63.2
R10	Daytime	60.1
	Nighttime	58.1
R11a	Daytime	56.2
	Nighttime	53.8
R11b	Daytime	53.1
	Nighttime	50.4

a The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

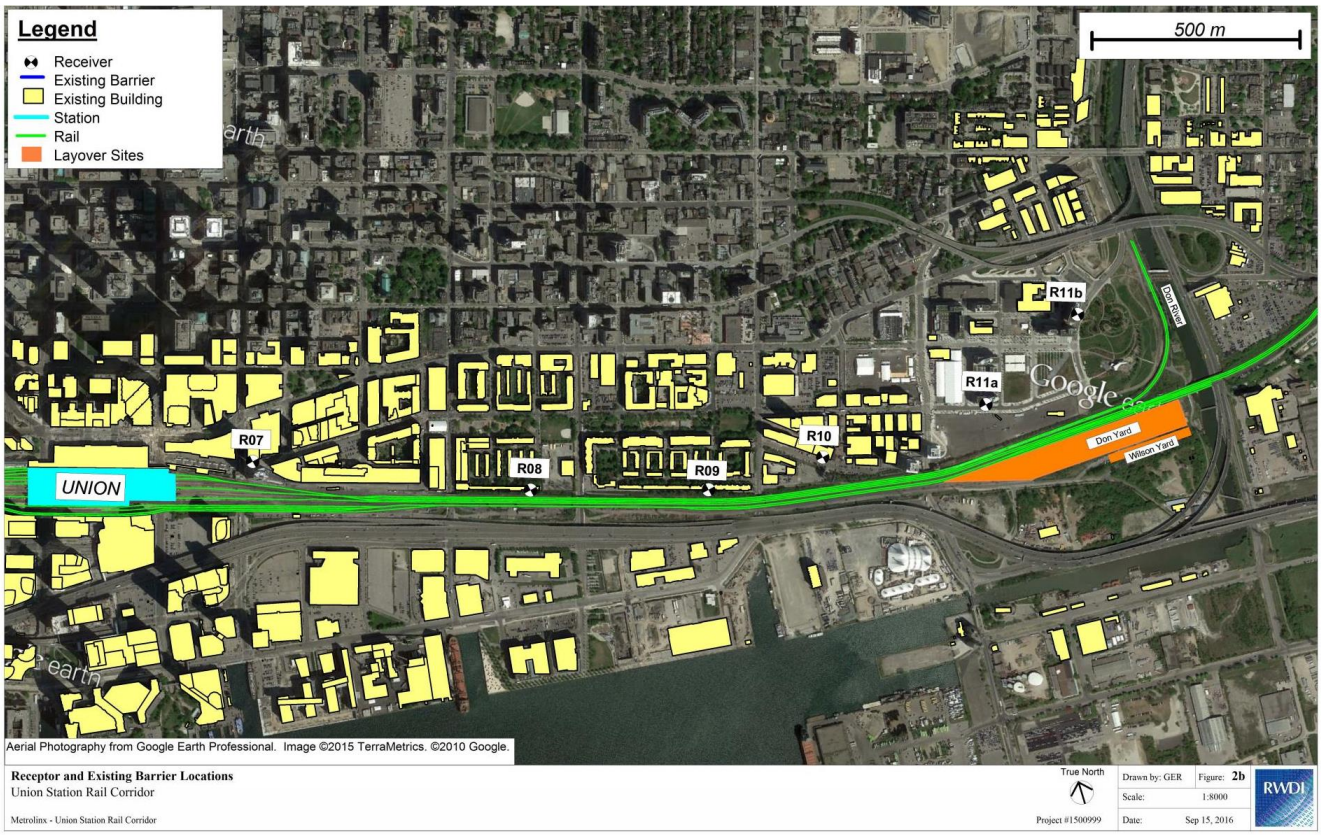
Table 2-7 presents the predicted baseline vibration levels for the USRC.

Table 2-7: Predicted Baseline Vibration Levels for USRC

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s) [2]
Go Train	R09	49	No	22	0.30
VIA Train		47			0.11
Freight Train		24			1.7

[1] See Figure 2a for receptor location of Appendix G.
[2] Vibration levels are presented in mm/s RMS in the vertical direction.

Figure 2-2: USRC Receptor and Existing Barrier Locations 1



2.8 Visual

2.8.1 Corridor and Bridges: Section USRC-1 – UP Express Union Station to Don Yard Layover

This section passes through a portion of downtown Toronto, the St. Lawrence Market area, and the Distillery District. These are historic neighbourhoods undergoing renewal.

For most of the south side, the tracks are paralleled by the Gardiner Expressway which is elevated and cuts off views from low rise development between the expressway and the waterfront. However, high-rise buildings will have views of the rail corridor over the expressway. The building on Yonge Street between the tracks and the Gardiner Expressway (see **Figure 2-3**) is typical of many residential buildings adjacent to the rail right-of-way. These buildings sit on parking podiums, so no windows look directly out from residential buildings to the railroad. However, views from windows higher in the buildings may be changed by the introduction of electrification infrastructure. Views from high windows in building facades close to and parallel to the tracks will not include electrification components unless people stand close to their windows and look down. However, from windows on perpendicular facades, views up and down the tracks make electrification infrastructure more visible.

There are also low- and mid-rise residential buildings which have direct views to the railroad and hence to any new electrification infrastructure when it is constructed (see **Figure 2-4**).

Historic buildings in the Distillery District also have direct views over the rail corridor (see **Figure 2-5**). However, it is noted that the views from some of these buildings are already compromised by billboards between them and the tracks.

Figure 2-3: High Rise Residential Buildings Close to Union Station looking West from Yonge Street

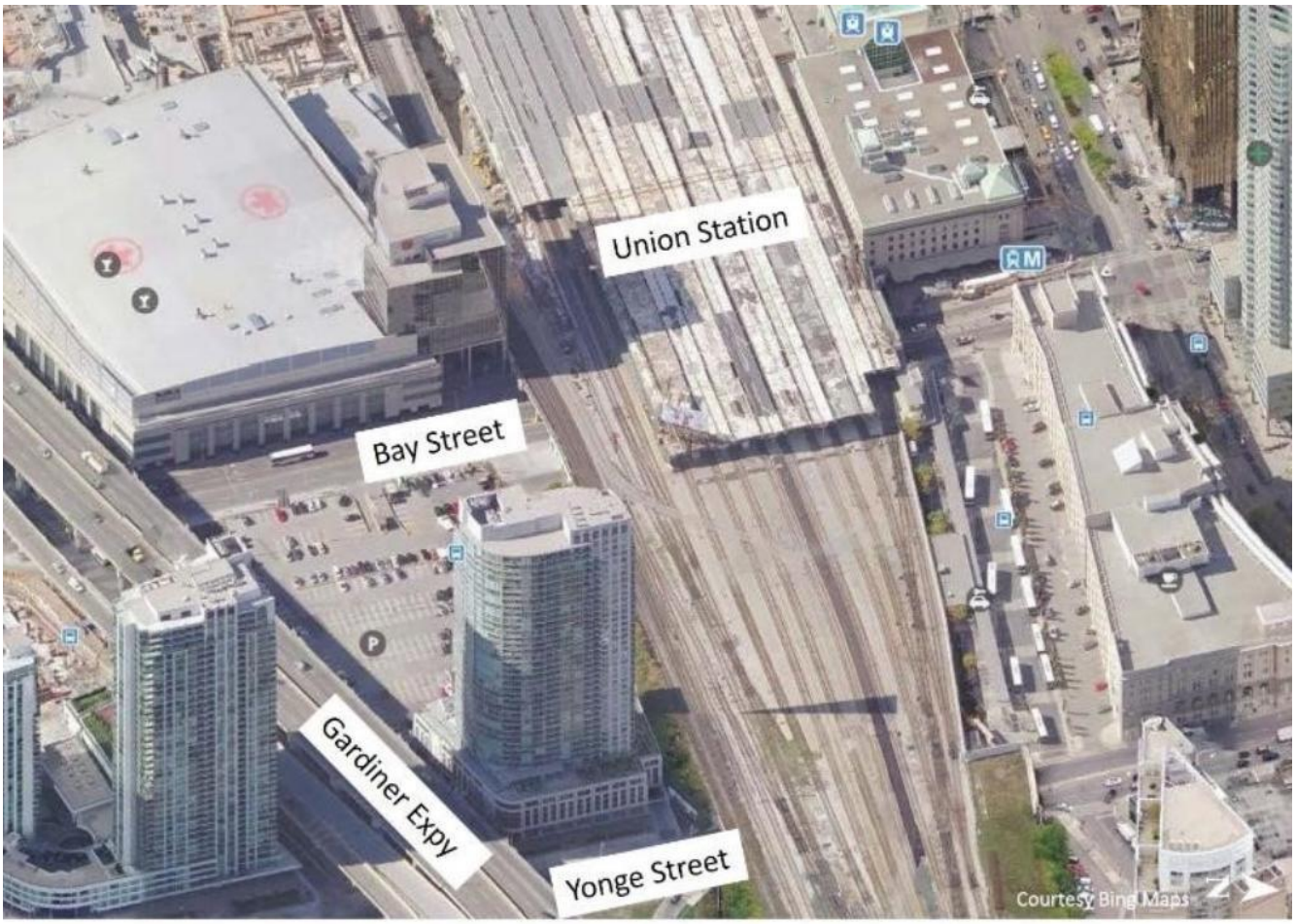


Figure 2-4: Low Rise Residential Directly overlooking Railroad north of Tracks

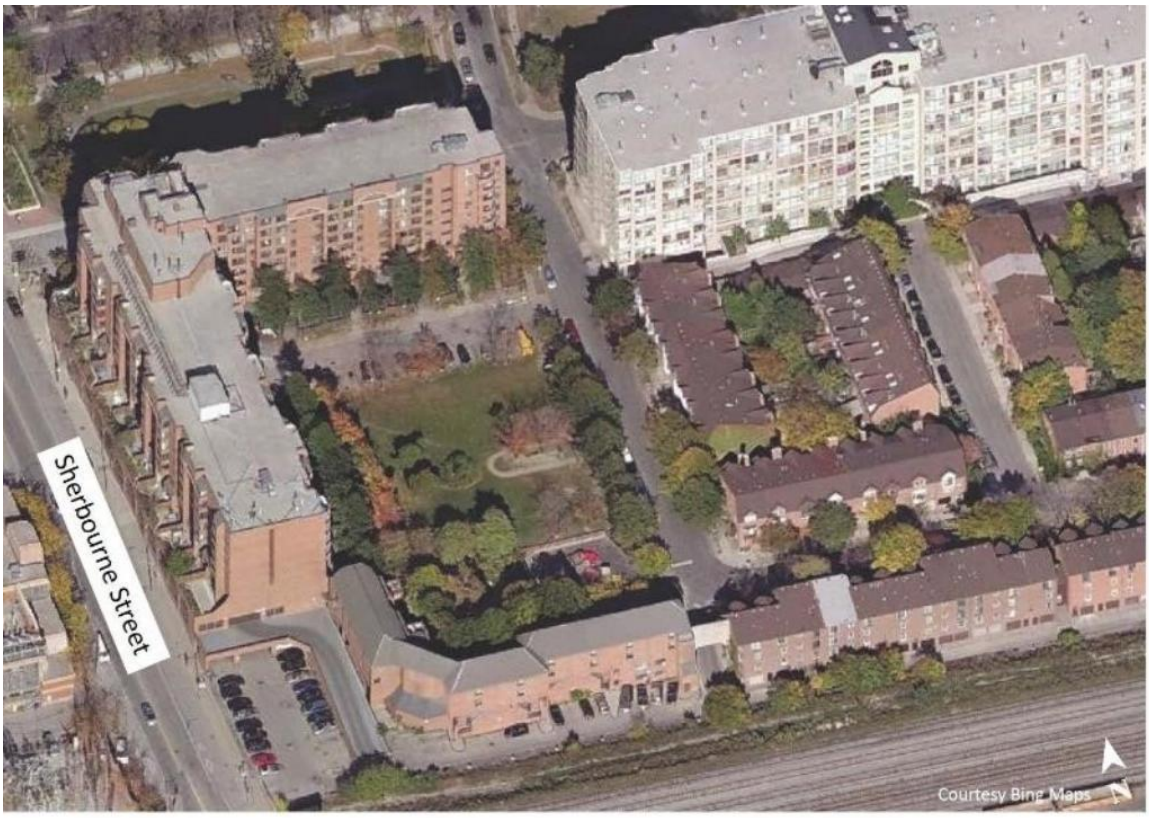
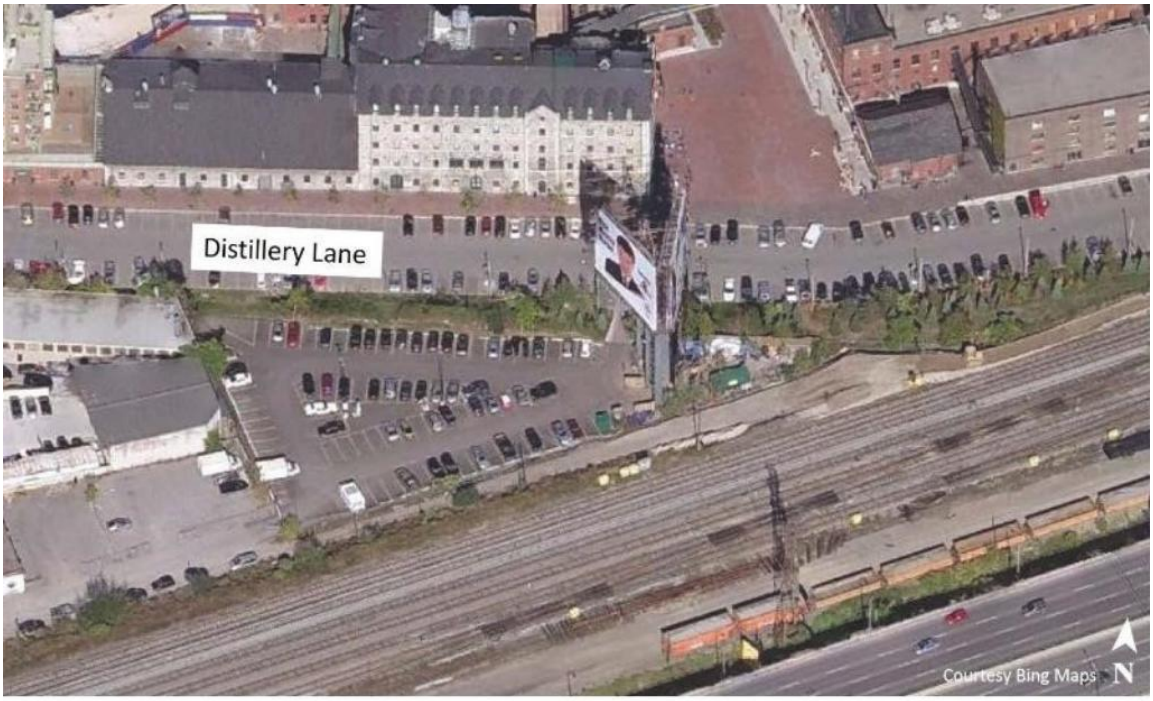


Figure 2-5: Distillery District Buildings North of Tracks overlooking Railroad



Farther to the east, adjacent to the Don River a new park (Corktown Common) (see **Figure 2-6**) has been created which is also adjacent to the railroad.

Figure 2-6: Corktown Common North of Tracks and West of Don River

There are no road bridges over the railroad in this section. However, there are rail bridges where roads pass under the railroad at Bay Street, Yonge Street, Lower Jarvis Street (**Figure 2-7**), Lower Sherbourne Street and Parliament Street. These bridges have heavily-used sidewalks and views from the approaches which may be altered by the introduction of electrification infrastructure across these bridges. There are no grade crossings.

Figure 2-7: Jarvis Street Bridge looking North

The only station in this section is Union Station. Union Station has 27 platforms which are accessed from below. Passengers will not have views of electrification infrastructure until they get on the platforms and these views may be limited by existing overhead cover above the platforms (see **Figure 2-8**).

Figure 2-8: Overhead Cover above Platforms at Union Station

2.9 Utilities

2.9.1 Corridor and Bridges: Section USRC-1 – UP Express Union Station to Don Yard Layover

Table 2-8 summarizes the existing utilities within USRC-1.

Table 2-8: Summary of Utilities within Section USRC-1

Utility	Owner	Description
Hydro Transmission	Hydro One	• six overhead 115kV crossings • one overhead crossing of unknown voltage • one overhead line parallel to the ROW • 20 buried 115kV crossings and two buried crossings of unknown voltage
	Enwave	• one buried 115kV crossing in a Hydro One conduit
Hydro Local Distribution	Toronto Hydro	• six overhead crossings of unknown voltage • two overhead lines of unknown voltage that run parallel to the ROW, but these are both proposed to be removed • three overhead secondary voltage lines that run parallel to the ROW • two buried electrical crossings of unknown voltage at Cherry St • 12 buried duct bank crossings of various sizes • ten duct banks of various sizes that run parallel to the ROW, of various lengths • future plans to construct a cable chamber near Bay St.
	TTC	• two buried electrical cables of unknown voltage near Bay St.
Pipelines	There are no records found of third party pipelines	
Watermains	Enwave	• four watermains, near York St, that cross the ROW • one steam line that runs parallel to the ROW from York St to Simcoe St.
Sanitary Sewers	Enwave	• one 300mm diameter buried sanitary sewer crossing
Stormwater Sewers	Enwave	• one 375mm diameter buried sanitary sewer crossing
Gas Mains	Enbridge Gas	• two crossings of unknown size • one 300mm diameter gas crossing • one 150mm diameter gas crossing that has been abandoned
Communication Companies	Allstream	• three buried conduits that cross the ROW • fibre in a buried CN-owned conduit that crosses the ROW near Lower Sherbourne St. • two fibres that run parallel to the ROW (buried Allstream conduit and buried CN conduit)

Utility	Owner	Description
	Bell/360, Bell, Bell Mobility	• two buried conduits (running east along the north side of the ROW and turns north to follow the Don Valley Pkwy; running west along the south side of the ROW to the Kitchener Corridor) • 18 buried conduits (seven run parallel to the ROW; 11 cross the ROW) • three overhead cables that cross the ROW • one to three overhead cables that run parallel to the ROW • one signal broadcast tower
	Rogers	• four underground fibre cables that cross ROW (one in a Rogers-owned duct; three in hydro structures)
	Sprint	• fibre optic conduit that runs east along the north side of the ROW and turns north to follow the Don Valley Pkwy

2.10 EMI & EMF

2.10.1 USRC Corridor

2.10.1.1 EMI Sensitive Sites

Based on the baseline mapping for the USRC, one EMI sensitive site was identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the corridor, as shown in **Table 2-9**. This was added to the list of candidate sites at which to collect baseline EMI scans during the Impact Assessment phase.

Table 2-9: EMI Sensitive Site near USRC

EMI Sensitive Site	Type	Coordinates	Distance to Closest Track
St. Joseph's Health Centre	Hospital	43°38'22.6"N, 79°27'01.2"W	Less than 100m

2.10.1.2 ELF EMF Measurements

The table in Section 4.2.2.1 of the EMI/EMF Baseline Conditions Report (Appendix J1) presents the ELF EMF measurements at select points along the USRC. There were three high-ELF (> 10 mG) areas along this section of the corridor, as shown in **Table 2-10**. **Figure 2-9** and **Figure 2-10** show aerial views of these locations in relation to the Study Area. These are locations where post-electrification measurement of ELF EMF is recommended.

Table 2-10: Summary of High ELF (> 10 mG) Areas along the USRC

Area of Interest	Coordinates	Resultant Flux Density Magnitude (mG)	References
Switch Machine 255 Near Power Substation	43°38'50.2"N, 79°22'00.4"W	19.4	**Figure 2-9**
Overhead Power Lines Near MP 0.75	43°38'49.5"N, 79°22'01.4"W	19.4	**Figure 2-9**
Overhead Signal Light 138	43°38'54.4"N, 79°21'40.2"W	11.0	**Figure 2-10**

Figure 2-9: ELF Sites in USRC – Overhead Power Lines and Switch Machine 255 in relation to Study Area

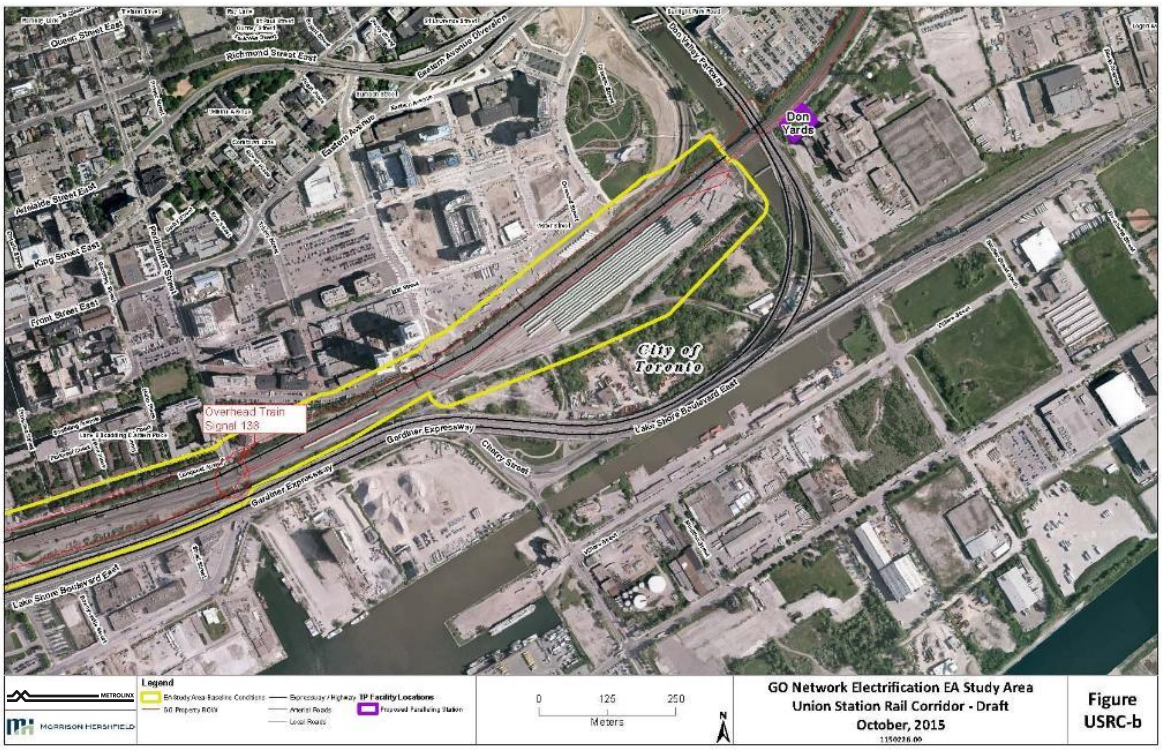
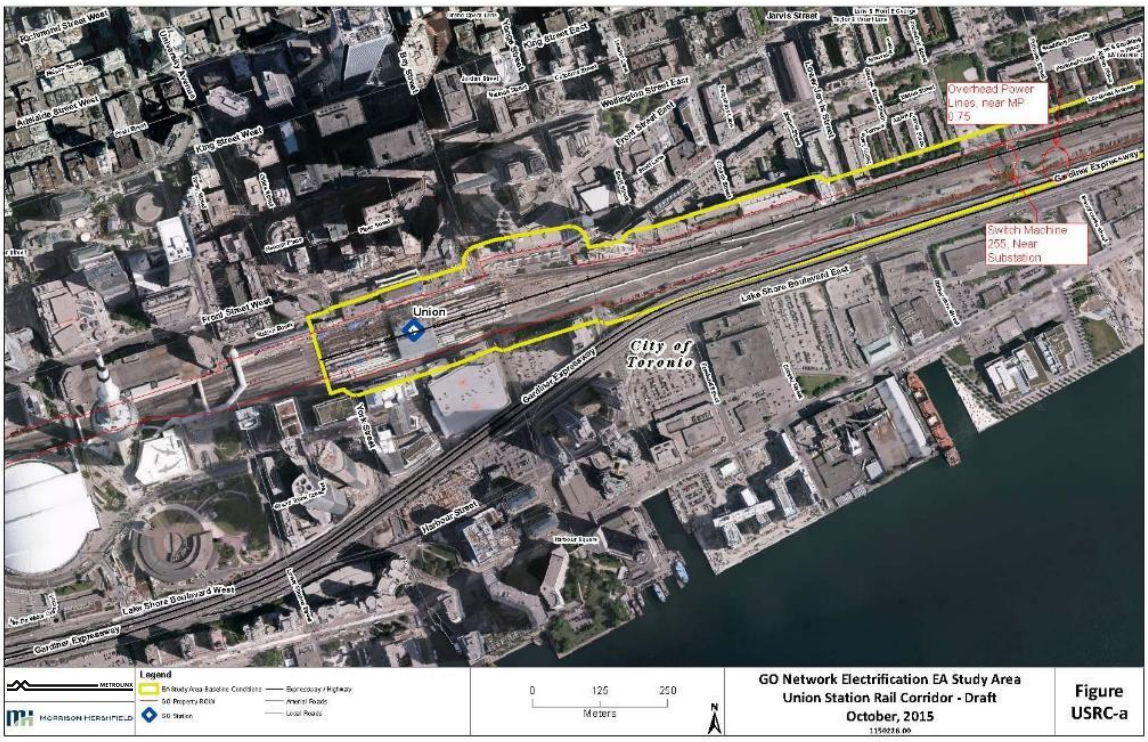


Figure 2-10: ELF Sites in USRC – Overhead Signal Light 138 in relation to Study Area



2.11 Stormwater Management

A Preliminary Stormwater Management Assessment was carried out for each of the Taps/TPFs as part of the GO Rail Network Electrification Project, however there are no Taps/TPF's proposed within the USRC.

2.12 Groundwater and Wells

Please refer to Section **1.5.12** for a description of the methodology followed for collection of Groundwater and Wells baseline conditions data. Baseline conditions within the Union Station Rail Corridor has been summarized below. Additional details can be found in the Groundwater Impact Assessment Report contained in **Appendix V**.

There were no water supply wells identified within 500 m of the rail corridor in this section. The section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are two (2) waterbodies, Lake Ontario and Don River, located within 500 m of the rail corridor.

3 Baseline Conditions – Lakeshore West Rail Corridor

3.1 Natural Environment

Please refer to Section 1.5.1 for a description of the methodology followed for collection of natural environmental baseline conditions data. Baseline conditions within each segment of the Lakeshore West Corridor have been summarized below. Additional details can be found in the Natural Environment Baseline Conditions Report contained in **Appendix A1**.

Based on review of available background information, **Table 3-1** lists all SAR with habitat within the immediate or general surrounding area of the Lakeshore West Corridor. SAR with suitable habitat *and* potential to occur within each portion of the Study Area are discussed in the appropriate sections below.

Table 3-1: Summary of Potential Species at Risk within the Immediate and General Area of the Lakeshore West Corridor

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
VASCULAR PLANTS						
Butternut	*Juglans cinerea*	END (Sched 1)	END	SARA	ESA 2007	MNRF Aurora
American Columbo	*Frasera caroliniensis*	END (Sched 1)	END	SARA	ESA 2007	MNRF Aurora
Eastern Flowering Dogwood	*Cornus florida*	END (Sched 1)	END	SARA	ESA 2007	MNRF Aurora
Hoary Mountain Mint	*Pycnanthemum incanum*	END (Sched 1)	END	SARA	ESA 2007	NHIC
American Chestnut	*Castanea dentata*	END (Sched 1)	END	SARA	ESA 2007	NHIC; MNRF Aurora
BIRDS						
Chimney Swift	*Chaetura pelagica*	THR (Sched 1)	THR	SARA; MBCA	ESA 2007	MNRF Aurora
Bank Swallow	*Riparia riparia*	No Status (No Sched)	THR	MBCA	ESA 2007	MNRF Aurora
Barn Swallow	*Hirundo rustica*	No Status (No Sched)	THR	MBCA	ESA 2007	MNRF Aurora/HRCA
Bobolink	*Dolichonyx oryzivorus*	No Status (No Sched)	THR	MBCA	ESA 2007	MNRF Aurora
Eastern Meadowlark	*Sturnella magna*	No Status (No Sched)	THR	MBCA	ESA 2007	MNRF Aurora
Peregrine Falcon	*Falco peregrinus*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Eastern Wood Pewee	*Contopus virens*	No Status (No Sched)	SC	MBCA	FWCA	MNRF Aurora
Wood Thrush	*Hylocichla mustelina*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora
Red-headed Woodpecker	*Melanerpes erythrocephalus*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
Whip-poor-will	*Caprimulgus vociferus*	THR (Sched 1)	THR	SARA; MBCA	ESA 2007	OBBA
Hooded Warbler	*Setophaga citrina*	THR (Sched 1)	-	SARA;MBCA	-	OBBA
Least Bittern	*Ixobrychus exilis*	THR (Sched 1)	THR	SARA; MBCA	ESA 2007	OBBA
Common Nighthawk	*Chordeiles minor*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
Golden-winged Warbler	*Vermivora chrysoptera*	THR (Sched 1)	SC	SARA: MBCA	-	OBBA
Louisiana Waterthrush	*Seiurus motacilla*	SC (Sched 1)	THR	MBCA	ESA	OBBA
HERPETOFAUNA						
Blanding's Turtle	*Emydoidea blandingii*	THR (Sched 1)	THR	SARA	ESA	MNRF Aurora
Eastern Musk Turtle	*Sternotherus odoratus*	THR (Sched 1)	SC	SARA	FWCA	NHIC
Northern Map Turtle	*Graptemys geog raphica*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora
Snapping Turtle	*Chelydra serpentina*	SC (Sched 1)	SC	-	-	MNRF Aurora
Spiny Softshell	*Apalone spinifera spinifera*	THR (Sched 1)	END	SARA	ESA	NHIC
INSECTS						
Monarch	*Danaus plexippus*	SC (Sched 1)	SC	-	-	MNRF Aurora
FISH						
American Eel	*Anguilla rostrata*	No Status (No Sched)	END	-	ESA	MNRF Aurora; HRCA
Reside Dace	*Clinostomus elon gates*	SC (Sched 3)	END	-	ESA	MNRF Aurora
Silver Shiner	*Notropis photog enis*	SC (Sched 3)	THR	-	ESA	MNRF Aurora

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
MAMMALS						
Eastern Small-footed Myotis	*Myotis leibii*	-	END	-	ESA	MNRF Aurora
Little Brown Myotis	*Myotis lucifugus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Northern Myotis	*Myotis septentrionalis*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Tri-coloured Bat	*Perimyotis subfl avus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora

* ESA: Endangered Species Act; FWCA: Fish and Wildlife Conservation Act; SARA: Species at Risk Act; MBCA: Migratory Birds Convention Act
** General prohibitions do not apply to species identified as Special Concern (SC) in Schedule 1 and all species in Schedule 3of the SARA
Note – The ESA (2007) supersedes the FWCA
END – Endangered; SC – Special Concern; THR - Threatened

3.1.1 Burlington Tap Location and TPS

3.1.1.1 Terrestrial

The Burlington Tap/TPS is located within Ecoregion 7E (See **Figure 1-1**).

Wetlands

There are no wetland features present within the Tap/TPS study area.

Vegetated Areas

The vegetation within the Tap/TPS study area is comprised of four (4) communities: Cultural Meadow (CUM), Deciduous Thicket (THD), Transportation and Utilities (CVI), and Commercial and Institutional (CVC). Vegetation within these communities are typical of disturbed areas and edge habitats. Species within the study area include Common Buckthorn, Norway Maple, Manitoba Maple, Trembling Aspen, and Dog Strangling Vine, Tall Goldenrod (*Solidago altissima*), Alsike Clover (*Trifolium hybridum*), Timothy-grass (*Phleum pretense*), and Tall Fescue (*Schedonorus arundinaceus*).

Wildlife

The Burlington Tap/TPS does not provide any Significant Wildlife Habitat; however the THD community may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

3.1.1.2 Aquatic

There are no aquatic features within the study area.

3.1.1.3 Species at Risk

The Burlington Tap/TPS may provide low quality foraging habitat for Monarch within the CUM. The THD community provides habitat for Butternut; however, there is low potential for this species to be present within the study area.

3.1.1.4 Designated Areas

There are no Designated Areas present within the study area.

3.1.2 Mimico Tap Location and TPS

3.1.2.1 Terrestrial

The Mimico Tap/TPS is located within Ecoregion 7E. The Mimico Tap is nested within the Mimico TPS location and, as such, the areas have been assessed together (**Figure 1-2**).

Wetlands

There are no wetland features present within the Tap/TPS study area.

Vegetated Areas

The Mimico Tap/TPS study area is comprised of four (4) communities: Cultural Meadow (CUM), Deciduous Thicket (THD), Transportation and Utilities (CVI), and Commercial and Institutional (CVC). Vegetation within these communities are typical of disturbed areas and edge habitats. Species within the study area include Common Buckthorn, Glossy Buckthorn (*Rhamnus frangula*) Norway Maple, Manitoba Maple, Trembling Aspen, and Dog Strangling Vine.

Wildlife

The Mimico Tap/TPS does not provide any Significant Wildlife Habitat; however The THD community may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

3.1.2.2 Aquatic

There are no aquatic features within the study area.

3.1.2.3 Species at Risk

The Mimico Tap/TPS may provide low quality foraging habitat for Monarch within the CUM. The THD community provides habitat for Butternut; however, there is low potential for this species to be present within the study area.

3.1.2.4 Designated Areas

There are no Designated Areas present within the Mimico Tap/TPS Location study area.

3.1.3 Mimico SWS

3.1.3.1 Terrestrial

The Mimico SWS is located within Ecoregion 7E (see **Figure 1-3**).

Wetlands

There are no wetland features present within the SWS study area.

Vegetated Areas

The Mimico SWS study area is located within one (1) large Commercial and Institutional (CVC) area. Vegetation within this community is typical of disturbed areas and edge habitats. Species within the study area include Common Buckthorn, Glossy Buckthorn, Manitoba Maple, Trembling Aspen, and Dog Strangling Vine.

Wildlife

The limited vegetated areas within the CVC community may provide potential foraging and nesting habitat for breeding birds.

3.1.3.2 Aquatic

There are no aquatic features within the SWS study area.

3.1.3.3 Species at Risk

There is low potential for Butternut to be present within the vegetated areas of the CVC community.

3.1.3.4 Designated Areas

There are no Designated Areas present within the study area.

3.1.4 Canpa 25kV Feeder Route

3.1.4.1 Terrestrial

The Canpa 25kV Feeder Route is located within Ecoregion 7E (**Figure 1-17**).

Wetlands

There are no wetland features present within the Canpa 25kV Feeder Route.

Vegetated Areas

The Canpa 25kV Feeder Route is comprised of four (4) communities: Green Land (CGL), Commercial and Institutional (CVC), Transportation and Utilities (CVI), Deciduous Thicket (THD). Vegetation within the study area are typical of disturbed areas and edge habitats.

Vegetation communities within this portion of the study area contain minimal/limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The Canpa 25kV Feeder Route does not provide any Significant Wildlife Habitat; however the CGL and THD communities may provide potential foraging and nesting habitat for breeding birds.

3.1.4.2 Aquatic

There are no aquatic features within the Canpa 25kV Feeder Route.

3.1.4.3 Species at Risk

The CGL communities provide habitat for Butternut; however, there is low potential for this species to be present within the study area.

3.1.4.4 Designated Areas

There are no Designated Areas present within the Canpa 25kVFeeder Route.

3.1.5 Oakville SWS

3.1.5.1 Terrestrial

The Oakville SWS is located within Ecoregion 7E (see **Figure 1-4**).

Wetlands

There are no wetland features present within the SWS study area.

Vegetated Areas

The Oakville SWS study area is located within one (1) large Commercial and Institutional (CVC) area. The Oakville SWS is a highly utilized commercial area and contains no vegetation.

Wildlife

The Oakville SWS study area does not contain any wildlife habitat.

3.1.5.2 Aquatic

There are no aquatic features within the SWS study area.

3.1.5.3 Species at Risk

The Oakville SWS study area does not provide any habitat for SAR.

3.1.5.4 Designated Areas

There are no Designated Areas present within the Oakville SWS study area.

3.1.6 Corridor & Bridges: Section LSW-1 – West of Bathurst Street (Mile 1.20) to Mimico Station

3.1.6.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There is one Provincially Significant Wetland (PSW), the Lower Humber River Wetland Complex, within this portion of the Study Area (see Section 3.1.6.4 for a description of this PSW).

Vegetated Areas

The Study Area contains a large proportion of CVC, CVI, and Residential Lands (CVR). The vegetated communities within this corridor section include Green Lands (CGL) and Deciduous Woodland (WOD). OA is present at the Lower Humber River and Mimico Creek (**Figure 3-1**). Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 3-1: OAO and MAS Communities, Humber River Coastal Marsh looking north October 21, 2015

Wildlife

The Lower Humber River Wetland Complex PSW, the Humber River Coastal Marsh Candidate ANSI and the OA present within the Lower Humber River and Mimico Creek may potentially provide habitat for overwintering and nesting turtles, breeding amphibians and breeding marsh birds. The WOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds.

3.1.6.2 Aquatic

There are two watercourses within this portion of the Study Area, Lower Humber River and Mimico Creek. Estuarine habitat in the Humber River watershed extends from the mouth to just above Bloor Street, a distance of approximately 6 km. This habitat is characterized by very low slope (0.03%), slow moving, turbid water, and is directly influenced by the water level in Lake Ontario. Fish species presently found in this section of the Humber River (as of 2005) and other species likely present are listed in Section 4.2.1.2 of **Appendix A1**.

The Mimico Creek watershed is dominated by cool-warm water generalist species tolerant of a range of habitat conditions. Species found in the lower reaches of Mimico Creek in and around the mouth include, as well as additional fish collected throughout Mimico Creek, are listed in Section 4.2.1.2 of **Appendix A1**.

3.1.6.3 Species at Risk

A total of 14 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-2**.

Table 3-2: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-1

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL; CVR) • Moderate (WOD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Blanding's Turtle	*Emydoidea blandingii*	• Low (OA)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; CUM adjacent to OA)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Monarch	*Danaus plexippus*	• Low (CVR; CVI)
Eastern Musk Turtle	*Sternotherus odoratus*	• Low(OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD; CVR)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a] CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities

3.1.6.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF.

The Provincially Significant Lower Humber River Wetland Complex is present immediately outside of the boundaries within this portion of the Study Area. This PSW consists of 15 wetlands, comprising an area of 25.6 ha of swamp (84%) and marsh (16%). Nineteen wetland community types have been delineated within the PSW. The complex consists of 86.7% lacustrine wetlands (wetlands primarily supported by lake processes) at the river mouth and 9.7% riverine wetlands (wetlands supported by river flooding) above the lake level within the floodplain. One small wetland (3.6% of the wetland complex) just north of Bloor

Street is palustrine (a wetland with an outflow but no inflow), based on groundwater discharge. 96% of the wetland is underlain by clay/loam soils, with 4% underlain by organic soils (North-South Env., 2009).

The Humber River Coastal Marsh Candidate Life Science ANSI and High Park Oaks Woodlands Life Science ANSI are also located within the LSW-1 corridor. The Humber River Coastal Marsh Candidate ANSI is Regionally Significant. The High Park Oaks Woodlands ANSI is considered Provincially Significant an outstanding concentration of provincially and regionally rare plant species, provincially rare black oak savannahs, regionally rare moist red oak and hemlock forests; and locally significant examples of lakeshore marsh, natural bottomlands and dry red oak/white oak upland forests (MNR, 1989).

3.1.7 Corridor & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

3.1.7.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVC and CVI with some CVR. The vegetated community within this corridor section is limited to one small Deciduous Woodland (WOD) as well as a Green Land (CGL) and Deciduous Thicket (THD) community. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This Study Area is comprised of CVC, CVI and CVR lands, therefore no Significant Wildlife Habitat is present within this corridor. However, the small patch of WOD and THD may potentially provide nesting and foraging habitat for breeding birds.

3.1.7.2 Aquatic

There are no aquatic features within this portion of the Study Area.

3.1.7.3 Species at Risk

A total of ten SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-3**.

Table 3-3: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-2

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR, THD) • Moderate (WOD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CVR)
Monarch	*Danaus plexippus*	• Low (CVR, CVI)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a] CGL – Green Land; CVR – Residential lands; THD – Deciduous Thicket; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities

3.1.7.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no Designated Areas within this portion of the Study Area.

3.1.8 Corridor & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

3.1.8.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVR with some CVC. The vegetated communities within this corridor section include CGL, THD, and CUM. OA is present at Etobicoke Creek, Applewood Creek and Cooksville Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of

electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 3-2: CGL Community, Etobicoke Valley Park looking south October 21, 2015

Wildlife

The Etobicoke, Applewood, and Cooksville Creeks may provide suitable movement corridors for herpetofauna and the small patches of THD and CGL may provide foraging and nesting habitat for breeding birds. The CUM communities may also provide potential foraging habitat for pollinating insects.

3.1.8.2 Aquatic

There are five watercourses within the Study Area: Lower Etobicoke Creek, Applewood Creek, Serson Creek, Cooksville Creek, and Mary Fix Creek. The thermal conditions of the Lower Etobicoke Creek are considered unstable and therefore the temperature regime is unknown. Fish species found throughout the Lower Etobicoke Creek from 2001-2004, including the Estuarine habitat present at the Lakeshore West Corridor (Section LSW-3) are listed in Section 4.2.3.2 of **Appendix A1**.

Applewood Creek, Cooksville Creek, and Serson Creek are tributaries of Lake Ontario. Mary Fix Creek is a tributary within the Credit River watershed. The presence and distribution of brook trout in many tributaries of the Credit River indicate temperatures suitable for coldwater species. Main river

temperatures, however, vary and could be more suitable for cool to warmwater species. Fish species found throughout the Credit River Watershed are listed in Section 4.2.3.2 of **Appendix A1**.

3.1.8.3 Species at Risk

A total of twelve SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-4**.

Table 3-4: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-3

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR, THD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL) • Low (CVR)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Monarch	*Danaus plexippus*	• Low (CVR, CVI, CUM, CGL)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a]CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities; THD – Deciduous Thicket

3.1.8.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA, CVC, and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

3.1.9 Corridor & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

3.1.9.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There is one PSW (Credit River Mashes Wetland Complex) and one evaluated wetland (Fudger's Marsh) within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVR with some CVC. The vegetated communities within this corridor section include CGL, WOD, MA, and CUM. OA is present at the Credit River. Vegetation communities identified above are consistent with those identified within the *GO Transit Lakeshore West Corridor Rail Expansion between Port Credit Station and Kerr Street* (URS, 2006). Some updates were made and several communities identified as FOD within the report have been updated to WOD.

Based on aerial photo interpretation, this portion of the Study Area contain intermediate (20 to 70%) tree cover. The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 3-3: OA and CVR Communities, Credit River Marshes Wetland Complex looking south October 21, 2015

Wildlife

The Credit River Marshes Wetland Complex PSW, the Credit River Coastal Marsh ANSI and the OA within the Credit River may potentially provide habitat for overwintering and nesting turtles, breeding amphibians and breeding marsh birds. The WOD and CGL communities may provide potential foraging and nesting habitat for breeding birds and the CUM may potentially provide foraging habitat for pollinating insects.

3.1.9.2 Aquatic

There are six watercourses within the Study Area: Kenollie Creek, Credit River, Tecumseh Creek, Lornewood Creek, Birchwood Creek (East and West) and Turtle Creek. The main Credit River is within the Study Area and Kenollie Creek is a tributary of the Credit River. The presence and distribution of brook trout in many tributaries of the Credit River indicate temperatures suitable for coldwater species. Main river temperatures, however, vary and could be more suitable for cool to warmwater species. Fish species found throughout the Credit River Watershed are listed in Section 4.2.4.2 of **Appendix A1**. The Credit River within the Study Area is a permanent watercourse and instream cover is provided by vascular plants, mostly cattails, logs/trees, boulders, and some organic debris. Bank armouring is present along both shorelines of the Credit River downstream of the CN corridor (URS, 2006). According to CVC the fish community within the study area is warmwater with migratory salmonids.

The west branch of Birchwood Creek is a small permanent watercourse which has been channelized, re-aligned, and armoured with concrete. It originates approximately 1.5 km to the west of the LSW corridor. The watercourse is classified as permanent and two fish species have been identified: Blacknose Dace and Creek Chub. The east branch of Birchwood Creek is a small permanent watercourse with limited habitat alterations. The watercourse originates approximately 1 km to the northwest of the LSW corridor. Fish species captured in the Study Area included Blacknose Dace, Creek Chub, and Common Carp (URS, 2006).

Lornewood Creek is a small watercourse with some minor habitat alternations. The watercourse originates 1.5 km to the northwest of the LSW corridor. The watercourse is classified as permanent and fish community sampling resulted in the capture of: Blacknose Dace, Creek Chub, Brook Stickleback, and Fathead Minnow (URS, 2006).

Kenollie Creek, Turtle Creek and Tecumseh Creek have marginal or no discernable fish habitat.

3.1.9.3 Species at Risk

A total of 14 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-5**.

Table 3-5: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-4

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR) • Moderate (WOD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; CUM adjacent to OA)
Bank Swallow	*Riparia riparia*	• Moderate (adjacent to OA areas)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CVR, CGL)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)
Monarch	*Danaus plexippus*	• Low (CVR, CVI, CGL)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)
American Eel	*Anguilla rostrata*	• Previously recorded

[a] CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities; MA - Marsh

3.1.9.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of CVC and Aurora District MNRF. The Provincially Significant Credit River Mashes Wetland Complex is present within the Study Area. The complex has forest communities greater than 2 ha and wetlands over 0.5 ha in size, and this natural area has the potential to support and sustain biodiversity, healthy ecosystem functions and to provide long-term resilience for the natural system. The riparian area provides a transitional zone between terrestrial and aquatic habitats, helping to maintain the water quality of the river and providing a movement corridor for plants and wildlife (Region of Peel, 2012).

Fudger's Marsh, an Evaluated wetland and designated ESA is present within the Study Area. Fudger's Marsh is part of the Birch Glen ESA. This site is in fair to poor condition due to several factors including residential encroachment, past logging, noise from the railway and road, windthrow, sheet and rill erosion and extensive and unplanned trail networks. Three vegetation communities are present at the site: broad-leaved sedge mineral marsh, dry-fresh oak-maple forest, and dry-moist old field meadow (URS, 2006).

The Study Area also contains the Lorne Park Prairie Life Science ANSI and the Credit River Coastal Marsh Life Science ANSI. The Credit River Marsh ANSI is considered Regionally Significant. The Lorne Park Prairie ANSI is considered Regionally Significant. It contains a remnant dry tallgrass prairie type with 93 floral species and seven faunal species documented (City of Mississauga, 2012).

3.1.10 Corridor & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

3.1.10.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVC with some CVR. The vegetated communities within this corridor section are limited to CGL and CUM. Vegetation communities identified above are consistent with those identified within the *GO Transit Lakeshore West Corridor Rail Expansion between Port Credit Station and Kerr Street* (URS, 2006). Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (i.e., > 10 %). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This section of the Study Area is mainly comprised of CVC, CVI and CVR lands, therefore no Significant Wildlife Habitat is present within this corridor. However, the CUM communities may provide potential foraging habitat for pollinating insects.

3.1.10.2 Aquatic

There are five watercourses within the Study Area: Sheridan Creek Avonhead Creek, Joshua's Creek, Wedgewood Creek, and Morrison Creek.

Sheridan Creek is a heavily armoured concrete channel through most of the Study Area. It originates approximately 4.0 km northwest of the LSW corridor near the intersection of Trafalgar Road and Dundas Street (Highway 5). The watercourse is permanent and historical fish records identified fathead minnow and creek chub. The channel likely provides only a corridor for fish movement and does not provide diverse habitat for fish (URS, 2006).

Joshua's Creek (East and West Branch), Wedgewood Creek and Morrison Creek (East and West Branch) are part of the Oakville East Urban Creeks Watershed located adjacent to the Sixteen Mile Creek

Watershed. Some of the tributaries have been diverted and are considered to be in poor condition as a result of erosion and increased stormwater runoff from the surrounding urban landscape (CH, 2013).

Morrison Creek has two branches as identified in the Go Transit *Lakeshore West Corridor Rail Expansion between Port Credit Station and Kerr Street* (URS, 2006). West Morrison Creek is a permanent watercourse that has been straightened as a result of urban development. The watercourse emerges approximately 0.1 km northwest of the LSW corridor. The watercourse passes under the LSW corridor via a single open foot box culvert. No fish species were observed or captured in 2005 as part of the study (URS, 2006). East Morrison Creek originates approximately 0.5 km northwest of the LSW corridor in the vicinity of the QEW. It is conveyed under the LSW corridor by a concrete box culvert. The creek exhibits intermittent flow patterns and no fish were captured (URS, 2006).

Wedgewood Creek also has an east and west branch. The west branch originates from surface runoff between the QEW and the Oakville North Yard. The watercourse is conveyed underground for a length of 280 m from the QEW to the LSW corridor. South of the corridor is the start of defined surface flow. The creek is classified as intermittent and was dry during URS field investigations in 2005. The west branch originates from a stormwater management pond between Royal Windsor Drive and the CN yard. The watercourse is conveyed underground from the Stormwater Management Pond through the CN yard. Negligible flow was noted during URS field investigations and the watercourse is classified as intermittent.

Joshua's Creek represents a fairly naturalized creek system that has been modified within the vicinity of the Study Area. Upstream of the LSW corridor the channel is straightened and immediately downstream of the LSW corridor the creek enters an engineered channel that contains armoured banks of gabion baskets along with concrete grade controls. The watercourse is classified as permanent and a total of seven fish species are identified within the vicinity of the LSW corridor: blacknose dace, bluntnose minnow, white sucker, creek chub, common shiner, fathead minnow and brook stickleback (URS, 2006).

3.1.10.3 Species at Risk

A total of seven SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-6**.

Table 3-6: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-5

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVR)
Barn Swallow	*Hirundo rustica*	• High (OA bridge structures, OA adjacent)
Bank Swallow	*Riparia riparia*	• Low (adjacent to OA areas)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CVR, CGL)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Monarch	*Danaus plexippus*	• Low (CVR, CVI, CGL, CUM)

[a] CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities

3.1.10.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of CVC, Halton Region Conservation Authority (HRCA), and Aurora District MNRF. There are no Designated Areas present in this portion of the Study Area.

3.1.11 Corridor & Bridges: Section LSW-6 – Oakville Station to Bronte Station

3.1.11.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands present within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVC. The vegetated communities within this corridor include WOD, and CUM. OA areas are present at Bronte Creek, McCraney Creek and Fourteen Mile Creek. Vegetation communities identified above are consistent with those identified within the *GO Transit Lakeshore West Corridor Rail Expansion between Port Credit Station and Kerr Street* (URS, 2006). Some updates were made based on changed ELC definitions. Several communities identified as FOD within the report have been updated to WOD. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Portions of the WOD communities are classified as Woodlands by the City of Oakville. Additionally, WOD communities associated with the Sixteen Mile Creek corridor are classified as Valleylands by the City of Oakville.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). %). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The rail line crosses over Sixteen Mile Creek, south of the Oakville Station. This river flows into the evaluated Oakville Creek Wetland Complex where there is potential habitat for overwintering and nesting turtles, breeding amphibians and breeding marsh birds. The CUM community may provide potential

foraging habitat for pollinating insects and the WOD communities may provide nesting and foraging habitat for breeding birds.

3.1.11.2 Aquatic

There are three watercourses within the Study Area. Within the main branch of Sixteen Mile Creek there is a diverse assemblage of fish species that inhabit a wide variety of habitats including small and intermediate riverine coldwater, intermediate riverine warmwater, rivermouth, and near shore habitats. Fish species observed in 2011 are listed in Section 4.2.6.2 of Appendix A1. During a site visits as part of the GO Transit Lakeshore West Corridor Rail Expansion Between Port Credit Station and Kerr Street (URS, 2006) visual observations were made of young of the year (YOY) salmonids which indicate the potential for suitable spawning conditions for salmonids within the vicinity of the LSW corridor. According to URS, instream cover consists of boulders and filamentous algae with little to no woody cover observed in the watercourse.

Fourteen Mile Creek and McCraney Creek (two crossings) are located in the Oakville West Urban Creeks Watershed located between the Sixteen Mile and Bronte Creek Watershed. Conditions in this watershed are similar to those found throughout the Oakville East Urban Creeks Watershed (CH, 2013).

3.1.11.3 Species at Risk

A total of sixteen SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-7**.

Table 3-7: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-6

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR) • Moderate (WOD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Moderate (adjacent to OA areas)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CVR)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Monarch	*Danaus plexippus*	• Low (CVR, CVI, CGL)
Redside Dace	*Clinostomas elongatus*	• Fourteen Mile Creek (OA)
American Eel	*Anguilla rostrata*	• Sixteen Mile Creek (OA)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Silver Shiner	*Notropis photogenis*	• Sixteen Mile Creek (OA)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a] CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities

3.1.11.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of HRCA and Aurora District MNRF. The Provincially significant Oakville Creek Wetland Complex is located just outside the Study Area to the south of the corridor.

3.1.12 Corridor & Bridges: Section LSW-7 – Bronte Station to Appleby Station

3.1.12.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There is one PSW (Lower Bronte Creek PSW Complex) immediately outside of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVC. The vegetated communities within this corridor section are limited to CGL and WOD. OA areas are present at Bronte Creek, Sheldon Creek, and Appleby Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

The Bronte Creek corridor is classified as Valleylands by the City of Oakville and portions of the WOD communities are also classified as Woodlands by the City of Oakville.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 3-4: WOD and OA Communities, looking south October 21, 2015

Wildlife

The Bronte, Sheldon, and Tuck Creeks may provide suitable migratory corridors for herpetofauna and the small patches of WOD and CGL may provide foraging and nesting habitat for breeding birds.

3.1.12.2 Aquatic

There are three watercourses within the Study Area, the most easterly of which is Bronte Creek. The diverse assemblage of fish species in the Bronte Creek Watershed inhabit a wide variety of habitats including small and intermediate riverine coldwater, intermediate riverine warmwater, rivermouth and near shore habitats. Fish species observed in the Bronte Creek Watershed are listed in Section 4.2.7.2 of **Appendix A1**.

Sheldon Creek and Appleby Creek are found within the Burlington Urban Creeks Watershed. The southern portions of these urban watersheds are heavily developed with commercial, industrial and residential developments and the northern portions of the watersheds tend to be rural in nature. Fish species observed throughout the Burlington Urban Creek Watershed are listed in Section 4.2.7.2 of **Appendix A1**.

3.1.12.3 Species at Risk

A total of 16 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-8**.

Table 3-8: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-7

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL) • Moderate (WOD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Moderate (adjacent to OA areas)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA)
Monarch	*Danaus plexippus*	• Low (CVR, CVI, CGL)
American Eel	*Anguilla rostrata*	• Bronte Creek (OA)
Silver Shiner	*Notropis photogenis*	• Bronte Creek (OA)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

a CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities

3.1.12.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of HRCA and Aurora District MNRF. The Lower Bronte Creek PSW Complex is located outside of the Study Area to the south of this portion of the Study Area.

3.1.13 Corridor & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

3.1.13.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVC with some CVR. The vegetated communities within this corridor section are CUM, AG, and WOD. OA areas are present at Shoreacres Creek and Tuck Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The Shoreacres and Tuck Creeks may provide suitable migratory corridors for herpetofauna and the small patches of WOD and CGL may provide foraging and nesting habitat for breeding birds. The AG communities may potentially provide nesting and foraging habitat for grassland birds.

3.1.13.2 Aquatic

There are four watercourses within the Study Area: Shoreacres Creek, Tuck Creek, Roseland Creek, and Indian Creek. All are found within the Burlington Urban Creeks Watershed. The southern portions of these urban watersheds are heavily developed with commercial, industrial and residential developments and the northern portions of the watersheds tend to be rural in nature. Fish species observed throughout the Burlington Urban Creek Watershed are listed in Section 4.2.8.2 of **Appendix A1**.

3.1.13.3 Species at Risk

A total of 13 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 3-9**

Table 3-9: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSW-8

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR) • Moderate (WOD)
Eastern Flowering Dogwood	*Cornus florida*	• Low (WOD)
American Chestnut	*Castanea dentata*	• Low (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CVR)
Bobolink	*Dolichonyx oryzivorus*	• Low (AG)
Eastern Meadowlark	*Sturnella magna*	• Low (AG)
Monarch	*Danaus plexippus*	• Low (CVR, CVI, CUM)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a] CGL – Green Land; CVR – Residential lands; WOD – Deciduous Woodland; CVC – Commercial and Institutional; OA – Open Water; CUM – Cultural Meadow; CVI – Transportation and Utilities; AG – Agriculture

3.1.13.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of HRCA and Aurora District MNRF. There are no Designated Areas present in this portion of the Study Area.

3.2 Preliminary Environmental Site Assessment

Please refer to Section 1.5.2 for a description of the methodology followed for collection of Preliminary Environmental Site Assessment site baseline conditions data. Baseline conditions at each TPF site associated with the Lakeshore West Corridor have been summarized below.

A summary of the background information review, observations from the site reconnaissance, findings, ranking, and recommendations for each TPF site are provided below. The location of identified issues, if any, are indicated on **Figure 3-5** to **Figure 3-6**.

3.2.1 Burlington Tap Location and TPS

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

3.2.2 Mimico Tap Location and TPS

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

3.2.3 Canpa 25kV Feeder Route

Table 3-10 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the 25kV Feeder Route (Canpa Rail ROW).

Table 3-10: Summary of Baseline Conditions along 25kV Feeder Route (Canpa Rail ROW)

Drive-by Site Reconnaissance Key Observations	• As the majority of the Site was not visible from publicly accessible lands, a Site visit was not completed.
Identified APECs/PCAs	• Various industrial land uses surrounding the Site, including several USTs and two waste disposal sites.
Risk Ranking	**Low**
Recommendations	• Characterize the quality of excess soil generated at the time of installation to determine management options. A subsurface investigation prior to construction is not considered necessary since the installation of the aerial feeder route is not anticipated to required property acquisition or large scale excavation activities that have the potential to disturb subsurface contamination, if present.

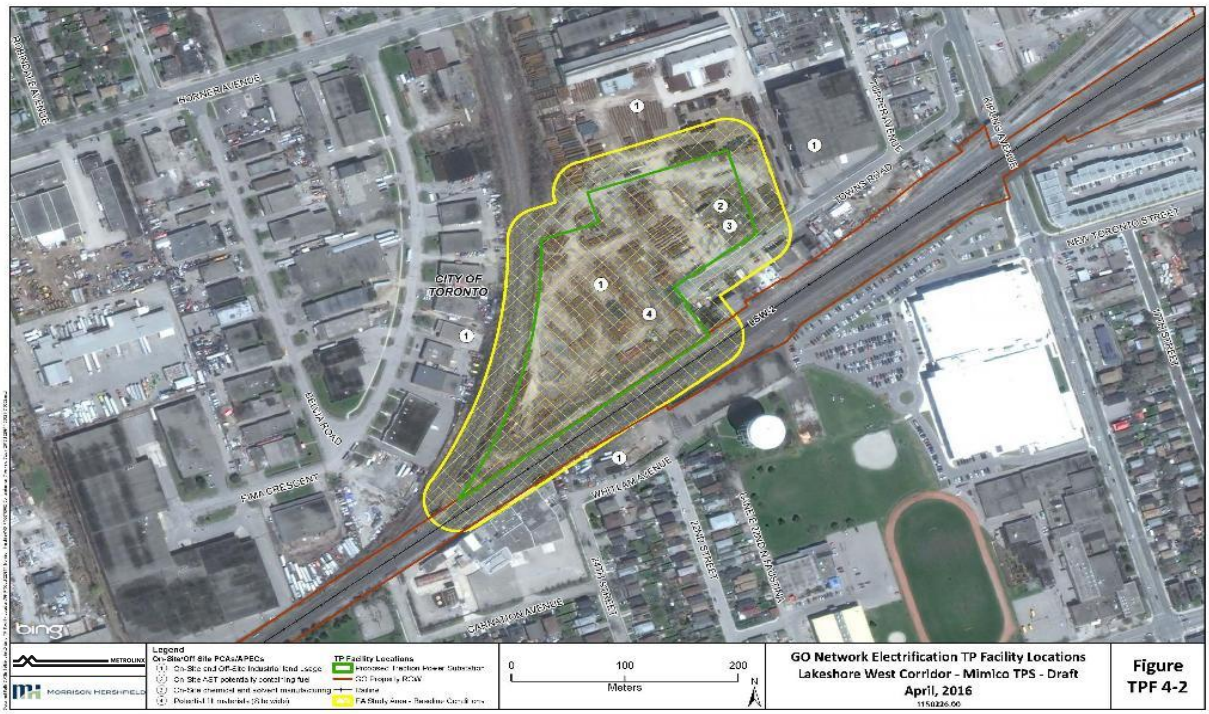
3.2.4 Mimico SWS

Table 3-11 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Mimico SWS site.

Table 3-11: Summary of Baseline Conditions at the Mimico SWS Site

Drive-by Site Reconnaissance Key Observations	• The Site was developed with one building, Pipe and Pilings Supply Ltd., located on the eastern portion of the Site with Site address of 36 Towns Road. The remaining Site areas were used for storage of metal pipe and rolls of metal sheeting. The yard areas were observed to be asphalt paved; • A rail spur is present along the western perimeter of the Site building; • An AST is present on Site, just north of the Site building; and, • Surrounding land uses are primarily industrial in nature.
Identified APECs/PCAs	• Historical and current industrial uses of the Site and surrounding properties; • Potential fill materials of unknown composition may be present across the Site; • On-Site chemical and solvent manufacturing; and, • One on-Site AST potentially containing fuel oil.
Risk Ranking	• **High**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Comprehensive Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from current and former on-site and adjacent/nearby land uses; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 3-5: Potential Sources of Contamination at Proposed Mimico SWS Site Location



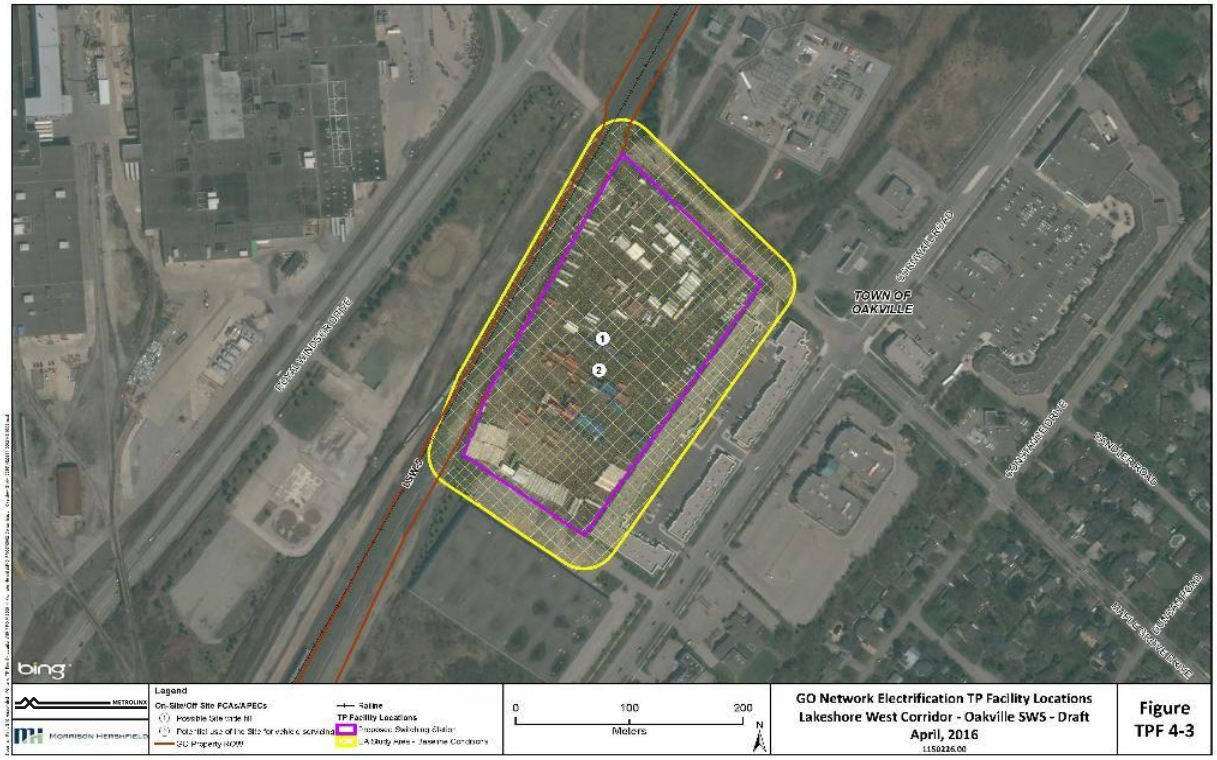
3.2.5 Oakville SWS

Table 3-12 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Oakville SWS site.

Table 3-12: Summary of Baseline Conditions at the Oakville SWS Site

Drive-by Site Reconnaissance Key Observations	• The Site is developed with two small mobile trailer type buildings. The yard areas appear to be used as tractor trailer storage; and, • Berms and large piles of soil were present along the perimeter of the Site indicating possible importation of fill materials onto the Site.
Identified APECs/PCAs	• Potential fill materials of unknown composition may be present across the Site; and, • The potential use of the Site for the vehicle servicing.
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Limited Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from adjacent/nearby land uses; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 3-6: Potential Sources of Contamination at Proposed Oakville SWS Site Location

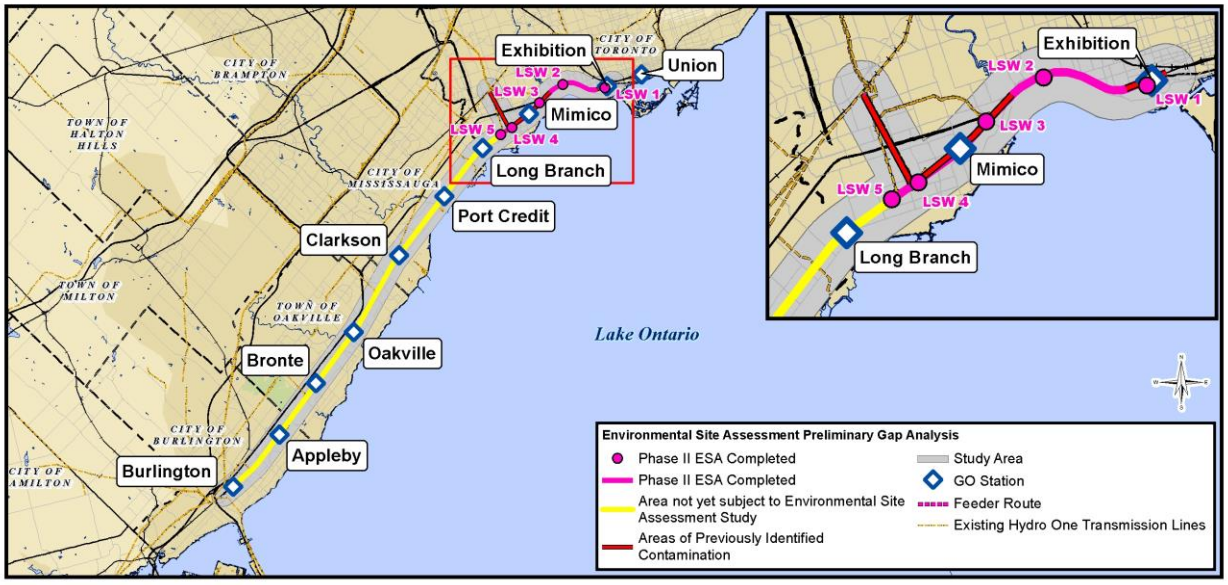


3.2.6 Lakeshore West Corridor

The Lakeshore West Corridor from Strachan Avenue in Toronto to 29th Street in Etobicoke was the subject of a Phase I and Phase II Environmental Site Assessments completed in 2010. These studies cover approximately 16 km of the 53 km long corridor. Approximately 37 km of this corridor has not been previously subject to a site assessment, further information on the gap analysis is provided in Appendix B. These two reports by SPL Beatty were completed for Metrolinx as part of the contemplated property acquisition of the railway Right-of-Way (ROW). There was also extensive ESA and site remediation work completed as part of the Oakville GO Station parking expansion project.

A detailed Phase II ESA was also completed by Englobe (2015) along a north-south railway corridor known as the Canpa Rail ROW. The Englobe study footprint does not intersect the subject OCS Impact Zone, however it does cover much of the proposed Mimico Tap footprint and the Mimico 25kV Feeder Route. The general location of data gaps and previously identified areas of contamination are illustrated in **Figure 3-7** and described in the following sections. Detailed maps of the extent of previous investigations and location of known or potential contamination found in previous studies are provided in **Appendix B**. Further work is recommended to address the data gaps identified to prepare a complete contamination overview study for the project footprint.

Figure 3-7: Lakeshore West Corridor Contamination Overview Map



The Phase II ESA completed in 2011 identified several areas of contamination. The study completed by SPL (2010b) outlined the following pertinent conclusions:

The results of soil analysis collected from boreholes throughout the study corridor identified marginal exceedances above the MOE Table 7 Standard (2004) for several parameters including metals, petroleum hydrocarbons (PHC), PAHs and PCBs. Locations of these areas are shown on the overview figure for this corridor (**Figure 3-7**) and **Appendix B**, and are characterized as:

1. Area #1 – an area with elevated concentrations of metals (cobalt, copper and nickel) along the railway ROW between Strachan and Dufferin Street. SPL Beatty (2010b) states that *"These metals are commonly found railway ballast."*

2. Area #2 – a location near Grand Avenue Park (west of Park Lawn Rd.) with both elevated metal (beryllium, cobalt and nickel) and hydrocarbon concentrations. Specifically petroleum hydrocarbons and PCBs were found in borehole BH18-3. Step-out drilling was completed to assess the PCB issue at this location. In addition it was indicated that soils at this location may be considered hazardous waste for the purposes of transportation and disposal. Toxicity Characteristic Leachate Procedure testing (TCLP) to characterize the hazardous/non-hazardous status of the soils as per O.Reg.347 was completed as part of the Phase II ESA conducted by SPL.

3. Area #3 – an area at the Mimico GO Station with elevated concentrations of metals.

4. Area #4 – laterally extensive metal and hydrocarbon (primarily PAHs) contamination in soil of the Willowbrook Rail Yard. High lead concentrations in soil from BH19-21 were identified, as such soils at this location would be considered hazardous waste (based on TCLP testing) for the purposes of transportation and disposal.

5. Area #5 – area of metal (primarily beryllium) and hydrocarbon contamination of soil in the vicinity of the proposed Mimico TPS.

SPL Beatty (2010) also noted that "any construction, maintenance or other activity along the rail corridor investigated should first include a review of this report. All workers who may come into contact with impacted soil should wear appropriate personal protective equipment. If suspect material not tested as part of this investigation is identified during any activity along the rail corridor a qualified consultant should be contacted to understand the nature of the impact prior to proceeding".

3.3 Cultural Heritage

Please refer to Section 1.5.3 for a description of the methodology followed for collection of cultural heritage baseline conditions data, and Section 1.5.3.1 for a description of the resources that were used for the screening of Cultural Heritage Resources. Baseline conditions within each segment of the Lakeshore West Corridor have been summarized below. Additional details can be found in the Cultural Heritage Screening Report contained in **Appendix C1**.

3.3.1 Burlington Tap Location and TPS

See **Figure 1-1** in Section 1.3 for the location of the proposed Burlington Tap site and TPS. There are no heritage properties identified at the Burlington Tap Location and TPS site. There are no further concerns from a cultural heritage perspective.

3.3.2 Mimico Tap Location and TPS

See **Figure 1-2** in Section 1.3 for the location of the proposed Mimico Tap and TPS site. There are no heritage properties identified at the Mimico Tap Location and TPS site. There are no further concerns from a cultural heritage perspective.

3.3.3 Mimico SWS

See **Figure 1-3** in Section 1.3 for the location of the proposed Mimico SWS site. There are no heritage properties identified at the Mimico SWS site. There are no further concerns from a cultural heritage perspective.

3.3.4 Canpa 25kV Feeder Route

See **Figure 1-17** in Section 1.3 for the proposed 25kV Feeder Route (Canpa Rail ROW). A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Two potential cultural heritage resources are located along the Canpa 25kV Feeder Route. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Signficance (PHPPS). Therefore,

these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-13** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-13: Cultural Heritage Resources along Canpa 25kV Feeder Route

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[6]	Metrolinx Heritage Recognition[7]
N/A	Gardiner Expressway, Toronto	Gardiner Expressway	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	The Queensway, Toronto	The Queensway	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

3.3.5 Oakville SWS

See **Figure 1-4** in Section 1.3 for the location of the proposed Oakville SWS site. There are no heritage properties identified at the Oakville SWS.

3.3.6 Corridor & Bridges: Section LSW-1 – West of Bathurst Street (Mile 1.20) to Mimico Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Fourteen potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-14** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

[6] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[7] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 3-14: Cultural Heritage Resources for Section LSW-1

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[8]	Metrolinx Heritage Recognition[9]
N/A	Manitoba Dr., Toronto	Exhibition GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	315 Royal York Rd., Toronto	Mimico Go Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Strachan Ave., Toronto	Strachan Avenue Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
LSW-1-1	Dufferin St., Toronto	Dufferin Street Bridge	None	Conditional Heritage Property; CHER previously completed (ASI 2011)	Provincial Heritage Property (recommended; MHC Decision Form was not issued)[10]
LSW-1-2	Dunn Ave., Toronto	Dunn Avenue Bridge	Provincial Heritage Property	Provincial Heritage Property - Structure was removed (2015); CHER is not required	Provincial Heritage Property (MHC Decision, November 25, 2014)
N/A	Jameson Ave., Toronto	Jameson Avenue Bridge	None	Non-Heritage Property; CHER is not required	Non-heritage property
LSW-1-3	Dowling Ave., Toronto	Dowling Avenue Bridge	Provincial Heritage Property	Provincial Heritage Property - Structure was removed (2015); CHER is not required	Provincial Heritage Property (MHC Decision, November 25, 2014)
N/A	Toronto	Sunnyside Pedestrian Walkway	None	Conditional Heritage Property; CHER recommeded	Non-Heritage Property (MHC Decision, August 15, 2016)

[8] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP

[9] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

[10] A CHER of the Dufferin Street Bridge was completed in 2011 outside of the Metrolinx Cultural Heritage Management Process. While no MHC Decision Form was ever issued, a review of the CHER indicates that the bridge met Reg. 9/06 of the OHA and would thus be recommended for consideration as a Provincial Heritage Property. The Dufferin Street Bridge was demolished in 2013.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[8]	Metrolinx Heritage Recognition[9]
LSW-1-4	Humber River, Toronto	Humber River Bridge	None	Potential Provincial Heritage Property; CHER in progress at the time of data collection for the CHSR	Provincial Heritage Property (MHC Decision, June 8, 2016)
N/A	TTC Humber Loop, Toronto	TTC Humber Loop Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Gardiner Expressway, Toronto	Gardiner Expressway Bridge	None	Conditional Heritage Property; CHER recommeded	Non-Heritage Property (MHC Decision, September 23, 2016)
N/A	North side of rail corridor, between Sunnyside Pedestrian Bridge and Dowling Avenue Bridge	Topiary Signs	None	Potential Provincial Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, September 23, 2016)
LSW-1-5	250 Fort York Blvd, Toronto	Fort York HCD	Part V Designation under the OHA (By-Law 420-85), National Historic Site	Protected property adjacent to the rail corridor and to Strachan Avenue Bridge; CHER is not required	Adjacent Protected Property
LSW-1-6	1601 Lakeshore Blvd W., Toronto	Palais Royale	Part IV Designation under the OHA (By-Law 563-84)	Protected property adjacent to Sunnyside Pedestrian Walkway (LSW-1-4); CHER is not required	Adjacent Protected Property

As noted above, CHERs were recommended and subsequently conducted as part of the Electrification TPAP for the following CHRs:

- Sunnyside Pedestrian Bridge;
- Humber River Bridge;
- Gardiner Expressway Bridge; and
- Topiary Signs.

A summary of the CHERs undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 3-15** below. See **Figure 3-8** through **Figure 3-11** for a visual representation of these CHRs.

Table 3-15: Summary of LSW-1 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Sunnyside Pedestrian Bridge	Not Heritage	August 15th, 2016	Not a Provincial Heritage Property
Humber River Bridge	9/06	October 13th, 2016	Metrolinx Heritage Property
Gardiner Expressway Bridge	Not Heritage	September 23rd, 2016	Not a Provincial Heritage Property
Topiary Signs	Not Heritage	September 23rd, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, the Sunnyside Pedestrian Bridge, Gardiner Expressway Bridge and Topiary Signs are neither Provincial Heritage Property nor Provincial Heritage Property of Provincial Significance. Refer to **Appendix M** for a copy of the CHERs prepared for each CHR noted above.

The Humber River Bridge met criterion under Regulations 9/06 and therefore is considered a Provincial Heritage Property. A copy of the CHER and Statement of Cultural Heritage Value can be found in **Appendix M**.

Figure 3-8: Sunnyside Pedestrian Bridge – East Elevation, looking South

Figure 3-9: Humber River Bridge

Figure 3-10: Gardiner Expressway Bridge - South Elevation

Figure 3-11: Topiary Signs - From Sunnyside Pedestrian Bridge, looking northeast

3.3.7 Corridor & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Six potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-16** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-16: Cultural Heritage Resources for LSW-2

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[11]	Metrolinx Heritage Recognition[12]
N/A	Towns Rd., Toronto	Mimico TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	20 Brow Dr., Toronto	Long Branch GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSW-2-1	Islington Ave., Toronto	Islington Avenue Bridge	None	Conditional Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, January 11, 2017)
N/A	Brown's Line, Toronto	Brown's Line Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Islington Ave., Etobicoke, Toronto	Willowbrook Maintenance Facility	None	Potential Provincial Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, September 23, 2016)
N/A	Etobicoke, Toronto	CANPA Interlocking Tower	CHER previously completed. Determine to not be a Provincial Heritage Property	Non-Heritage Property; CHER not required	Non-Heritage Property (MHC Decision, November 25, 2014)

As noted above, CHERs were recommended and subsequently conducted for the Islington Avenue Bridge and Willowbrook Maintenance Facility. A summary of the CHERs undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 3-17** below. See **Figure 3-12** through **Figure 3-13** for a visual representation of these CHRs.

[11] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[12] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 3-17: Summary of LSW-2 CHERs Undertaken and Statement of Cultural Heritage Value

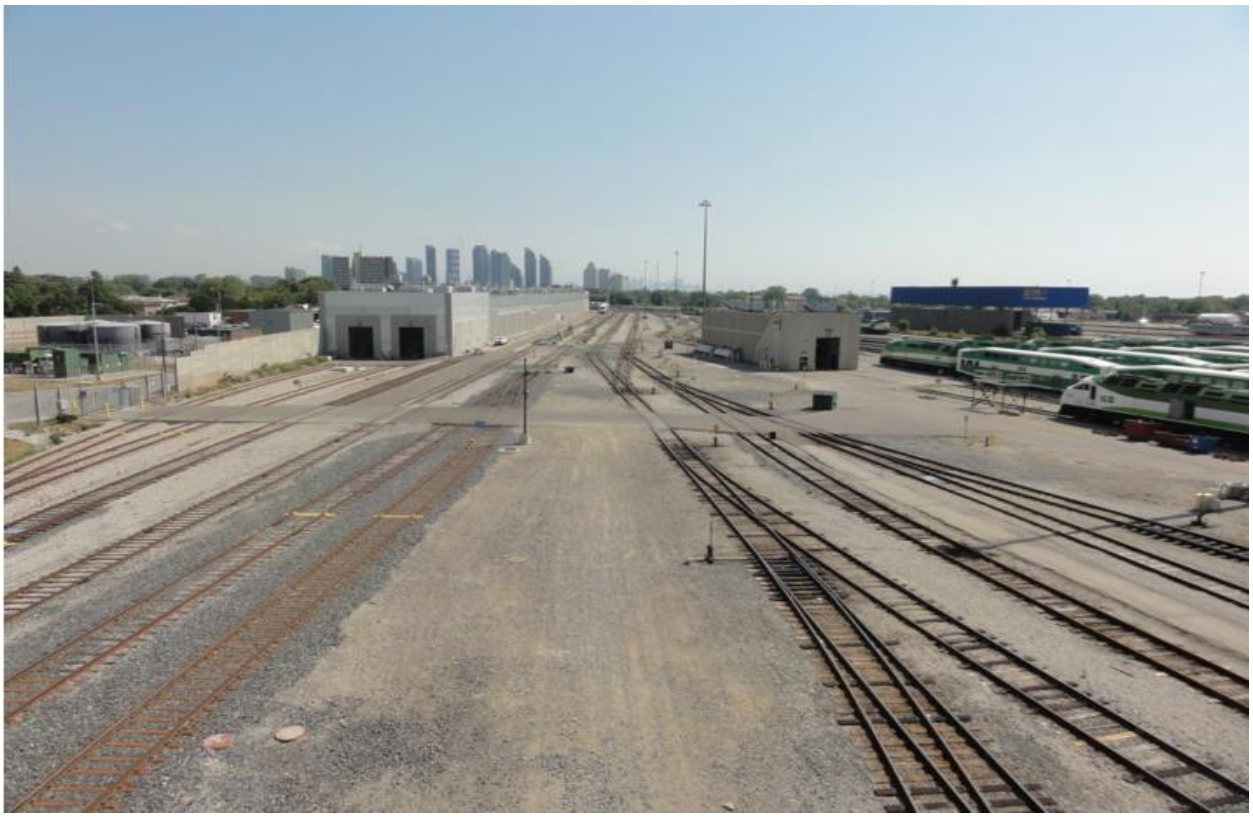
CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Islington Avenue Bridge	9/06	January 11th, 2017	Metrolinx Heritage Property
Willowbrook Maintenance Facility	Not Heritage	September 23rd, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, the Willowbrook Maintenance Facility is neither Provincial Heritage Property nor Provincial Heritage Property of Provincial Significance. The Islington Avenue Bridge met criterion under Ontario Regulations 9/06 and therefore is considered a Provincial Heritage Property.

See **Appendix M** for a copy of the CHERs as well as the Statement of Cultural Heritage Value for the Islington Avenue Bridge.

Figure 3-12: Islington Avenue Bridge – East Elevation

Figure 3-13: Willowbrook Maintenance Facility – Central portion looking northeast



3.3.8 Corridor & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Two potential cultural heritage resource is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-18** summarizes this resource and provides recommendations for it (see **Appendix C1** for the screening reports).

Table 3-18: Cultural Heritage Resources for LSW-3

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[13]	Metrolinx Heritage Recognition[14]
N/A	30 Queen St. E., Mississauga	Port Credit GO Station	None	Non-Heritage Property	A CHER is not required
3-1	Etobicoke Creek	Etobicoke Creek Bridge	None	Potential Provincial Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision pending)[15]

As noted above, a CHER was recommended and subsequently conducted for the Etobicoke Creek Bridge. A summary of the CHER undertaken and preliminary Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 or 10/06 is provided in **Table 3-19** below. See **Figure 3-14** for a visual representation of this CHR.

Table 3-19: Summary of LSW-3 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Etobicoke Creek Bridge	9/06	TBD	TBD

Based on the preliminary recommendations noted above, Etobicoke Creek Bridge meets at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, it does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Etobicoke Creek Bridge does not hold Provincial significance and is not considered a Provincial Heritage Property of Provincial Significance. A copy of the draft CHER which is still pending MHC review is provided in **Appendix M**.

[13] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[14] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

[15] The Metrolinx Heritage Committee Decision Form for the Etobicoke Creek Bridge CHER/CHERR was pending at the time of the EPR submission and will be provided to MTCS, as required, once available.

Figure 3-14: Etobicoke Creek Bridge - North Elevation

3.3.9 Corridor & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Two potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-20** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-20: Cultural Heritage Resources for LSW-4

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[16]	Metrolinx Heritage Recognition[17]
LSW-4-1	Credit River, Mississauga	Credit River Bridge	Recognized in the City of Mississauga CHL Inventory	Potential Provincial Heritage Property; CHER recommended	Provincial Heritage Property of Provincial Significance (MHC Decision, October 13, 2016)
LSW-4-2	40 Stavebank Road, Mississauga	Port Credit Memorial Arena	Designated under Part IV of the OHA (By-law 261-2011)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

As noted above, a CHER was recommended and subsequently conducted for the Credit River Bridge. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 3-21** below. See **Figure 3-15** for a visual representation of this CHR.

Table 3-21: Summary of LSW-4 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Credit River Bridge	9/06 and 10/06	October 13th, 2016	Metrolinx Heritage Property of Provincial Significance

Based on the recommendations noted above, the Credit River Bridge met criterion under Ontario Regulations 9/06 and 10/06 and therefore is considered a Provincial Heritage Property and Provincial Heritage Property of Provincial Significance.

[16] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[17] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Figure 3-15: Credit River Bridge – South Elevation

3.3.10 Corridor & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Six potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-22** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-22: Cultural Heritage Resources for LSW-5

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[18]	Metrolinx Heritage Recognition[19]
N/A	Maple Grove Dr., Oakville	Oakville TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	1110 Southdown Rd., Mississauga	Clarkson GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Ford Drive, Oakville	Ford Drive Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Royal Windsor Drive, Oakville	Royal Windsor Drive Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Joshua Creek, Oakville	Joshua Creek Bridge	None	Potential Provincial Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, October 13, 2016)
LSW-5-1	420 South Service Road	The General Electric Company property	Designated under Part IV of the OHA (By-law 2011-96)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

As noted above, a CHER was recommended and subsequently conducted for the Joshua Creek Bridge. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 or 10/06 is provided in **Table 3-23** below. See **Figure 3-16** for a visual representation of this CHR.

Table 3-23: Summary of LSW-5 CHERs Undertaken and Statement of Cultural Heritage Value

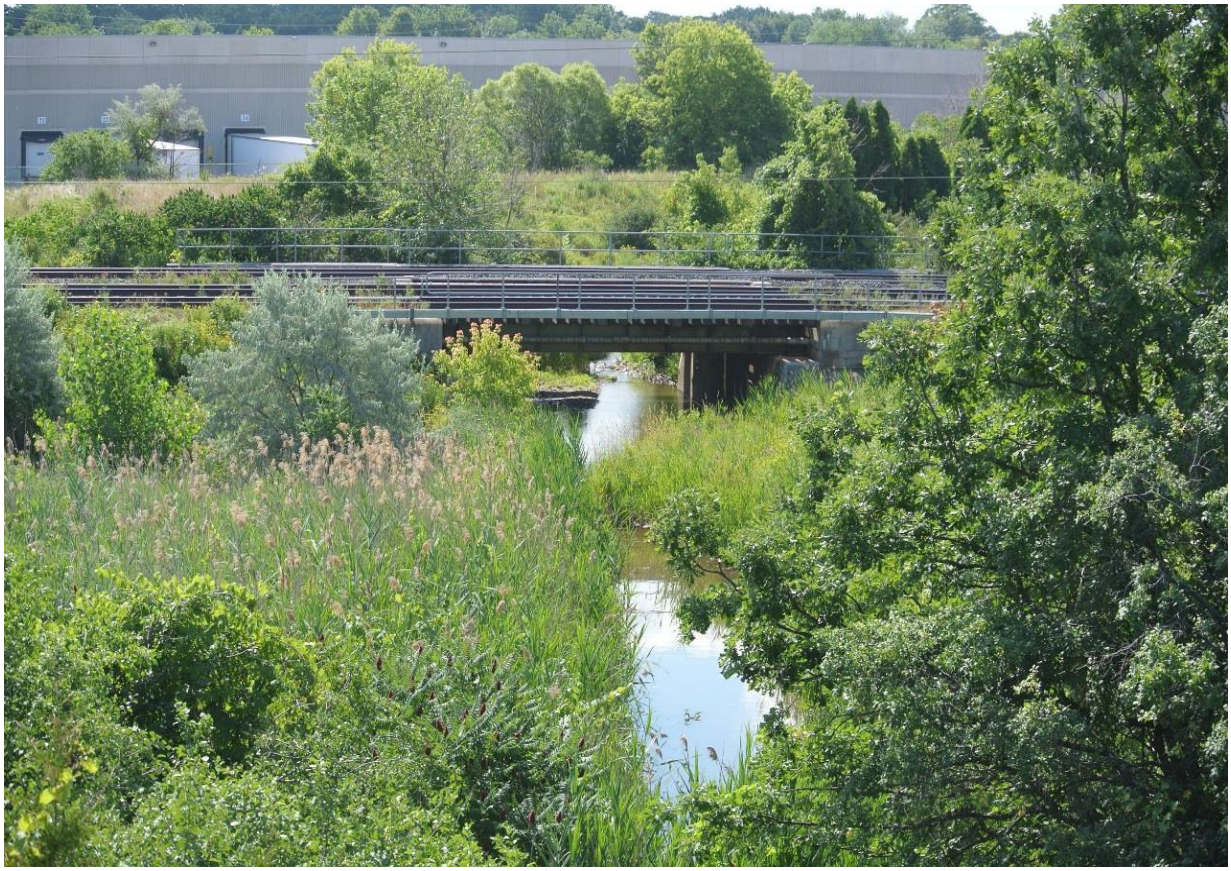
CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Joshua Creek Bridge	Not Heritage	October 13th, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, the Joshua Creek Bridge is neither Provincial Heritage Property nor Provincial Heritage Property of Provincial Significance under Ontario Regulations 9/06 and 10/06. A copy of the CHER is provided in **Appendix M**.

[18] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[19] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Figure 3-16: Joshua Creek Bridge – North Elevation



3.3.11 Corridor & Bridges: Section LSW-6 – Oakville Station to Bronte Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Two potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-24** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-24: Cultural Heritage Resources for LSW-6

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[20]	Metrolinx Heritage Recognition[21]
N/A	214 Cross Ave., Oakville	Oakville GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSW-6-1	Sixteen Mile Creek and Cross Avenue, Oakville	Sixteen Mile Creek and Cross Avenue Bridges	Listed on the Oakville Heritage Register	Potential Provincial Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, October 13, 2016)

As noted above, a CHER was recommended and subsequently conducted for the Sixteen Mile Creek Bridge. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 3-25** below. See **Figure 3-17** for a visual representation of this CHR.

Table 3-25: Summary of LSW-6 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Sixteen Mile Creek Bridge	9/06	October 13th, 2016	Metrolinx Heritage Property

Based on the recommendations noted above, Sixteen Mile Creek Bridge meets at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, it does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Sixteen Mile Creek Bridge does not hold Provincial significance and is not considered a Provincial Heritage Property of Provincial Significance. A copy of the CHER and Statement of Cultural Heritage Value is provided in **Appendix M**.

[20] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[21] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Figure 3-17: Sixteen Mile Creek Bridge – South Elevation

3.3.12 Corridor & Bridges: Section LSW-7 – Bronte Station to Appleby Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-26** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-26: Cultural Heritage Resources for LSW-7

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[22]	Metrolinx Heritage Recognition[23]
N/A	2104 Wyecroft Rd., Oakville	Bronte GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	5111 Fairview St., Burlington	Appleby GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSW-7-1	Bronte Creek, Oakville	Bronte Creek Bridge	None	Potential Provincial Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, October 13, 2016)

As noted above, a CHER was recommended and subsequently conducted for the Bronte Creek Bridge. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 3-27** below. See **Figure 3-18** for a visual representation of this CHR.

Table 3-27: Summary of LSW-7 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Bronte Creek Bridge	9/06	October 13th, 2016	Metrolinx Heritage Property

Based on the recommendations noted above, Bronte Creek meets at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, it does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Bronte Creek Bridge does not hold Provincial significance and is not considered a Provincial Heritage Property of Provincial Significance. A copy of the CHER and Statement of Cultural Heritage Value is provided in **Appendix M**.

[22] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[23] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Figure 3-18: Bronte Creek Bridge – North Elevation

3.3.13 Corridor & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 3-28** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 3-28: Cultural Heritage Resources for LSW-8

CHR	Location	Property Name	Previous Heritage Recognition[24]	Screening Outcome	Metrolinx Heritage Recognition
N/A	Cumberland Ave., Burlington	Burlington TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Guelph Line, Burlington	Guelph Line Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Drury Lane, Burlington	Drury Lane Pedestrian Bridge	None	Conditional Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, August 15, 2016)

As noted above, a CHER was recommended and subsequently conducted for the Drury Lane Pedestrian Bridge. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 3-29** below. See **Figure 3-19** for a visual representation of this CHR.

Table 3-29: Summary of LSW-8 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Drury Lane Pedestrian Bridge	Not Heritage	August 15th, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, Drury Lane Pedestrian Bridge does not meet the criteria contained within Ontario Regulations 9/06 or 10/06, and as such it is neither a Provincial Heritage Property nor a Provincial Heritage Property of Provincial Significance. A copy of the CHER is provided in **Appendix M**.

[24] Details pertaining to MHC Decision Forms, summaries of CHER results, etc. have not been captured in Volume 2; as the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, these updated results/details are appropriately captured in Volume 3. For details pertaining to MHC Decision Forms/Dates as well as more detailed descriptions of CHER results, please refer to Volume 3, Appendix C2 and Appendix M accordingly.

Figure 3-19: Drury Lane Pedestrian Bridge – West Elevation, looking South

3.4 Archaeology

A review of the historic land use of the Lakeshore West Corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. It is situated within the traditional territories occupied by the ancestral Huron-Wendat and Iroquoian populations who are generally accepted to be ancestral to the Neutral Nations. The north shore of Lake of Ontario was abandoned by ancestral Huron-Wendat populations near the turn of the sixteenth century while Neutral Nation populations occupied the region of the head of Lake Ontario until the early-mid seventeenth century. The corridor was subsequently occupied by the Seneca First Nation until the late seventeenth century; and, subsequently occupied by the Mississauga First Nation until 1795 (Sections LSW-7 and LSW-8); 1805 (LSW-1, LSW-2 and LSW-3); and, 1806 (LSW-3, LSW-4, LSW-5, LSW-6 and LSW-7) (Aboriginal Affairs and Northern Development Canada [AANDC] 2013b; 2013c; 2013d; Benn 2008; Birch 2015; Ellis 2013; Williamson 2013). The background research also acknowledges that, since the turn of the eighteenth century, the Métis have lived throughout the Province of Ontario but are often muted in the historical record (MNC n.d.; Stone and Chaput 1978: 607,608). Since 1784, the corridor has been occupied by Euro-Canadian peoples and is situated within the former Township of East Flamborough, County of Wentworth; since 1795 within the former Township of Nelson, County of Halton; since 1805 within the former Townships of Etobicoke and York, County of York; and, since 1806 within the former Township of Trafalgar, County of Halton and the former Township of Toronto, County of Peel (Benn 2008; Boulton 1805; Pope 1877a; 1877b).

A review of 19th century mapping indicates that the corridor includes both historic features and transportation routes (Miles & Co. 1878; Page & Smith 1875; Pope 1877a; 1877b; Tremaine 1858; 1859; 1860) (Figure 5-1 to 5-6).

Please refer to Section 1.5.4 for a description of the methodology followed for collection of archaeological baseline conditions data. Baseline conditions within each segment of the Lakeshore West Corridor have been summarized below. Additional details can be found in the Archaeological Baseline Conditions Report contained in **Appendix D1**.

3.4.1 Burlington Tap Location and TPS

See **Figure 1-1** in Section 1.3 for the location of the proposed Burlington Tap Location and TPS site. Criteria indicate that the Burlington TPS site meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Great Western Railway)
- Well-drained sandy soils (Font sand)

These criteria are indicative of lands in the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the Burlington Tap location and TPS.

3.4.2 Mimico Tap Location and TPS

See **Figure 1-2** in Section 1.3 for the location of the proposed Mimico Tap Location and TPS site. The Mimico Tap Location and TPS meets the following criteria indicative of archaeological potential:

- Historic transportation routes (Credit Valley Railway)
- Proximity to historic features (farmsteads)
- Proximity to water source (Unnamed historic tributary)

These criteria are indicative of lands in the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological resources, depending on the soil conditions and the degree to which soils have been subject to disturbance. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

3.4.3 Mimico SWS

See **Figure 1-3** in Section 1.3 for the location of the proposed Mimico SWS site. The Mimico SWS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Great Western Railway)

- Proximity to historic features (farmhouse)
- Proximity to water source (Unnamed historic tributary)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the Mimico SWS.

3.4.4 Canpa 25kV Feeder Route (Canpa Rail ROW)

The site has been severely disturbed by past grading and its current use as a truck and storage yard. Therefore, archaeological potential has been removed.

3.4.5 Oakville SWS

See **Figure 1-4** in Section 1-3 for the location of the proposed Oakville SWS site.
The Oakville SWS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Great Western Railway; Maple Grove Drive)
- Proximity to historic features (farmhouse)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

According to the Environmental Study Report (URS 2006) for the GO Transit Lakeshore West Corridor Rail Expansion Class EA, between Port Credit Station and Kerr Street, City of Mississauga and Town of Oakville, a Stage 1 archaeological assessment was completed for the EA within the LSW-5 section. This Stage 1 archaeological assessment recommended that no further work was required due to previous disturbance. No other known previous archaeological assessments have been completed within the Oakville SWS.

3.4.6 Corridor & Bridges: Section LSW-1 – West of Bathurst Street (Mile 1.20) to Mimico Station

Section LSW-1 meets the following criteria which are indicative of Aboriginal and Euro-Canadian archaeological sites:

- Proximity to Euro-Canadian settlement (Mimico, Parkdale)
- Proximity to historic transportation route (Great Western Railway; roads; Humber River)
- Proximity to historic features (farmhouses, church)
- Proximity to water source (Humber River and Lake Ontario)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section also encroaches on the Christ Church Mimico Memorial Gardens, a cemetery with burials dating to the early nineteenth century (see Figure 5-2 in **Appendix D1**). Full details of mitigating impacts to the cemetery are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least three previous archaeological assessments (ASI 2009c; 2009e; 2014a) (see Figures 7-1 and 7-2 in **Appendix D1**). Approximately 1.9 ha has been previously assessed. No other known previous archaeological assessments have been completed within the LSW-1 section.

A property inspection and recommendation of archaeological potential will be required, including a cemetery investigation and avoidance/protection strategy as well as confirmation and mitigation strategy for the known archaeological sites in this corridor.

3.4.7 Corridor & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

Section LSW-2 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Mimico)
- Proximity to historic transportation route (Great Western Railway)
- Proximity to historic features (farmhouse)
- Proximity to water source (Etobicoke Creek)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the LSW-2 section.

3.4.8 Corridor & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

Section LSW-3 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Port Credit)
- Proximity to historic transportation route (Great Western Railway; Hurontario Street)
- Proximity to historic features (farmsteads)
- Well-drained sandy soil (Fox sandy loam)
- Proximity to water source (Etobicoke Creek)
- Associated First Nation occupation (Port Credit Mississauga settlement)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least two previous archaeological assessments (ASI 2004a; 2014f) (see Figures 7-2 and 7-3 in **Appendix D1**). Approximately 1 ha has been previously assessed. No other known previous archaeological assessments have been completed within the LSW-3 section.

3.4.9 Corridor & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

Section LSW-4 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Port Credit, Clarkson)
- Proximity to historic transportation route (Great Western Railway; Mississauga Road; Credit River)
- Proximity to historic features (farmsteads)
- Well-drained sandy soil (Fox sand)
- Proximity to previously registered archaeological sites (Klinker *AjGv-49*)
- Proximity to water source (Credit River)
- Associated First Nation occupation (Port Credit Mississauga settlement)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section includes submerged lands within the Credit River which may possess potential for marine archaeological sites. The Klinker site (AjGv-49) is located in this section. This site however, did not require further assessment as it does not possess any further cultural heritage value or interest (CHVI) (MTCS 2015) (see Figure 7-3 in **Appendix D1**).

This section has been subject to at least two previous archaeological assessments (ASI 1989; 2000b) (see Figure 7-3 in **Appendix D1**). Approximately 1.3 ha has been previously assessed. According to the Environmental Study Report (URS Canada Inc. [URS] 2006) for the GO Transit Lakeshore West Corridor Rail Expansion Class EA, between Port Credit Station and Kerr Street, City of Mississauga and Town of Oakville, a Stage 1 archaeological assessment was completed for the EA within the LSW-4 section. This Stage 1 archaeological assessment recommended that no further work was required due to previous disturbance. No other known previous archaeological assessments have been completed within the LSW-4 section.

3.4.10 Corridor & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

The study area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Oakville)

- Proximity to historic transportation route (Great Western Railway; Trafalgar Road)
- Proximity to historic features (farmsteads)
- Proximity to water source (Joshua's Creek; Sixteen Mile Creek)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).According to the Environmental Study Report (URS 2006) for the GO Transit Lakeshore West Corridor Rail Expansion Class EA, between Port Credit Station and Kerr Street, City of Mississauga and Town of Oakville, a Stage 1 archaeological assessment was completed for the EA within the LSW-5 section. This Stage 1 archaeological assessment recommended that no further work was required due to previous disturbance. No other known previous archaeological assessments have been completed within the LSW-5 section.

3.4.11 Corridor & Bridges: Section LSW-6 – Oakville Station to Bronte Station

Section LSW-6 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Oakville)
- Proximity to historic transportation route (Great Western Railway; Lyons Lane)
- Proximity to water source (Sixteen Mile Creek)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 2008) (see Figures 7-4 and 7-5 in **Appendix D1**). Approximately 6.1 ha have been previously assessed. No other known previous archaeological assessments have been completed within the LSW-6 section.

According to the Environmental Study Report (URS 2006) for the Go Transit Lakeshore West Corridor Rail Expansion Class EA, between Port Credit Station and Kerr Street, City of Mississauga and Town of Oakville, a Stage 1 archaeological assessment was completed for the EA within the LSW-6 section. This Stage 1 archaeological assessment recommended that no further work was required due to previous disturbance. No other known previous archaeological assessments have been completed within the LSW-6 section.

3.4.12 Corridor & Bridges: Section LSW-7 – Bronte Station to Appleby Station

Section LSW-7 meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Great Western Railway; Bronte Road)
- Proximity to historic features (farmsteads)
- Proximity to water source (Bronte Creek)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 2008) (see Figure 7-5 in **Appendix D1**). Approximately 1 ha has been previously assessed. No other known previous archaeological assessments have been completed within the LSW-7 section.

3.4.13 Corridor & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

The study area meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Great Western Railway)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (George Richardson *AiGw-87*)
- Proximity to water source (unnamed tributaries)
- Well-drained sandy soils (Fox sandy loam)

These criteria are indicative of the study area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the LSW-8 section.

Based on the available background documents, all sections and TPFs within the Lakeshore West Rail Corridor, as well as the Mimico Tap Location, included areas which had not been previously subject to archaeological assessment. Therefore, parts of the Lakeshore West Rail Corridor required further archaeological assessment. For further details on the specific areas that were furthered assessed, please refer to Figures 7-1 and 7-6 of the Archaeological Baseline Conditions Report (**Appendix D1**).

3.5 Land Use & Socio-Economic

Please refer to Section 1.5.5 for a description of the methodology followed for collection of land use and socio-economic baseline conditions data. Baseline conditions within each segment of the Lakeshore West Corridor have been summarized below. Additional details can be found in the Land Use & Socio-Economic Baseline Conditions Report contained in **Appendix E1**.

From Union Station, the Lakeshore West Corridor is primarily urban, passing through the south west end of Toronto, then through the City of Mississauga, Town of Oakville and City of Burlington. The route includes two Regional municipalities (Peel Region and Halton Region).

There are 109 sensitive receptor facilities (schools, child care centres, long term care centres and hospitals) in the vicinity (i.e., within approximately 500 m) of the Lakeshore West Corridor. Of these, three

are less than 40 m from the rail corridor, nine are between 40 and 100 m from the rail corridor, and the remaining 97 are between 100 and 500 m from the rail corridor (see Table 4-4 and Figures B-3 to B-36 in **Appendix E1**).

3.5.1 Burlington Tap Location and TPS

3.5.1.1 Existing Land Use

At the proposed Burlington Tap location and TPS site (see **Figure 1-1**) land use is currently designated as employment/industrial; the facility will be located next to Hydro One's existing Cumberland Transmission Station (TS). The property is zoned *Utility Services*, which permits transportation, communication and utility uses; the TPS and Tap are thus not in conflict with current zoning designations and adjacent land uses. The site is surrounded by office/warehouses and parking lots to the southwest, northwest, and northeast, open space to the north, and the rail corridor to the southeast. Official Plan Land use designations along at this TPS site are shown in Figures LSW-33 in **Appendix E1**.

There are no trails, large parks or other recreational amenities in the vicinity of the proposed Burlington TPS site. The closest sensitive receptor facility to the Burlington Tap Location TPS site is First Steps Learning & Child Care Centre which is located approximately 460 m away on Harrington Court.

Figure 3-20: Existing Land Use at the Proposed Burlington TPS Site (Parking Lot)

Figure 3-21: Existing Land Use at the Proposed Burlington TPS Site (Driveway to Burlington Tap Site)

3.5.1.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the Burlington Tap location and TPS. A permit has been issued to expand the existing Hydro One Cumberland Transformer Station at the proposed Burlington Tap Location and TPS site. Additionally, a site plan has been approved for the empty lot to the north of the TPS site, which is now in building permit stage.

One road widening project is proposed by Halton Region within this area:

- Appleby Line from Fairview Street to Taywood Drive, proposed to begin in 2024.

This road widening project will be planned in more detail following the completion of detailed design for the electrification project.

There are no planned and approved recreational amenities in the vicinity of this section of the proposed Burlington Tap location and TPS site. The site is zoned for *Utility Services* under the City of Burlington Zoning By-law 2020.

3.5.2 Mimico Tap Location and TPS

3.5.2.1 Existing Land Use

The Mimico TPS Tap Point (**Figure 1-2**) is located approximately 3 km north of the Lakeshore West Corridor, in the City of Toronto on lands adjacent to the Milton Corridor. The site is also approximately 110 m west of the Manby TS. The site primarily consists of vacant lot / open space, with a building and associated parking lots/storage areas. It is in an area generally characterized by rail infrastructure and commercial/industrial buildings, with no recreational amenities nearby.

There are no trails, large parks or other recreational amenities in the vicinity of the proposed Mimico TPS Tap location, nor are there any sensitive receptor facilities in the vicinity of the site.

Official Plan Land use designations at this Tap TPS site are shown in Figures LSW-9 in **Appendix E1**.

3.5.2.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the proposed Mimico TPS Tap site, nor are there any development applications at the site. No planned and approved recreational amenities near the proposed Mimico TPS Tap site.

The Mimico TPS Tap Point is zoned *Employment Industrial (E)* and Utility and Transportation (UT) under the City of Toronto Zoning By-law 569-2013, which permits a public utility at the site with conditions. These state that the public utility:

- Cannot be a sewage treatment plant.
- Must be enclosed by walls and comply with the permitted maximum lot coverage, required minimum building setbacks and permitted maximum height for a building.

3.5.3 Mimico SWS

3.5.3.1 Existing Land Use

The Mimico SWS site (**Figure 1-3**) is designated as *Employment Area* is currently located in the City of Toronto in an industrial storage area surrounded by the rail corridor and similar industrial storage areas and commercial use with the exception of a low-rise residential development directly south of the rail corridor. Official Plan Land use designations at this SWS site are shown in Figures LSW-6 in **Appendix E1**.

Figure 3-22: Existing Land Use at the Proposed Mimico SWS Site (Northeast of Site, Facing Southwest)

Figure 3-23: Existing Land Use at the Proposed Mimico SWS Site (East of Site, Facing West)

Figure 3-24: Existing Land Use at the Proposed Mimico SWS Site (Industrial/Commercial Land Uses Surrounding the Site)

There are no trails or large parks in the vicinity of the proposed Mimico SWS site, and the site is approximately 300 m from a school (Lakeshore Collegiate Institute).

3.5.3.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the proposed Mimico SWS site, and no development applications at the site. A condominium development has been approved at 120 Twenty Fourth Street, on the south side of the GO Transit corridor and directly south of the proposed Mimico SWS site.

No planned and approved recreational amenities cross or are directly adjacent to the proposed Mimico SWS site, and the site is zoned under the Former General Etobicoke Zoning Code V131.

3.5.4 Canpa 25kV Feeder Route

3.5.4.1 Existing Land Use

A 25 kV Feeder Route will run along the existing Canpa Rail corridor, connecting the Mimico Tap/TPS to the Mimico SWS. The Feeder Route is a proposed to be an above ground connection route within the existing railway corridor. The Feeder Route is zoned for *Utility Transportation* which permits both Public Utilities and Transportation Uses. The rail ROW is surrounded almost entirely by commercial and industrial areas, the exception being a park just north of Horner Avenue.

Official Plan Land use designations for the 25kV Feeder Route are shown in Figures LSW-6 to LSW-9 in Appendix E1.

3.5.4.2 Planned Land Use

The lands for the 25kV Feeder Route are not subject to any planned land uses. There are no development applications for or adjacent to the Feeder Route, and no planned and approved recreational amenities in the vicinity of the route.

3.5.5 Oakville SWS

3.5.5.1 Existing Land Use

Land use at the proposed Oakville SWS site (**Figure 1-4**) is designated as *Business Employment*, and is currently a storage/parking area. It is bordered on the northwest by the rail corridor, northeast by Maple Grove Road, southeast by a shopping plaza, and on the southwest by office buildings. Official Plan Land use designations at this SWS site are shown in Figures LSW-21 in **Appendix E1**.

Figure 3-25: Existing Land Use at the Proposed Oakville SWS Site (North of Site, Facing Southwest)

Figure 3-26: Existing Land Use at the Proposed Oakville SWS Site (Northeast of Site, Facing Southwest)

There are no large recreational amenities in the vicinity of the proposed Oakville SWS site. The closest sensitive receptor facility to the site is Chisholm Academy which is located approximately 160 m away on the south side of Cornwall Road.

3.5.5.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the proposed Oakville SWS site, and no development applications or planned and approved recreational amenities at the site. The site is zoned *Business Employment, Special Zone 186* under the Town of Oakville Zoning By-law 2014-014.

3.5.6 Corridor & Bridges: Section LSW-1 – West of Bathurst Street (Mile 1.20) to Mimico Station

3.5.6.1 Existing Land Use

West of Strachan Avenue, land use is designated as Employment Area to the north with the Gardiner Expressway to the south. West of Dufferin Street, the rail corridor follows the Gardiner Expressway, and

is bordered to the north by primarily low-rise Residential neighbourhoods to the east and west of High Park. However, this area is also interspersed by a few higher density apartment buildings. After passing by the *Natural Areas* of the Humber River and adjacent *Employment Areas*, the rail corridor splits from the Gardiner and passes through *Natural Areas* (Mimico Creek), *Parks*, *Mixed Use*, *Employment Areas*, and an equal balance of high density *Apartment* and low density *Residential* neighbourhoods to the Mimico GO Station. Two other noteworthy designations adjacent to the rail corridor are the substantial *Open Space* lands that make up High Park and the *Institutional* lands of St. Joseph's Health Centre. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-1 to LSW-5 in **Appendix E1**.

Parks and recreational features within the Toronto section of the rail corridor include a number of long, linear east-west parks. These are:

- Marilyn Bell Park, which extends from just west of Alberta Circle along Lakeshore Boulevard to Wilson Park Road;
- Beaty Boulevard Park;
- Budapest Park;
- Sunnyside Boardwalk and Sunnyside Park;
- Sir Casimir Gzowski Park; and,
- Humber Bay Shores Park.

Other large parks adjacent to the rail corridor are High Park and South Humber Park.

Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Humber River Recreational Trail, Humber Bay Park East Trail and Martin Goodman Trail.

There are no sensitive receptor facilities within 40 m of the rail corridor.

3.5.6.2 Planned Land Use

The Lakeshore West Corridor in Toronto runs adjacent to the Swansea Secondary Plan. Specific policies in the plan call for increased residential density and the preservation of employment lands.

In addition, it is noted that the City of Toronto and the Toronto Transit Commission completed an EA (July, 2011) for the Dufferin Bridge (crossing the Gardiner Expressway) which includes an extension of the existing Exhibition Place LRT route and replacing the Dufferin Street bridges over the Gardiner Expressway and GO rail corridor along the existing alignment. A multi-use path crossing the rail corridor at Humber Park has been approved and planned, which will form part of the Pan Am Path. Additionally, construction is set to begin in the spring of 2016 on the Fort York Pedestrian and Cycle Bridge, which would link Garrison Common to areas north of the rail corridor.

Under the City of Toronto Zoning By-law 569-2013, this section of the rail corridor is zoned for *Utility and Transportation*.

3.5.7 Corridor & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

3.5.7.1 Existing Land Use

This section of the rail corridor is bordered almost exclusively by *Employment Areas* on the north side, with *Employment Areas*, *Neighbourhoods*, *Parks*, *Mixed Use Areas*, and *Apartment Neighbourhoods* on the south side. Long Branch GO Station is adjacent to some of the *Natural Areas* associated with Etobicoke Creek. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-5 to LSW-10 in **Appendix E1**.

There are no trails or large parks in the vicinity of this section of the rail corridor, and no sensitive receptor facilities within 40 m of the rail corridor.

3.5.7.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor, and no planned and approved recreational amenities cross or are directly adjacent to this section of the rail corridor.

Under the City of Toronto Zoning By-law 569-2013 this portion of the rail corridor is zoned for *Utility and Transportation*.

3.5.8 Corridor & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

3.5.8.1 Existing Land Use

The rail corridor enters Mississauga west of the *Natural Areas* surrounding Etobicoke Creek. This section of the rail corridor begins with large *Private Open Space and Greenlands* at Etobicoke Creek, and is predominantly designated for *Low Density Residential* development. However, *Medium Density Residential* lands can be found at major intersections near the rail corridor and *High Density Residential* lands are found south of Port Credit GO Station. Dispersed along the rail corridor is a mix of *Business Employment* lands, *Public* and *Private Open Spaces*, *Utility*, and *Greenbelt* designations. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-10 to LSW-14 in **Appendix E1**.

Marie Curtis Park is the only large park bordering this section of the rail corridor. The Lakeview Golf Course is located to the north of the rail corridor, on either side of Dixie Road. Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Etobicoke Valley Trail, running along the Etobicoke Creek, west of the Long Branch GO Station.

Two sensitive receptor facilities (Caring for Kids and Mentor College Primary Campus) are within 40 m of the rail corridor.

3.5.8.2 Planned Land Use

This portion of the rail corridor runs through and adjacent to the Lakeview Community Node, which has an associated Lakeview Local Area Plan. The Plan includes most of the lands between Etobicoke Creek and Seneca Avenue. The general purpose of the Lakeview Local Area Plan aims to promote two separate residential and employment districts.

At the Port Credit GO Station, the rail corridor also passes the Port Credit Community Node, which includes lands to the south of rail corridor between Rosewood Avenue and Mississauga Road. The Node has an associated Port Credit Local Area Plan, which has a general objective of maintaining the area's distinct character while continuing to promote the area's mixture of residential and commercial uses.

There are no planned and approved recreational amenities in the vicinity of this section of the rail corridor, and it has no active zoning designation under the City of Mississauga Zoning By-law 0225-2007.

3.5.9 Corridor & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

3.5.9.1 Existing Land Use

This section of the rail corridor is predominantly designated for low-density *Residential* development to the north, and a mix of uses (*Residential* of varying densities*, Business Employment*, *Mixed Use*) to the south, with *Public* and *Private Open Spaces* on both sides and *Greenbelt* designations around the many waterways crossing the rail corridor. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-14 to LSW-18 in **Appendix E1**.

Two large parks (Memorial Park and Birchwood Park) are located adjacent to this section of the rail corridor. One sensitive receptor facility (Clarkson Angels Child Care and Educational Centre) is within 40 m of the rail corridor. Based on currently available information, trails within the City of Mississauga in the vicinity of this section of the rail corridor include a paved Multi-use trail crossing under this section of the rail corridor at Mississauga Road.

3.5.9.2 Planned Land Use

This portion of the rail corridor runs adjacent to part of the Port Credit Community Node, as described in Section 3.5.8.2. Just east of the Clarkson GO Station, the rail corridor passes the Clarkson Village Community Node, which is adjacent to the rail corridor between the rail spur and Southdown Road. The Node has an associated Clarkson Village Local Area Plan, which envisions a transition into a pedestrian friendly and transit supportive community, while enhancing the Village character as a distinct and established community.

There are no planned and approved recreational amenities in the vicinity of this section of the rail corridor, and the rail corridor has no zoning designation under the City of Mississauga Zoning By-law 0225-2007.

3.5.10 Corridor & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

3.5.10.1 Existing Land Use

West of the Clarkson GO Station, land use to the south of the rail corridor is entirely *Business Employment* to the municipal border, while land use to the north is *Residential High Density* followed by *Utility*.

In Oakville, the most significant uses for this section of the rail corridor revolves around a variety of different employment uses. *Industrial* and *Business Employment* make up the most abundant of these employment uses between the municipal border and Chartwell Road, but the area also contains *Business Commercial*, *Office Employment* and smaller sections of *Parkway Belt, Natural Area,* and *Private Open Space*. The area to the west of Chartwell Road surrounding the Oakville GO Station is designated as the Midtown Oakville Growth Area, and has a variety of different uses including *Office Employment*, *Urban Centre*, *Community Commercial*, *Natural Area,* and *Parks and Open Space.* Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-18 to LSW-23 in **Appendix E1**.

Two large parks border this section of the rail corridor: Clarkson Park, just east of Winston Churchill Boulevard in Mississauga; and Cornwall Road Park, at Watson Avenue in Oakville. There are no sensitive receptor facilities within 40 m of the rail corridor.

3.5.10.2 Planned Land Use

This portion of the rail corridor runs adjacent to the Southdown Local Area Plan in Mississauga, which includes lands to the south of the rail corridor between Southdown Road and Winston Churchill Boulevard. The general purpose of the Southdown Local Area Plan is to continue to promote employment uses in the area. There are no Secondary Plans affecting the lands adjacent to the rail corridor in Oakville.

A paved Multi-use trail is proposed along this section of the rail corridor, starting in the City of Mississauga following the hydro corridor that runs east-west to the north of the rail corridor. The trail is proposed to terminate at Ford Drive in the Town of Oakville. There are no planned and approved recreational amenities in the vicinity of this section of the rail corridor, and the rail corridor has no zoning designation under the City of Mississauga Zoning By-law 0225-2007. Under the Town of Oakville Zoning By-law 2014-014 the rail corridor is zoned *Utility*.

3.5.11 Corridor & Bridges: Section LSW-6 – Oakville Station to Bronte Station

3.5.11.1 Existing Land Use

West of the Oakville GO Station, the Midtown Oakville Growth Area continues and includes *Urban Core* and *High Density Residential* land uses. Past this is Sixteen Mile Creek, which is designated as a *Natural Area*. The Kerr Village Growth Area is located to the west of the creek on the south side of the rail corridor,

and includes *Main Street 2*, *Urban Centre*, and *Urban Core* designations. The rest of this section of the rail corridor is bordered by primarily *Industrial* uses, with some *Business Employment* and *Business Commercial*. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-23 to LSW-27 in **Appendix E1**.

Hogs Back Park, which includes substantial green space on either side of the Sixteen Mile Creek north of the tracks, is the only large recreational amenity in the vicinity of this section of the rail corridor. There are no sensitive receptor facilities within 40 m of the rail corridor.

3.5.11.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the rail corridor in Oakville. While the Kerr Village Growth Area is mainly built up along the rail corridor, there is some open space designated as *Main Street 2* that can be developed for commercial uses.

There are no planned and approved recreational amenities in the vicinity of this section of the rail corridor, and the rail corridor is zoned *Utility* under the Town of Oakville Zoning By-law 2014-014 the rail corridor is zoned for *Utility*.

3.5.12 Corridor & Bridges: Section LSW-7 – Bronte Station to Appleby Station

3.5.12.1 Existing Land Use

The lands to the west of the Bronte GO Station remain primarily *Industrial* to the municipal border, with *Parkway Belt* around Bronte Creek, and small portions of *Business Employment*, *Business Commercial*, and *Natural Area*. Large portions of this land is currently open space, with the potential to be developed for commercial or industrial uses.

Within Burlington, land use to the north is entirely *General Commercial*, while to the south is primarily *Major Parks and Open Space* followed by *Mixed Use Corridor (MUC) – Employment* around the Appleby GO Station. Undeveloped areas are located south of the rail corridor to the west of Burloak Drive, and on the north side of the tracks at the Appleby GO Station. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-27 to LSW-30 in **Appendix E1**.

Sherwood Forest Park, between Burloak Drive and the Appleby GO Station on the south side of the rail corridor, is the only large recreational amenity bordering this section of the rail corridor. There are no sensitive receptor facilities within 40 m of the rail corridor.

3.5.12.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the rail corridor in Oakville or Burlington, and no planned and approved recreational amenities in the vicinity of this section of the rail corridor. Both of the undeveloped areas along this section of the rail corridor are designated as *General Employment*.

Two road widening projects are proposed by Halton Region within this area:

- Burloak Drive from Harvester Road to Upper Middle Road, proposed to begin in 2029; and
- Bronte Road from Speers Road to Highway 407, proposed to begin in 2025.

Both of these projects will be planned in more detail following the completion of detailed design for the electrification project.

Under the Town of Oakville Zoning By-law 2014-014 the rail corridor is zoned for *Utility*. Under the City of Burlington Zoning By-law 2020 the rail corridor is zoned for *Utility Services*.

3.5.13 Corridor & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

3.5.13.1 Existing Land Use

West of the Appleby GO Station to Guelph Line, land uses to the north of the rail corridor are primarily *General Employment*, while areas south alternate between *MUC – Commercial*, *MUC – Employment*, and *Regional Commercial*. There are large sections of open space or undeveloped land along this section of the rail corridor, primarily to the north of the rail corridor.

West of Guelph Line to the Burlington GO Station, land use to the north of the rail corridor is *General Employment* and *Residential*, and south of the rail corridor *is MUC – Employment* and *MUC Commercial*. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSW-30 to LSW-34 in **Appendix E1**.

There are no trails, large parks or other recreational amenities in the vicinity of this section of the rail corridor. No sensitive receptor facilities are within 40 m of the rail corridor.

3.5.13.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the rail corridor in Burlington, and no planned and approved recreational amenities in the vicinity of this section of the rail corridor. The undeveloped lands between Appleby Line and Guelph Line are designated for commercial development: *MUC – Commercial*, *MUC – Employment*, and *Regional Commercial*.

One road widening project is proposed by Halton Region within this area:

- Appleby Line from Fairview Street to Taywood Drive, proposed to begin in 2024.

This road widening project will be planned in more detail following the completion of detailed design for the electrification project.

Under the City of Burlington Zoning By-law 2020 the rail corridor is zoned for *Utility Services*.

3.6 Air Quality

Portions of the Lakeshore West Corridor have been classified as Urban or Suburban land use categories. A brief summary of the findings for each category are provided below.

In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of $PM_{2.5}$ (respirable particulate matter), and PM_{10} (inhalable particulate matter) are slightly exceeded.

Pollutant concentrations in the suburban areas are somewhat lower than those in the urban areas. However, annual average benzene and benzo(a)pyrene concentrations still exceed their criteria. Criterion for 24-hour concentration of $PM_{2.5}$ is slightly exceeded. Data on PM_{10} were unavailable for the suburban land use category.

Table 3-30 through Table 3-31 show air quality statistics for each land use category (urban and suburban). See **Appendix F1** for station-by-station summaries of the air quality monitoring data.

Table 3-30 through Table 3-31 also show the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQCs except for $PM_{2.5}$ which has a CAAQS, as described in Section 1.5.6.

Table 3-30: Summary of Urban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
$PM_{2.5}$	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM_{10}	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 3-31: Summary of Suburban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	205	255	362	757	1-hr	229	2437	N/A	1509
Nitrogen Dioxide	400	200	-	-	18	27	47	80	1-hr	23	121	71	N/A
$PM_{2.5}$	-	27	8.8	-	5	8	14	28	1-hr	6.7	62	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.46	0.58	0.80	1.14	24-hr	0.57	N/A	1.77	N/A
1,3-Butadiene	-	10	2	-	0.03	0.05	0.07	0.12	24-hr	0.04	N/A	0.13	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	N/A	N/A	N/A	N/A	24-hr	0.00018	N/A	0.0036	N/A

Note: N/A – data not available

Table 3-32 summarizes the Lakeshore West rail corridor sections and the air quality categories for the corridor.

Table 3-32: Summary of LSW Corridor Air Quality Baseline Conditions

Corridor Section		Length (km)	Traction Power Facilities	Baseline Air Quality Category	Baseline Air Quality Table Reference
LSW-1	Strachan Ave to Mimico Station	8.2		Urban	3-24
LSW-2	Mimico Station to Long Branch Station	4.8	Mimico TPS Mimico Tap	Suburban	3-25
LSW-3	Long Branch Station to Port Credit Station	5.2		Suburban	3-24
LSW-4	Port Credit Station to Clarkson Station	6.0		Suburban	3-24
LSW-5	Clarkson Station to Oakville Station	7.4	Oakville SWS	Urban	3-23
LSW-6	Oakville Station to Bronte Station	5.3		Urban	3-23
LSW-7	Bronte Station to Appleby Station	5.5		Urban	3-23
LSW-8	Appleby Station to Burlington Station	5.5	Burlington TPS Burlington Tap	Urban	3-21

3.7 Noise & Vibration

Receptors for this assessment include the following noise sensitive land uses:

- Residences;
- Hotels, motels and campgrounds;
- Schools, universities, libraries and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and
- Churches and places of worship.

Receptors within the Study Area are mainly residential houses located adjacent to the Lakeshore West rail corridor. In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Modelling was completed for all these receptors; however, results are presented for selected representative receptors. **Table 3-33** presents the predicted baseline noise levels for the Lakeshore West Corridor. Maps depicting the Receptor IDs identified in **Table 3-33**and **Table 3-34** are shown below.

Table 3-33: Predicted Baseline Noise Levels for the Lakeshore West Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R01	Daytime	79.0
	Nighttime	71.9
R02	Daytime	80.7
	Nighttime	73.7
R03	Daytime	63.6
	Nighttime	62.5
R04	Daytime	60.2
	Nighttime	57.5
R05	Daytime	64.7
	Nighttime	62.3
R06	Daytime	56.9
	Nighttime	55.5
R07	Daytime	61.3
	Nighttime	60.8
R08	Daytime	60.1
	Nighttime	59.5
R09	Daytime	62.6
	Nighttime	60.6
R10	Daytime	62.1
	Nighttime	60.2
R11	Daytime	67.6
	Nighttime	64.0
R12	Daytime	59.3
	Nighttime	57.9
R13	Daytime	60.2
	Nighttime	58.5
R14	Daytime	55.0
	Nighttime	51.3
R15	Daytime	55.0
	Nighttime	54.1
R16	Daytime	55.0
	Nighttime	50.0
R17	Daytime	55.0

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	50.0
R18	Daytime	59.7
	Nighttime	57.1
R19	Daytime	58.2
	Nighttime	55.4
R20	Daytime	61.6
	Nighttime	59.6
R21	Daytime	58.3
	Nighttime	56.4
R22	Daytime	56.2
	Nighttime	54.3
R23	Daytime	62.5
	Nighttime	59.8
R24a	Daytime	55.0
	Nighttime	52.3
R24b	Daytime	70.1
	Nighttime	66.3
R24c	Daytime	58.5
	Nighttime	55.0
R24d	Daytime	71.1
	Nighttime	66.8
R25	Daytime	67.4
	Nighttime	63.5
R26	Daytime	67.4
	Nighttime	65.2
R27	Daytime	66.8
	Nighttime	64.6
R28	Daytime	65.2
	Nighttime	63.1
R29	Daytime	69.4
	Nighttime	66.5
R30	Daytime	55.0
	Nighttime	56.0
R31	Daytime	69.2
	Nighttime	66.6

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R32	Daytime	63.6
	Nighttime	61.0
R33	Daytime	60.2
	Nighttime	58.4
R34	Daytime	63.6
	Nighttime	61.7
R35	Daytime	65.2
	Nighttime	61.8
R36	Daytime	66.0
	Nighttime	62.7
R37	Daytime	62.8
	Nighttime	61.0
R38	Daytime	66.7
	Nighttime	64.6
R39	Daytime	59.6
	Nighttime	59.6
R40	Daytime	55.3
	Nighttime	57.9
R41	Daytime	60.0
	Nighttime	58.0
R42	Daytime	60.6
	Nighttime	59.3
R43	Daytime	58.8
	Nighttime	57.6
R44	Daytime	65.6
	Nighttime	63.4
R45	Daytime	66.5
	Nighttime	64.9
R46	Daytime	64.5
	Nighttime	62.9
R47	Daytime	55.0
	Nighttime	58.0
R48	Daytime	65.4
	Nighttime	64.2
R49	Daytime	60.2

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	58.8
R50	Daytime	66.1
	Nighttime	64.8
R51	Daytime	60.7
	Nighttime	59.5
R52	Daytime	55.0
	Nighttime	54.1
R53	Daytime	55.0
	Nighttime	50.0
R54	Daytime	55.0
	Nighttime	50.0
R55	Daytime	58.0
	Nighttime	56.4
R56	Daytime	59.7
	Nighttime	57.8
R57	Daytime	55.0
	Nighttime	53.9
R58	Daytime	62.5
	Nighttime	60.3
R59	Daytime	55.0
	Nighttime	51.7
R60	Daytime	55.0
	Nighttime	50.6
R61	Daytime	55.0
	Nighttime	51.4
R62	Daytime	55.0
	Nighttime	50.6
R63	Daytime	55.0
	Nighttime	50.0
R64	Daytime	55.0
	Nighttime	50.0
R65	Daytime	55.0
	Nighttime	54.1
R66	Daytime	55.0
	Nighttime	52.3

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R67	Daytime	55.0
	Nighttime	53.7
R68	Daytime	57.4
	Nighttime	54.9
R69	Daytime	55.8
	Nighttime	53.4
R70	Daytime	55.0
	Nighttime	52.4
R71	Daytime	55.0
	Nighttime	50.9
R72	Daytime	55.0
	Nighttime	52.6
R73	Daytime	55.0
	Nighttime	52.6
R74	Daytime	61.2
	Nighttime	58.1

a The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Table 3-34 presents the predicted baseline vibration levels for the Lakeshore West Corridor.

Table 3-34: Predicted Baseline Vibration Levels for the Lakeshore West Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
				Existing (m)	Existing (mm/s)
GO Train	R01	69	No	59	0.024
VIA Train		97			0.034
Freight Train		32			0.11

[1] See Figure 2a for receptor location in Appendix G.

Figure 3-27: LSW Corridor Receptor and Existing Barrier Locations 1

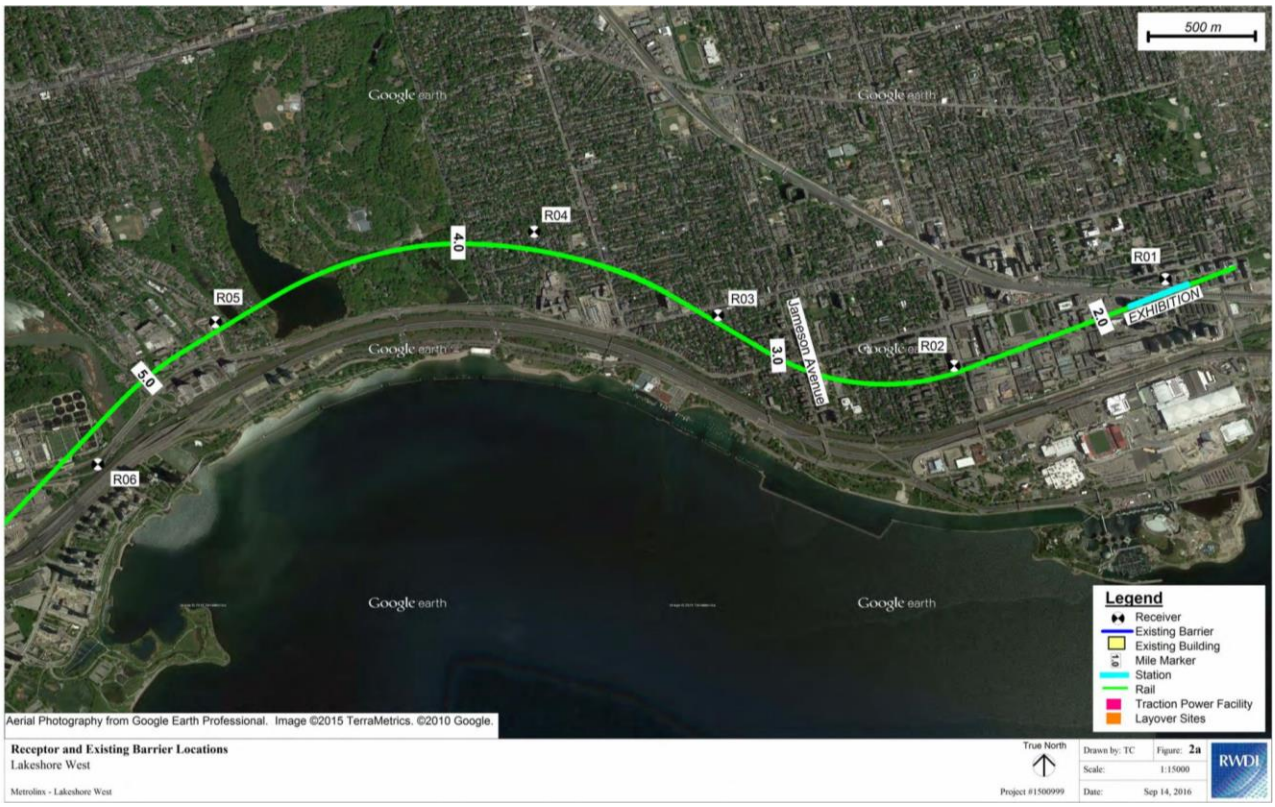


Figure 3-28: LSW Corridor Receptor and Existing Barrier Locations 2

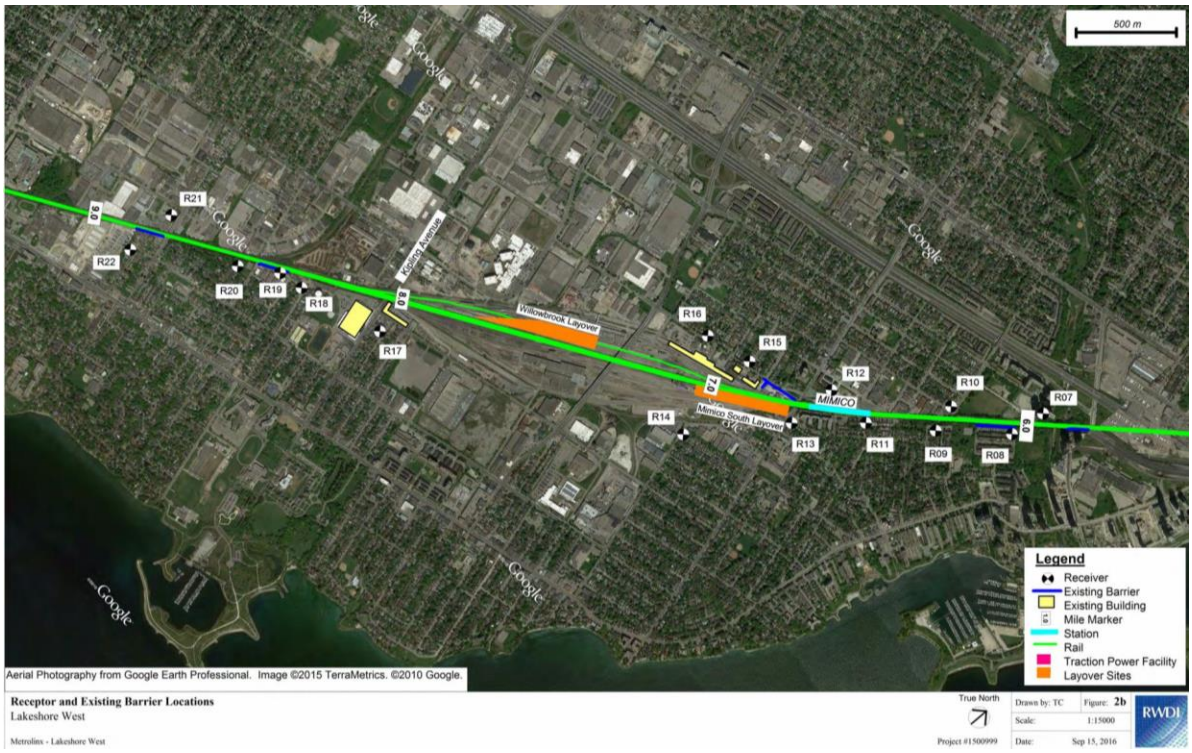


Figure 3-29: LSW Corridor Receptor and Existing Barrier Locations 3

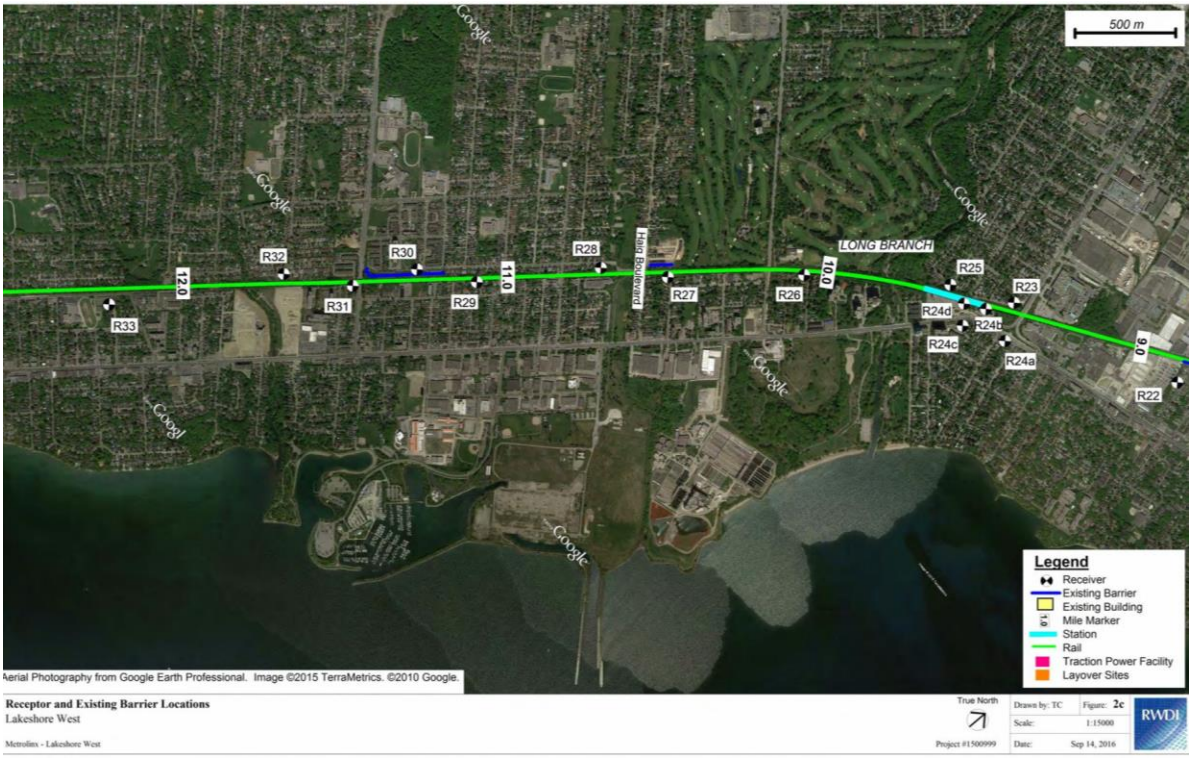


Figure 3-30: LSW Corridor Receptor and Existing Barrier Locations 4

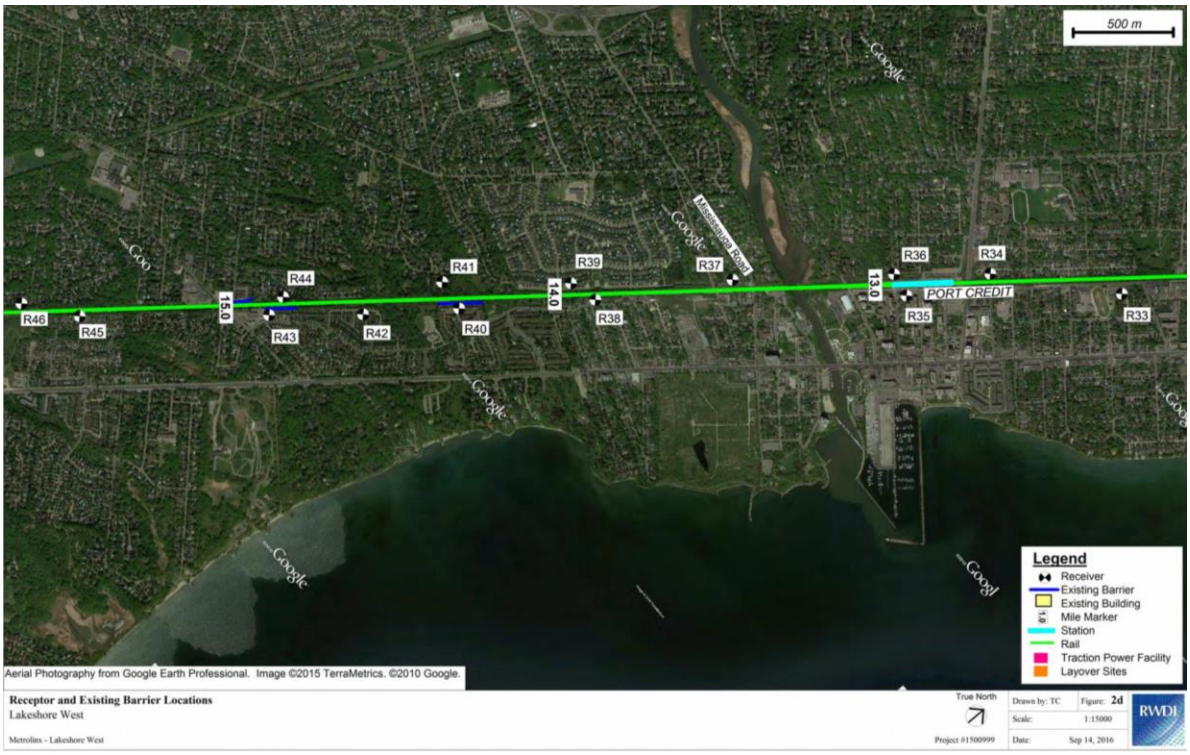


Figure 3-31: LSW Corridor Receptor and Existing Barrier Locations 5

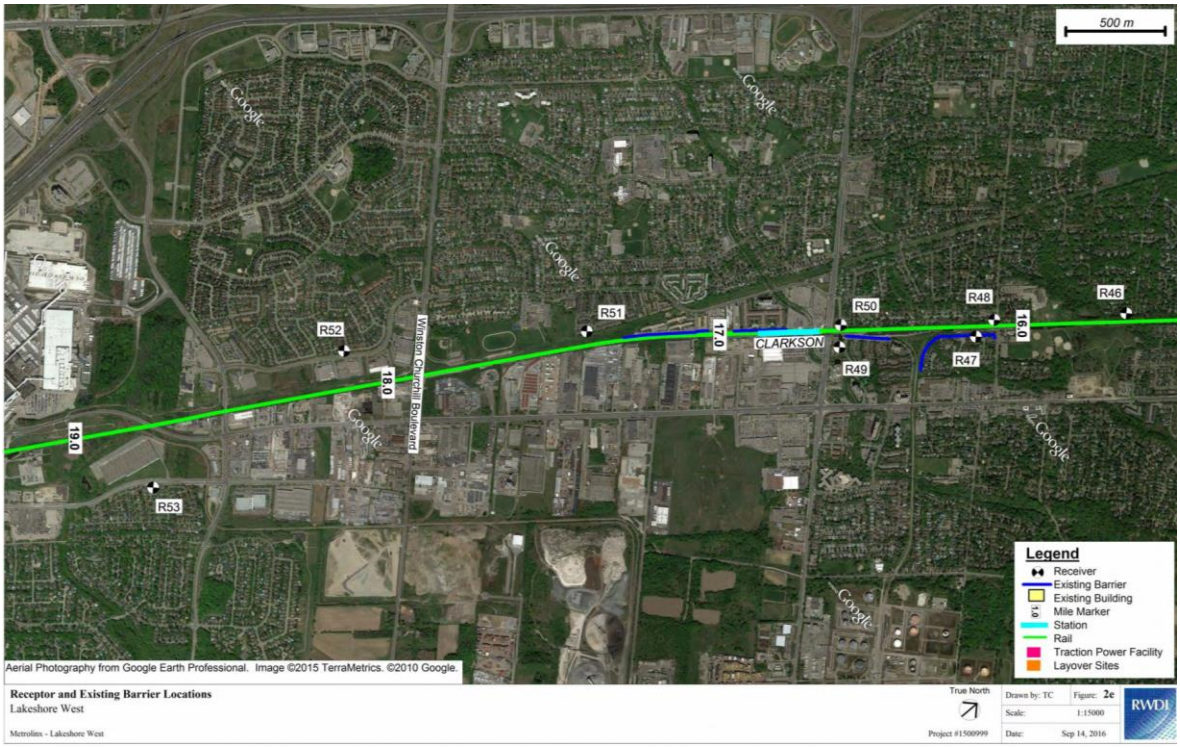


Figure 3-32: LSW Corridor Receptor and Existing Barrier Locations 6

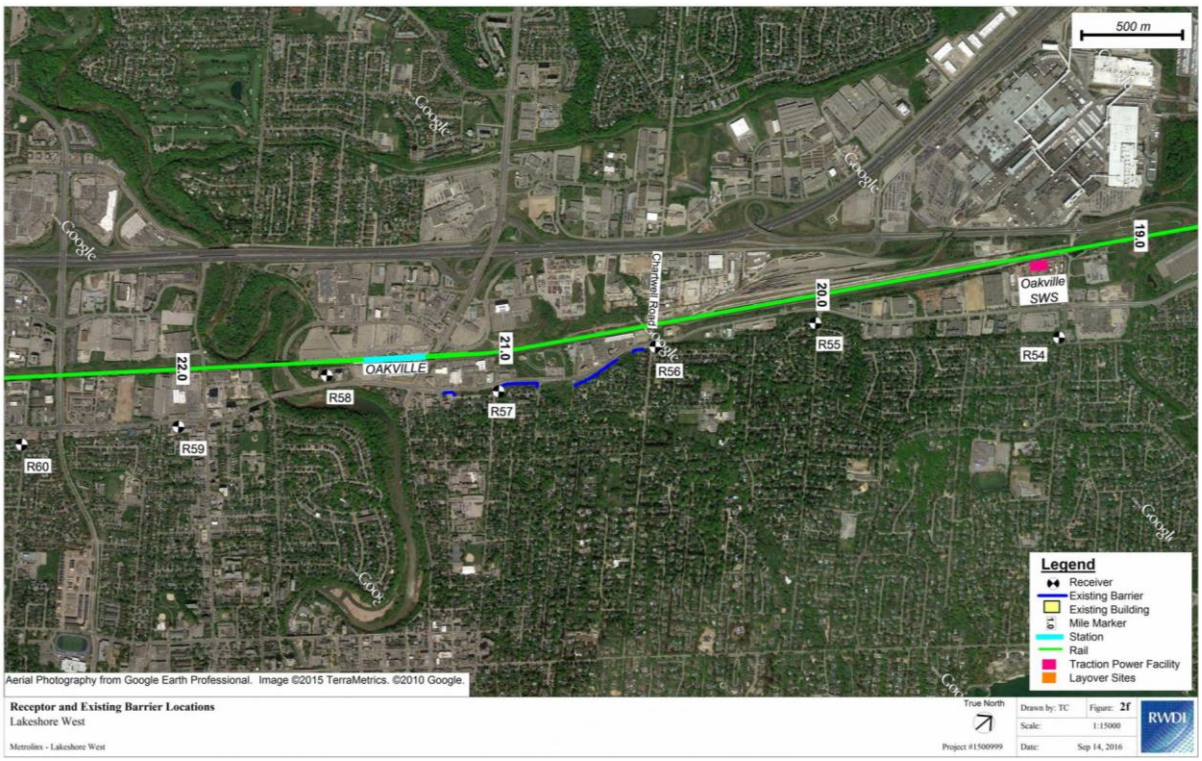


Figure 3-33: LSW Corridor Receptor and Existing Barrier Locations 7

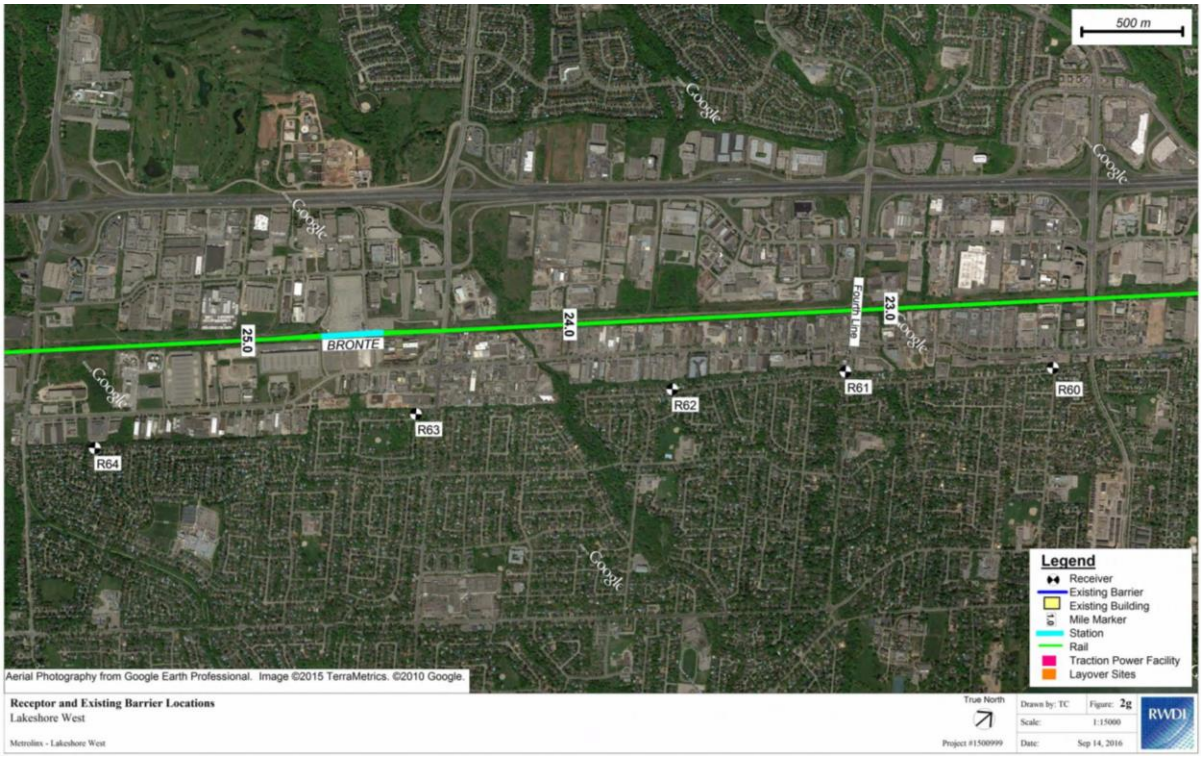


Figure 3-34: LSW Corridor Receptor and Existing Barrier Locations 8

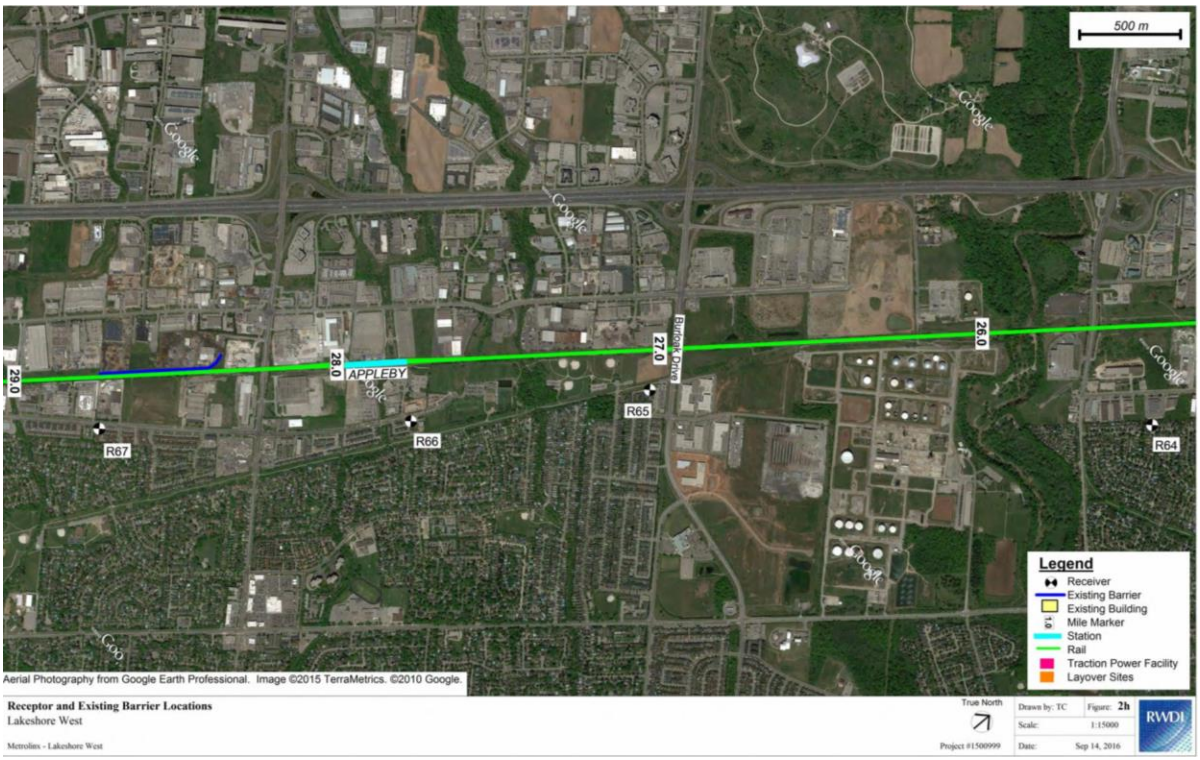
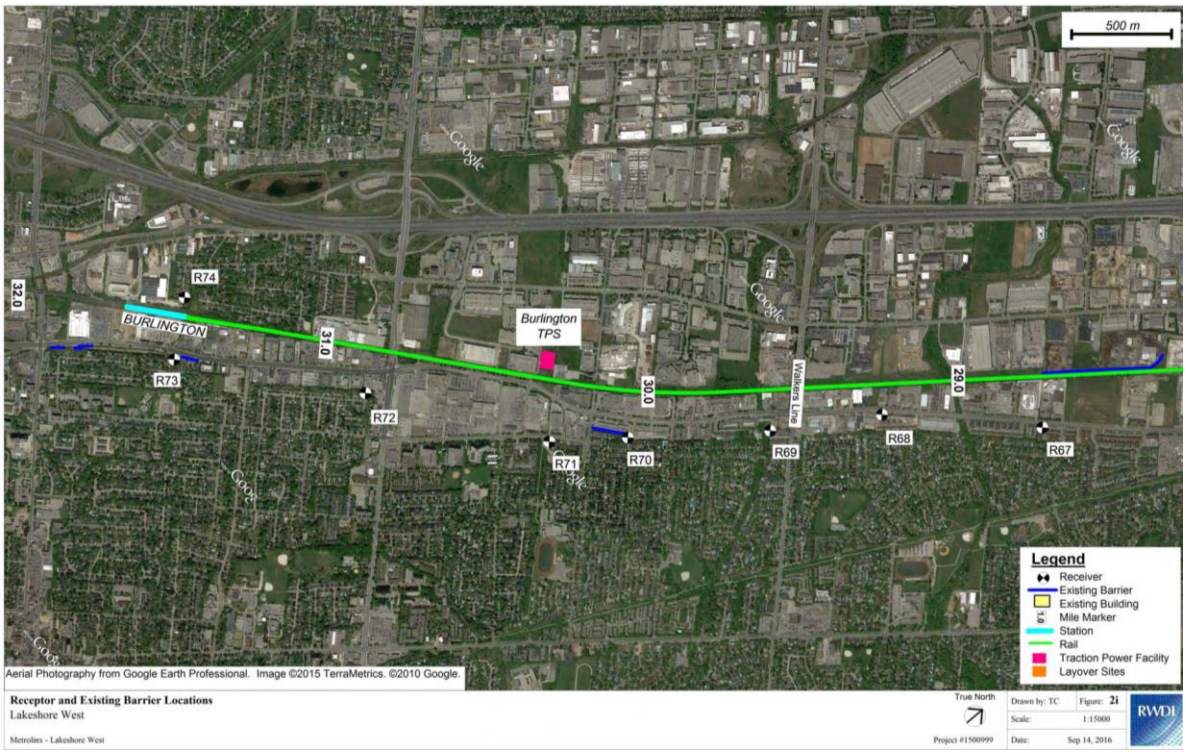


Figure 3-35: LSW Corridor Receptor and Existing Barrier Locations 9



3.8 Visual

Please refer to Section 1.5.8 for a description of the methodology followed for collection of visual baseline conditions data. Baseline conditions within each segment of the Lakeshore West Corridor have been summarized below. Additional details can be found in the Visual Assessment Baseline Conditions Report contained in **Appendix H1**.

3.8.1 Burlington Tap Location and TPS

See **Figure 1-1** in Section 1.3 for the location of the proposed Burlington Tap Location and TPS site.

The Burlington Tap Location and TPS site are located on Cumberland Avenue on the north side of the rail corridor adjacent to the existing Hydro One Cumberland TS facility. Although the Tap and TPS are located on the same parcel of land, they are in fact physically separate with the Tap being located west of the TPS site. Cumberland Avenue does not cross the railroad and terminates at the Cumberland TS. This parcel is currently vacant and located in an industrial area. The site is visible from Fairview Street on the south side of the railroad. On the opposite side of the railroad, there is a small strip shopping that shields the street in front from views of the site. The site is generally hidden from views from the surrounding area, assuming it does not invade the Cumberland Avenue right-of-way. However, immediately to the west of this shopping centre there is a vacant parcel of land on Fairview Street which allows views across the railroad to the Tap and TPS. Some vegetative screening along the back of the sidewalk in this area would eliminate any visual impacts. At the time of study, the proposed site is planted with a number of evergreen trees that will be uprooted by construction.

Figure 3-36: Proposed Site of Burlington Tap Location and TPS on Cumberland Avenue

3.8.2 Mimico Tap Location and TPS

See **Figure 1-2** in Section 1.3 for the location of the proposed Mimico Tap Location and TPS site.

The Mimico Tap and TPS is located approximately 1,000 metres north of the Mimico SWS adjacent to the Milton Rail Corridor. The site is covered in scrub vegetation and in a 'y' junction where an industrial track branches off the Milton corridor. Most of the development surrounding the TAP and TPS facility is industrial, and includes parking lots, commercial, and electrical system infrastructure. However, immediately north of the Milton corridor there is a high-rise residential building with a second residential complex under construction on its west side, both fronting on Dundas Street. The Tap and TPS location will be visible from the south-facing windows of the existing building, however, the building is oriented east-west with most of the windows are on the east and west facades, so do not look directly over the Tap and TPS. There is already a lot of electrification equipment visible from this building, albeit farther away, as it is adjacent to the Hydro One Manby Transformer Station which is much more extensive. The addition of the Tap and TPS facility will be visible from the existing residential building, however, mitigation is not an option as the equipment is too tall to screen with vegetation.

3.8.3 Canpa 25kV Feeder Route

See **Figure 1-17** in Section 1.3 for the location of the proposed 25kV Canpa Rail ROW feeder route. The Canpa 25kV Feeder follows a railway corridor that connects the Milton Line with the Lakeshore East Line. The corridor is in an entirely industrial area between the Mimico Tap/TPS and the Mimico SWS location.

3.8.4 Mimico SWS

See **Figure 1-3** in Section 1.3 for the location of the proposed Mimico SWS site.

The site for the Mimico SWS is located in this section west of the Willowbrook Yard and north of the rail corridor on a triangular parcel of land at the end of Towns Road, an industrial cul-de-sac. The parcel is surrounded by industrial development.

3.8.5 Oakville SWS

See **Figure 1-4** in Section 1.3 for the location of the proposed Oakville SWS site.

The site of the Oakville SWS is to the west of maple Grove Drive which is a local road terminating at the railroad. The site is immediately behind a newly constructed commercial complex and is currently utilized as an intermodal facility. The commercial complex fronts onto a parking lot and does not appear to overlook the SWS site. Other development in the area is industrial.

3.8.6 Corridor & Bridges: Section LSW-1 – West of Bathurst Street (Mile 1.20) to Mimico Station

This section is within the City of Toronto. Immediately west of the Strachan Avenue Bridge there are five high-rise residential buildings overlooking the rail corridor. The view to and from these buildings and the Strachan Avenue Bridge may be impacted by the electrification infrastructure along the tracks and the safety barrier which will be erected on the Strachan Avenue Bridge.

Figure 3-37: View of High Rise Buildings and Rail Corridor looking West from Strachan Avenue Bridge

Other development between Strachan Avenue and Dufferin Street are all non-residential in the form of small-scale industrial/commercial development north of the tracks. South of the tracks, the rail right-of-way is bordered by the Gardiner Expressway, which is elevated on a viaduct across Strachan Avenue and gradually returns to grade at Dufferin Street. South of the Gardiner Expressway is the Canadian National Exhibition Complex. There are no views from this complex to the rail right-of-way.

The Dufferin Street Bridge has only one sidewalk on the east side, but views to the east from this sidewalk may be altered by the introduction of protective barrier. To the west of the bridge, a large signal gantry already intrudes in the view west along the railroad.

Figure 3-38: Dufferin Street Bridge looking North and Residential Buildings overlooking the Track

West of Dufferin Street is a residential neighbourhood of single-family homes and mid-rise apartment buildings north of the tracks. Most of this area is buffered from views of the railroad between Dufferin Street and St. Joseph's Medical Centre by a landscaped embankment, with the tracks at a lower elevation than the residential development. Beyond the medical centre, the tracks are at the same grade as the surrounding neighbourhood, which continues as a mix of high-rise and single-family residential development. One large park – High Park – is located immediately north of The Queensway, which abuts the rail corridor in this area. Though there is vegetation along the tracks and in the park, winter views may be affected by the introduction of electrification infrastructure. On the south, the rail corridor is paralleled by the Gardiner Expressway and Lake Shore Boulevard West. Views of new electrification infrastructure will extend across these facilities to the lakeshore, which is lined with beaches, recreational facilities, parks and boating docks.

Figure 3-39: View of Railroad to the Left and Lakeshore to the Right across Gardiner Expressway and Lake Shore Boulevard West

Further to the west the railroad crosses the Humber River Estuary on a bridge. The rail bridge has parallel bridges (The Queensway to the north and The Gardiner Expressway and Lake Shore Boulevard West to the south) which limit views up and down the river. Electrification infrastructure across the railroad bridge will be visible from the parallel roadway bridges. West of the Humber River, the rail right-of-way veers away from the lake shore. High-rise and mid-rise residential buildings block views of the lakefront, but electrification infrastructure may be visible from these buildings.

The rail right-of-way continues to veer further from the lake front with a mix of residential and non-residential development on both sides of the tracks up to the Mimico Station. There are two small neighbourhood parks on either side of the tracks in the vicinity of Grand Avenue: Grand Avenue Park and Manchester Park.

There are five road bridges across the railroad at Dufferin Street, Dunn Avenue, Jameson Avenue, Dowling Avenue, and the Gardiner Expressway. With the exception of the Gardiner Expressway Bridge, all have sidewalks. Views up and down the railroad are likely to be affected by the introduction of safety barriers on these bridges. There is also a pedestrian bridge (the Sunnyside pedestrian bridge) that crosses the railroad, the Gardiner Expressway and Lake Shore Boulevard West close to St. Joseph's Medical Centre. This bridge provides a connection between residential neighbourhoods and the lakefront amenities. Protective barriers will be required on this bridge which may change the experience for pedestrians crossing it. There are also six road bridges under the railroad at Parkside Drive, Colborne Lodge Drive, Ellis

Avenue, Windermere Avenue, South Kingsway and Park Lawn Road. Views from these roads approaching the railroad bridges may be changed by electrification infrastructure on the bridges. In addition there is a streetcar bridge under the tracks just west of the Humber River crossing.

There are two GO stations in this section – Exhibition and Mimico. At Exhibition GO Station, the railroad is paralleled by the Gardiner Expressway which is on a viaduct. The station provides access to Exhibition Place via a walkway under the Expressway which may limit views of electrification infrastructure for passengers walking to and from the station. There is no parking at this station.

At Mimico GO Station, parking abuts the rail right-of-way. A condominium development is adjacent to the ticket office and abuts the parking lot. There is also a restaurant/pub (Blue Goose Tavern) on the site, as well as some semi-detached houses that look straight onto the station platform. Behind the station, with views of the rail right-of-way, is a small memorial garden/cemetery and townhouse complex on the east side of Royal York. There is also a residential development south of the tracks backing up to the rail right-of-way, but as can be seen from **Figure 3-21**, there are virtually no windows on this side of the development. Views for passengers arriving and departing the station may be altered by the introduction of electrification infrastructure, catenary wires and support structures in the station area.

Figure 3-40: Mimico Station looking South with Residential Building Beyond

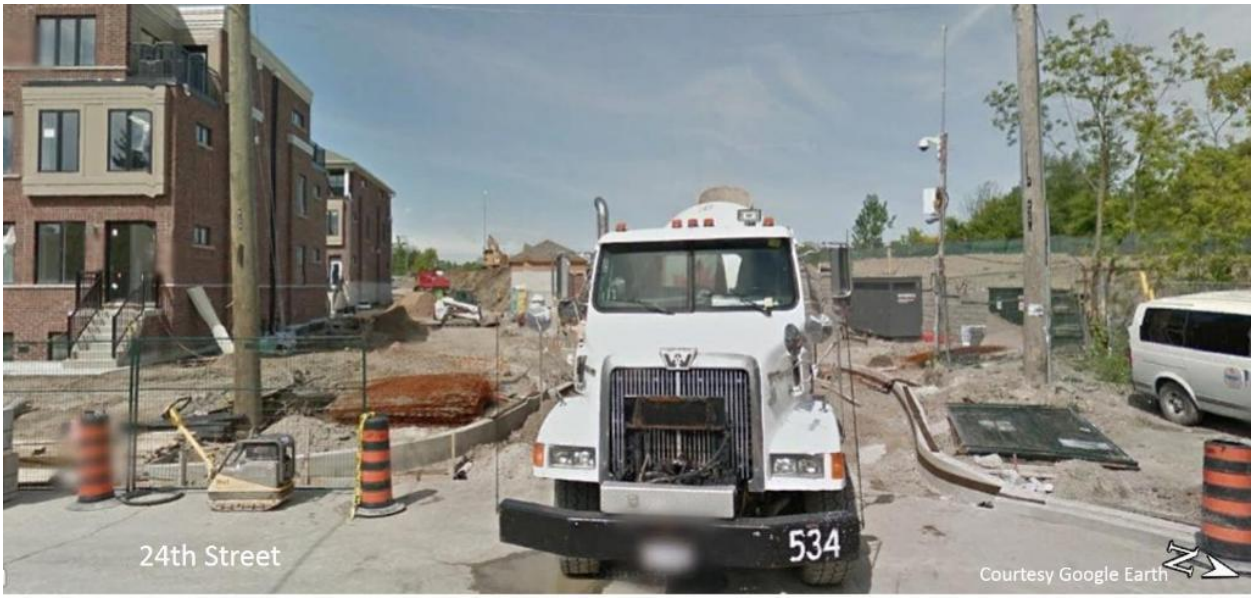
3.8.7 Corridor & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

This section is also within the City of Toronto. A major portion of this section passes through the Willowbrook Yard where Metrolinx trains are stored and serviced. All tracks owned by GO will be electrified. However, the yard is surrounded by non-residential development and views to and from the

surrounding area are not sensitive to changes caused by electrification. The only possible exception is the Islington Avenue Bridge which crosses the yard and will require extensive barriers along the back of the sidewalks for protection.

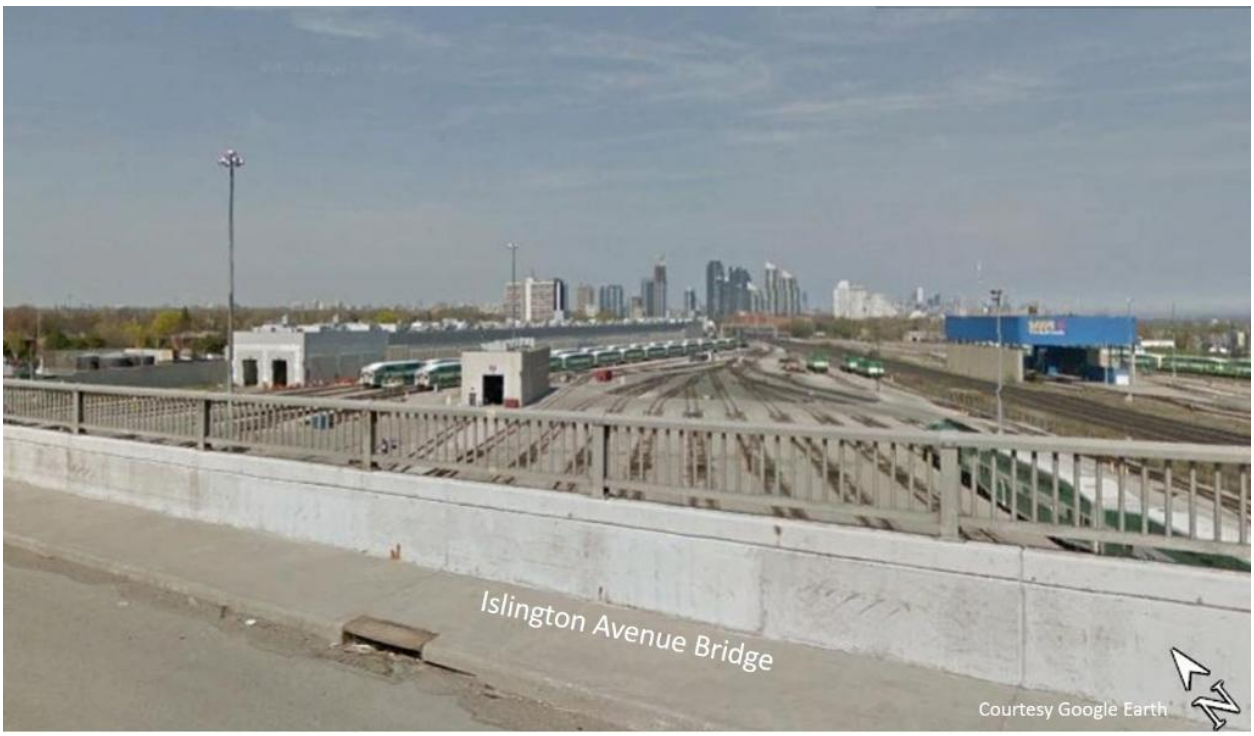
West of the yard on the north side, the rest of this section runs adjacent to industrial development. To the south there is a mix of uses including single-family and multi-family residential, two parks (Donald Ross Memorial Park and Laburnham Park), and a catholic school (Christ the King Elementary School). While the residential development currently has some vegetation buffers along the tracks, there may be views of the tracks, especially in winter, when the leaves are off the trees. A residential development, currently under construction at 24th Street, is immediately adjacent to the tracks with possible open views of the electrification infrastructure.

Figure 3-41: Residential Buildings under Construction at 24th Street



There are two road bridges over the railroad at Islington Avenue and Browns Line. As mentioned above, the Islington Avenue Bridge crosses the rail yard. Existing views from the sidewalk look over the entire yard and include a long vista to high rise development on the lakeshore in the distance.

Figure 3-42: View from Islington Avenue Bridge looking East towards Downtown Toronto



There are three bridges where roads pass under the railroad at Royal York Road, Kipling Avenue and 30th Street. Roadways that pass under the railroad give drivers a clear view of the railroad bridge and the electrification infrastructure placed on the bridge when it is constructed. Views from these roadways may be changed by the introduction of electrification infrastructure on the railroad bridges above. There are no grade crossings in this section.

There is one station in this section: Long Branch GO Station. The station has parking along the tracks and the views for passengers arriving at and departing from the station will potentially be impacted by electrification.

Figure 3-43: Long Branch Station Parking

3.8.8 Corridor & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

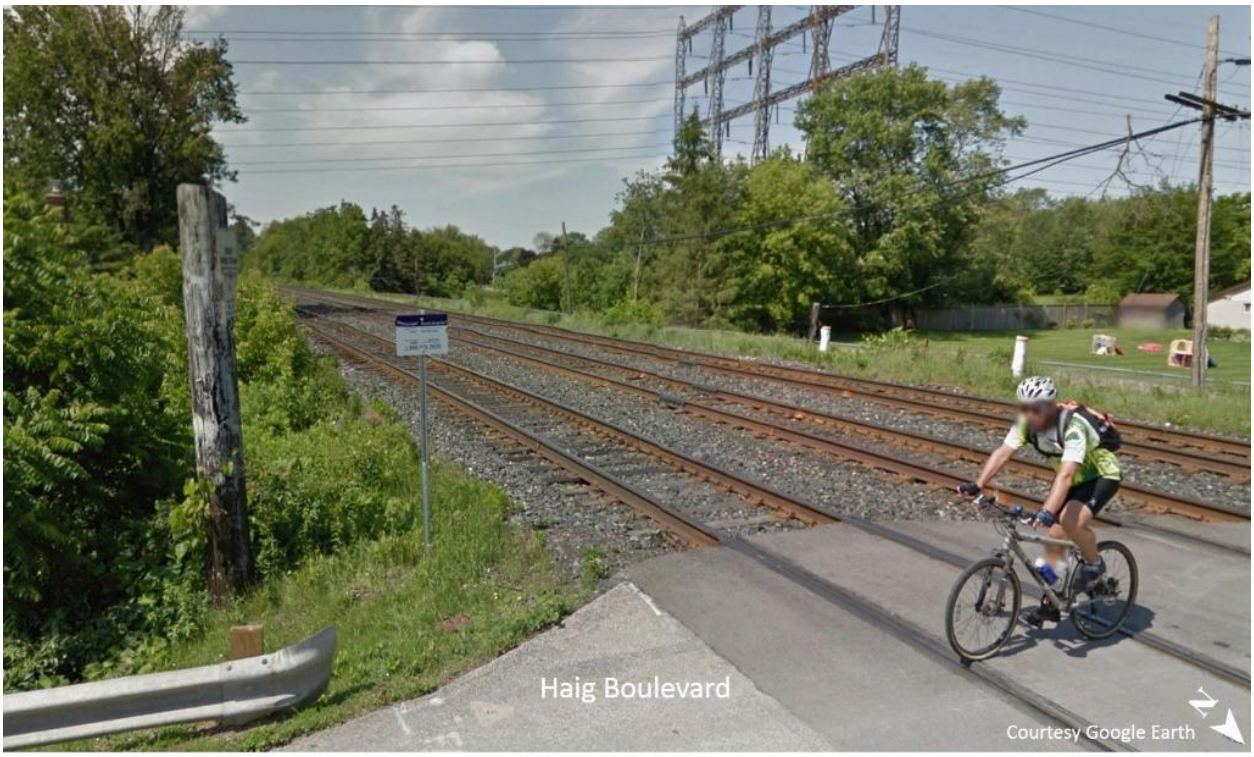
This section runs through the City of Mississauga, and consists of almost entirely residential development on both sides of the tracks, including single-family homes and high-rise apartments. There are two golf courses that abut the right-of-way north of the tracks – the Toronto Golf Club and the Lakeview Golf Course. Views to and from these golf courses are mostly screened by vegetation, but during winter, electrification infrastructure could be visible through this vegetation.

The railroad crosses Etobicoke Creek, which runs along the eastern boundary of the Toronto Golf Club. A recreational trail follows the creek and also passes under the railroad. Electrification infrastructure on the rail bridge may affect views from the trail below.

Figure 3-44: Railroad Bridge over Etobicoke Creek and Recreational Trail

The railroad also crosses under electric transmission lines which run in an open space corridor.

Figure 3-45: Transmission Lines in Open Space Corridor from Haig Boulevard Crossing looking West



There are no road bridges over the railroad in this section, but there are three road bridges under the railroad at Dixie Road, Cawthra Road and Hurontario Street, where electrification infrastructure may be visible from the approach roads. There are two grade crossings in residential areas in this section at Haig and Ogden Avenues.

The Port Credit GO Station is the only station in the section. At this station, the tracks are on an embankment above the parking lot, affording passengers views to and from the railroad as they walk across the parking lot.

Figure 3-46: Port Credit GO Station Parking Lot Looking North to the Railway Tracks

3.8.9 Corridor & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

This section is also in the City of Mississauga, and consists almost entirely of residential development, including single-family homes with pockets of high-rise and mid-rise development. Some small homes are very close – within three metres – of the rail right-of-way. Some of the other homes with large backyards have clear views to the tracks from patios and rear yards. In addition, some mid-rise and high rise residential buildings may have views of electrification infrastructure, especially from upper floors, even though there is often attractive landscaping at the ground level. **Figure 3-48** shows low-rise residential development, which is currently screened by vegetation as well as a mid-rise building. Views from the upper floors of this building may afford views of the electrification infrastructure.

Figure 3-47: Homes on Queen St W with Backyards as Close as Three Metres to the Rail Right-of-Way

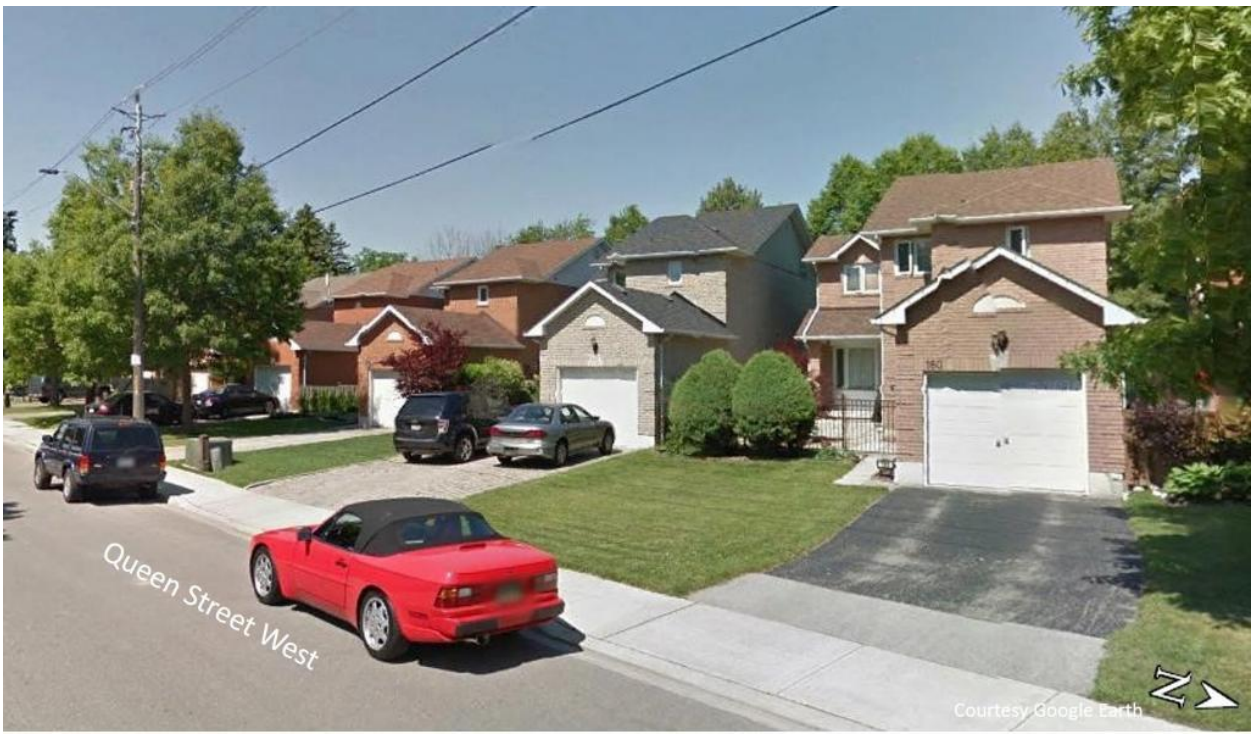


Figure 3-48: Mid-Rise and Low Rise Residential at Walden Circle with Railroad to the Left

In Port Credit, the railroad crosses the Credit River, which has landscaped banks and an attractive park along the east side embankment. The river is used for boating and recreation. Views from these amenities may be changed by the introduction of electrification infrastructure.

Figure 3-49: View of Credit River Railroad Crossing looking North from Lakeshore Road West

There are no road bridges over the railroad in this section, and only one road that passes under the railroad at Southdown Road. Electrification infrastructure on the railroad bridge may be visible from the approaches on either side of the bridge. There are three at-grade crossings at Stavebank Road, Lorne Park Road and Clarkson Road in residential areas.

There are no stations within this section.

3.8.10 Corridor & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

This section is partly in the City of Mississauga and partly in the Town of Oakville. There are two multi-family residential developments abutting the rail right-of-way just west of the Clarkson GO Station on the north side of the tracks. The rest of this section is almost entirely non-residential development. The only other residential development is relatively far from the tracks, with a wide band of vegetation which would be likely to shield views of electrification infrastructure from these homes.

There is one road bridge over the tracks at Royal Windsor Drive. There are no sidewalks on the approaches to this bridge, and a signal structure adjacent to the bridge already interferes with views from the bridge on one side. There are three railroad bridges over roadways in this section at Winston Churchill Boulevard, Ford Drive and Trafalgar Road. Views of electrification infrastructure on the bridges will be visible on the approaches to these bridges. There is one grade crossing in an industrial area at 8th Line.

There is one station in this section: Clarkson GO Station. The large parking lot affords long views to the track and station. The introduction of electrification infrastructure may change the view for passengers arriving at and departing from the station.

Figure 3-50: Housing on Bromsgrove Road looking South to Track showing Right-of-Way Fence

Figure 3-51: Clarkson GO Station from Parking Lot looking West to Garage

3.8.11 Corridor & Bridges: Section LSW-6 – Oakville Station to Bronte Station

This section is entirely within the Town of Oakville. The entire section passes through industrial development on either side of the tracks, with only one residential high-rise project that is just north of Oakville GO Station to the south of the tracks. Residents in these buildings may have views of the electrification infrastructure up and down the rail corridor. In **Figure 3-52**, the railroad is immediately behind the black fence on the right.

Figure 3-52: Residential Buildings close to Tracks near Oakville Station, View from Old Mill Road with Railroad to Right

The rail corridor crosses Sixteen Mile Creek and Cross Avenue on a long viaduct. The creek meanders through Hogs Back Park and the railroad viaduct is a scenic steel structure on stone piers and can be viewed from the park and from the Cornwall Road Bridge to its south. The views may be impacted by the construction of electrification infrastructure across the viaduct.

There are no road bridges across the railroad, but there are two additional railroad bridges across roadways at Dorval Drive and Third Line where electrification infrastructure may be visible across the bridges from the roadway approaches. There are two grade crossings in industrial areas at Kerr Street and Fourth Line.

Oakville GO Station is the only station in this section. This is a large station with several large parking lots on either side of the tracks as well as a large parking garage. Views for passengers arriving at and leaving the station will be altered by the electrification project.

Figure 3-53: Rail Viaduct across Sixteen Mile Creek from looking North from Cornwall Road Bridge

Figure 3-54: Oakville GO Station Parking Garage Looking towards Rail Corridor from Trafalgar Road

3.8.12 Corridor & Bridges: Section LSW-7 – Bronte Station to Appleby Station

This section is partly in the Town of Oakville and partly in the City of Burlington. The entire section consists of non-residential development with large scale industrial facilities and some vacant land abutting both sides of the tracks. The only exception is Sherwood Forest Park, which is situated south of the tracks and west of Burloak Drive. The park is mostly open sports fields with residential development beyond. However, the homes are approximately 200 metres from the rail corridor so that views of electrification infrastructure may be in the distance from these homes.

There are no road bridges crossing the railroad in this section and only one bridge where the railroad crosses a roadway, at Bronte Road. Electrification infrastructure may be visible from the approaches on either side of the Bronte Road Bridge. There are two grade crossings in industrial areas at Bronte Road and Burloak Drive.

There are two stations in this section: Bronte GO Station and Appleby GO Station. Both of these stations are located in industrial areas. They each have a large parking lot adjacent to the tracks. Views for passengers arriving at and departing from these stations may be altered by the introduction of electrification infrastructure.

3.8.13 Corridor & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

This section is entirely within the City of Burlington. On the north side of the tracks the section is characterized by industrial development except for two blocks of single-family homes that abut the tracks just east of the Burlington Station. On the south side of the railroad, land use changes from industrial in the east to retail and commercial in the west approaching Burlington Station.

There are no road bridges over the railroad in this section, and only three rail bridges over roads at Appleby Line, Walkers Line and Guelph Line. In addition there is a pedestrian bridge linking the residential area north of the tracks to the retail area to the south at Drury Lane. No grade crossings exist in this section.

There are no stations within this section.

Figure 3-55: Pedestrian Bridge Connecting Drury Lane and Orpha Street across Rail Corridor

3.9 Utilities

Please refer to Section 1.5.9 for a description of the methodology followed for collection of utilities baseline conditions data. Baseline conditions within each segment of the Lakeshore West Corridor have been summarized below. Additional details can be found in the Utilities Baseline Conditions Report contained in **Appendix I1**.

3.9.1 Burlington Tap Location and TPS

See **Figure 1-1** in Section 1.3 for the location of the proposed Burlington Tap Location site.

In addition to the utility requests for Section LSW-8 (see Section 3.9.13), an ON1Call planning request was logged for the entire property for the proposed Burlington TPS. To augment the information received, a visual survey of the site was also performed using Google Earth. Three communication companies: Bell, Rogers, and Cogeco Cable were identified as having plant on the Burlington TPS property. Union Gas was also identified as having underground facilities on the property. These utility companies as well as Halton Region and the City of Burlington were contacted individually by MH for information regarding existing and future utilities in the area of the proposed site.

Table 3-35: Summary of Utilities at Proposed Burlington Tap Location

Utility	Description
Hydro	Hydro One has a substation and transmission towers with a minimum of six high-voltage lines on the property, to which a proposed connection will be made for the Burlington TPS. In the visual survey using Google Earth local overhead lines were observed along the western side of Cumberland Ave near the proposed Burlington Tap Location and TPS site. There is also a Burlington Hydro-owned pole at the southern limit of the property with lines crossing the ROW to the south. There is no indication of other local distribution lines or buried hydro utilities on or near this site.
Pipelines	There are no records found of third party pipelines on or near the proposed Burlington Tap Location and TPS site.
Watermains	Halton Region confirmed the presence of watermains on the proposed Burlington Tap Location and TPS site.
Sanitary Sewers	Halton Region confirmed the presence of sanitary sewers near the proposed Burlington Tap Location and Tap Location and TPS site, but not within the extent of the property.
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed Burlington Tap Location and TPS site.
Gas Mains	Union Gas confirmed the presence of buried utilities on the proposed Burlington Tap Location and TPS site.
Communication Companies	Both Bell and Cogeco Cable confirmed the presence of buried plant on the proposed Burlington Tap site. Rogers confirmed that they do not have any existing buried utilities on the proposed Burlington Tap Location and TPS site.

3.9.2 Mimico Tap Location and TPS

See **Figure 1-2** in Section 1.3 for the location of the proposed Mimico Tap and TPS Location site.

Table 3-36: Summary of Utilities at Proposed Mimico Tap and TPS Location

Utility	Description
Hydro	Hydro One confirmed the presence of overhead lines at the proposed Mimico Tap and TPS site.
Pipelines	There are no records found of third party pipelines on or near the proposed Mimico Tap and TPS site.
Watermains	There are no records found of third party watermains on or near the proposed Mimico Tap and TPS site.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the proposed Mimico Tap and TPS site.
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed Mimico Tap and TPS site.
Gas Mains	There are no records found of third party gas mains on or near the proposed Mimico Tap and TPS site.
Communication Companies	Bell owns one overhead cable on or near the proposed Mimico Tap and TPS site. Level 3 and Rogers own one buried conduit on or near the Mimico Tap and TPS site.

3.9.3 Mimico SWS

See **Figure 1-3** in Section 1.3 for the location of the proposed Mimico SWS site.

In addition to the utility requests for Section LSW-1 (see section 3.9.6), an ON1Call planning request was logged for the entire property of the proposed Mimico SWS site. Bell along with the City of Toronto were contacted individually for further information regarding existing and future utilities in the area of the proposed site. To augment the information received, a visual survey of the site was also performed using Google Earth.

Table 3-37: Summary of Utilities at Proposed Mimico SWS Site

Utility	Description
Hydro	There are no records found of third party hydro utilities on or near the proposed Mimico SWS site.
Pipelines	There are no records found of third party pipelines on or near the proposed Mimico SWS site.
Watermains	The City of Toronto confirmed the presence of watermains on or near the proposed Mimico SWS site.

Utility	Description
Sanitary Sewers	The City of Toronto confirmed the presence of sanitary sewers on or near the proposed Mimico SWS site.
Stormwater Sewers	The City of Toronto confirmed the presence of stormwater sewers on the proposed Mimico SWS site.
Gas Mains	There are no records found of third party gas mains on or near the proposed Mimico SWS site.
Communication Companies	Bell, Allstream and Rogers confirmed the presence of buried conduits on or near the proposed Mimico SWS site.

3.9.4 Canpa 25kV Feeder Route

Table 3-38: Summary of Utilities along the Proposed 25kV Feeder Route (Canpa Rail ROW)

Utility	Description
Hydro	Hydro One confirmed the presence of overhead as well as buried hydro utilities along the proposed 25kV Canpa feeder route.
Pipelines	There are no records found of third party pipelines along or near the proposed 25kV Canpa feeder route.
Watermains	The City of Toronto confirmed the presence of watermains along the proposed 25kV Canpa feeder route.
Sanitary Sewers	The City of Toronto confirmed the presence of sanitary sewers along the proposed 25kV Canpa feeder route.
Stormwater Sewers	The City of Toronto confirmed the presence of stormwater sewers along the proposed 25kV Canpa feeder route.
Gas Mains	There are no records found of third party gas mains along or near the proposed 25kV Canpa feeder route.
Communication Companies	Bell confirmed the presence of buried conduits along the proposed Canpa 25kV feeder route. Rogers confirmed the presence of buried and overhead conduits along the proposed Canpa 25kv feeder route.

3.9.5 Oakville SWS

See **Figure 1-4** in Section 1.3 for the location of the proposed Oakville SWS site.

In addition to the utility requests for Section LSW-5 (see section 3.9.10), an ON1Call planning request was logged for the entire property for the proposed Oakville SWS. To augment the information received, a visual survey of the site was also performed using Google Earth. ON1Call identified four communication companies: Bell, Rogers, Telus and Cogeco Cable, two pipeline companies, Trans-Northern and Enbridge Pipelines, and Hydro One and Union Gas were also identified as having infrastructure in the area. These

eight ON1Call members, as well as Halton Region and the Town of Oakville were contacted individually by MH for information regarding existing and future utilities in the area of the proposed site.

Table 3-39: Summary of Utilities at Proposed Oakville SWS Site

Utility	Description
Hydro	There are no records found of third party hydro facilities on the proposed site, however, there is an existing Hydro One transformer station east of the proposed site, from which the Oakville SWS is proposed to obtain power. There is no record of Oakville Hydro plant on the proposed site, however an overhead line was identified along the west side of Maple Grove Drive in Google Earth visual survey.
Pipelines	Trans-Northern confirmed the presence of existing buried plant on the proposed Oakville SWS site. Enbridge Pipelines identified a pipeline east of the site but confirmed that the property for the proposed Oakville SWS is clear.
Watermains	Halton Region confirmed the presence of watermains on the roads surrounding the proposed Oakville SWS site and a service into the property.
Sanitary Sewers	Halton Region confirmed the presence of sanitary sewers on the roads surrounding the proposed Oakville SWS site and a service into the property.
Stormwater Sewers	The Town of Oakville confirmed the presence of stormwater sewers on the roads surrounding the proposed Oakville SWS site.
Gas Mains	Union Gas confirmed the presence of gas mains on the property for the proposed Oakville SWS site.
Communication Companies	Zayo, Bell, Cogeco Cable, Rogers, and Telus confirmed the presence of buried conduits on the property for the proposed Oakville SWS. In addition, Rogers confirmed the presence of overhead plant in the area.

3.9.6 Corridor & Bridges: Section LSW-1 – West of Bathurst Street (Mile 1.20) to Mimico Station

Table 3-40: Summary of Utilities within Section LSW-1

Utility		Description
Hydro	***Transmission***	Hydro One owns fourteen buried 115kV crossings in Section LSW-1.. Hydro One also owns one overhead 115kV line near the Gardiner Expressway.
	Local Distribution	Toronto Hydro owns two overhead 4.16kV or secondary voltage crossings, one overhead 4.16kV to 13.8kV crossing, two overhead crossings with primary and secondary voltage lines, three overhead primary voltage crossings, and two overhead secondary voltage crossings in Section LSW-1. Toronto Hydro also owns one overhead line of unknown voltage that runs parallel to the ROW on the south side that is proposed to be removed.

Utility		Description
		Toronto Hydro owns two electrical crossings on the Dowling Ave bridge but these are proposed to be removed. Toronto Hydro also owns one duct bank of unknown size on the Gardiner Expy overpass. Toronto Hydro owns one buried crossing with two primary and one secondary voltage lines, one buried primary voltage crossing, one buried secondary voltage crossing, and one buried crossing of unknown voltage in this Section. Toronto Hydro also owns two buried crossings of unknown voltage that are proposed to be removed. Toronto Hydro owns 15 duct bank crossings of various size in this Section. Toronto Hydro owns two buried electrical conduits and nine duct banks of various size that run parallel to the ROW on both sides in this Section. The TTC owns two overhead and four buried electrical crossings of unknown voltage in this Section.
Pipelines		There are no records found of third party pipelines in Section LSW-1.
Watermains		City of Toronto owns eight buried crossing watermains of varying diameter and one buried watermain of unknown diameter that runs parallel to the ROW from Atlantic Ave to Dufferin St in Section LSW-1.
Sanitary Sewers		City of Toronto owns 14 buried crossing sanitary sewers in Section LSW-1
Stormwater Sewers		City of Toronto owns five buried stormwater sewers in Section LSW-1. MTO owns two ditch culverts in this Section, each 900mm by 900mm near Park Lawn Rd.
Gas Mains		Enbridge Gas owns seven buried gas crossings and 15 buried gas mains that run parallel to the ROW in Section LSW-1.
Communication Companies		Zayo and Telus each own buried conduits that runs the length of the corridor. Beanfield owns one buried conduit crossing in this section. Bell owns one overhead cable north of the ROW in Section LSW-1. Bell also owns eight buried conduits and nine duct banks of varying size that cross the ROW in this Section. Bell owns 21 buried conduits and 17 duct banks of varying size that run parallel to the ROW on both sides in this Section. Two of the parallel conduits extend to Section LSW-2 and one conduit extends to Section LSW-4. One of the parallel duct banks extends to Section LSW-2. Bell Mobility owns one signal broadcast tower in this Section.

3.9.7 Corridor & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

Table 3-41: Summary of Utilities within Section LSW-2

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSW-2.
	Local Distribution	Enersource owns three 5kV lines on the 30th St overpass in Section LSW-2. Enersource also owns five overhead crossings between 11kV and 33kV in this Section. Toronto Hydro owns one overhead electrical crossing with two primary and one secondary voltage lines in Section LSW-2 as well as one buried secondary voltage electrical crossing. Toronto Hydro owns one duct bank that runs parallel to the corridor on the south side in this section. The TTC owns two overhead electrical crossings on unknown voltage in this Section.
Pipelines		There are no records found of third party pipelines in Section LSW-2.
Watermains		The City of Toronto owns two buried watermain crossings in Section LSW-2: one is 250mm in diameter and the other is 300mm in diameter. It is unclear whether these watermains are in the ROW or on the Brown's Line overpass.
Sanitary Sewers		The City of Toronto owns one sewer crossing of unknown size in Section LSW-2. It is unclear whether the sewer is in the ROW or on the Brown's Line overpass.
Stormwater Sewers		The City of Toronto has one buried stormwater sewer crossing in Section LSW-2.
Gas Mains		Enbridge Gas owns three buried gas mains crossings of 8in. to 10in. in diameter in Section LSW-2.
Communication Companies		Allstream and Telus each own one buried conduit that runs the length of the corridor. Bell owns one buried conduit and five duct banks of varying size that cross the ROW in this Section. Bell owns two buried conduits that run parallel to the ROW: one continues from Section LSW-1 and extends to Section LSW-4 and the other begins in Section LSW-2 and extends to Section LSW-5. Bell owns two duct banks of varying size that run parallel to the ROW in this Section. Bell owns one duct bank that runs parallel to the ROW, continuing from Section LSW-1 that ends in Section LSW-2. Rogers owns two buried conduits that cross the ROW in this Section. Rogers owns two buried conduits that run parallel to the ROW in this Section: one extends to Section LSW-3 and the other extends to Section LSW-4.

3.9.8 Corridor & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

Table 3-42: Summary of Utilities within Section LSW-3

Utility		Description
Hydro	***Transmission***	Hydro One owns four 230kV overhead crossings and one 275kV overhead crossing in Section LSW-3.
	Local Distribution	Alectra (formally Enersource) owns four overhead crossings of 5kV or less, one overhead crossing of 5kV to 11kV, and two overhead crossings of 11kV to 33kV in Section LSW-3.
Pipelines		There are no records found of third party pipelines in Section LSW-3.
Watermains		Peel Region owns 15 buried watermain crossings of varying size in section LSW-3.
Sanitary Sewers		Peel Region owns nine buried sanitary sewer crossings in Section LSW-3, ranging in size from 250mm to 2400mm in diameter.
Stormwater Sewers		City of Mississauga owns three buried stormwater sewer crossings in Section LSW-3, ranging in size from 900mm to 2100mm in diameter. City of Mississauga also owns one ditch culvert crossing of unknown size in this Section, near Cawthra Rd. Peel Region owns two buried stormwater sewer crossings in this Section, 450mm and 1500mm in diameter. Peel Region also owns one 600mm ditch culvert crossing in this Section, near Revus Ave.
Gas Mains		Enbridge Gas owns seven buried gas main crossings of varying size in Section LSW-3.
Communication Companies		Zayo and Telus each own one buried conduit that runs the length of the corridor. Bell owns one conduit crossing the ROW in Section LSW-3. Bell owns six buried conduit crossings as well as 15 buried conduits that do not cross the tracks but are located within the Study Area in this Section. Bell owns eight buried conduits that run parallel to the ROW; one continues from Section LSW-1 and extends to Section LSW-4 and another continues from Section LSW-2 and extends to Section LSW-5. Peel Region Public Sector Network (PSN) owns two overhead crossings and one buried crossing in this Section. Peel Region PSN also owns one conduit that runs parallel to the ROW in this Section. Rogers owns three overhead cable crossings and seven buried conduit crossings in this Section. Rogers also owns one buried conduit that runs parallel to the ROW in this Section.

3.9.9 Corridor & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

Table 3-43: Summary of Utilities within Section LSW-4

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSW-4.
	Local Distribution	Alectra owns two 5kV to 11kV overhead crossings and three 11kV to 33kV overhead crossings in Section LSW-4. Alectra owns two buried crossings of unknown voltage in this Section.
Pipelines		Enbridge Pipelines owns one pipeline crossing in Section LSW-4. Trans-Northern owns two pipeline crossings in this Section.
Watermains		Peel Region owns nine buried watermain crossings of varying size in Section LSW-4.
Sanitary Sewers		City of Mississauga owns four buried sanitary sewer crossings ranging in size from 300mm to 1370mm in diameter, in Section LSW-4. Peel Region owns five buried sanitary sewer crossings of varying size in this Section.
Stormwater Sewers		City of Mississauga owns two buried stormwater sewers in Section LSW-4, with diameters of 1980mm and 2025mm, respectively. City of Mississauga also owns five ditch culvert crossings of varying size in this Section. Peel Region owns one buried 1067mm-diameter stormwater sewer crossing in this Section.
Gas Mains		Enbridge Gas owns seven buried gas main crossings of varying size in Section LSW-4.
Communication Companies		Zayo owns one buried conduit that runs parallel to the ROW in Section LSW-4.Bell owns four buried cables, six buried conduits, and four buried duct bank crossings in Section LSW-4. Bell owns one buried cable, two buried conduits, and one buried duct bank that run parallel to the ROW in this Section. Bell Mobility and Telus Mobility each own one signal broadcast tower in this Section. Peel Region PSN owns one overhead cable crossing in this Section. Rogers owns three overhead cable crossings and one buried conduit that runs parallel to the ROW in this Section. Rogers also owns nine buried conduit crossings in this Section. Rogers owns one buried cable and four buried conduits that run parallel to the ROW in this Section.

3.9.10 Corridor & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

Table 3-44: Summary of Utilities within Section LSW-5

Utility		Description
Hydro	***Transmission***	Hydro One owns two overhead 230kV crossings in Section LSW-5.
	Local Distribution	Alectra owns two overhead 11kV to 33kV crossings in Section LSW-5 and one overhead 11kV to 33kV line that runs parallel to the ROW in this Section. Alectra also owns one buried duct bank crossing of unknown size in this Section. Oakville Hydro owns seven overhead 4.16kv to 27kV crossings in Section LSW-5 and one overhead line of unknown voltage that runs parallel to the ROW in this Section. Oakville Hydro owns two buried conduits and two buried duct bank crossings in this Section.
Pipelines		Enbridge Pipelines owns one 500mm-diameter buried fuel transmission pipeline crossing in Section LSW-5. Trans-Northern owns three buried fuel transmission pipeline crossings in this Section, ranging from 400mm to 500mm in diameter. Trans-Northern also owns six buried fuel transmission pipelines that run parallel to the ROW in this Section, ranging from 250mm to 500mm in diameter.
Watermains		Halton Region owns six buried watermain crossings of varying size in Section LSW-5. Peel Region owns three buried watermain crossings of varying size in this Section. Town of Oakville owns one buried 600mm-diameter watermain crossing in this Section at Ford Dr.
Sanitary Sewers		Halton Region owns seven buried sanitary sewer crossings of varying size in Section LSW-5. Peel region owns two buried sanitary sewer crossings of unknown size in this Section.
Stormwater Sewers		City of Mississauga owns one buried 1200mm stormwater sewer crossing in Section LSW-5. Halton Region owns one 3000mm ditch culvert crossing in this Section, near Trafalgar Rd. Peel Region owns two ditch culvert crossings in this Section, near Winston Churchill Blvd. They are 300mm and 600mm in size. Town of Oakville owns four buried stormwater sewer crossings ranging from 300mm to 1950mm in diameter, in this Section. Town of Oakville also owns five ditch culvert crossings of varying size in this Section.
Gas Mains		Union Gas owns four buried gas main crossings in Section LSW-5, ranging from 6in. to 12in. in diameter. Union Gas also owns two buried gas mains of varying size that run parallel to the ROW in this Section.
Communication Companies		Zayo owns one buried conduit crossing and two buried conduits that run parallel to the ROW in Section LSW-5.

Utility	Description
	Bell owns four buried cables, four buried conduits, and three buried duct bank crossings in Section LSW-5. Bell also owns one buried cable, one buried conduit, and one buried duct bank that run parallel to the ROW in this Section. Bell Mobility and Rogers Wireless each own two signal broadcast towers in this Section. Telus Mobility owns one signal broadcast tower in this Section at Chartwell Rd. Cogeco Connexion owns two buried conduit crossings and one buried conduit that runs parallel to the ROW in this Section. Rogers owns four buried conduit crossings and one buried conduit that runs parallel to the ROW in this Section. Telus owns one buried conduit and one buried duct bank crossing in this Section, at Chartwell Rd and Maple Grove Dr., respectively. Telus also owns one buried duct bank that runs parallel to the ROW near Chartwell Rd in this Section.

3.9.11 Corridor & Bridges: Section LSW-6 – Oakville Station to Bronte Station

Table 3-45: Summary of Utilities within Section LSW-6

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSW-6.
	Local Distribution	Oakville Hydro owns five overhead crossings of varying voltage in Section LSW-6. Oakville Hydro owns one overhead 600V line that runs parallel to the ROW near 4th Line in this Section. Oakville Hydro owns eight buried crossings of varying voltage in this Section. Oakville Hydro also owns one buried conduit near Lyons Lane and one buried duct bank near 4th Line that run parallel to the ROW in this Section.
Pipelines		Trans-Northern owns four buried fuel transmission pipeline crossings from 400mm to 500mm in diameter in Section LSW-6. Trans-Northern also owns four buried fuel transmission pipelines from 250mm to 400mm in diameter in Section LSW-6.
Watermains		Halton Region owns seven buried watermain crossings ranging from 150mm to 1650mm in diameter in Section LSW-6. They also own one buried 150mm-diameter watermain that runs parallel to the ROW in this Section.
Sanitary Sewers		Halton Region owns 11 buried sanitary sewer crossings ranging from 200mm to 1650mm in diameter in Section LSW-6.
Stormwater Sewers		Halton Region owns one buried stormwater sewer crossing of unknown size in Section LSW-6. Town of Oakville owns four buried stormwater sewer crossings ranging from 375mm to 825mm in this Section. Town of Oakville also owns three ditch culvert crossings and one ditch culvert that runs parallel to the ROW in this Section.
Gas Mains		Union Gas owns eight buried gas main crossings in Section LSW-6, ranging in size from 2in. to 8in. Union Gas also indicated future plans to construct one 100mm diameter gas crossing near 4th Line..

Utility	Description
Communication Companies	Zayo owns one buried conduit crossing and one buried conduit that runs parallel to the ROW in Section LSW-6. Bell owns six buried cables and seven buried conduit crossings in this Section. Bell owns seven buried cables and one buried conduit that run parallel to the ROW in this Section. Bell Mobility owns two signal broadcast towers in this Section. Rogers Wireless and Telus Mobility each own one signal broadcast tower in this Section. Cogeco Connexion owns two buried conduit crossings and two overhead cables that run parallel to the ROW in this Section. Rogers owns one overhead cable crossing and one buried conduit crossing in this Section. Rogers also owns one overhead cable that runs parallel to the ROW in this Section.
Other	The Town of Oakville has future plans to construct grade separations at Kerr St and 4th Line.

3.9.12 Corridor & Bridges: Section LSW-7 – Bronte Station to Appleby Station

Table 3-46: Summary of Utilities within Section LSW-7

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSW-7.
	Local Distribution	Burlington Hydro owns two overhead crossings in Section LSW-7: one is 13.8kV and one is 27.6kV. Burlington Hydro owns one buried secondary voltage conduit that runs parallel to the ROW in this Section, as well as one buried secondary voltage crossing. Oakville Hydro owns nine overhead crossings of varying voltage in this Section. Oakville Hydro owns two overhead lines of unknown size that run parallel to the ROW in this Section. Oakville Hydro also owns two buried crossings of varying voltage as well as one buried line of unknown voltage that runs parallel to the ROW in this Section.
Pipelines		Enbridge Pipelines owns one 500mm-diameter buried fuel transmission pipeline crossing in Section LSW-7, near Burloak Dr. Suncor owns a 1.8m-diameter underground pedestrian tunnel near McPherson Rd in this Section. Trans-Northern owns four buried fuel transmission pipeline crossings in this Section, varying in size from 400mm to 500mm. Trans-Northern also owns 250mm- and 400mm-diameter fuel transmission pipelines that run parallel to the ROW in this Section.
Watermains		Halton Region owns four watermain crossings ranging from 300mm to 1800mm in diameter (with two of unknown size) in Section LSW-7. Halton Region has also indicated plans to construct one 1800mm diameter watermain at Burloak Dr., to be completed in 2016.
Sanitary Sewers		Halton Region owns four sanitary sewer crossings ranging from 250mm to 1400mm in diameter in Section LSW-7.

Utility	Description
Stormwater Sewers	City of Burlington owns three buried stormwater sewer crossings of varying size in Section LSW-7. City of Burlington also owns five buried stormwater sewers ranging from 200mm to 1650mm in diameter that run parallel to the ROW in this Section. City of Burlington owns one ditch culvert crossing at Oval Ct and one 900mm ditch culvert that runs parallel to the ROW near Burloak Dr. in this Section. Town of Oakville owns two buried stormwater sewer crossings in this Section: one is of unknown size at Bronte GO Station and the other is 1050mm in diameter at Bronte Rd.
Gas Mains	Union Gas owns three buried gas main crossings varying in size from 2in. to 8in. in diameter in Section LSW-7. Union Gas also owns a 36in.-diameter gas main that runs parallel to the ROW in this Section.
Communication Companies	Zayo owns one buried conduit crossing in Section LSW-7. Bell owns one buried cable and four buried conduit crossings in this Section. Bell also owns one buried conduit that runs parallel to the ROW near Appleby GO Station in this Section. Cogeco Connexion owns one overhead cable crossing and three buried conduit crossings in this Section. Cogeco Connexion also owns one overhead cable that runs parallel to the ROW in this Section near Bronte Rd. Rogers owns one overhead cable crossing near Burloak Dr. and one buried conduit crossing near Bronte Rd in this Section. Rogers Wireless owns one signal broadcast tower in this Section near Bronte Rd.
Other	The Town of Oakville has indicated plans to construct a grade separation at Burloak Dr.

3.9.13 Corridor & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

Table 3-47: Summary of Utilities within Section LSW-8

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSW-8.
	Local Distribution	Burlington Hydro owns eight overhead cable crossings and four buried conduit crossings of varying voltage in Section LSW-8. Burlington Hydro also owns five overhead cables and 11 buried conduits that run parallel to the ROW in this Section.
Pipelines		There are no records found of third party pipelines in Section LSW-8.
Watermains		Halton Region owns five buried watermain crossings of various size in Section LSW-8. Halton Region indicated plans to construct one 750mm diameter watermain at Cumberland Ave and one 250mm diameter watermain at Drury Lane by 2016, and one 400mm diameter watermain at Appleby Line by 2023.
Sanitary Sewers		City of Burlington owns one 2450mm-diameter buried sanitary sewer crossing in Section LSW-8, near Guelph Line. Halton Region owns eight buried sanitary sewer crossings of various size in this Section. Halton Region also owns two buried sanitary sewers that run parallel to the ROW in this Section: one is 300mm and the other is 375mm in diameter. Halton Region indicated plans to construct one 450mm diameter sanitary sewer at Appleby Line by 2025.
Stormwater Sewers		City of Burlington owns 14 buried stormwater sewer crossings ranging from 300mm to 2450mm in diameter in Section LSW-8. City of Burlington also owns 12 buried stormwater sewers ranging from 375mm to 1350mm in diameter that run parallel to the ROW in this Section. City of Burlington owns two ditch culvert crossings in this Section.
Gas Mains		Union Gas owns five buried gas main crossings of varying size and one buried gas main of unknown size that runs parallel to the ROW in Section LSW-8.
Communication Companies		Zayo owns two buried conduit crossings in Section LSW-8. Bell owns one buried cable, one buried conduit, and five buried duct bank crossings in this Section. Bell also owns one buried cable and one buried conduit that run parallel to the ROW in this Section. Cogeco Connexion owns three overhead cable crossings and three buried conduit crossings in Section LSW-8. Cogeco Connexion also owns one overhead cable and four buried conduits that run parallel to the ROW in this Section. Telus owns one buried duct bank that runs parallel to the ROW in this Section.

3.10 EMI & EMF

3.10.1 Traction Power Facilities

Table 3-48 summarizes the ELF EMF measurements for the traction power facilities within the Lakeshore West Corridor, as well as the GPS coordinates where the measurements were taken. For those locations where the Resultant Flux Density magnitude was less than 1.0 mG, the designation of "Background Only" is shown.

Table 3-48: ELF EMF Measurement Results at Lakeshore West Corridor Traction Power Facilities

Facility Name	Latitude	Longitude	Resultant Flux Density Magnitude (mG)	Comments
Burlington TPS and Tap Location	43.352272	-79.79153	Background Only	Measured from parking lot near Cogent Power.
Oakville SWS	43.481161	-79.660447	3.7	Measured from dead end near power station.
Mimico SWS	43.603313	-79.521797	Background Only	Measured from parking lot near Lakeshore Arena.
Mimico TPS and Tap Location	43.635588	-79.537907	3.5	Measured from GO Station.

3.10.2 Lakeshore West Corridor

3.10.2.1 EMI Sensitive Sites

Based on the baseline mapping for Lakeshore West Corridor, one EMI sensitive site was identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the corridor, as shown in **Table 3-49**. This was added to the list of candidate sites at which to collect baseline EMI scans during the Impact Assessment phase.

Table 3-49: EMI Sensitive Site near the Lakeshore West Corridor

EMI Sensitive Site	Type	Coordinates	Distance to Closest Track
Burgess Veterinary Emergency	Hospital	43°21'23.1"N, 79°47'04.5"W	Less than 100m

3.10.2.2 ELF EMF Measurements

The tables in Section 4.2.3.2 to Section 4.2.3.9 in the EMI/EMF Baseline Conditions Report (**Appendix J1**) present the ELF EMF measurements at select points along the Lakeshore West Corridor. There was one high-ELF (> 10 mG) area along this section of the corridor, as shown in **Table 3-50**. **Figure 3-56** shows an aerial view of this location in relation to the Study Area. This is a location where post-electrification measurement of ELF EMF is recommended.

Table 3-50: Summary of High ELF (> 10 mG) Areas along the Lakeshore West Corridor

Area of Interest	Coordinates	Resultant Flux Density Magnitude (mG)	References
3 metres from centre of track	43°21'09.8"N, 79°47'25.4"W	11.3	Figure 3-38

Figure 3-56: ELF Sites in Lakeshore West – 3 Metres from Centre of Track in relation to Study Area

3.11 Stormwater Management

Please refer to Section 1.5.11 for a description of the methodology followed for collection of stormwater management baseline conditions data. Baseline conditions for each TPF site within the Lakeshore West Rail Corridor have been summarized below. Additional details can be found in the Preliminary Stormwater Management Assessment Report contained in **Appendix K**.

3.11.1 Burlington Tap/TPS

The existing drainage pattern for the site is shown on **Figure 3-57**. The total TPF Assessment Area is approximately 3.9 ha consisting of an existing Transformer Station and undeveloped land.

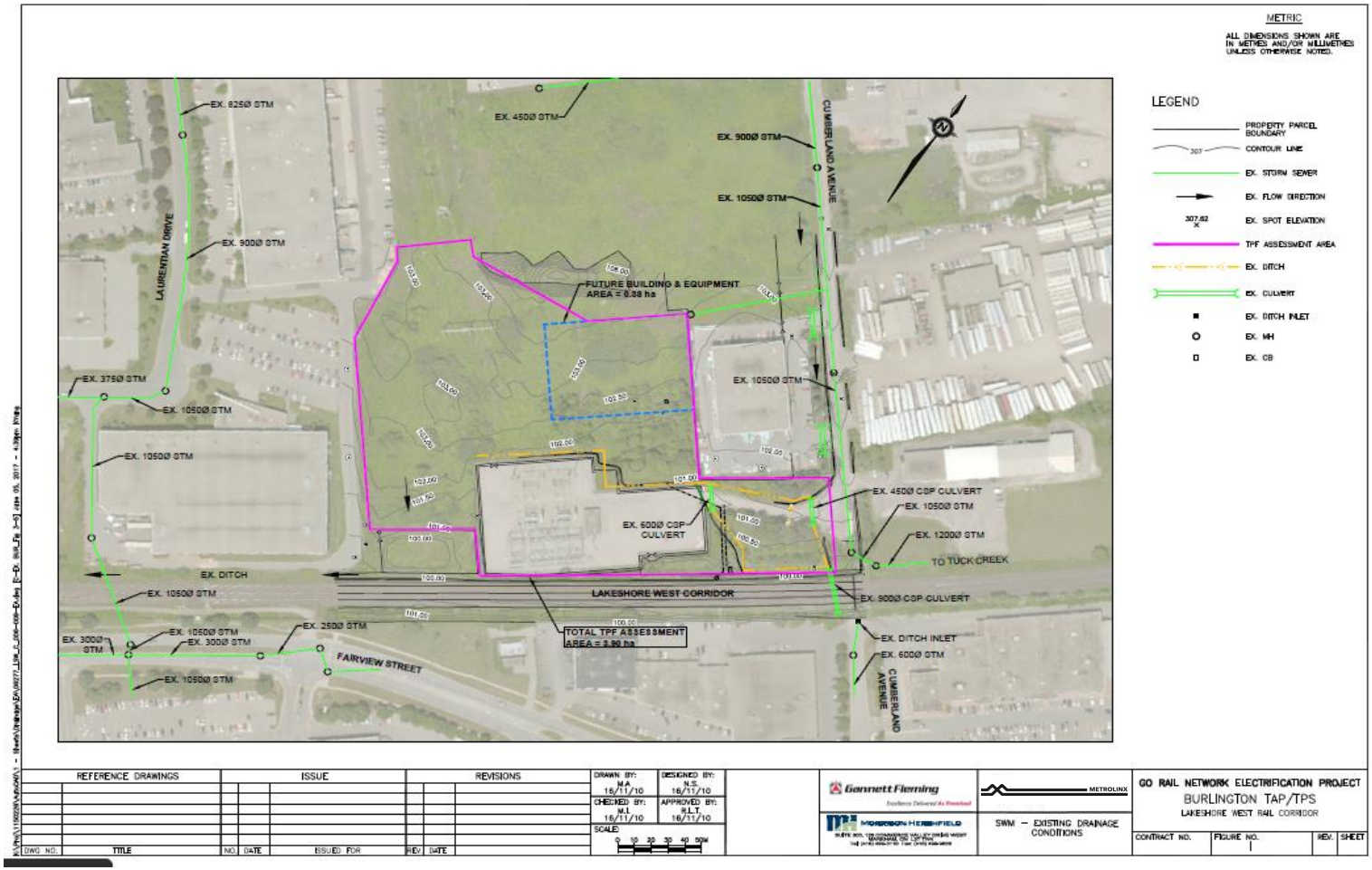
The site is situated at the boundary of the Roseland Creek watershed and the Tuck Creek watershed. The Tap/TPS is within the conservation area of Halton Region Conservation Authority (HRCA) but is outside the regulated area.

Under the existing condition, there is no defined drainage system for the undeveloped area of the property parcel. The area is uneven and primarily vegetated. The stormwater appears to stay at the site and infiltrate for minor storms. For major storm runoffs, the runoff will overflow partially towards Cumberland Avenue and partially towards the rail corridor where it is conveyed on the south side of the corridor through a culvert. There is an existing ditch along the access road (Cumberland Avenue) for the existing Transformer Station. Overland flow from the station site discharges to this ditch and flows away by the road drainage system.

Based on the information extracted from the Halton County Ontario Soil Survey Report No. 43, the soil type for the Burlington Tap/TPS site is Sandy Loam (see **Appendix K**). Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

For the existing condition, based on the land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0% for the site area of 0.42 ha.

Figure 3-57: Burlington Tap/TPS Existing Drainage Conditions



3.11.2 Mimico Tap/TPS

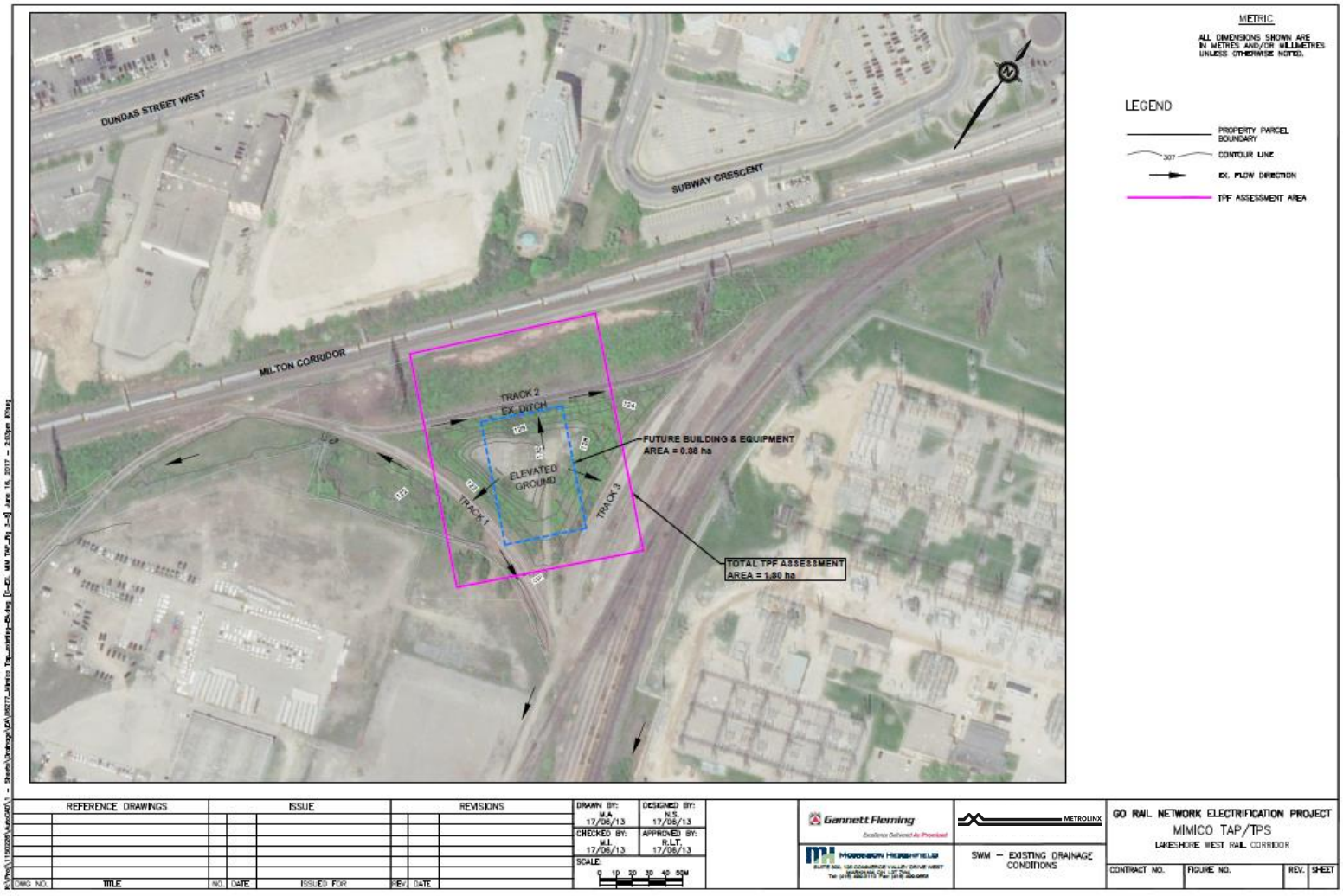
The proposed Mimico Tap/TPS site is connected to a tributary to the Lake Ontario Waterfront and is located within the jurisdiction of TRCA, but it is outside the regulated area. The site is located on an elevated ground (approximately 7 to 8m higher than adjacent properties), it is uneven and debris has been dumped on the surface. Debris will be removed and the site will be levelled. There is no defined drainage runoff flow route from the site under existing condition. The runoff either infiltrates to the ground or flows down the slope in all directions. There is no defined ditch, at the toe of the slope, along the rail tracks. Tracks are generally higher than the adjacent grounds and the minor flow either infiltrates to the ground or ponds at low spots beside the tracks.

Major storm runoff flows to the south west direction as the ground elevations generally drop in that direction. Runoff ultimately discharges to Etobicoke Creek located approximately 2km away from the site towards the west. Major storm runoff from the site flows to the drainage system of the adjacent properties before discharging to the Creek. More investigations, at detailed design stage, will determine the outfall locations for the site runoff.

The existing drainage pattern for the study area is shown on **Figure 3-58**. The total TPF Assessment Area, including 0.10 ha for the future access road, is approximately 1.40 ha. The site is presently undeveloped. For the existing condition, based on the type of the land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0%.

Based on the information extracted from Ontario Soil Survey Report No. 19 by Regional Municipality of York, the soil type for the Mimico Tap/TPS site is generally Sand, Silty Sand (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

Figure 3-58: Mimico Tap/TPS Existing Drainage Conditions



3.11.3 Mimico SWS

The Mimico SWS site is part of the tributary area of Mimico Creek, and as such it is within the jurisdiction of TRCA. However, the site is outside the regulated area of the Mimico Creek. The existing drainage pattern for the site area is shown on **Figure 3-59**. The total Assessment Area for the TPF site is approximately 3.39 ha with railway tracks to the south and west of the site. The site is used as a storage yard for pipes (large and small) and steel beams. The ground is mostly covered with gravel.

Under existing conditions, the runoff from the site, sheet flows to the ditch along the Lakeshore West Rail Corridor and to a ditch along the west secondary/branch track.

Additionally, there are the following known minor drainage systems:

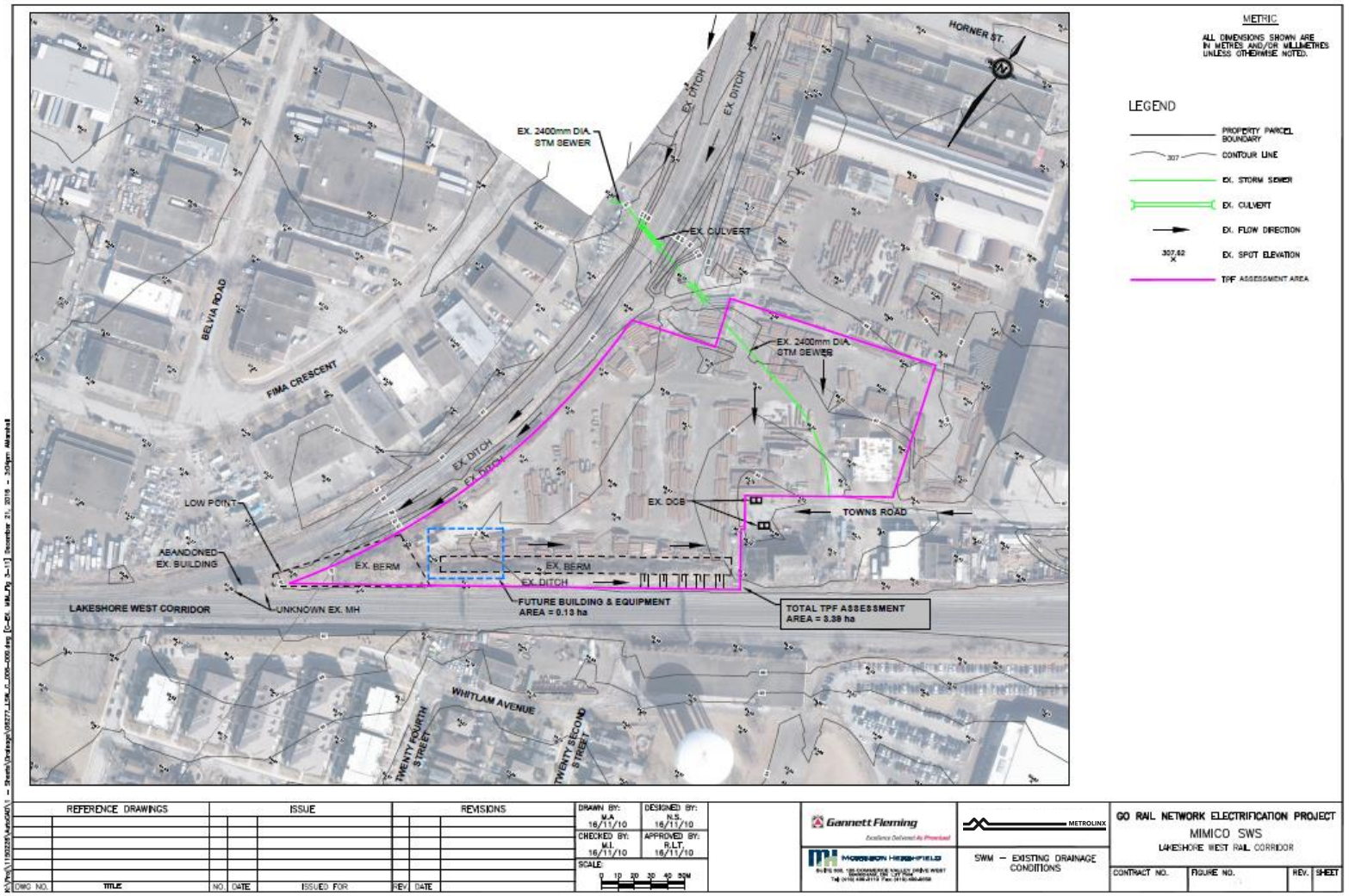
1. An existing 2400 mm storm sewer that goes through the site from south to north boundaries. The tributary area draining to this pipe is unknown at this time;
2. Runoff from the 2400 mm sewer is conveyed across two branching tracks to the north via existing culverts;
3. There are two double catchbasins on Towns Road to the east property boundary line. It is not determined if the leads are connected to the 2400 mm storm sewer in the property.

The ditches to the south and the west are fully vegetated and there is no previous evidence of flooding that exceeded the top of banks. These ditches may be able to provide adequate storage for low frequency high magnitude events with no over spilling to adjacent properties and lands. These ditches appear to convey the existing minor and major site flows to an offsite outlet.

For the existing condition, based on type of the land use, the runoff coefficient (C) is estimated at 0.50 and the percent impervious at 0.5 or 45% for the site area of 0.22 ha.

Based on the information extracted from Ontario Geological Survey, Preliminary Map P.2204, by Ministry of Natural Resources, Ontario, the soil type for the Mimico SWS site is generally Clayey Silt Till (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

Figure 3-59: Mimico SWS Existing Drainage Conditions



3.11.4 Oakville SWS

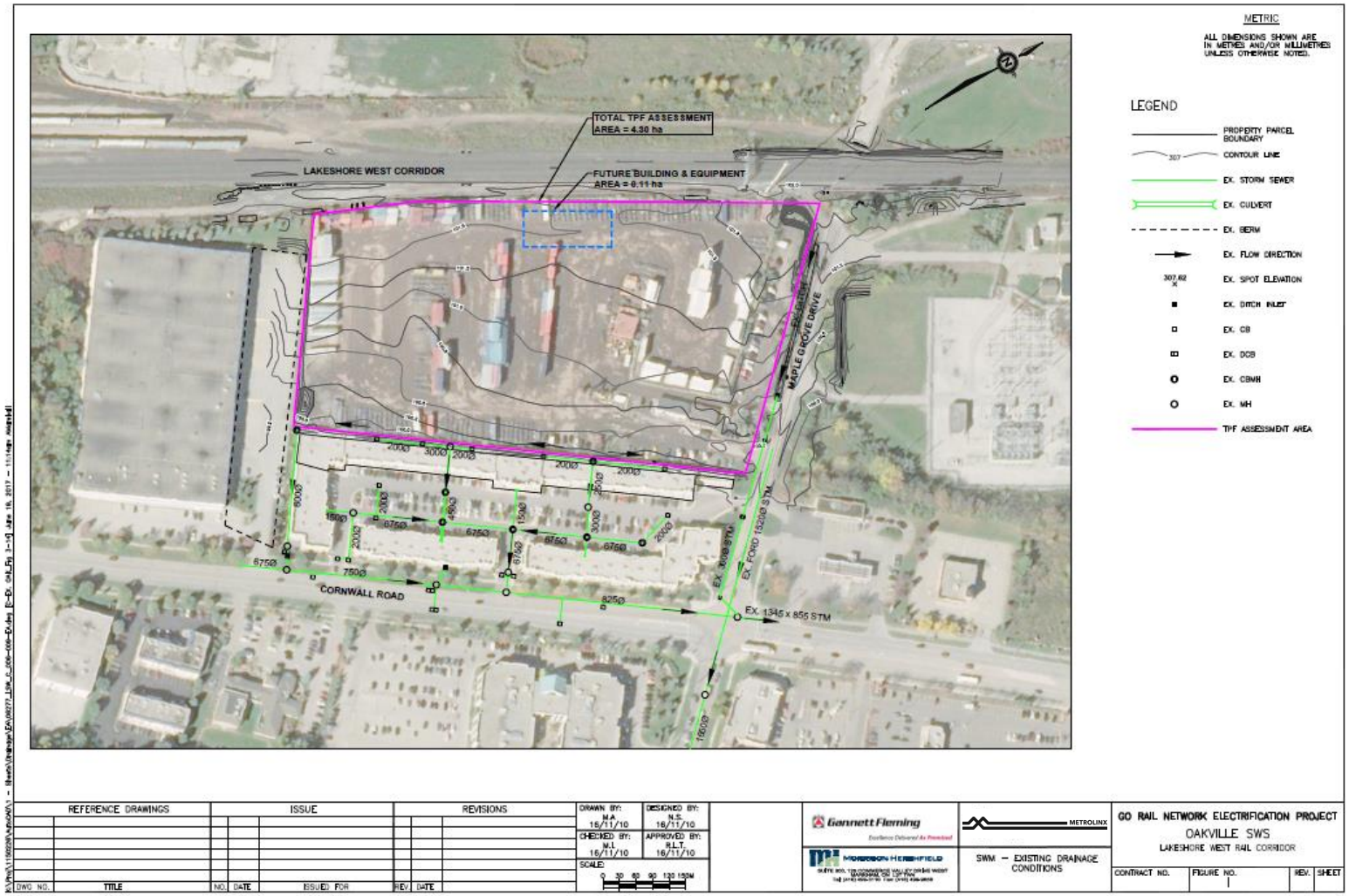
The proposed site is a tributary to the Joshua's Creek and is located within the jurisdiction of HRCA but is outside the regulated area. However, HRCA has noted that the Oakville SWS site may be subject to spill from the adjacent Joshua's Creek. The existing drainage pattern for the site area is shown on **Figure 3-60**. The total TPF Assessment Area is approximately 4.3 ha consisting of existing trucking facility.

Under existing condition, there is no defined drainage system for the Assessment Area. The site in general is flat and the storm water runs overland towards the south east and south west directions. There is a ditch along the south east limit of the Assessment Area with no defined outlet. The ditch overflows towards the Maple Grove Drive where the runoff is captured by the road storm sewer system. There is another existing ditch along the north east limit of the property parcel, along the Maple Grove Drive, which ends at the entrance of the property parcel. The runoff at this point enters into the driveway culvert connected to the road storm sewer system which conveys flows downstream.

Based on the information extracted from the Halton County Ontario Soil Survey Report No. 43, the soil type for approximately one half of the Oakville SWS site is Sandy Loam and for the other half it is Clay Loam. The area designated for electrical equipment has soil type of Clay Loam (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type. For the existing condition, based on the soil type and land use, the runoff coefficient, 'C' is estimated at 0.3 and the percent impervious at 0.3 or 14% for the site area of 0.17 ha..

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. The minor flows will discharge to the existing storm sewer system on Maple Grove Drive while major storm runoff will run overland on the road. As the external flow contribution to the existing ditches, culverts, storm sewers and the capacities of the conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at these locations. This will be further investigated at the detailed design stage.

Figure 3-60: Oakville SWS Existing Drainage Conditions



3.12 Groundwater and Wells

Please refer to Section **1.5.12** for a description of the methodology followed for collection of Groundwater and Wells baseline conditions data. Baseline conditions within the Lakeshore West Rail Corridor has been summarized below. Additional details can be found in the Groundwater Impact Assessment Report contained in **Appendix V**.

3.12.1 Burlington Tap/TPS

There was one (1) domestic supply well identified within 500 m of the Burlington Tap/TPS location. The surrounding area is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Roseland Creek, located within 500 m of the Tap/TPS location.

3.12.2 Mimico Tap/TPS Location

There were no water supply wells identified within 500 m of the Mimico Tap/TPS location. The surrounding area is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are no waterbodies located within 500 m of the Tap/TPS location.

3.12.3 Mimico SWS Location

There were no water supply wells identified within 500 m of the Mimico switching station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There are no waterbodies located within 500 m of the SWS location.

3.12.4 Canpa 25kV Feeder Route

There were no water supply wells identified within 500 m of the Canpa 25kV Feeder Route. However, this section is characterized by an urban setting and the use of private water wells is likely negligible. There are no waterbodies located within 500 m of the 25kV Feeder Route.

3.12.5 Oakville SWS

There were no water supply wells identified within 500 m of the Oakville switching station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, Joshua's Creek and Wedgewood Creek, located within 500 m of the SWS location.

3.12.6 OCS & Bridges: Section LSW-1 – Strachan Avenue to Mimico Station

There were no water supply wells identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are four (4) waterbodies, Grenadier Pond, Mimico Creek, Humber River and Lake Ontario, located within 500 m of the rail corridor in this section.

3.12.7 OCS & Bridges: Section LSW-2 – Mimico Station to Long Branch Station

There were no water supply wells identified within 500 m of the rail corridor in this section. The section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Etobicoke Creek, located within 500 m of the rail corridor in this section.

3.12.8 OCS & Bridges: Section LSW-3 – Long Branch Station to Port Credit Station

There were no water supply wells identified within 500 m of the rail corridor in this section. The section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are five (5) waterbodies, Etobicoke Creek, Applewood Creek, Serson Creek, Cooksville Creek, and Mary Fix Creek, located within 500 m of the rail corridor in this section.

3.12.9 OCS & Bridges: Section LSW-4 – Port Credit Station to Clarkson Station

There were seven (7) domestic supply wells and two (2) industrial/commercial supply wells identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are seven (7) waterbodies, Credit River Marshes Wetland Complex, Tecumseh Creek, Lornewood Creek, Birchwood Creek, Fudger's Marsh, Turtle Creek, and Sheridan Creek, located within 500 m of the rail corridor in this section.

3.12.10 OCS & Bridges: Section LSW-5 – Clarkson Station to Oakville Station

There were five (5) domestic supply wells, eleven (11) industrial/commercial supply wells, and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are six (6) waterbodies, Sheridan Creek, Avonhead Creek, Joshua's Creek, Wedgewood Creek, Morrison Creek, and Sixteen Mile Creek, located within 500 m of the rail corridor in this section.

3.12.11 OCS & Bridges: Section LSW-6 – Oakville Station to Bronte Station

There was one (1) domestic supply well and one (1) industrial/commercial supply well identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are three (3) waterbodies, Sixteen Mile Creek, McCraney Creek, and Fourteen Mile Creek, located within 500 m of the rail corridor in this section.

3.12.12 OCS & Bridges: Section LSW-7 – Bronte Station to Appleby Station

There were eight (8) domestic supply wells, two (2) industrial/commercial supply wells, one (1) agricultural supply well, and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are three (3) waterbodies, Lower Bronte Creek Wetland Complex, Appleby Creek, and Sheldon Creek, located within 500 m of the rail corridor in this section.

3.12.13 OCS & Bridges: Section LSW-8 – Appleby Station to Burlington (MP 31.5)

There were five (5) domestic supply wells identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are six (6) waterbodies, Appleby Creek, Sheldon Creek, Shoreacres Creek, Tuck Creek, Roseland Creek, and Indian Creek, located within 500 m of the rail corridor in this section.

4 Baseline Conditions – Kitchener Corridor

4.1 Natural Environment

Please refer to Section 1.5.1 for a description of the methodology followed for collection of natural environmental baseline conditions data. Baseline conditions within each segment of the Kitchener Corridor have been summarized below. Additional details can be found in the Natural Environment Baseline Conditions Report contained in **Appendix A1**.

Based on review of available background information, **Table 4-1** lists all SAR with habitat within the immediate or general surrounding area of the Kitchener Corridor. SAR with suitable habitat *and* potential to occur within each portion of the Study Area are discussed in the appropriate sections below.

Table 4-1: Summary of Potential Species at Risk within the Immediate and General Area of the Kitchener Corridor

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
VASCULAR PLANTS						
Butternut	*Juglans cinerea*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
BIRDS						
Bank Swallow	*Riparia riparia*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; OBBA
Bobolink	*Dolichonyx oryzivorus*	No Status (No Sched)	THR	MBCA	ESA	OBBA
Chimney Swift	*Chaetura pelagica*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora; OBBA
Common Nighthawk	*Chordeiles minor*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
Eastern Meadowlark	*Sturnella magna*	No Status (No Sched)	THR	MBCA	ESA 2007	OBBA
Eastern Wood-pewee	*Contopus virens*	(No Sched)	SC	MBCA	-	MNRF Aurora; OBBA
Peregrine Falcon	*Falco peregrinus*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora
Red-headed Woodpecker	*Melanerpes erythrocephalus*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Wood Thrush	*Hylocichla mustelina*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora; OBBA; TRCA
HERPETOFAUNA						
Snapping Turtle	*Chelydra serpentina*	SC (Sched 1)	SC	-	-	MNRF Aurora; NHIC
Western Chorus Frog	*Pseudacris triseriata*	THR (Sched 1)	-	SARA	-	TRCA
INVERTEBRATES						
Monarch	*Danaus plex ippus*	SC (Sched 1)	SC	-	ESA	MNRF Aurora
FISH						
Reside Dace	*Clinostomus elongates*	SC (Sched 3)	END	-	ESA	MNRF Aurora
MAMMALS						
Eastern Small-footed Myotis	*Myotis leibii*	-	END	-	ESA	MNRF Aurora
Little Brown Myotis	*Myotis lucifugus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Northern Myotis	*Myotis septentrion alis*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Tri-coloured Bat	*Perimyotis s ubflavus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora

* ESA: Endangered Species Act; FWCA: Fish and Wildlife Conservation Act; SARA: Species at Risk Act; MBCA: Migratory Birds Convention Act
** General prohibitions do not apply to species identified as Special Concern (SC) in Schedule 1 and all species in Schedule 3of the SARA
Note – The ESA (2007) supersedes the FWCA; END – Endangered; SC – Special Concern; THR - Threatened

4.1.1 Bramalea PS

4.1.1.1 Terrestrial

The Bramalea PS is located within Ecoregion 7E (see **Figure 1-5**).

Wetlands

There are no wetland features present within the PS.

Vegetated Areas

The vegetation within the PS area is comprised of three (3) communities: Cultural Meadow (CUM), Commercial and Institutional (CVC), and Transportation and Utilities (CVI) and typical of disturbed areas. Species within the study area include Tall Goldenrod, New England Aster (*Symphyotrichum novae-angliae*), Heath Aster (*Symphyotrichum ericoides*), Common Milkweed (*Asclepias syriaca*), and Trembling Aspen.

Vegetation communities within this portion of the study area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are discussed in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The Bramalea PS does not provide any Significant Wildlife Habitat; however the CUM community may provide suitable habitat for pollinating insects.

4.1.1.2 Aquatic

There are no aquatic features within the PS.

4.1.1.3 Species at Risk

The Bramalea PS does not provide any suitable habitat for SAR.

4.1.1.4 Designated Areas

The boundary of the eastern portion of the Bramalea PS Study Area touches limits of TRCA's Regulated Areas.

4.1.2 Bramalea 25kV Feeder Route

4.1.2.1 Terrestrial

The 25kV Feeder Route is located within Ecoregion 7E (see **Figure 1-19**).

Wetlands

There are no wetland features present within the 25kV Feeder Route.

Vegetated Areas

The vegetation within the Feeder Route area is comprised of three (3) communities: Cultural Meadow (CUM) and Transportation and Utilities (CVI) and typical of disturbed areas. Species within the study area include Tall Goldenrod, New England Aster (*Symphyotrichum novae-angliae*), Heath Aster (*Symphyotrichum ericoides*), Common Milkweed (*Asclepias syriaca*), and Trembling Aspen.

Vegetation communities within this portion of the study area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are discussed in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The 25kV Feeder Route does not provide any Significant Wildlife Habitat; however the CUM community may provide suitable habitat for pollinating insects.

4.1.2.2 Aquatic

There are no aquatic features within the 25kV Feeder Route.

4.1.2.3 Species at Risk

The 25kV Feeder Route does not provide any suitable habitat for SAR.

4.1.2.4 Designated Areas

The 25kV Feeder Route is located within the Toronto and Region Conservation Authority (TRCA) Regulated Area.

4.1.3 Corridor & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

4.1.3.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are several identified unevaluated wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVC, as well as CVI. The vegetated communities within this corridor section are limited to the riparian valley areas surrounding Mimico Creek. These communities consist of CUM, MEM, and WOD. OA areas are present at Mimico Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This Study Area has a number of small identified unevaluated wetlands, identified as MEM, as well as OA areas within Mimico Creek that may provide staging, foraging and overwintering habitat for turtles and

breeding and foraging habitat for amphibians and marsh birds. The CUM communities may provide potential foraging habitat for pollinating insects. The WOD communities may provide foraging and nesting habitat for breeding birds.

4.1.3.2 Aquatic

There is one watercourse within the Study Area: Mimico Creek. The Mimico Creek watershed is dominated by cool-warm water generalist species tolerant of a range of habitat conditions. Species found in the lower reaches of Mimico Creek in and around the mouth are listed in Section 4.3.1.2 of **Appendix A1**.

4.1.3.3 Species at Risk

A total of 11 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 4-2** below.

Table 4-2: Potential Species at Risk with Suitable Habitat and Potential to Occur within KT-1

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Moderate (WOD)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD)
Wood Thrush	*Hylocichla mustelina*	• High (WOD)
Snapping Turtle	*Chelydra serpentina*	• Low (OA, MAM, MEM)
Western Chorus Frog	*Pseudacris triseriata*	• High
Monarch Butterfly	*Danaus plexippus*	• Moderate (MEM • Low (CUM)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a]OA – Open Water; CUM – Cultural Meadow; CVC – Commercial and Institutional; WOD – Deciduous Woodland; MEM – Mixed Meadow; MAM – Meadow Marsh

4.1.3.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

4.1.4 Corridor & Bridges: Section KT-2 – Malton Station to Bramalea Station

4.1.4.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVC, CVR, and CVI. The vegetated communities within this corridor consist of MAM, THD, and CUM. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain minimal canopy cover (i.e. <10%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The CUM communities may provide potential foraging habitat for pollinating insects and the MAM may provide nesting and foraging habitat for marsh birds.

4.1.4.2 Aquatic

There is one watercourse within the study area: Mimico Creek. The Mimico Creek watershed is dominated by cool-warm water generalist species tolerant of a range of habitat conditions. Species found in the lower reaches of Mimico Creek in and around the mouth are listed in Section 4.3.2.2 of **Appendix A1**.

4.1.4.3 Species at Risk

A total of four SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 4-3** below.

Table 4-3: Potential Species at Risk with Suitable Habitat and Potential to Occur within KT-2

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (THD)
Chimney Swift	*Chaetura pelagica*	• Low (Chimney Swift are found within chimney structures that are part of the CVC)
Monarch Butterfly	*Danaus plexippus*	• Moderate (MAM) • Low (CUM)
Snapping Turtle	*Chelydra serpentina*	• Low (OA, MAM)

[a]OA – Open Water; CUM – Cultural Meadow; CVC – Commercial and Institutional; MAM – Meadow Marsh

4.1.4.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

4.2 Preliminary Environmental Site Assessment

Please refer to Section 1.5.2 for a description of the methodology followed for collection of preliminary environmental assessment site baseline conditions data. Baseline conditions at each TPF site associated with the Kitchener Corridor have been summarized below.

A summary of the background information review, observations from the site reconnaissance, findings, ranking, and recommendations for each TPF site are provided below. The location of identified issues, if any, are indicated on **Figure 4-1**, below.

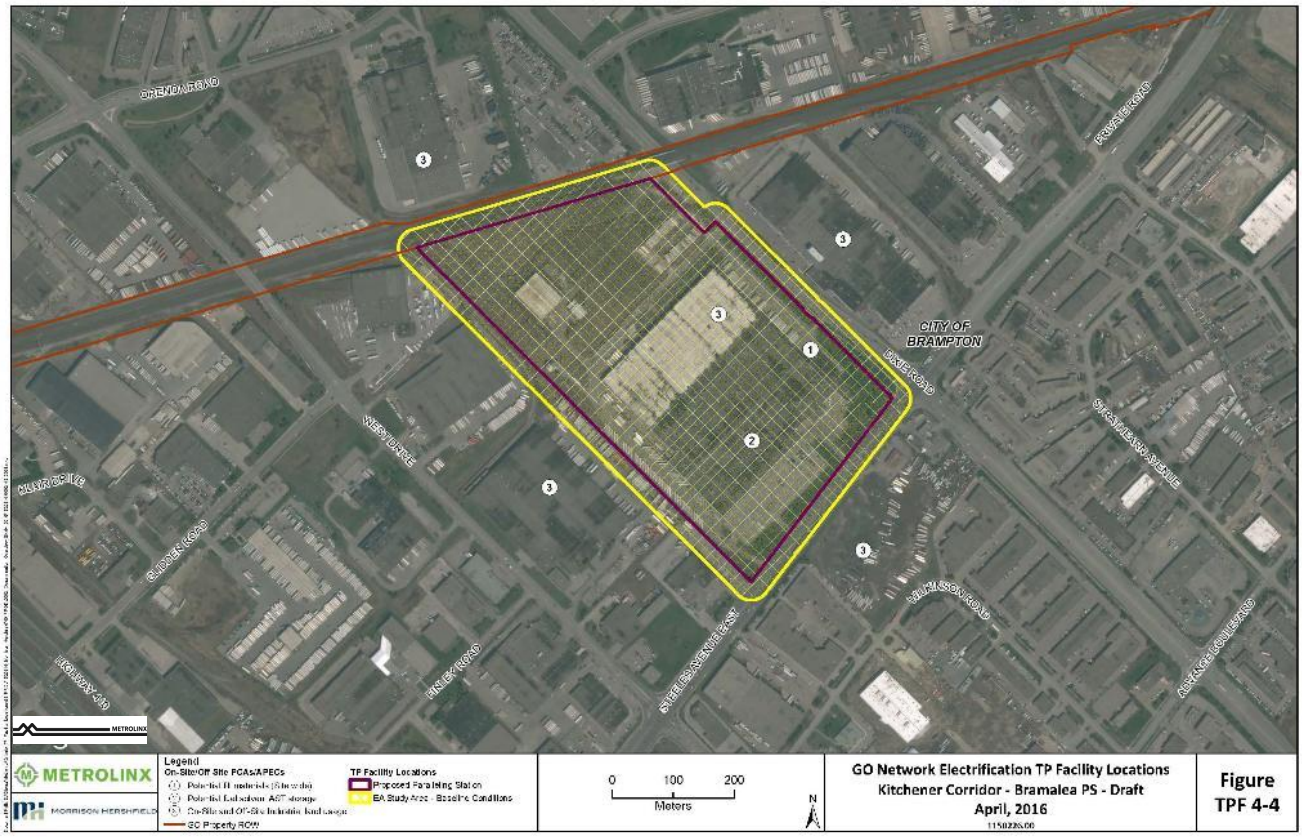
4.2.1 Bramalea PS

Table 4-4 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Bramalea PS site.

Table 4-4: Summary of Baseline Conditions at the Bramalea PS Site

Drive-by Site Reconnaissance Key Observations	• The Site is developed with one large industrial building on the southern half of the Site, Ford Canadian Headquarters (possible assembly and warehousing facility); • The northern portion of the Site is used for tractor trailer parking, and is developed with one small building; • The Site appears to be a facility that has motor vehicle parts and supplies; • Four vent pipes are present on the main Site building indicating possible fuel or solvents storage; • The eastern portion of the Site was at a higher grade than the western portion of the Site; • Berms were present along the eastern and northwestern boundaries of the Site; and, • Surrounding land uses consist primarily of industrial properties.
Identified APECs/PCAs	• Potential fill materials of unknown composition may be present across the Site; • Industrial on-Site and off-Site land usage, including waste generation of halogenated solvents; and, • Possible on-Site fuel or solvents containing ASTs.
Risk Ranking	**Moderate**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from on-Site and adjacent/nearby land uses; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 4-1: Potential Sources of Contamination at the Proposed Bramalea PS Site Location



4.2.2 Bramalea 25kV Feeder Route

Table 4-5 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Bramalea 25kV Feeder Route site.

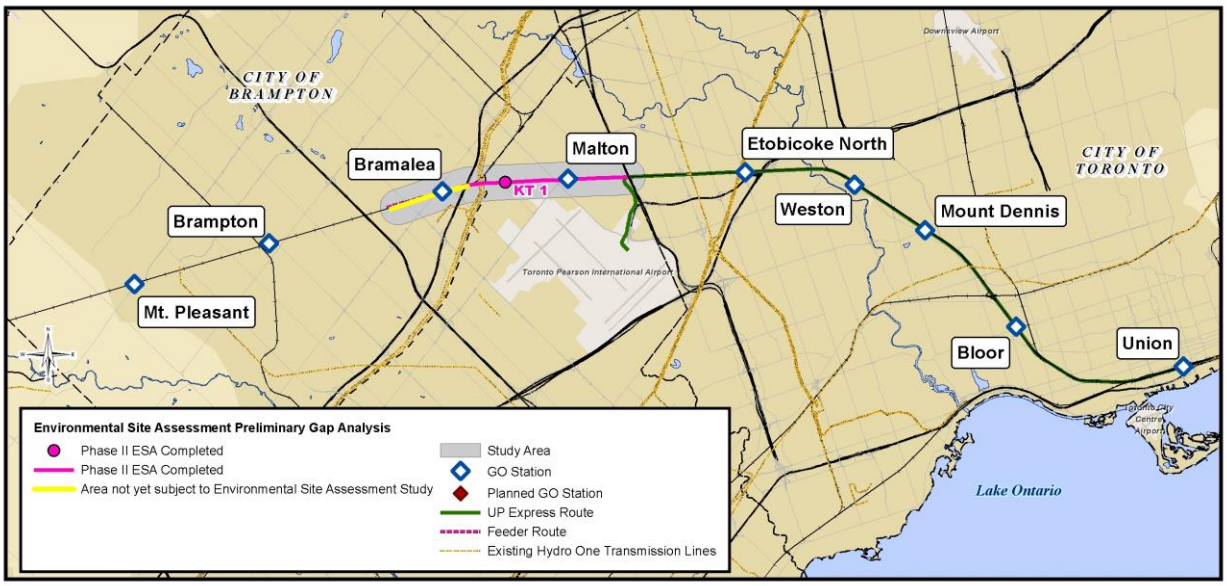
Table 4-5: Summary of Baseline Conditions at the Bramalea 25kV Feeder Route

Drive-by Site Reconnaissance Key Observations	• As the majority of the Site was not visible from publically accessible lands, a Site visit was not completed.
Identified APECs/PCAs	• Various industrial land uses surrounding the Site.
Risk Ranking	**Low**
Recommendations	• Characterize the quality of excess soil generated at the time of installation to determine management options. A subsurface investigation prior to construction is not considered necessary since the installation of the connection is not anticipated to require property acquisition or large scale excavation activities that have the potential to disturb subsurface contamination, if present.

4.2.3 Kitchener Corridor

A Phase I and 2 ESA was completed by Ecoplans in 2009 to support a property acquisition for a portion of the CN Weston Subdivision. This was required as part of a plan for expansion of the GO Transit passenger rail service. The Ecoplans (2009) study also extended eastward beyond Hwy 427, following what is now the UP Express, and terminated where the corridor crosses Strachan Avenue in Toronto. This study covers approximately 3.8 km of the 6.5 km long corridor, and further information on the gap analysis is provided in **Appendix B**. The general location of data gaps and previously identified areas of contamination are illustrated in **Figure 4-2** and described below. Detailed maps of the extent of previous investigations and location of contamination or potential contamination found in previous studies are provided in **Appendix B**. The corridor west of Highway 407 has not been assessed, a length of approximately 2.7 km. Further work is recommended to address the data gaps identified to prepare a complete contamination overview study for the project footprint.

Figure 4-2: Kitchener Corridor Contamination Overview Map



The Phase I and II ESA works completed by Ecoplans (2009) identified the following contaminant related issues:

1. During Phase II ESA works, there were only two boreholes completed on the subject corridor (BH37 and BH38). Several PAH parameters exceeding the applicable MOE Table 3 Standard were identified in the deeper soil in the vicinity of Derry Road East and Airport Road at approximate CN Mile 15.12 (BH37, identified as Area #1 in **Figure 4-2**). The contamination identified in the borehole may be attributed to a coal shed which is partially located on the site, the various surrounding industrial properties and/or the closed landfill located approximately 250 metres west of this borehole.

2. The scope of this Phase II ESA was limited in that a comprehensive overview of soil and groundwater was not completed. Ecoplans believes that there are significant data gaps at the site including groundwater data. This ESA recommended as a minimum that future expansion of the GO Transit system within the Weston Subdivision required site specific investigations to determine appropriate management of contaminated soil and groundwater and potential health and safety issues.

4.3 Cultural Heritage

Please refer to Section 1.5.3 for a description of the methodology followed for collection of cultural heritage baseline conditions data. Baseline conditions within each segment of the Kitchener Corridor have been summarized below. Additional details can be found in the Cultural Heritage Screening Report contained in **Appendix C1**. Please refer to Section 1.5.3.1 for a description of the resources that were used for the screening of Cultural Heritage Resources.

4.3.1 Bramalea PS

See **Figure 1-5** in Section 1.3 for the location of the proposed Bramalea PS site. A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource is located near this PS. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 4-6** summarizes this resource and provides recommendations for it (see **Appendix C1** for the screening reports).

Table 4-6: Cultural Heritage Resources for Bramalea PS

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[25]	Metrolinx Heritage Recognition[26]
N/A	8000 Dixie Road, Brampton	Bramalea TP Site	Listed on the City of Brampton Inventory of Heritage Resources	Conditional Heritage Property; CHER recommended	Non-Heritage Property as the portions of this property to be acquired do not contain heritage attributes (MHC Decision, January 11, 2017)

As noted above, a CHER was recommended and subsequently conducted for the Bramalea PS site. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 4-7** below.

[25] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[26] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 4-7: Summary of Bramalea PS CHERs Undertaken and Statement of Cultural Heritage

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Bramalea PS Site	Not heritage	January 11, 2017	Not a Provincial Heritage Property

Based on the recommendations noted above, the Bramalea PS site does not meet the criteria contained within Ontario Regulations 9/06 or 10/06, and as such it is neither a Provincial Heritage Property nor a Provincial Heritage Property of Provincial Significance. A copy of the CHER is provided in **Appendix M**.

4.3.2 Bramalea 25kV Feeder Route

There are no heritage properties identified within the Bramalea 25kV feeder route. There are no further concerns from a cultural heritage perspective.

4.3.3 Corridor & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 4-8** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 4-8: Cultural Heritage Resources for KT-1

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[27]	Metrolinx Heritage Recognition[28]
N/A	3060 Derry Rd. E., Mississauga	Malton GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Goreway Dr., Mississauga	Goreway Drive Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Mimico Creek, Mississauga	Mimico Creek Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property

4.3.4 Corridor & Bridges: Section KT-2 – Malton Station to Bramalea Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Six potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 4-9** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

[27] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[28] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 4-9: Cultural Heritage Resources for KT-2

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[29]	Metrolinx Heritage Recognition[30]
N/A	Derry Road, Mississauga	Derry Road Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Airport Road, Mississauga	Airport Road Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	1713 Steeles Ave., Bramalea	Bramalea GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Highway 407 North, Brampton	Highway 407 North Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Highway 407 South, Brampton	Highway 407 South Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Bramalea Road, Brampton	Bramalea Road Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property

4.4 Archaeology

A review of the historic land use of the Kitchener corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. It is situated within the traditional territory occupied by the ancestral Huron-Wendat until the turn of the sixteenth century; subsequently utilized by the Seneca First Nation as a hunting ground until the late seventeenth century; and, subsequently occupied by the Mississauga First Nation until 1806 (Section KT-1; KT-2); and 1818 (TPF-4) (AANDC 2013a; 2013d; Ellis 2013; Williamson 2013). The background research also acknowledges that since the turn of the eighteenth century, the Métis have lived throughout the Province of Ontario but are often muted in the historical record (MNC n.d.; Stone and Chaput 1978:607,608). Since 1806, the corridor has been occupied by Euro-Canadian peoples and is situated within the former Townships of Toronto Gore and Toronto, County of Peel; and, since 1818 within the former Township of Chinguacousy, County of Peel (Pope 1877b). A review of 19th

[29] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[30] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

century mapping indicates that the corridor includes both historic features and transportation routes (Tremaine 1859; Pope 1877b) (Figure 5-27 in **Appendix D1**).

A review of the physiography of the corridor indicates that it is situated within the Peel Plain physiographic region of southern Ontario (Chapman and Putnam 1984). Review of soils information indicates that the corridor does not include any well-drained sandy soils (Department of Agriculture 1953; Hoffman and Richards 1953) (Figures 6-1 and 6-2 in **Appendix D1**).

Please refer to Section 1.5.4 for a description of the methodology followed for collection of archaeological baseline conditions data. Baseline conditions within each segment of the Kitchener Corridor have been summarized below. Additional details can be found in the Archaeological Baseline Conditions Report contained in **Appendix D1**.

4.4.1 Bramalea PS

See **Figure 1-5** in Section 1.3 for the location of the proposed Bramalea PS site. The Bramalea PS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway; Steeles Avenue East)
- Proximity to water source (unnamed historic tributary)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the Bramalea PS.

4.4.2 25kV Feeder Route

The 25kV Feeder Route corridor includes an active GO Railway line, and corridor lands have been previously disturbed by past railway construction. Archaeological potential has therefore been removed.

4.4.3 Corridor & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

Section KT-1 meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway; former alignment of Goreway Drive)
- Proximity to historic features (farmstead; station grounds)
- Proximity to water source (Mimico Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to two previous archaeological assessments (ASI 2009a; 2009b) (see Figure 7-27 in **Appendix D1**). Approximately 2.2 ha have been previously assessed. ASI (2009a) conducted a Stage 1 archaeological assessment for the Georgetown South Service Expansion and Union Pearson Rail Link under the project direction of Rob Pihl (P057-509-2008). This Stage 1 archaeological assessment recommended that part of the KT-1 section possessed no archaeological potential on account of previous archaeological assessment. This Stage 1 archaeological assessment only overlapped with the current Study Area up to the west side of Goreway Drive. No other known previous archaeological assessments have been completed within the KT-1 section.

4.4.4 Corridor & Bridges: Section KT-2 – Malton Station to Bramalea Station

Section KT-2 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Malton)
- Proximity to historic transportation route (Grand Trunk Railway; Bramalea Road)
- Proximity to historic features (farmsteads)
- Proximity to water source (tributary of Etobicoke Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the KT-2 section. Based on the available background documents, the Bramalea PS and the Kitchener Corridor, include areas which had not been previously subject to archaeological assessment. Therefore, parts of the Kitchener Rail Corridor required further archaeological assessment. For further details on the specific areas that were further assessed, please refer to Figure 7-27 of the Archaeology Baseline Conditions Report (**Appendix D1**).

4.5 Land Use & Socio-Economic

Please refer to Section 1.5.5 for a description of the methodology followed for collection of land use and socio-economic baseline conditions data. Baseline conditions within each segment of the Kitchener Corridor have been summarized below. Additional details can be found in the Land Use and Socio-Economic Baseline Conditions Report contained in **Appendix E1**.

The portion of the Kitchener Corridor from Strachan Avenue to the airport spur (at Highway 427) was previously assessed/approved as part of the Metrolinx UP Express Electrification EA. The small section of the Kitchener Corridor being evaluated in this study (Highway 427 to the Bramalea GO Station passes through employment/industrial lands in the City of Mississauga and the City of Brampton towards the Bramalea GO Station. This section of the rail corridor is entirely within Peel Region.

There are two sensitive receptor facilities (both schools) within the vicinity (i.e., within approximately 500 m) of the Kitchener Corridor. There are no child care centres, long term care centres or hospitals in the vicinity of the rail corridor (see Table 4-5 and Figures KT-3 to KT-6 in **Appendix E1**).

4.5.1 Bramalea PS

4.5.1.1 Existing Land Use

The north/northwest portion of the proposed Bramalea PS site (**Figure 1-5**) is designated *Industrial*, while the south/southeast is designated *Business Corridor.* Currently, the north/northeast of the site is primarily open space, with some parking lots, warehousing and a silo. The south/southeast portion is comprised of the buildings and parking lots for the Ford Parts and Distribution Centre. The site is bordered to the north/northwest by the rail corridor, northeast by Dixie Road, southeast by Steeles Avenue East, and southwest/west by other warehouses/parking lots. Official Plan Land use designations at this PS site are shown in Figures KT-4 and KT-5 in **Appendix E1**.

Figure 4-3: Existing Land Use at the Proposed Bramalea PS Site (East of Site, Facing North)

Figure 4-4: Existing Land Use at the Proposed Bramalea PS Site (North of Site, Facing South)

There are no trails, large parks or other recreational amenities within the vicinity of the proposed Bramalea PS site. Given the industrial nature of the area, there are no sensitive receptor facilities within the vicinity of the proposed Bramalea PS site.

4.5.1.2 Planned Land Use

The lands of the proposed Bramalea PS site are subject to the Bramalea West Industrial Secondary Plan. This Secondary Plan encourages the continuing development of Community Structure "Villages", while maintaining the existing commercial and industrial areas. The southwest corner of the site is designated *Mixed Industrial* and *Commercial* use under this Secondary Plan. There are no development applications at the site.

There are no planned and approved recreational amenities in the vicinity of the proposed Bramalea PS site, and the majority of the site is zoned *Industrial* under the City of Brampton Zoning By-law 270-2004. The southwest corner of the site is zoned *Commercial.*

4.5.2 Bramalea 25kV Feeder Route

4.5.2.1 Existing Land Use

The 25kV Feeder route will run within the City of Brampton along the Kitchener Corridor from the Bramalea PS eastward. Land use on either side of this route generally consists of industrial uses, and commercial uses.

4.5.3 Corridor & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

4.5.3.1 Existing Land Use

In Mississauga, lands along the rail corridor to the Malton GO Station are primarily designated as *Industrial* and *Business Employment*, with *Greenlands* around Wildwood Park/Mimico Creek. South west of the Malton GO Station is Toronto Pearson International Airport. Official Plan Land use designations along this section of the rail corridor are shown in Figures KT-1 and KT-2 in **Appendix E1**.

Wildwood Park is the only large park that borders this section of the rail corridor, and there are no sensitive receptor facilities in the vicinity of the rail corridor.

4.5.3.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the rail corridor in Mississauga, and no planned and approved recreational amenities bordering this section of the rail corridor.

Under the City of Mississauga Zoning By-law 0225-2007 the rail corridor does not have any zoning designation.

4.5.4 Corridor & Bridges: Section KT-2 – Malton Station to Bramalea Station

4.5.4.1 Existing Land Use

West of the Malton GO Station to Hull Street/Beverley Street, land use adjacent to the rail corridor is characterized by *Low Density Residential*, *Greenbelt, Mainstreet Retail Commercial,* and *General Retail Commercial*. The remainder of adjacent land use is *Business Employment* and *Industrial* to the municipal border.

Entering Brampton, land use along the rail corridor is entirely *Parkway Belt West*, *Open Space*, *Industrial* and *Office*, with *Business Corridor* around the Bramalea GO Station. Undeveloped lands are located between the municipal border and Highway 407, and west Highway 407 to Bramalea Road. Official Plan Land use designations along this section of the rail corridor are shown in Figures KT-2 to KT-4 in **Appendix E1**.

There are no trails, large parks or other recreational amenities along this section of the rail corridor, and no sensitive receptor facilities are within 40 m of the rail corridor.

4.5.4.2 Planned Land Use

All lands located within the City of Brampton are classified under Secondary Plans. The rail corridor passes through the Steeles Industrial Secondary Plan and runs adjacent to the Bramalea Road South Gateway Secondary Plan. The goals of the Steeles Industrial Secondary Plan policy guidelines are to promote the industrial, commercial and institutional development of the affected lands. The Bramalea Road South Gateway Secondary Plan envisions the area as a mixed-use centre that will function as an urban gateway into the City of Brampton, where a multi-modal transportation node of regional significance is maintained, a new urban place is created, and impacts to industrial operations are minimized. The undeveloped areas around the 407 are designated as *Parkway Belt West*.

The city of Brampton is currently undertaking an environmental assessment to widen Bramalea Road between the city limit and Steeles Avenue East. This includes a widening of the bridge on Bramalea Road which crosses the railway tracks. There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned *Public Ownership and Utilities* under the City of Brampton Zoning By-law 270-2004.

4.6 Air Quality

The Kitchener Corridor has been classified as an Urban land use category. In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of $PM_{2.5}$ (respirable particulate matter), and PM_{10} (inhalable particulate matter) are slightly exceeded.

Table 4-10 shows air quality statistics for the urban land use category. See **Appendix F1** for station-by-station summaries of the air quality monitoring data.

Table 4-10 also shows the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQCs except for $PM_{2.5}$ which has a CAAQS, as described in Section 1.5.6.

Table 4-10: Summary of Urban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
$PM_{2.5}$	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM_{10}	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 4-9 summarizes the Kitchener Corridor sections and the air quality categories for the corridor.

Table 4-11: Summary of Kitchener Corridor Air Quality Baseline Conditions

Corridor Section		Length (km)	Traction Power Facilities	Baseline Air Quality Category	Baseline Air Quality Table Reference
KT-1	UP Express Spur (at Highway 427) to Malton Station	2.1		Urban	4-8
KT-2	Malton Station to Bramalea Station	4.4		Urban	4-8
	Traction Power Facility located west of KT-2 Segment		Bramalea PS	Urban	4-8

4.7 Noise & Vibration

Receptors of interest for this assessment include the following noise sensitive land uses:

- Residences;
- Hotels, motels and campgrounds;
- Schools, universities, libraries and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and
- Churches and places of worship.

Receptors of interest within the Study Area are mainly residential houses located adjacent to the Kitchener rail corridor. In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Modelling was completed for all these receptors; however, results are presented for selected representative receptors. **Table 4-12** presents the predicted baseline noise levels for the Kitchener Corridor. Maps depicting the Receptor IDs identified in **Table 4-12** and **Table 4-13** are shown below.

Table 4-12: Predicted Baseline Noise Levels for the Kitchener Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R44	Daytime	59.4
	Nighttime	57.1
R45	Daytime	56.1
	Nighttime	53.2
R46	Daytime	20.5
	Nighttime	15.6

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Table 4-13 presents the predicted baseline vibration levels for the Kitchener Corridor.

Table 4-13: Predicted Baseline Vibration Levels for the Kitchener Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
				Existing (m)	Existing (mm/s)
Go Train	R13	128	No	30	0.093
Freight Train		40			0.31
Go Train	R30	129	No	65	0.04
Freight Train		40			0.13
Go Train	R36	128	No	40	0.07
Freight Train		40			0.22
Go Train	R45	128	No	50	0.05
Freight Train		40			0.16

[1] See Figure 2b, 2d and 2h for receptor locations in Appendix G.

Figure 4-5: Kitchener Corridor Receptor and Existing Barrier Locations 1

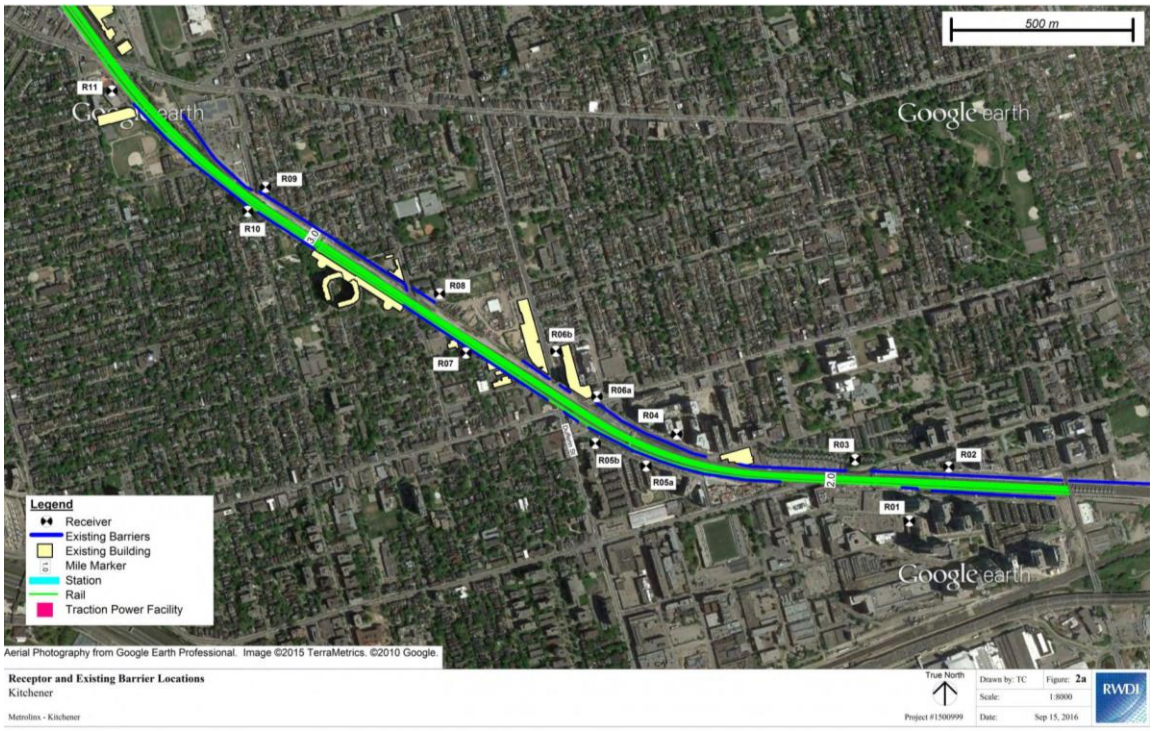


Figure 4-6: Kitchener Corridor Receptor and Existing Barrier Locations 2

Figure 4-7: Kitchener Corridor Receptor and Existing Barrier Locations 3

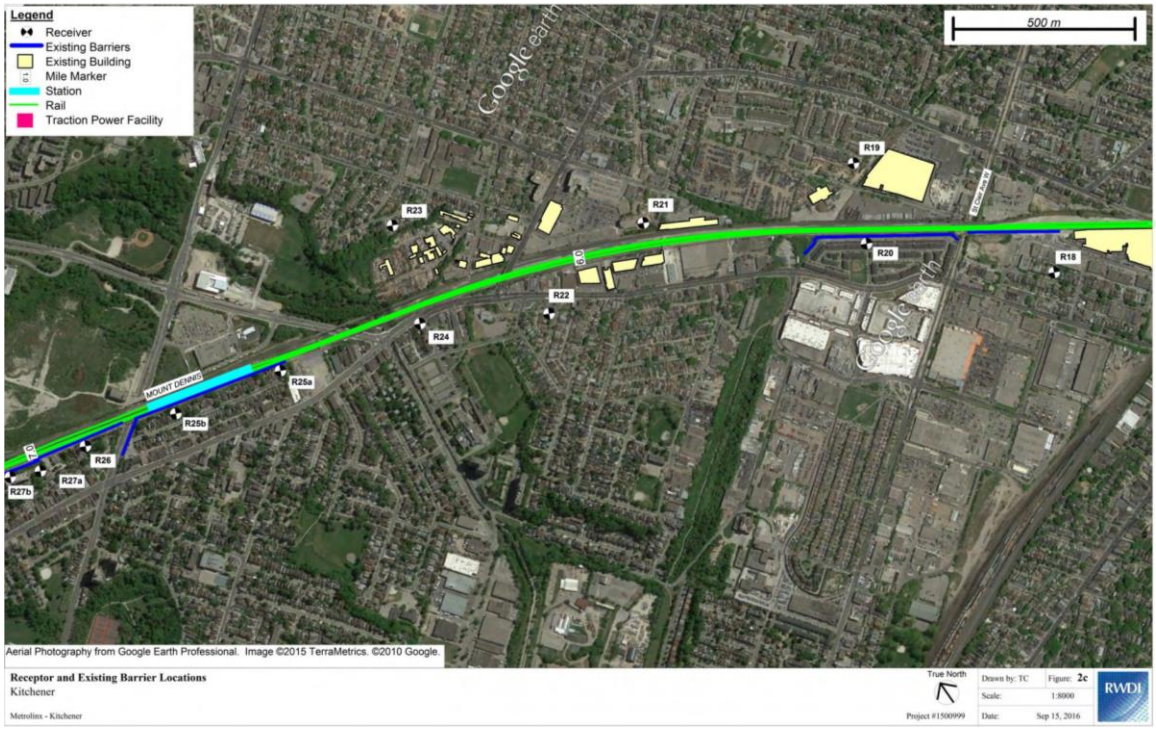


Figure 4-8: Kitchener Corridor Receptor and Existing Barrier Locations 4

Figure 4-9: Kitchener Corridor Receptor and Existing Barrier Locations 5

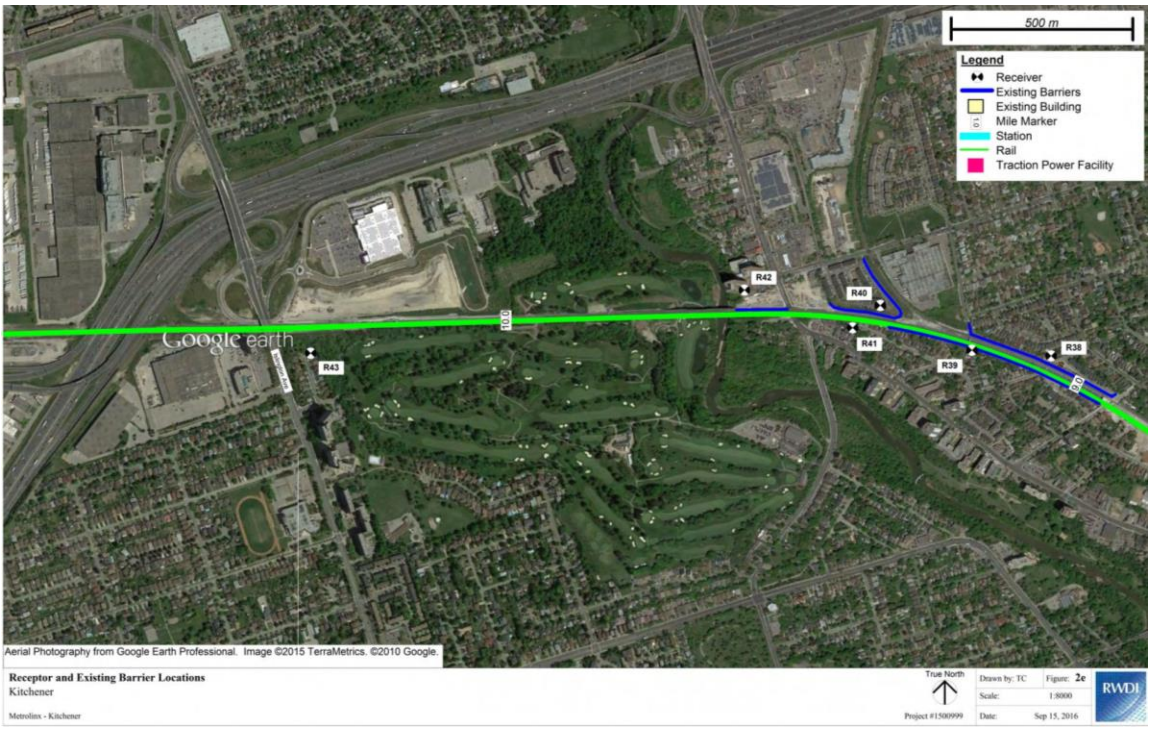


Figure 4-10: Kitchener Corridor Receptor and Existing Barrier Locations 6

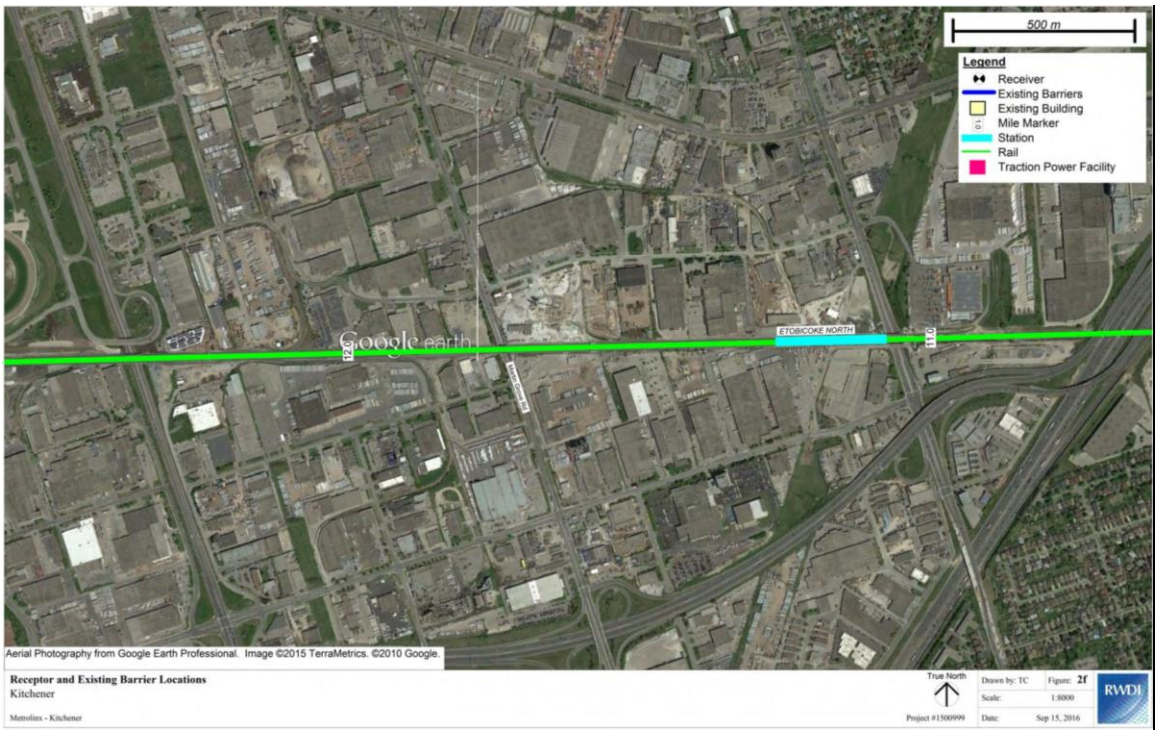


Figure 4-11: Kitchener Corridor Receptor and Existing Barrier Locations 7

Figure 4-12: Kitchener Corridor Receptor and Existing Barrier Locations 8

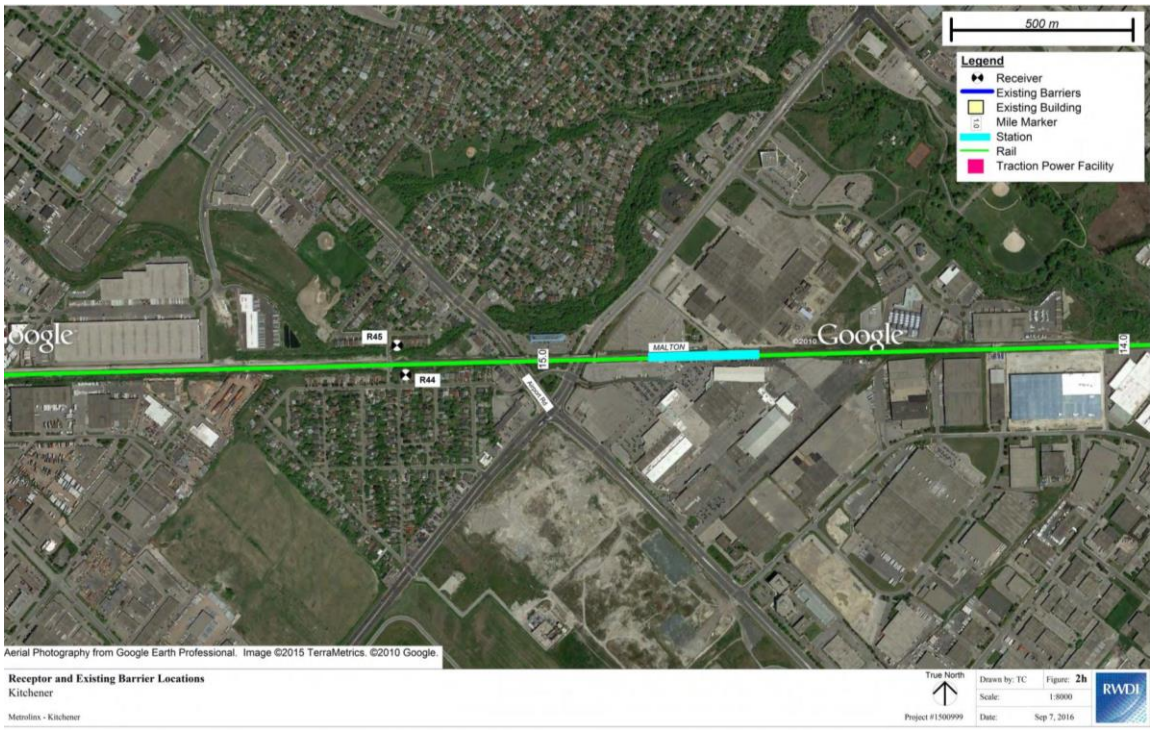


Figure 4-13: Kitchener Corridor Receptor and Existing Barrier Locations 9

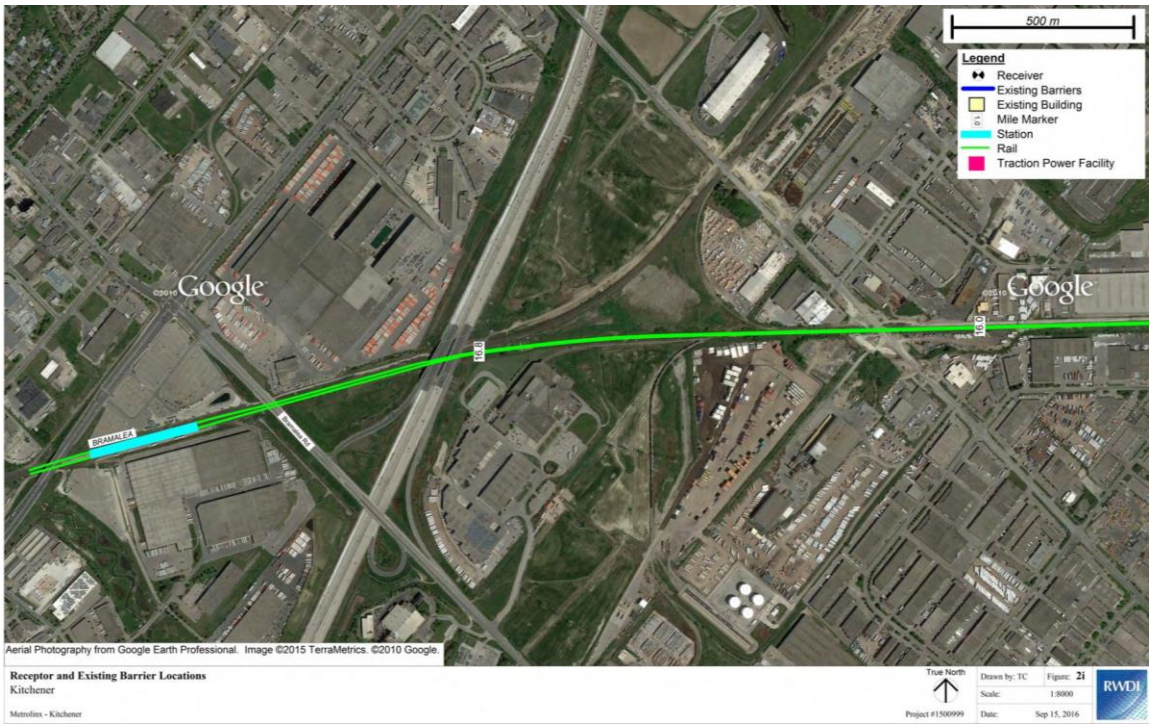
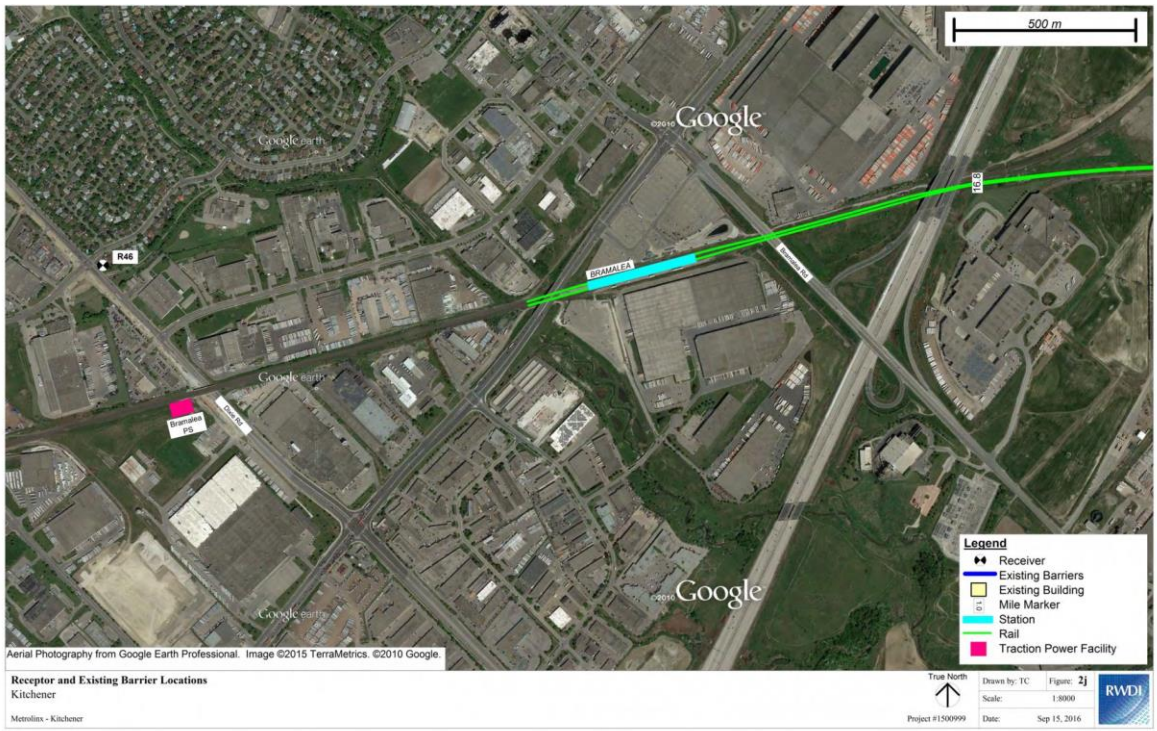


Figure 4-14: Kitchener Corridor Receptor and Existing Barrier Locations 10



4.8 Visual

Please refer to Section 1.5.8 for a description of the methodology followed for collection of visual baseline conditions data. Baseline conditions within each segment of the Kitchener Corridor have been summarized below. Additional details can be found in the Visual Assessment Baseline Conditions Report contained in **Appendix H1**.

4.8.1 Bramalea PS

See **Figure 1-5** in Section 1.3 for the location of the proposed Bramalea PS site. The proposed site for the Bramalea PS is located approximately 2000 metres west of the Bramalea GO Station. The site is located on a vacant parcel of land between Dixie Road and West Drive on the south side of the rail right-of-way, and is surrounded by large-scale industrial buildings. The site is visible from a distance from the east side of the West Avenue Bridge, however, the only sidewalk on the bridge is on the west side.

Figure 4-15: Proposed Site of Bramalea PS from West Drive Bridge (Site is beyond Industrial Building on Right Side of Tracks)

4.8.2 Bramalea 25kV Feeder Route

The Bramalea 25kV feeder route follows the Kitchener Corridor through an industrial area.

4.8.3 Corridor & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

This section is in the City of Mississauga and passes through an industrial area with no residential development. West of Highway 427, the railroad crosses a small unnamed creek. Wildwood Park, which is located in the creek watershed, abuts the tracks to the north.

There are no bridges either over or under roads in this section.

Malton GO Station is the only station in the section. Parking at the station abuts the tracks and views for passengers arriving at or leaving the station may be altered by the introduction of electrification infrastructure.

4.8.4 Corridor & Bridges: Section KT-2 – Malton Station to Bramalea Station

This section is partly in the City of Mississauga and partly in the City of Brampton, and consists of mostly industrial properties with one small area (approximately 500 metres in length) where residential homes back up to the tracks on both sides of the rail corridor. On the north side of the rail right-of-way, a small waterway or ditch with wooded banks affords visual protection for the homes. On the south side, the homes are closer to the right-of-way and, although there is currently a vegetative buffer along the tracks, electrification infrastructure may be visible in winter when the leaves are off the trees.

There are four bridges over the railroad in this section at Airport Road Highway 407, Bramalea Road and Steeles Avenue East. None of these bridges have sidewalks. Highway 407 is a freeway with fast moving traffic. The need for protective barriers will be determined during the design phase. The bridge at Bramalea Road may require a safety barrier, which would impact views for motorists. There are two grade crossings at Scarboro Street in a residential area and Torbram Road in an industrial area.

The only station in this section is Bramalea GO Station, which has a large parking lot that abuts the rail corridor. Passengers arriving at and departing from the station may have changed views of the station and rail right-of-way with the introduction of electrification infrastructure.

4.9 Utilities

Please refer to Section 2.9 for a description of the methodology followed for collection of utilities baseline conditions data. Baseline conditions within each segment of the Kitchener Corridor have been summarized below. Additional details can be found in the Utilities Baseline Conditions Report contained in **Appendix I1**.

4.9.1 Bramalea PS & 25kV Feeder Route

See **Figure 1-5** in Section 1.3 for the location of the proposed Bramalea PS site.

In addition to the utility requests for Section KT-2, an ON1Call planning request was logged for the entire property for the proposed Bramalea PS site. To augment the information received, a visual survey of the

site was also performed using Google Earth. Two communication companies: Bell and Rogers were identified as having plant on the property. Hydro One was also identified as having underground plant on the property. These utility companies, as well as Peel Region and the City of Brampton, were contacted individually by MH for information regarding existing and future utilities in the area of the proposed site.

Table 4-14: Summary of Utilities at Proposed Bramalea PS Site

Utility	Description
Hydro	Hydro One confirmed that the property is clear of their underground plant. The visual survey performed in Google Earth confirmed the existence of overhead lines crossing into the proposed Bramalea PS site from Dixie Rd. Additionally, there are also overhead lines on the north side of Steeles Ave East along the proposed south limits of the site.
Pipelines	There are no records found of third party pipelines on or near the proposed Bramalea PS site.
Watermains	Peel Region owns 25 buried watermains of varying size on or near the Bramalea PS. Peel Region owns one buried watermain crossing of unknown size within the Bramalea 25kV Feeder Route.
Sanitary Sewers	Peel Region owns seven buried sanitary sewers of varying size on or near the Bramalea PS.
Stormwater Sewers	Peel Region owns 18 buried stormwater sewers of varying size on or near the Bramalea PS. Peel Region also owns three ditch culverts from 300mm to 600mm in size on or near this Site. Peel Region owns one buried stormwater sewer crossing of unknown size and one buried 1120mm by 1825mm stormwater sewer that runs parallel to the Bramalea 25kV Feeder Route. Peel Region also owns a ditch culvert that crosses the Site.
Gas Mains	Enbridge Gas owns four 8in.-diameter buried gas mains on or near the Bramalea PS. Enbridge Gas owns one 8in.-diameter gas main that crosses the Bramalea 25kV Feeder Route.
Communication Companies	Bell and Rogers both confirmed the presence of buried and overhead utilities on the proposed Bramalea PS site. Zayo owns one buried cable on or near the Bramalea 25kV Feeder Route. Bell owns one buried cable that runs parallel to the Bramalea 25kV Feeder Route. Rogers owns two overhead cables and four buried conduits on or near the Bramalea 25kV Feeder Route.

4.9.2 Corridor & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

Table 4-15: Summary of Utilities within Section KT-1

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section KT-1.
	Local Distribution	Alectra owns four overhead crossings ranging from 11kV to 44kV in Section KT-1. Alectra owns two 11kV to 33kV overhead lines that run parallel to the ROW in this Section. There is a power service and substation owned by Alectra north of the tracks at Malton GO Station.
Pipelines		There are no records found of third party pipelines within Section KT-1.
Watermains		Peel Region owns one buried 400mm diameter watermain in Section KT-1.
Sanitary Sewers		Peel Region owns one buried sanitary sewer crossing of unknown size in Section KT-1, near Goreway Dr. Magellan Aerospace owns one buried 600mm-diameter sanitary sewer crossing in section KT-1, near Professional Court.
Stormwater Sewers		City of Mississauga owns five buried stormwater sewers that cross the ROW and one buried 500mm-diameter stormwater sewer that is parallel to the ROW in Section KT-1, near Derry Rd E. City or Mississauga also owns two ditch culverts that cross the corridor in this Section. Peel Region has one buried 400mm-diameter stormwater sewer crossing in this Section, near Malton GO Station.
Gas Mains		Enbridge Gas owns one buried gas main of unknown size that runs parallel to the ROW in Section KT-1. Magellan Aerospace owns one buried 42in.-diameter gas main crossing in this Section.
Communication Companies		Zayo owns one buried conduit crossing near Goreway Dr in Section KT-1. Bell owns one buried cable and one buried duct bank crossing near Goreway Dr in this Section. Bell also owns one buried conduit that runs parallel to the ROW in this Section, near Highway 427. Peel Region PSN owns one overhead cable crossing in this Section, near Goreway Dr. Rogers owns one buried conduit crossing in this Section, near Goreway Dr. Rogers Wireless owns one signal broadcast tower in this Section, near Professional Court. Telus owns one buried conduit crossing in this Section, near Malton GO Station.

4.9.3 Corridor & Bridges: Section KT-2 – Malton Station to Bramalea Station

Table 4-16: Summary of Utilities within Section KT-2

Utility		Description
Hydro	***Transmission***	Hydro One owns four overhead 500kV crossings and one 230kV overhead crossing in Section KT-2.
	Local Distribution	Alectra owns five overhead crossings ranging from 11kV to 33kV and one buried duct bank crossing near Hull St in Section KT-2. Alectra owns one 44kV overhead line that runs parallel to the ROW in this Section.
Pipelines		There are no records found of third party pipelines within Section KT-2.
Watermains		Peel Region owns six buried watermain crossings of varying size in Section KT-2.
Sanitary Sewers		Peel Region owns eight buried sanitary sewer crossings ranging from 300mm to 1800mm in diameter in Section KT-2.
Stormwater Sewers		City of Mississauga owns two buried stormwater sewer crossings and one buried stormwater sewer that runs parallel to the ROW in Section KT-2. City of Mississauga also owns one ditch culvert crossing in this Section. Peel Region owns two buried stormwater sewer crossings in this Section: one is 400mm and the other is 675mm in diameter. Peel Region also owns four ditch culverts in this Section, three of which are parallel to the ROW and one is a crossing.
Gas Mains		Enbridge Gas owns eight buried gas main crossings ranging from 30mm to 900mm in diameter in Section KT-2. Enbridge Gas also owns one buried gas main of unknown size near Drew Rd in this Section.
Communication Companies		Zayo owns two buried conduit crossings in Section KT-2. Bell owns one buried cable, two buried conduits, and three buried duct bank crossings in this Section. Bell owns six buried cables, two buried conduits, and one buried duct bank that run parallel to the ROW in this Section. Bell also owns two conduits on the Bramalea Rd overpass and two duct banks on the Steeles Ave E overpass in this Section. Peel Region PSN owns one buried duct bank crossing in this Section near Steeles Ave E, two overhead cable crossings, and one overhead cable that runs parallel to the ROW near Airport Rd. Rogers owns two overhead cable and five buried conduit crossings in Section KT-2. Rogers also owns three buried conduits that run parallel to the ROW in this Section. Telus owns one buried conduit crossing near Derry Rd E and one buried conduit that runs parallel to the ROW in this Section, near Highway 407.

4.10 EMI & EMF

4.10.1 Traction Power Facilities

Table 4-17 summarizes the ELF EMF measurements for the traction power facility within the Kitchener Corridor, as well as the GPS coordinates where the measurements were taken.

Table 4-17: ELF EMF Measurement Results at Kitchener Corridor Traction Power Facility

Facility Name	Latitude	Longitude	Resultant Flux Density Magnitude (mG)	Comments
Bramalea PS	43.698054	-79.704948	1.5	Measured from parking lot just off Dixie Road.

4.10.2 Kitchener Corridor

4.10.2.1 EMI Sensitive Sites

Based on the baseline mapping for the Kitchener Corridor, no EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the corridor.

4.10.2.2 ELF EMF Measurements

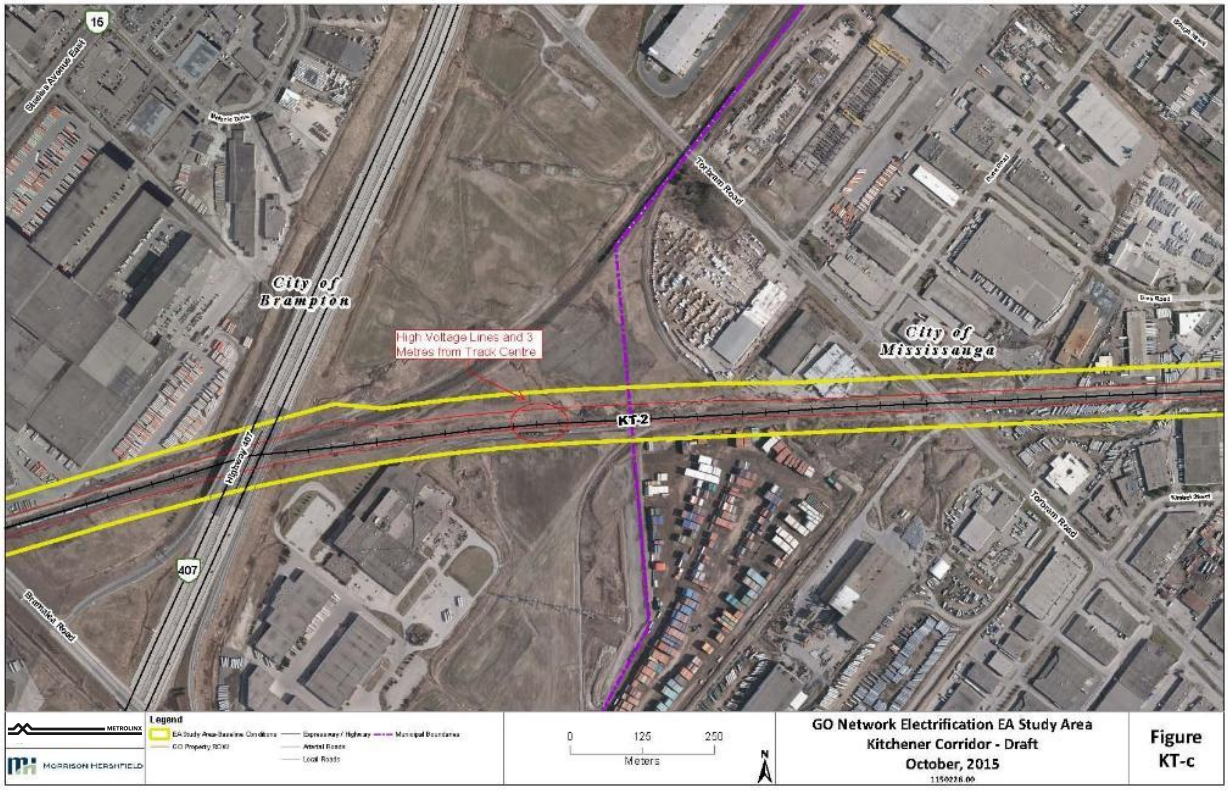
The tables in Section 4.2.4.2 to Section 4.2.4.3 in the EMI/EMF Baseline Conditions Report (**Appendix J1**) present the ELF EMF measurements at select points along the Kitchener Corridor. There were two high-ELF (> 10 mG) areas along this corridor, as shown in **Table 4-18**.

Figure 4-16 shows aerial views of these locations in relation to the Study Area. These are locations where post-electrification measurement of ELF EMF is recommended.

Table 4-18: Summary of High ELF (> 10 mG) Areas along the Kitchener Corridor

Area of Interest	Coordinates	Resultant Flux Density Magnitude (mG)	References
Under High Voltage Lines	43°42'14.5"N, 79°40'28.9"W	54.2	Figure 4-6
3 metres from centre of track	43°42'14.5"N, 79°40''25.6"W	55.2	Figure 4-6

Figure 4-16: ELF Sites in Kitchener Corridor – Under High Voltage Lines and 3 Metres from Centre of Track in relation to Study Area



4.11 Stormwater Management

Please refer to Section 1.5.11 for a description of the methodology followed for collection of stormwater management baseline conditions data. Baseline conditions for each TPF site within the Kitchener Rail Corridor has been summarized below. Additional details can be found in the Preliminary Stormwater Management Assessment Report contained in **Appendix K**.

4.11.1.1 Bramalea PS

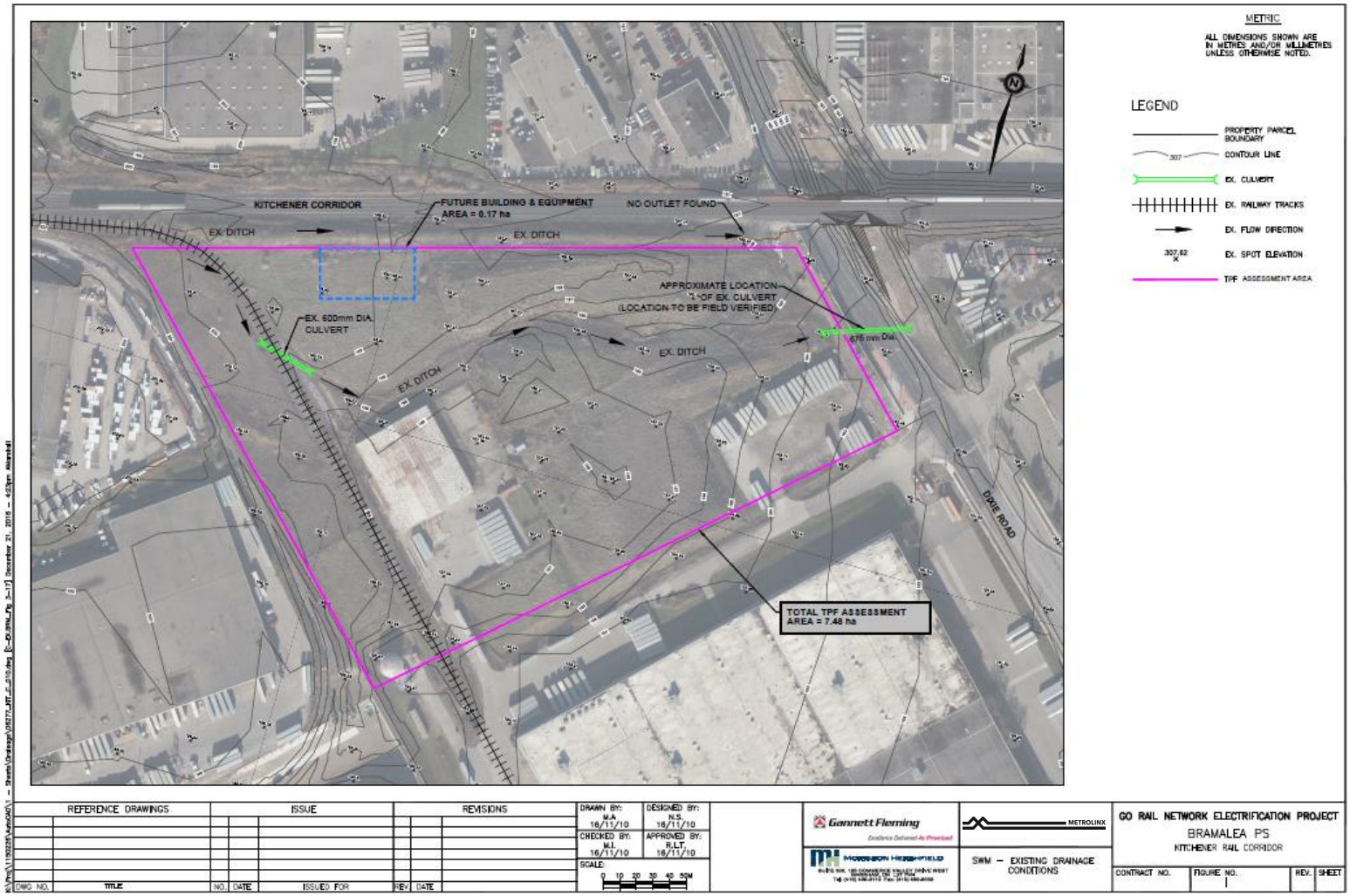
The proposed site is part of the tributary area of Etobicoke Creek, and as such it is within the jurisdiction of TRCA. The existing drainage pattern for the site area is shown on **Figure 4-17**. The total area of the TPF Property is approximately 7.48 ha. Except for the branch railway track and the building and parking lot, the site is largely undeveloped.

Based on the available contour plans, aerial photographs and judgement from survey outside the fence line, it was understood that a ditch runs from north-west of the branching track, crosses the track via a culvert and runs through the site towards a 675mm outlet culvert at Dixie Road. Under existing condition, the runoff from the site flows to the ditch discharging to the Dixie Road culvert.

Based on the existing land use, the runoff coefficient, (C) is estimated at 0.30 and the percent impervious at 0.3 or 14% for the site area of 0.32 ha.

Based on the information extracted from Ontario Geological Survey, Preliminary Map P.2204, by Ministry of Natural Resources, Ontario, the soil type for the TPF Assessment Area is generally Clay (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

Figure 4-17: Bramalea PS Existing Drainage Conditions



4.12 Groundwater and Wells

Please refer to Section **1.5.12** for a description of the methodology followed for collection of Groundwater and Wells baseline conditions data. Baseline conditions within the Kitchener Rail Corridor has been summarized below. Additional details can be found in the Groundwater Impact Assessment Report contained in **Appendix V**.

4.12.1 Bramalea PS

There is one (1) domestic well and one (1) industrial/commercial well within 500 m of the Bramalea paralleling station. The surrounding area is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Spring Creek, located within 500 m of the paralleling station.

4.12.2 Bramalea 25kV Feeder Route

There was one (1) domestic supply well and one (1) industrial/commercial supply well identified within 500 m of the Bramalea Feeder Route. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Spring Creek, located within 500 m of the feeder route.

4.12.3 OCS & Bridges: Section KT-1 – UP Express Spur (at Highway 427) to Malton Station

There were no water supply wells identified within 500 m of the rail corridor in this section. The section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Mimico Creek, located within 500 m of the rail corridor.

4.12.4 OCS & Bridges: Section KT-2 – Malton Station to Bramalea Station

There were eight (8) domestic supply wells, one (1) agricultural supply well, four (4) commercial/industrial supply wells and two (2) supply wells of unknown type identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are two (2) waterbodies, Mimico Creek and Spring Creek, located within 500 m of the rail corridor.

5 Baseline Conditions – Barrie Corridor

5.1 Natural Environment

Please refer to Section 1.5.1 for a description of the methodology followed for collection of natural environmental baseline conditions data. Baseline conditions within each segment of the Barrie Corridor have been summarized below. Additional details can be found in the Natural Environment Baseline Conditions Report contained in **Appendix A1**.

Based on review of available background information, **Table 5-1** lists all SAR with habitat within the immediate or general surrounding area of the Barrie Corridor. SAR with suitable habitat *and* potential to occur within each portion of the Study Area are discussed in the appropriate sections below.

Table 5-1: Summary of Potential Species at Risk within the Immediate and General Area of the Barrie Corridor

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
VASCULAR PLANTS						
American Ginseng	*Panax quinquefolius*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Butternut	*Juglans cinerea*	END (Sched 1)	END	SARA	ESA	MNRF Aurora and Midhurst
BIRDS						
Acadian Flycatcher	*Empidonax virescens*	END Sched 1)	END END	SARA; MBCA	ESA	OBBA
Bank Swallow	*Riparia riparia*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora and Midhurst
Barn Swallow	*Hirundo rustica*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora and Midhurst
Black Tern	*Chlidonias niger*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora and Midhurst
Bobolink	*Dolichonyx oryzivorus*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora and Midhurst
Canada Warbler	*Cardellina canadensi*	THR (Sched 1)	SC	SARA; MBCA	-	MNRF Midhurst; OBBA

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Cerulean Warbler	*Dendroica cerulea*	SC (Sched 1)	THR	MBCA	ESA	OBBA
Chimney Swift	*Chaetura pelagica*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora and Midhurst
Common Nighthawk	*Chordeiles minor*	THR (Sched 1)	SC	SARA; MBCA	-	MNRF Aurora and Midhurst
Eastern Meadowlark	*Sturnella magna*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora and Midhurst
Eastern Wood-pewee	*Contopus virens*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora and Midhurst
Golden-winged Warbler	*Vermivora chrysoptera*	THR (Sched 1)	SC	SARA; MBCA	-	MNRF Midhurst
Grasshopper Sparrow	*Ammodramus savannarum pratensis*	No Status (No Sched)	SC	MBCA	-	MNRF Midhurst
King Rail	*Rallus elegans*	END (Sched 1)	END	SARA; MBCA	ESA	MNRF Midhurst
Least Bittern	*xobrychus exilis*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora and Midhurst; OBBA
Olive-sided Flycatcher	*Contopus cooperi*	THR (Sched 1)	SC	SARA; MBCA	-	MNRF Aurora
Peregrine Falcon	*Falco peregrinus*	SC (Sched 1)	SC	-	FWCA	MNRF Midhurst
Red-headed Woodpecker	*Melanerpes erythrocephalus*	THR (Sched 1)	SC	SARA; MBCA	-	MNRF Aurora and Midhurst; NHIC
Short-eared Owl	*Asio flammeus*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora
Whip-poor-will	*Antrostomus vociferus*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Midhurst; OBBA

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Wood Thrush	*Hylocichla mustelina*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora and Midhurst
Yellow Rail	*Coturnicops noveboracensis*	SC (Sched 1)	SC	MBCA	-	MNRF Aurora and Midhurst
HERPETOFAUNA						
Blanding's Turtle	*Emydoidea blandingii*	THR (Sched 1)	THR	SARA	ESA	MNRF Aurora and Midhurst
Eastern Ribbonsnake	*Thamnophis sauritus*	SC (Sched 1)	SC	SARA	ESA	MNRF Aurora
Northern Map Turtle	*Graptemys geographica*	SC (Sched 1)	SC	-	FWCA	MNRF Midhurst; NHIC
Snapping Turtle	*Chelydra serpentina*	SC (Sched 1)	SC	-	-	MNRF Aurora and Midhurst
INVERTEBRATES						
Monarch	*Danaus plexippus*	SC (Sched 1)	SC	-	-	MNRF Aurora and Midhurst
Rusty-patched Bumblebee	*Bombus affinis*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
FISHES						
American Eel	*Anguilla rostrata*	No Status (No Status)	END	-	ESA	MNRF Aurora and Midhurst
Reside Dace	*Clinostomus elongates*	SC (Sched 3)	END	-	ESA	MNRF Aurora
MAMMALS						
Little Brown Myotis	*Myotis lucifugus*	END (Sched 1)	END	SARA	ESA 2007	MNRF Aurora and Midhurst
Northern Myotis	*Myotis septentrionalis*	END (Sched 1)	END	SARA	ESA 2007	MNRF Aurora and Midhurst

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Eastern Small-footed Myotis	*Myotis leibii*	-	END	-	ESA	MNRF Aurora
Tri-coloured Bat	*Perimyotis subflavus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora

* ESA: Endangered Species Act; FWCA: Fish and Wildlife Conservation Act; SARA: Species at Risk Act; MBCA: Migratory Birds Convention Act
** General prohibitions do not apply to species identified as Special Concern (SC) in Schedule 1 and all species in Schedule 3of the SARA
Note – The ESA (2007) supersedes the FWCA; END – Endangered; SC – Special Concern; THR - Threatened

5.1.1 Allandale Tap Location (Preferred)

5.1.1.1 Terrestrial

The Allandale Tap is located within Ecoregion 6E. The Allandale Tap Area is within Hydro One's Barrie Area Transmission Upgrade Project study area, which is being undertaken in accordance with *the Class Environmental Assessment for Minor Transmission Facilities*. . A natural environment inventory was undertaken by Arcadis Canada Inc. (*Barrie TS to Essa TS Corridor Assessment – Natural Environment* [2016]) and is provided in Appendix G. The findings and mapping documented in the memo have been incorporated into this section in order to identify existing natural features and delineate vegetation communities within the Allandale Tap Area. See **Appendix A1** for further details.

Wetlands

There are no wetland features present within the Tap Area.

Vegetated Areas

The Allandale Tap Area is comprised of six (6) communities. It is largely located within a Commercial and Institutional (CVC) land, and extends to areas within Deciduous Forest (FOD), Cultural Meadow (CUM), Mixed Forest (FOM), Red Pine Coniferous Plantation (CUP), and Transportation and Utilities (CVI).

Wildlife

The Allandale Tap Area does not provide any Significant Wildlife Habitat; however, the FOD, FOM, and CUP may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

5.1.1.2 Aquatic

There are no aquatic features within the Tap Area.

5.1.1.3 Species at Risk

The CUM community within the Tap Area provides low quality foraging habitat for Monarch. The FOD, FOM and CUP community provides suitable habitat for Red-headed Woodpecker and Butternut with moderate potential for these species to occur.

5.1.1.4 Designated Areas

A portion of the Tap Area is located within the Lake Simcoe Region Conservation Authority (LSRCA) Regulated Area.

5.1.2 Allandale Tap Location (Alternative)

5.1.2.1 Terrestrial

The Alternate Allandale Tap Area is located within Ecoregion 6E (see **Figure 1-6**).

Wetlands

There are no wetland features present within the Tap Area.

Vegetated Areas

The Alternate Allandale Tap Area is comprised of four (4) communities: Commercial and Institutional (CVC), Residential (CVR), Transportation and Utilities (CVI), Cultural Meadow (CUM). Vegetation within these communities are typical of disturbed areas and edge habitat.

The vegetation within the Alternate Allandale Tap Area and Feeder Route areas are mainly comprised of vegetation associated with disturbed areas and edge habitats, including Trembling Aspen, Manitoba Maple, Norway Maple, Black Walnut, Common Buckthorn, Silver Maple, Tall Goldenrod, Wild Carrot (*Daucus carota*), and White Sweet Clover (*Melilotus albus*).

Wildlife

The Alternate Allandale Tap Area does not provide any Significant Wildlife Habitat; however The WOD and CVR communities may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

5.1.2.2 Aquatic

A drainage ditch is located along the west corner of the Alternate Allandale Tap Area. A desktop review of LIO data and Lake Simcoe Region Conservation Authority Regulated Area mapping did not identify the drainage ditch as a watercourse or within CA regulated area. Lake Simcoe Region Conservation Authority conducted a field visit and confirmed that the drainage ditch does not connect to any watercourse features.

5.1.2.3 Species at Risk

The CUM community within the Alternate Tap Area provides low quality foraging habitat for Monarch. The WOD community adjacent to the Feeder Route provides suitable habitat for Red-headed Woodpecker and Butternut with moderate potential for these species to occur.

5.1.2.4 Designated Areas

There are no Designated Areas within the Alternative Allandale Tap area

5.1.3 Allandale TPS

5.1.3.1 Terrestrial

The Allandale TPS is located within Ecoregion 6E (see **Figure 1-6**).

Wetlands

There are no wetland features present within the TPS study area.

Vegetated Areas

The Allandale TPS is comprised of four (4) communities: Commercial and Institutional (CVC), Residential (CVR), Transportation and Utilities (CVI), Cultural Meadow (CUM). Vegetation within these communities are typical of disturbed areas and edge habitat. The vegetation within the TPS Area is mainly composed of vegetation associated with disturbed areas. Species within the study area include Trembling Aspen, Manitoba Maple, Norway Maple, Common Buckthorn and non-native and invasive forbs and herbaceous plants.

Wildlife

The Allandale TPS study area does not provide any Significant Wildlife Habitat; however The CVR communities may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

5.1.3.2 Aquatic

A drainage ditch is present along the east edge of the TPS study area. A desktop review of LIO data and Lake Simcoe Region Conservation Authority (LSRCA) Regulated Area mapping did not identify the drainage ditch as a watercourse or within CA regulated area. Lake Simcoe Region Conservation Authority conducted a field visit and confirmed that the drainage ditch does not connect to any watercourse features.

5.1.3.3 Species at Risk

There is low potential for Butternut to occur along the southern portion of the study area within the CVR community.

5.1.3.4 Designated Areas

There are no Designated Areas within the TPS study area.

5.1.4 Barrie-Collingwood Railway 25kV Feeder Route

5.1.4.1 Terrestrial

The 25kV Feeder Route is located within Ecoregion 6E (see **Figure 1-18)**.

Wetlands

There are no wetland features present within the 25kV Feeder Route.

Vegetated Areas

The 25kV Feeder Route are comprised of five (5) communities: Commercial and Institutional (CVC), Cultural Meadow (CUM), Transportation and Utilities (CVI), Residential (CVR), and Deciduous Woodland (WOD).

The vegetation within the Feeder Route area is mainly comprised of vegetation associated with disturbed areas and edge habitats, including Trembling Aspen, Manitoba Maple, Norway Maple, Black Walnut, Common Buckthorn, Silver Maple, Tall Goldenrod, Wild Carrot (*Daucus carota*), and White Sweet Clover (*Melilotus albus*).

Wildlife

The 25kV Feeder Route does not provide any Significant Wildlife Habitat; however The WOD and CVR communities may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

5.1.4.2 Aquatic

Hotchkiss Creek is present within the 25kV Feeder Route study area.

5.1.4.3 Species at Risk

The WOD community adjacent to the Feeder Route provides suitable habitat for Red-headed Woodpecker and Butternut with moderate potential for these species to occur. Additionally, the CVR communities adjacent to the Feeder Route provide suitable habitat for Red-headed Woodpecker and Butternut, however, with a low potential to occur.

5.1.4.4 Designated Areas

A portion of the 25kV Feeder Route is located within the Lake Simcoe Region Conservation Authority (LSRCA) Regulated Area.

5.1.5 Newmarket SWS

5.1.5.1 Terrestrial

The Newmarket SWS is located within Ecoregion 6E (see **Figure 1-7)**.

Wetlands

There are no wetland features present within the SWS study area.

Vegetated Areas

The Newmarket SWS is comprised of five (5) communities: Commercial and Institutional (CVC), Transportation and Utilities (CVI), Cultural Meadow (CUM), Deciduous Thicket (THD), and Deciduous Woodland (WOD). Vegetation within these communities are typical of disturbed areas and edge habitats. Species within the study area include Manitoba Maple, Autumn Olive, Common Buckthorn and Dog Strangling Vine.

Wildlife

Newmarket SWS does not provide any Significant Wildlife Habitat; however, the THD and WOD communities may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

5.1.5.2 Aquatic

There are no aquatic features within the SWS study area.

5.1.5.3 Species at Risk

There is low potential for Butternut to occur within the THD and moderate potential to occur within the WOD community.

5.1.5.4 Designated Areas

A portion of the Newmarket SWS study area is located within the Lake Simcoe Region Conservation Authority (LSRCA) Regulated Area.

5.1.6 Gilford PS

5.1.6.1 Terrestrial

The Gilford PS is located within Ecoregion 6E (see **Figure 1-8**).

Wetlands

There are no wetland features present within the PS study area.

Vegetated Areas

The Gilford PS study area is comprised of four (4) communities: Cultural Meadow (CUM), Deciduous Woodland (WOD), Residential (CVR) and Transportation and Utilities (CVI). Vegetation within these communities are typical of disturbed areas and edge habitats. Species within the study area including White Sweet Clover, Common Milkweed, Dog Strangling Vine, Large Tooth Aspen, and Manitoba Maple.

Wildlife

The Gilford PS study area does not provide any Significant Wildlife Habitat; however, the WOD may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

5.1.6.2 Aquatic

There are no aquatic features within the PS study area.

5.1.6.3 Species at Risk

There is moderate potential for Butternut to occur within the WOD community and a low potential to occur along the edge of the CUM community.

5.1.6.4 Designated Areas

A portion of the Gilford PS study area is located within the Lake Simcoe Region Conservation Authority (LSRCA) Regulated Area.

5.1.7 Maple PS

5.1.7.1 Terrestrial

The Maple PS is located within Ecoregion 6E (see **Figure 1-9**).

Wetlands

There are no wetland features present within the PS study area.

Vegetated Areas

The Maple PS study area is comprised of five (5) communities: Agriculture (AG), Cultural Meadow (CUM), Transportation and Utilities (CVI), Meadow Marsh (MAM), and Treed Agriculture (TAG). Vegetation within these communities are typical of disturbed areas and edge habitat. Species within the study area include Common Buckthorn, White Sweet Clover, Tall Goldenrod, Orchard Grass (*Dactylis glomerata*), and Common Tansy (*Tanacetum vulgare*). The AG areas contain annual crop covers (e.g. soybeans).

Wildlife

The Maple PS study area does not provide any Significant Wildlife Habitat; however the TAG areas may provide potential foraging and nesting habitat for breeding birds and the CUM and MAM may provide suitable habitat for pollinating insects.

5.1.7.2 Aquatic

There are no aquatic features within the PS study area.

5.1.7.3 Species at Risk

There is a low potential for Eastern Meadowlark and Bobolink to occur within AG communities and low potential for Rusty Patched Bumblebee within the CUM and MAM communities.

5.1.7.4 Designated Areas

There are no Designated Areas within the PS study area.

5.1.8 Corridor & Bridges: Section BR-1 – Parkdale Junction to Caledonia Station

5.1.8.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI, CVC, and CVR. The vegetated communities within this corridor section are limited to CGL. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain minimal canopy cover (i.e. <10%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This Study Area is mainly comprised of CVC, CVI and CVR lands, therefore no Significant Wildlife Habitat is present within this corridor. However, the CGL communities may provide potential nesting and foraging habitat for breeding birds.

5.1.8.2 Aquatic

There are no watercourses within this portion of the Study Area.

5.1.8.3 Species at Risk

A total of five SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-2** below.

Table 5-2: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-1

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR)
Barn Swallow	*Hirundo rustica*	• Low (on bridge structures)
Chimney Swift	*Chaetura pelagica*	• Moderate (CVC)
Monarch	*Danaus plexippus*	• Low (CVC)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CGL)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR - Residential

5.1.8.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas present within this portion of the Study Area.

5.1.9 Corridor & Bridges: Section BR-2 – Caledonia Station to Downsview Park Station

5.1.9.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI and CVC with some CVR. The vegetated communities within this corridor section are limited to CGL and WOD. Refer to Appendix D in **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This Study Area is mainly comprised of CVC, CVI and CVR lands, therefore no Significant Wildlife Habitat is present within this corridor. However, the small patches of WOD and CGL communities may provide potential nesting and foraging habitat for breeding birds.

5.1.9.2 Aquatic

There is one watercourse within the study area: Maple Leaf Creek. Maple Leaf Creek is found in the Black Creek subwatershed which is part of the Humber River Watershed. Habitat categories found in the Black Creek Subwatershed include Small Riverine Warmwater, Intermediate Riverine Warmwater and Lacustrine. Species known to presently occur in these habitat categories within the Black Creek Subwatershed (as of 2005) are listed in Section 4.4.2.2 of **Appendix A1**.

5.1.9.3 Species at Risk

A total of ten SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-3** below.

Table 5-3: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-2

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR) • Moderate (WOD)
Barn Swallow	*Hirundo rustica*	• Low (on bridge structures)
Chimney Swift	*Chaetura pelagica*	• Moderate (CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, WOD)
Monarch	*Danaus plexippus*	• Low (CVC, CVI)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CVC, CVI)
Eastern Small-footed Myotis	*Myotis leibii*	• Low (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Low (WOD)
Northern Myotis	*Myotis septentrionalis*	• Low (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (WOD)

[a]CGL – Green Land; CVR – Residential Lands; CVC – Commercial and Institutional; WOD – Deciduous Woodland; CVI – Transportation and Utilities

5.1.9.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas present within this portion of the Study Area.

5.1.10 Corridor & Bridges: Section BR-3 – Downsview Park Station to Rutherford Station

5.1.10.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands present within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI, CVC, and CVR. The vegetated communities within this corridor section are CGL, WOD, MA, and CUM. OA is present at the Don River West Branch. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This Study Area has one small unevaluated wetland as well as OA within Don River West Branch that may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM communities may provide potential foraging habitat for pollinating insects. The WOD and CGL communities may provide foraging and nesting habitat for breeding birds.

5.1.10.2 Aquatic

There are two watercourses within the study area: Don River West Branch and Westminster Creek. There are several crossings of the Don River West Branch within the study area and Westminster Creek is a tributary of Don River West Branch. Fish community at the watershed level indicates a total of 21 fish species that are currently present in the Don (2002-2005) of which 17 are native. Specific species known to occur in the Upper West Don River Subwatershed as of 2005 are listed in Section 4.4.3.2 of **Appendix A1**.

5.1.10.3 Species at Risk

A total of 12 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-4** below.

Table 5-4: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-3

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR) • Moderate (WOD)
Chimney Swift	*Chaetura pelagica*	• Moderate (CVC)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, WOD)
Snapping Turtle	*Chelydra serpentina*	• Low (OA)
Eastern Ribbonsnake	*Thamnophis sauritus*	• Low (MA)
Monarch	*Danaus plexippus*	• Low (CVC, CVL. CUM)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CGL, CVC, CVI, CUM)
Eastern Small-footed Myotis	*Myotis leibii*	• Low (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Low (WOD)
Northern Myotis	*Myotis septentrionalis*	• Low (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (WOD)

[a]OA – Open Water; CUM – Cultural Meadow; CGL – Green Land; WOD – Deciduous Woodland; CVC – Commercial and Institutional; MA – Marsh

5.1.10.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and MNRF Aurora District. There are no Designated Areas present within this portion of the Study Area.

5.1.11 Corridor & Bridges: Section BR-4 – Rutherford Station to King City Station

5.1.11.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There is one PSW (King-Vaughan Wetland Complex) within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI, CVC, and CVR. The vegetated communities within this corridor section are CGL, WOD, CUM, AG, TAG, MA, SW and MAM. OA is also present. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (i.e. < 10%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The MA communities within the King-Vaughn Wetland Complex PSW, and the OA areas present within the Westminster Creek, Don River West Branch, and East Humber River may potentially provide habitat for overwintering and nesting turtles, breeding amphibians and breeding marsh birds. The WOD, TAG and CGL communities may potentially provide nesting and foraging habitat for breeding birds. The OAG and CUM may also provide potential habitat for grassland birds and pollinating insects.

5.1.11.2 Aquatic

There are several crossings of the Don River West Branch and East Humber River within the study area. Fish community within the Don River West Branch at the watershed level indicates a total of 21 fish species that are currently present in the Don (2002-2005) of which 17 are native. Specific species known to occur in the Upper West Don River Subwatershed (as of 2005) are listed in Section 4.4.4.2 of **Appendix A1**.

Habitat categories found in the East Humber River include: small riverine coldwater, small riverine warmwater, intermediate riverine coldwater and lacustrine. Species known to presently occur in these habitat categories within the Humber River Watershed (as of 2005) are listed in Section 4.4.4.2 of **Appendix A1**.

5.1.11.3 Species at Risk

A total of 16 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-5** below.

Table 5-5: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-4

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVC, TAG, CVR) • Moderate (WOD and SW)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, WOD, SW)
Least Bittern	*Ixobrychus exilis*	• Low (MA, MAM)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Common Nighthawk	*Chordeiles minor*	• Low (WOD)
Short-eared Owl	*Asio flammeus*	• Low (AG, CUM)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)
Eastern Ribbonsnake	*Thamnophis sauritus*	• Moderate (MA)
Monarch	*Danaus plexippus*	• Low (CVC, CVI. CVR, CGL)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CGL, TAG, CVR)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a]OA – Open Water; CUM – Cultural Meadow; CGL – Green Land; WOD – Deciduous Woodland; MA - Marsh; MAM – Meadow Marsh; AG - Agriculture; CVC – Commercial and Institutional; SW – Swamp; CVI – Transportation and Utilities; CVR - Residential

5.1.11.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF.

The King-Vaughan Wetland Complex, a PSW consists of 23 individual wetlands (83% swamp, 17% marsh). It is composed of clay, loam and silt soils on a site that is palustrine (69%) or isolated (31%). Vegetation found on this wetland includes tall shrubs (34%), deciduous trees (28%), dead trees and shrubs (19%), and narrow-leaved emergents (12%); additionally, robust emergents and free-floating plants are found in small agglomerations (MNR, 2002).

The Study Area also contains two areas designated under the Greenbelt Plan, Protected Countryside and the Oak Ridges Moraine Conservation Plan area. The Provincially Significant, Maple Uplands and Kettles Candidate Life Science Area of Natural and Scientific Interest (ANSI) is known to support flora and fauna species found nowhere else in the Don Watershed (TRCA, 2010).

5.1.12 Corridor & Bridges: Section BR-5 – King City Station to Bathurst Street

5.1.12.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There is one unevaluated wetland and one PSW (King-Vaughan Wetland Complex) within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI, CVC, CVR. The vegetated communities within this corridor section are CGL, FOD, FOM, SW, MA, MAM, CUM, TAG, WOD, and AG. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 5-1: FOM Community, looking northwest October 23, 2015

Wildlife

The MA and SW communities within the King-Vaughn Wetland Complex PSW, and the OA present within the East Humber River may potentially provide habitat for overwintering and nesting turtles, breeding

amphibians and breeding marsh birds. The FOM, FOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds. The AG communities may also provide potential habitat for grassland birds and pollinating insects.

5.1.12.2 Aquatic

There are several crossings of the East Humber River within the study area. Habitat categories found in the East Humber River include: small riverine coldwater, small riverine warmwater, intermediate riverine coldwater and lacustrine. Species known to presently occur in these habitat categories within the Humber River Watershed (as of 2005) are listed in Section 4.4.5.2 of **Appendix A1**.

5.1.12.3 Species at Risk

A total of 24 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-6** below.

Table 5-6: Potential Species at Risk with Suitable Habitat and Potential to Occur within BAR-5

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVC, TAG, CVR) • Moderate (FOD, WOD, FOM)
American Ginseng	Panax *quinquefolius*	• Low (FOM, FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, FOD, WOD, SW)
Acadian Flycatcher	*Empidonax virescens*	• Low (FOM)
Cerulean Warbler	*Dendroica cerulea*	• Low (FOM)
Eastern Wood Pewee	*Contopus virens*	• Low (FOM)
Canada Warbler	*Wilsonia canadensis*	• Low (FOM)
Wood Thrush	Hylocichla mustelina	• Moderate (FOM, FOD)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Bank Swallow	*Riparia riparia*	• Low (adjacent to OA communities)
Short-eared Owl	*Asio flammeus*	• Low (AG, CUM)
Yellow Rail	*Coturnicops noveboracensis*	• Low (SW)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)
Eastern Ribbonsnake	*Thamnophis sauritus*	• Low (MAM, SW)
Blanding's Turtle	*Emydoidea blandingii*	• Low (OA, MA)
Redside Dace	*Clinostomus elongates*	• East Humber River (OA)is Occupied Habitat
Monarch	*Danaus plexippus*	• Low (CUM)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CUM)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (FOM, FOD) • Low (WOD, SW)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOM, FOD) • Low (WOD, SW)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOM, FOD) • Low (WOD, SW)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (FOM, FOD) • Low (WOD, SW)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR – Residential Lands; FOD – Deciduous Forest; FOM –Mixed Forest; OA – Open Water; MA – Marsh; CUM – Cultural Meadow; TAG – Treed Agriculture; WOD – Deciduous Woodland; SW – Swamp; MAM – Meadow Marsh

5.1.12.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. The King-Vaughan Wetland Complex PSW identified in BR-4 is also present within this corridor. Portions of this corridor are also part of the Oak Ridges Moraine Conservation Plan area.

5.1.13 Corridor & Bridges: Section BR-6 – Bathurst Street to Aurora Station

5.1.13.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are several unevaluated wetlands associated with the Holland River East Branch located within the study area.

Vegetated Areas

The Study Area contains a large proportion of CVI, CVC, and CVR. The vegetated communities within this corridor section are CGL, FOM, MA, SWM, WOM, THD, WOD and CUM. OA is present at the Holland River

East Branch. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

This Study Area has a number of small unevaluated wetlands as well as OA within the Holland River East Branch that may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM communities may provide potential foraging habitat for pollinating insects. The FOM, SWM, WOM, WOD, THD, and CGL communities may provide foraging and nesting habitat for breeding birds.

5.1.13.2 Aquatic

There are three crossings of the Holland River East Branch within the study area. The fish communities in the East Holland range from cold headwater communities to diverse warm large order systems. Generally, the East Holland River displays cold to coolwater tributaries feeding a warmwater Main Branch. Fish species captured in the East Holland subwatershed from 1930-2007 are listed in Section 4.4.6.2 of **Appendix A1**.

5.1.13.3 Species at Risk

A total of 19 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-7** below.

Table 5-7: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-6

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVC, THD, CVR) • Moderate (FOM, WOM, WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, FOM, SWM, WOM, WOD)
Acadian Flycatcher	*Empidonax virescens*	• Low (FOD, SWM)
Cerulean Warbler	*Dendroica cerulea*	• Low (FOD, SWM)
Eastern Wood Pewee	*Contopus virens*	• Low (FOD, SWM)
Canada Warbler	*Wilsonia canadensis*	• Low (FOD, SWM)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Wood Thrush	Hylocichla mustelina	• Moderate (FOM, SWM)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Blanding's Turtle	*Emydoidea blandingii*	• Low (OA)
Monarch	*Danaus plexippus*	• Low (CUM)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CUM)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (FOM, WOM, SWM) • Low (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOM, WOM, SWM) • Low (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOM, WOM, SWM) • Low (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (FOM, WOM, SWM) • Low (WOD)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR – Residential Lands; FOD – Deciduous Forest; FOM – Mixed Forest; OA – Open Water; AG – Agriculture; CUM – Cultural Meadow; SWM – Mixed Swamp; WOM – Mixed Woodland; WOD – Deciduous Woodland; FOM – Mixed Forest; THD – Deciduous Thicket

5.1.13.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of Lake Simcoe Region Conservation Authority (LSRCA) and Aurora District Ministry of Natural Resources and Forestry (MNRF). Sheppard's Bush Conservation Area, managed by LSRCA, is located east of the rail corridor south of Wellington Street East.

This portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries. Additionally, areas within this corridor are within the Oak Ridges Moraine Conservation Plan area.

5.1.14 Corridor & Bridges: Section BR-7 – Aurora Station to East Gwillimbury Station

5.1.14.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There is one PSW (Aurora (McKenzie) Marsh Wetland Complex) and several unevaluated wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVI, CVC, and CVR. The vegetated communities within this Study Area include CGL, WOD, SW, MAS, MA, AG, FOD, and CUM. OA is present at the Holland River East Branch. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The SW and MAS communities within the Aurora (McKenzie) Marsh Wetland Complex PSW, and number of small unevaluated wetlands as well as the OA areas within the Holland River East Branch may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may provide potential habitat for grassland birds and pollinating insects. The WOD, FOD, SW and CGL communities may also provide foraging and nesting habitat for breeding birds.

5.1.14.2 Aquatic

There are six crossings of the Holland River East Branch within the study area. The fish communities in the East Holland range from cold headwater communities to diverse warm large order systems. Generally, the East Holland River displays cold to coolwater tributaries feeding a warmwater Main Branch. Fish species captured in the East Holland subwatershed from 1930-2007 are listed in Section 4.4.7.2 of **Appendix A1**.

5.1.14.3 Species at Risk

A total of 22 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-8** below.

Table 5-8: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-7

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVC, CVR) • Moderate (WOD, FPD)
American Ginseng	Panax *quinquefolius*	• Low (FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, WOD, SW, FOD)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG) • Low (within some CUM)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG) • Low (within some CUM)
Bank Swallow	*Riparia riparia*	• Low (adjacent to OA communities)
Cerulean Warbler	*Dendroica cerulea*	• Low (FOD)
Canada Warbler	*Wilsonia canadensis*	• Low (FOD)
Acadian Flycatcher	*Empidonax virescens*	• Low (FOD)
Wood Thrush	Hylocichla mustelina	• Low (FOD)
Eastern Wood Pewee	*Contopus virens*	• Low (FOD)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA and adjacent MAS, MA)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA and adjacent MAS, MA)
Northern Map Turtle	*Graptemys geographica*	• Low (OA and adjacent MAS, MA)
Eastern Ribbonsnake	*Thamnophis sauritus*	• Low (MAS, SW)
Monarch	*Danaus plexippus*	• Low (CUM, CVC)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CUM, CVC, CGL)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (FOD, WOD) • Low (SW)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOD, WOD) • Low (SW)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOD, WOD) • Low (SW)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (FOD, WOD) • Low (SW)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR – Residential Lands; WOD – Deciduous Woodland; CUM – Cultural Meadow; OA – Open Water; AG – Agriculture; MAS – Shallow Marsh; SW – Swamp; FOD – Deciduous Forest

5.1.14.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of Lake Simcoe Region Conservation Authority (LSRCA) and Aurora District MNRF.

Mabel Davis Conservation Area, managed by LSRCA, is located east of the rail corridor between Davis Drive and Green Lane. Wesley Brooks Conservation Area, also managed by LSRCA is located west of the corridor between Mulock Drive and Doug Duncan Drive. Bailey Ecological Park, owned by LSRCA, is located west of the corridor between Kensit Avenue and Mulock Drive.

The Aurora (McKenzie) Marsh Wetland Complex is a 10 ha area that has been designated as a PSW by the Ministry of Natural Resources and Forestry. It is recognized as a significant ecological feature, due to its wildlife habitat and aesthetic value to the community. It provides habitat to turtles, frogs, small mammals and waterfowl (R.V. Anderson Ass. Ltd, 2006). According to the *Bradford Corridor Planning Study* (Delcan, 2002), McKenzie Marsh PSW is made of two individual wetlands comprising two different wetland types (25% swamp, 75% marsh).

Additionally, this portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries.

5.1.15 Corridor & Bridges: Section BR-8 – East Gwillimbury Station to Bradford Station

5.1.15.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are several unevaluated wetlands, one evaluated wetland (Rogers Reservoir) and two PSWs (Holland Marsh Wetland Complex and Holland Marsh) within this portion of the Study Area.

Vegetated Areas

The Study Area contains CVI, CVC, and CVR. The vegetated communities within this corridor section are CGL, WOD, FOM, FOD, SW, MAS, AG, TAG, and CUM.OA is present at the Holland River West Branch. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 5-2: MAS and FOM Communities, looking south October 23, 2015

Wildlife

The SW and MAS communities within the Holland Marsh Wetland Complex PSW, the Holland Marsh (BW5) PSW, and the Holland Landing Fen and Wetlands ANSI, as well as the OA areas within the Rogers Reservoir evaluated wetland and the Holland River East Branch may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may provide potential habitat for grassland birds and pollinating insects. The FOM, FOD, WOD, SW, TAG and CGL communities may also provide foraging and nesting habitat for breeding birds.

An MNRF identified Significant Wildlife Habitat Seasonal Concentration Area (Deer Wintering Yard) is present within this corridor.

5.1.15.2 Aquatic

There are five crossings of the Holland River East Branch within the study area. The fish communities in the East Holland range from cold headwater communities to diverse warm large order systems. Generally, the East Holland River displays cold to coolwater tributaries feeding a warmwater Main Branch. Fish

species captured in the East Holland subwatershed from 1930-2007 are listed in Section 4.4.8.2 of **Appendix A1**.

There is also one crossing of the Holland River West Branch within the study area. The West Holland ranges from cold headwater communities to diverse warm large order systems. Generally, the West Holland River displays cold to coolwater tributaries feeding a warmwater Main Branch. Fish species captured in the East Holland subwatershed from 1930-2008 are listed in Section 4.4.8.2 of **Appendix A1**.

5.1.15.3 Species at Risk

A total of 24 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-9** below.

Table 5-9: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-8

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, TAG, CVC, CVR) • Moderate (FOD, FOM, WOD)
American Ginseng	Panax *quinquefolius*	• Low (FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, WOD, FOD, FOM, SW)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (FOD, SW, FOM)
Cerulean Warbler	*Dendroica cerulea*	• Moderate (FOD, SW, FOM)
Eastern Wood Pewee	*Contopus virens*	• Moderate (FOD, SW, FOM)
Canada Warbler	*Wilsonia canadensis*	• Moderate (FOD, SW, FOM)
Wood Thrush	Hylocichla mustelina	• Moderate (FOD, SW, FOM)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Grasshopper Sparrow	*Ammodramus savannarum pratensis*	• Moderate (AG)
Short-eared Owl	*Asio flammeus*	• Low (CUM)
Eastern Ribbonsnake	*Thamnophis sauritus*	• Low (MAS, SW)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA and adjacent MAS)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA and adjacent MAS)
Northern Map Turtle	*Graptemys geographica*	• Low (OA and adjacent MAS)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
American Eel	*Anguilla rostrata*	• Holland River (OA)
Monarch Butterfly	*Danaus plexippus*	• Low (CUM)
Rusty-patched Bumblebee	*Bombus affinis*	• Low (CUM, AG)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (FOD, WOD, FOM) • Low (SW)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOD, WOD, FOM) • Low (SW)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOD, WOD, FOM) • Low (SW)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (FOD, WOD, FOM) • Low (SW)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR – Residential Lands; FOD – Deciduous Forest; WOD – Deciduous Woodland; CUM – Cultural Meadow; OA – Open Water; FOM – Mixed Forest; AG – Agriculture; MAS – Shallow Marsh; SW – Swamp; TAG – Treed Agriculture

5.1.15.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of LSRCA and Aurora District MNRF. Rogers Reservoir Conservation Authority, managed by LSRCA, is located east of the corridor between Green Lane East and 2nd Concession.

Rogers Reservoir is identified as an evaluated wetland. The Holland Marsh Wetland Complex and Holland Marsh (BW5) are considered PSWs. A portion of the Holland River is also designated as Holland Marsh Lowlands and conserved an Environmentally Sensitive Area according to the County of Simcoe. Holland Landing Fen and Wetlands is a Candidate Life Science ANSI of provincial significance located adjacent to the Study Area corridor

This portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries. Areas within this corridor are also located within the Greenbelt Protected Countryside.

5.1.16 Corridor & Bridges: Section BR-9 – Bradford Station to 13th Line

5.1.16.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are several unevaluated wetlands and two PSWs (the Holland Marsh (BW5) and Holland Marsh Wetland Complex) within this Study Area.

Vegetated Areas

The Study Area contains CVI, CVC, and CVR. The vegetated communities within this corridor section are FOM, FOD, SW, MAS, MAM, MA, AG, and CUM. OA is present at the Holland River West Branch. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 5-3: AG Community and Rail Crossing, looking south October 23, 2015

Wildlife

The SW and MA communities within the Holland Marsh Wetland Complex PSW, and the Holland Marsh (BW5) PSW, as well as the OA areas within the unevaluated wetlands and the Holland River West Branch may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may provide potential habitat for

grassland birds and pollinating insects. The FOM, SW and FOD communities may also provide foraging and nesting habitat for breeding birds.

An MNRF identified Significant Wildlife Habitat Seasonal Concentration Area (Deer Wintering Yard) is present within this corridor.

5.1.16.2 Aquatic

There are approximately thirteen crossings of the Holland River West Branch within the study area. The West Holland ranges from cold headwater communities to diverse warm large order systems. Generally, the West Holland River displays cold to coolwater tributaries feeding a warmwater Main Branch. Fish species captured in the East Holland subwatershed from 1930-2008 are listed in Section 4.4.9.2 of **Appendix A1**.

5.1.16.3 Species at Risk

A total of 22 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-10** below.

Table 5-10: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-9

Species		Potential to Occur (Community)a
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CVC, CVR) • Moderate (FOD, FOM)
American Ginseng	*Panax quinquefolius*	• Low (FOD, FOM)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Low (CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (FOM, FOD, SW)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (FOD, FOM)
Cerulean Warbler	*Dendroica cerulea*	• Moderate (FOD, FOM)
Eastern Wood Pewee	*Contopus virens*	• Moderate (FOD, FOM)
Canada Warbler	*Wilsonia canadensis*	• Moderate (FOD, FOM)
Wood Thrush	Hylocichla mustelina	• Moderate (FOD, FOM)
Whip-poor-will	*Caprimulgus vociferus*	• Moderate (FOD, FOM)
Golden-winged Warbler	*Vermivora chrysoptera*	• Moderate (SW, FOM)
Grasshopper Sparrow	*Ammodramus savannarum pratensis*	• Moderate (AG)

Species		Potential to Occur (Community)a
Common Name	Scientific Name	
Olive-sided Flycatcher	*Contopus cooperi*	• Moderate (SW, FOM)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA and adjacent MAS)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA and adjacent MAS)
Northern Map Turtle	*Graptemys geographica*	• Moderate (OA and adjacent MAS)
Monarch Butterfly	*Danaus plexippus*	• Low (CUM)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOM, SW. FOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOM, SW, FOD)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR – Residential Lands; FOD – Deciduous Forest; WOD – Deciduous Woodland; CUM – Cultural Meadow; OA – Open Water; FOM – Mixed Forest; AG – Agriculture; MAS – Shallow Marsh; SW – Swamp; MA - Marsh

5.1.16.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of Lake Simcoe Region Conservation Authority (LSRCA) and Midhurst District Ministry of Natural Resources and Forestry (MNRF). Scanlon Creek Conservation Area, managed by LSRCA, is located on both sides of the corridor between 9th and 10th Line.

Portions of the Holland Marsh (BW5) and Holland Marsh Wetland Complex described within BR-8 are also found within this corridor. This portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries. Areas within this corridor are within the Greenbelt Protected Countryside.

5.1.17 Corridor & Bridges: Section BR-10 – 13th Line to 6th Line Section

5.1.17.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are several unevaluated wetlands and three PSWs (Holland Marsh (BW5), Wilson Creek Marsh (IN6), and Little Cedar Point (IN3)) within this Study Area.

Vegetated Areas

The Study Area contains a CVI, CVC, and CVR. The vegetated communities within this corridor section are CGL, WOD, FOM, FOD, SW, MAS, AG, MA, TAG, WOM, and CUM. OA is present at the Holland River West Branch. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 5-4: WOD and MAS Communities, looking east October 23, 2015

Wildlife

The SW and MAS communities within the Holland Marsh PSW, the Wilson Creek Marsh PSW, and the Little Cedar Point PSW, as well as the OA areas within the unevaluated wetlands and creeks may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may provide potential habitat for grassland birds and pollinating insects. The WOD, WOM, TAG, FOM and FOD communities may also provide foraging and nesting habitat for breeding birds.

An MNRF identified Significant Wildlife Habitat Seasonal Concentration Area (Deer Wintering Yard) is present within this corridor.

5.1.17.2 Aquatic

There is one crossing of the Holland River West Branch within this portion of the study area. The West Holland ranges from cold headwater communities to diverse warm large order systems. Generally, the West Holland River displays cold to coolwater tributaries feeding a warmwater Main Branch. Fish species captured in the East Holland subwatershed from 1930-2008 are listed in Section 4.4.10.2 of **Appendix A1**.

There are several creeks within the Innisfil Creeks subwatershed within the study area, Gilford Creek, White Birch Creek, Wilson Creek, Carson Creek, and Belle Aire Creek**.** The fish communities in the Innisfil Creeks subwatershed range from cold headwater communities to diverse warm water systems. The majority of the creeks are cold water systems, cold water species are present only in Strathallan, Sandy Cove, Burts Drain, Leonard's, and White Birch Creeks. A total of 32 species have been captured from the Innisfil Creeks subwatershed since 1975. Species captured throughout the subwatershed since 1990 are listed in Section 4.4.10.2 of **Appendix A1**.

5.1.17.3 Species at Risk

A total of 24 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-11** below.

Table 5-11: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-10

Species		Potential to Occur (Community)a
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVC, CVR) • Moderate (FOD, FOM, TAG, WOD, WOM)
American Ginseng	Panax *quinquefolius*	• Low (FOD, FOM)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, CUM areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL,FOM WOD, WOM, SW, FOD)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (FOM, FOD)
Cerulean Warbler	*Dendroica cerulea*	• Moderate (FOM, FOD)
Eastern Wood Pewee	*Contopus virens*	• Moderate (FOM, FOD)
Canada Warbler	*Wilsonia canadensis*	• Moderate (FOM, FOD)
Wood Thrush	Hylocichla mustelina	• Moderate (FOM, FOD)
Whip-poor-will	*Caprimulgus vociferus*	• Moderate (FOM, FOD)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Least Bittern	*Ixobrychus exilis*	• Moderate (MAS)
Common Nighthawk	*Chordeiles minor*	• Low (AG, CUM, WOD)

Species		Potential to Occur (Community)a
Common Name	Scientific Name	
Golden-winged Warbler	*Vermivora chrysoptera*	• Moderate (SW, FOM, WOD, FOD)
Grasshopper Sparrow	*Ammodramus savannarum pratensis*	• Moderate (AG)
Olive-sided Flycatcher	*Contopus cooperi*	• Moderate (SW, FOM)
Yellow Rail	*Coturnicops noveboracensis*	• Moderate (MAS)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA and adjacent MAS, SW)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA and adjacent MAS, SW)
Northern Map Turtle	*Graptemys geographica*	• Moderate (OA and adjacent MAS, SW)
Monarch Butterfly	*Danaus plexippus*	• Low (CUM)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOM, SW, WOD, WOM, FOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOM, SW, WOD, WOM, FOD)

[a]CGL – Green Land; CVC – Commercial and Institutional; CVR – Residential Lands; FOD – Deciduous Forest; FOM – Mixed Forest; TAG – Treed Agriculture; WOD – Deciduous Woodland; CUM – Cultural Meadow; OA – Open Water; AG – Agriculture; MAS – Shallow Marsh; SW – Swamp; MA – Marsh, TAG – Treed Agriculture; WOM – Mixed Woodland

5.1.17.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of LSRCA and Midhurst District MNRF. The Luck Property, owned by LSRCA, is located west of the corridor north of Shoreacres Drive and east of 20th Sideroad.

Portions of the Holland Marsh (BW5) identified within BR-8 are also found within this corridor. The Wilson Creek Marsh (IN6) PSW and Little Cedar Point (IN3) PSW are also found within this Study Area. One Life Science ANSI, the Holland River Marsh is considered provincially significant.

This portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries. Some areas within this corridor are also located within the Greenbelt Protected Countryside.

5.1.18 Corridor & Bridges: Section BR-11 – 6th Line to Barrie South Station

5.1.18.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are several identified unevaluated wetlands within this portion of the Study Area. One evaluated wetland (St. Paul's) is located directly adjacent to the corridor Study Area.

Vegetated Areas

The Study Area contains CVI, CVR and CVC. The vegetated communities within this corridor section are WOD, FOM, MAS, AG, TAG, FOD, SW, and CUM. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The St Paul's Swamp (IN5) evaluated wetland, the MAS communities, as well as OA within the unevaluated wetlands and creeks may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may provide potential habitat for grassland birds and pollinating insects. The WOD, FOM, FOD and TAG communities may also provide foraging and nesting habitat for breeding birds.

5.1.18.2 Aquatic

There are two watercourse within the study area: Banks Creek and Hewitt's Creek. Banks Creek is within the Innisfil Creeks subwatershed**.** The fish communities in the Innisfil Creeks subwatershed range from cold headwater communities to diverse warm water systems. The majority of the creeks are cold water systems, cold water species are present only in Strathallan, Sandy Cove, Burts Drain, Leonard's, and White Birch Creeks. A total of 32 species have been captured from the Innisfil Creeks subwatershed since 1975. Species captured throughout the subwatershed since 1990 are listed in Section 4.4.11.2 of **Appendix A1**.

The fish communities in the Hewitts Creek Subwatershed range from cold headwater communities to diverse warm large order systems. A total of 21 species have been captured in the Hewitts Creek Subwatershed since 1975. Species captured throughout Hewitts Creek since 1990 are listed in Section 4.4.11.2 of **Appendix A1**.

5.1.18.3 Species at Risk

A total of 22 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-12** below.

Table 5-12: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-11

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVC) • Moderate (FOM, FOD, TAG, WOD)

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
American Ginseng	Panax *quinquefolius*	• Low (FOM, FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, FOM, FOD, SW)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (FOM, FOD)
Cerulean Warbler	*Dendroica cerulea*	• Moderate (FOM, FOD)
Eastern Wood Pewee	*Contopus virens*	• Moderate (FOM, FOD)
Canada Warbler	*Wilsonia canadensis*	• Moderate (FOM, FOD)
Wood Thrush	Hylocichla mustelina	• Moderate (FOM, FOD)
Whip-poor-will	*Caprimulgus vociferus*	• Moderate (FOM, FOD)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Least Bittern	*Ixobrychus exilis*	• Moderate (MAS)
Common Nighthawk	*Chordeiles minor*	• Low (AG)
Golden-winged Warbler	*Vermivora chrysoptera*	• Moderate (FOM, FOD)
Grasshopper Sparrow	*Ammodramus savannarum pratensis*	• Moderate (AG)
Olive-sided Flycatcher	*Contopus cooperi*	• Moderate (SW, FOM)
Snapping Turtle	*Chelydra serpentina*	• Moderate (MAS)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (MAS)
Monarch Butterfly	*Danaus plexippus*	• Low (CUM)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOM, FOD, WOD, SW)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOM, FOD, WOD, SW)

[a]CGL – Green Land; CVC – Commercial and Institutional; FOM – Mixed Forest; TAG – Treed Agriculture; WOD – Deciduous Woodland; CUM – Cultural Meadow; AG – Agriculture; MAS – Shallow Marsh; SW – Swamp; CVR - Residential; FOD – Deciduous Forest

5.1.18.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of LSRCA and Midhurst District MNRF.

St. Paul's Evaluated Wetland is within this portion of the Study Area. This wetland is not provincially significant and is made up of two wetland types, 75% swamp and 25% marsh (Delcan, 2002).

This portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries.

5.1.19 Corridor & Bridges: Section BR-12 – Barrie South Station to Allandale Waterfront Station

5.1.19.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are no identified wetlands within this portion of Study Area according to LIO data; however, one wetland (Swamp) community was identified through ELC analysis.

Vegetated Areas

This portion of the Study Area largely consists of CVI, CVC, and CVR. The vegetated communities within this corridor section are CGL, WOD, FOM, TAG, AG, and CUM. OA is found at Lovers Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The SW communities, as well as OA within the Lovers and Whiskey Creeks may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may provide potential habitat for grassland birds and pollinating insects. The WOD, FOD, and CGL communities may provide foraging and nesting habitat for breeding birds.

5.1.19.2 Aquatic

There are two watercourses within the study area: Lovers Creek and Whiskey Creek**.** The fish communities in the Lovers Creek Subwatershed range from cold headwater communities to diverse warm large order systems. A total of 32 species have been captured in the Lovers Creek Subwatershed since 1975. Species captured throughout Lovers Creek since 1990 are listed in Section 4.4.12.2 of **Appendix A1**.

Whiskey Creek is within the Barrie Creeks subwatershed. The fish communities of the Barrie Creeks Subwatershed range from cold headwater communities to diverse warm large order systems. A total of 33 species have been captured in the Barrie Creeks Subwatershed since 1975. Species captured throughout Whiskey Creek since 1990 are listed in Section 4.4.12.2 of **Appendix A1**.

5.1.19.3 Species at Risk

A total of 21 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 5-13** below.

Table 5-13: Potential Species at Risk with Suitable Habitat and Potential to Occur within BR-12

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CGL, CVR, CVC) • Moderate (FOM, WOD, TAG)
American Ginseng	*Panax quinquefolius*	• Low (FOM)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, FOM, TAG, CGL)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (FOM)
Cerulean Warbler	*Dendroica cerulea*	• Moderate (FOM)
Eastern Wood Pewee	*Contopus virens*	• Moderate (FOM)
Canada Warbler	*Wilsonia canadensis*	• Moderate (FOM)
Wood Thrush	*Hylocichla mustelina*	• Moderate (FOM)
Whip-poor-will	*Caprimulgus vociferus*	• Moderate (FOM)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Least Bittern	*Ixobrychus exilis*	• Moderate (SW)
Common Nighthawk	*Chordeiles minor*	• Low (AG)
Olive-sided Flycatcher	*Contopus cooperi*	• Moderate (FOM)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Monarch Butterfly	*Danaus plexippus*	• Low (CUM)
Northern Map Turtle	*Graptemys geographica*	• Moderate (OA)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOM, WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOM, WOD)

[a]CGL – Green Land; CVR – Residential Lands; CVC – Commercial and Institutional; FOM – Mixed Forest; TAG – Treed Agriculture; WOD – Deciduous Woodland; CUM – Cultural Meadow; AG – Agriculture; SW – Swamp; OA – Open Water

5.1.19.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of LSRCA and Midhurst District MNRF.

This portion of the study area is located with the Lake Simcoe Protection Plan watershed boundaries.

5.2 Preliminary Environmental Site Assessment

Please refer to Section 1.5.2 for a description of the methodology followed for collection of preliminary environmental assessment site baseline conditions data. Baseline conditions at each TPF site associated with the Barrie Corridor have been summarized below.

A summary of the background information review, observations from the site reconnaissance, findings, ranking, and recommendations for each TPF site are provided below. The location of identified issues, if any, are indicated on **Figure 5-5 to Figure 5-8**, below.

5.2.1 Allandale Tap Location (Preferred)

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

5.2.2 Allandale Tap Location (Alternative)

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

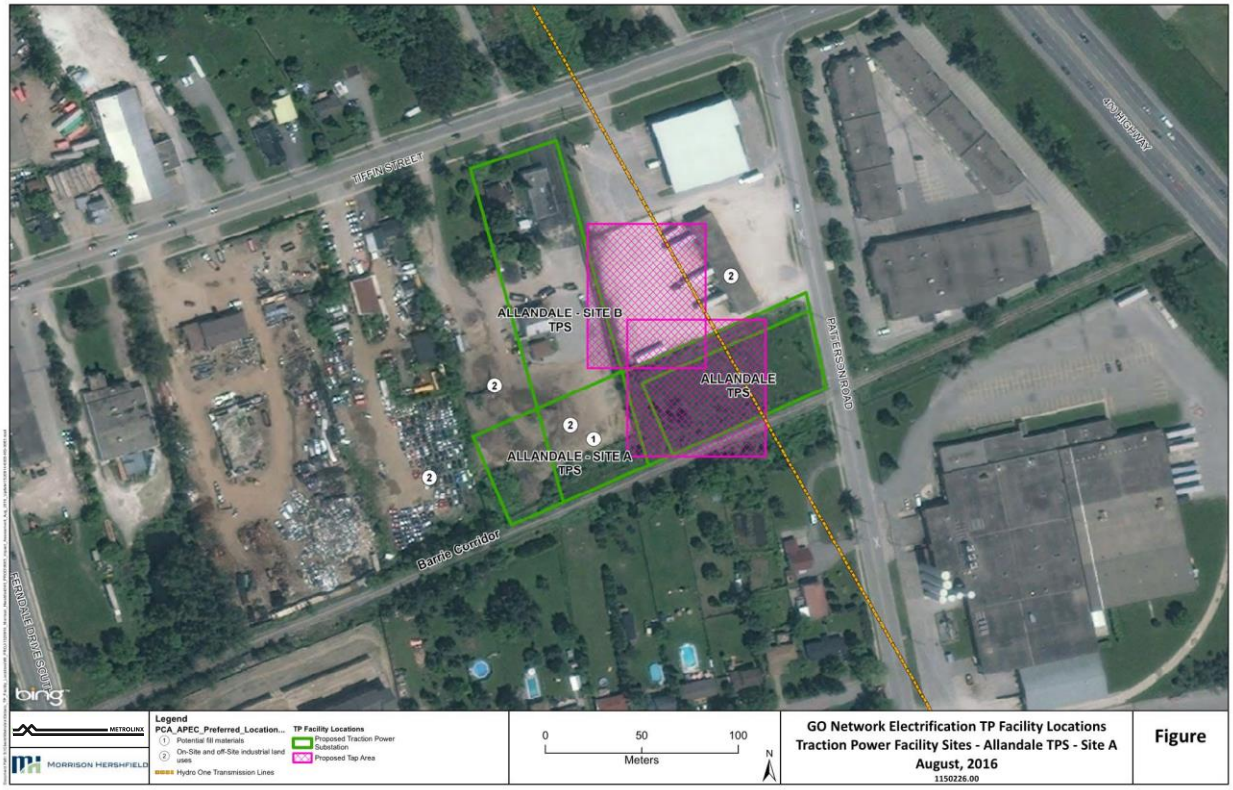
5.2.3 Allandale TPS

Table 5-14 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Allandale TPS site.

Table 5-14: Summary of Baseline Conditions at the Allandale TPS Site

Drive-by Site Reconnaissance Key Observations	• The Site consists of a parcel of undeveloped, vegetated land. The ground appears to be hummocky and potential fill is present throughout the Site. • Surrounding properties consist of the following: - North: An industrial property occupied by Romeo's Trucking (10 Patterson Road) - East: Patterson Road followed by a multi-tenant commercial/light industrial building; - South: Rail tracks followed by residential dwellings; and, - West: An undeveloped lot. An automotive scrap yard is present approximately 60 m west of the Site.
Identified APECs/PCAs	• Potential fill of unknown quality across the Site; and, • Industrial Land use: Romeo's Trucking located immediately adjacent to the north of the Site at 10 Patterson Road; and, an auto junkyard located further west of the Site.
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired. • Complete a Limited Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from adjacent/nearby land uses. • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 5-5: Potential Sources of Contamination at Proposed Allandale TPS Site Location



5.2.4 Barrie-Collingwood Railway 25kV Feeder Route

Table 5-15 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Allandale TPS site.

Table 5-15: Summary of Baseline Conditions at the 25kV Feeder Route (Barrie Collingwood Rail ROW)

Drive-by Site Reconnaissance Key Observations	• The Site was not visible from publicly accessible locations, and therefore a Site Reconnaissance was not conducted.
Identified APECs/PCAs	• Various industrial land uses surrounding the Site; and, • A rail yard present adjacent to the southeast portion of the Site.
Risk Ranking	**Moderate**
Recommendations	• Characterize the quality of excess soil generated at the time of installation to determine management options. A subsurface investigation prior to construction is not considered necessary since the installation of the connection is not anticipated to required property acquisition or large scale excavation activities that have the potential to disturb subsurface contamination, if present.

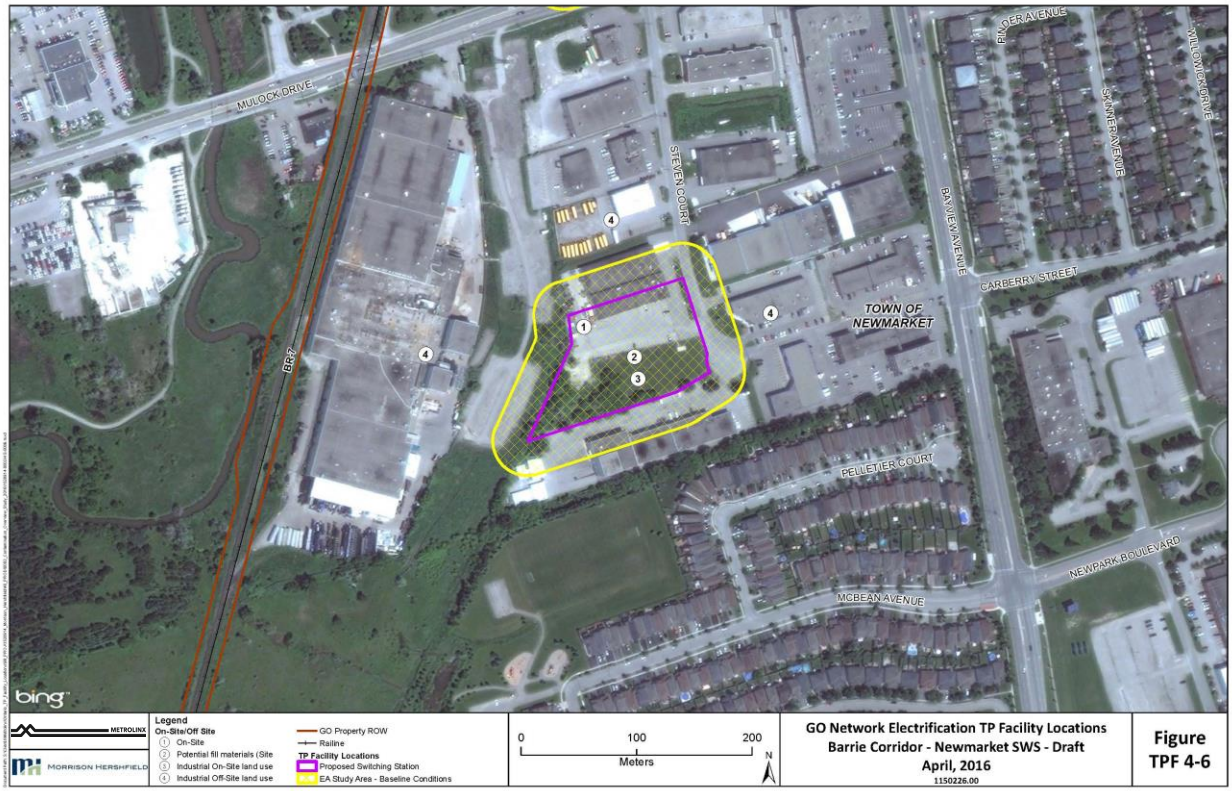
5.2.5 Newmarket SWS

Table 5-16 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Newmarket SWS site.

Table 5-16: Summary of Baseline Conditions at the Newmarket SWS Site

Drive-by Site Reconnaissance Key Observations	• The Site is used primarily as a parking area with undeveloped grassed land with trees along the southern portion of the Site; • The Newmarket Hydro Building is present immediately north of the Site with a portion of the building being on-Site; • One large cylindrical AST was observed at the northwest corner of the Site; • Surrounding land uses consist of industrial properties to the north, south, east and west of the Site.
Identified APECs/PCAs	• Potential fill materials of unknown composition may be present across the Site; • Industrial on-Site and off-Site land usage, including hazardous waste generation; and, • On-Site AST on the northwest corner of the Site.
Risk Ranking	**Moderate**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from on-site and adjacent/nearby land uses; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 5-6: Potential Sources of Contamination at Proposed Newmarket SWS Site Location



5.2.6 Gilford PS

Table 5-17 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Gilford PS site.

Table 5-17: Summary of Baseline Conditions at the Gilford PS Site

Drive-by Site Reconnaissance Key Observations	• The Site consisted of vacant land overgrown with vegetation. The ground appears uneven and hummocky; and, • The surrounding properties consist primarily of residential properties. Rail tracks are present adjacent to the west of the Site.
Identified APECs/PCAs	• Potential fill materials of unknown quality.
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Limited Subsurface Investigation to investigate the potential fill materials at the Site; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required. Additional PCAs/APECs identified during the Phase I ESA will be investigated as part of a Limited Subsurface Investigation and/or Phase II ESA.

Figure 5-7: Potential Sources of Contamination at Proposed Gilford PS Site Location

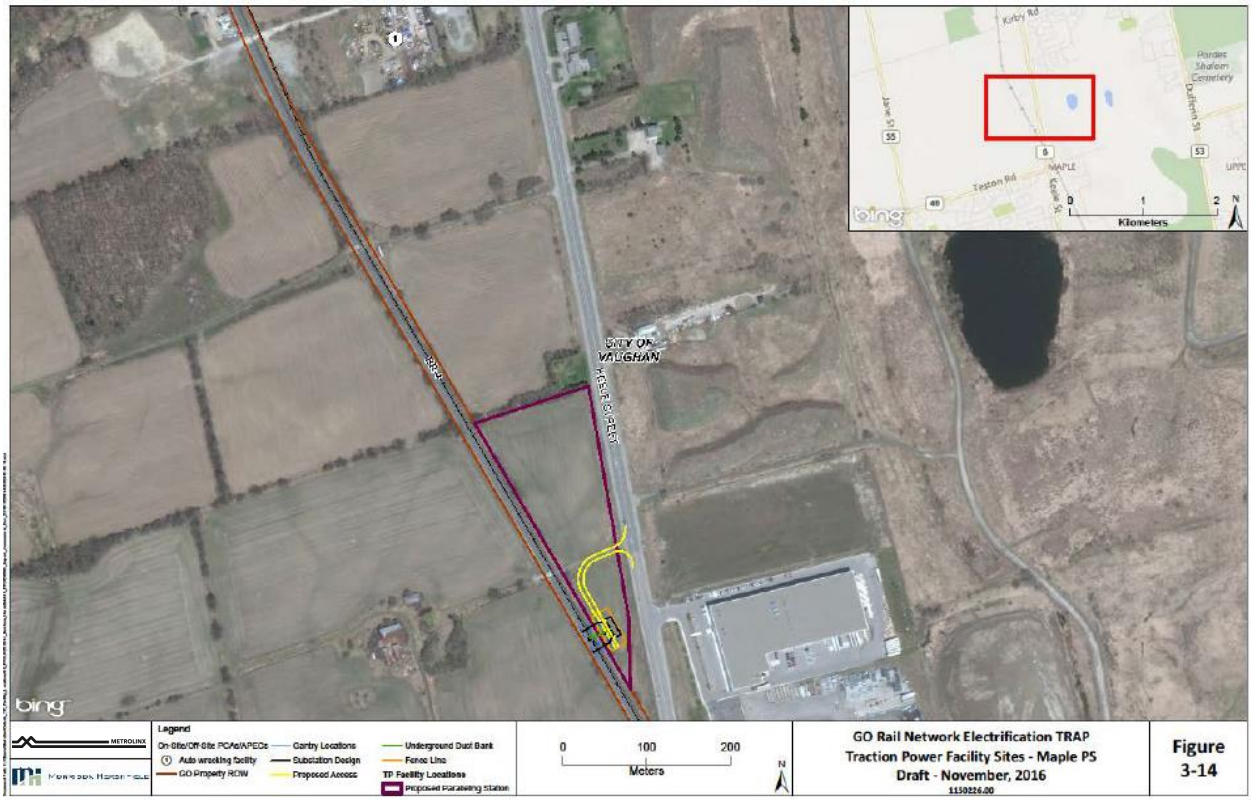
5.2.7 Maple PS

Table 5-18 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Maple PS site.

Table 5-18: Summary of Baseline Conditions at the Maple PS Site

Drive-by Site Reconnaissance Key Observations	• The Site consists of vacant agricultural fields with one small building and one potential storage trailer at the western boundary of the Site. An auto wrecking facility is present adjacent to the north of the Site. Rail tracks are present adjacent to the west of the Site; and, Keele Street is present adjacent to the east of the Site. Agricultural land is present adjacent to the south of the Site.
Identified APECs/PCAs	• Auto wrecking facility immediately adjacent to the north of Site.
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Limited Subsurface Investigation along the northern property boundary to assess for potential subsurface impacts resulting from the auto-wrecking facility located immediately adjacent to the north of the Site; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 5-8: Potential Sources of Contamination at Proposed Maple PS Site Location



5.2.8 Barrie Corridor

The Barrie Corridor appears to have had very limited ESA work completed along its alignment based on the information provided. There have been a few small properties that have had Phase I and Phase II ESA studies. Notably, this work was completed at the King City and Aurora GO Stations to support land acquisitions related to parking and or station expansion. This work however occurred outside of the OCS Impact Zone.

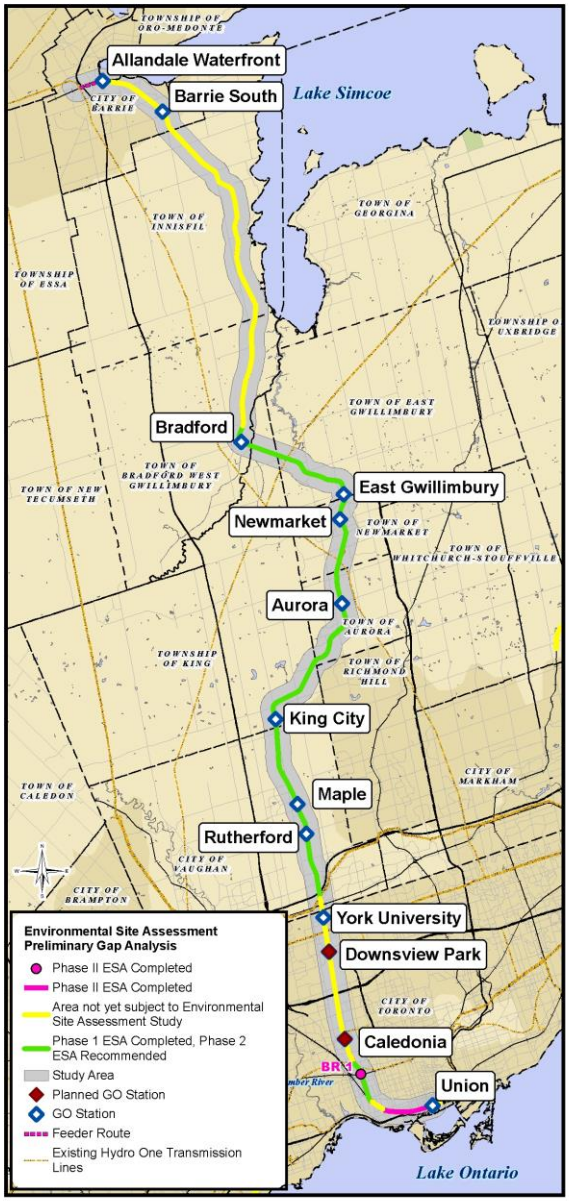
The most substantive ESA on the Barrie Corridor that addresses the OCS Impact Zone was a Phase I ESA conducted by Jacques Whitford Environment Limited (JWEL 2000). This study was conducted along a portion of the line known as the "*Newmarket Subdivision - Mile 12.90 to 42.3".* The Phase I ESA did identify areas of potential environmental concern, however the report did not provide any recommendations.

In 2015 Phase I and Phase II ESA studies (Arcadis 2015a & b) were completed for the Davenport Community Rail Overpass between Dundas Street and St. Clair Avenue. The Phase II ESA however was limited to 750 m length of the corridor between Lappin Avenue and Davenport Road. Combined, these Phase I ESA studies cover approximately 52 km of the 100 km long corridor, and further information on the gap analysis is provided in **Appendix B**. Approximately 48km of this corridor has not been subject to

site assessment. Further work is recommended to address the data gaps identified to prepare a complete contamination overview study for the project footprint.

The general location of data are illustrated in **Figure 5-9** and described below. Detailed maps of the extent of previous investigations are provided in **Appendix B**.

Figure 5-9: Barrie Corridor Contamination Overview Map



The 2015 Phase II ESA of the short segment near Davenport Road found soil and groundwater contamination along the ROW. This included petroleum hydrocarbons, chlorinated solvents, PAHs, PCBs

and metals in excess of to exceed MOE Table 3 Standards. Locations of these areas are shown on the overview figure for this corridor (**Figure 5-9)** and **Appendix B**. Additional contamination studies are required for contaminated lands in order to understand the nature of the contamination.

5.3 Cultural Heritage

Please refer to Section 1.5.3 for a description of the methodology followed for collection of cultural heritage baseline conditions data. Baseline conditions within each segment of the Barrie Corridor have been summarized below. Additional details can be found in the Cultural Heritage Screening Report contained in **Appendix C1**. Please refer to Section 1.5.3.1 for a description of the resources that were used for the screening of Cultural Heritage Resources.

5.3.1 Allandale Tap Location (Preferred)

See **Figure 1-6** in Section 1.3 for the location of the proposed Preferred Allandale Tap Location site. There are no heritage properties identified at the Alternative Allandale Tap Location. There are no further concerns from a cultural heritage perspective.

5.3.2 Allandale Tap Location (Alternative)

See **Figure 1-6** in Section 1.3 for the location of the proposed Alternative Allandale Tap Location site. There are no heritage properties identified at the Alternative Allandale Tap Location. There are no further concerns from a cultural heritage perspective.

5.3.3 Allandale TPS

See **Figure 1-6** in Section 1.3 for the location of the proposed Allandale TPS site. There are no heritage properties identified at the Allandale TPS.

5.3.4 Barrie-Collingwood Railway 25kV Feeder Route

See **Figure 1-18** in Section 1.4 for the proposed Feeder Route. A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource was located along the Barrie-Collingwood Railway 25kV Feeder Route. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-19** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 5-19: Cultural Heritage Resources for Barrie-Collingwood 25kV Feeder Route

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[31]	Metrolinx Heritage Recognition[32]
N/A	Highway 400, Barrie	Highway 400/Barrie-Collingwood Railway Overpass	None	Non-heritage property; CHER is not required	Non-Heritage Property

5.3.5 Newmarket SWS

See **Figure 1-7** in Section 1.3 for the location of the proposed Newmarket SWS site. There are no heritage properties identified at the Newmarket SWS.

5.3.6 Gilford PS

See **Figure 1-8** in Section 1.3 for the location of the proposed Gilford PS site. There are no heritage properties identified at this location.

5.3.7 Maple PS

See **Figure 1-9** in Section 1.3 for the location of the proposed Maple PS site. There are no heritage properties identified at the Maple PS.

5.3.8 Corridor & Bridges: Section BR-1 – Parkdale Junction to Caledonia Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Seven potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-20** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

[31] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[32] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 5-20: Cultural Heritage Resources for BR-1

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[33]	Metrolinx Heritage Recognition[34]
N/A	Dundas Street, Toronto	Dundas Street Bridge	None	Conditional Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, September 23, 2016)C
N/A	Innes Avenue, Toronto	Innes Avenue Pedestrian Bridge	None	Conditional Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, August 15, 2016)
N/A	Eglinton Avenue, Toronto	Eglinton Avenue Bridge	CHER previously completed. Determined to not be a Provincial Heritage Property.	Non-heritage property; CHER is not required	Non-Heritage Property (MHC Decision, January 28. 2016)
BR-1-1	222 Lansdowne Street, Toronto	National Cash Register Company Building	Designated under Part IV of the OHA (By-law 436-2003)	Protected property adjacent to the rail corridor and to Dundas Street Bridge; CHER is not required	Adjacent Protected Property
BR-1-2	1550 St. Claire Ave. W., Toronto	Former Rail Station	Listed on the City of Toronto Heritage Inventory; designated under the Heritage Railway Station Protection Act	Former adjacent protected property - structure was removed (post-1992); CHER is not required	Adjacent Protected Property
BR-1-3	St. Clair Avenue West, Toronto	St. Clair Avenue West Bridge	CHER previously completed, determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC SCHV, n.d.)
BR-1-4	Toronto	York Beltline Trail	CHER previously completed, determined to be a Provincial Heritage Property	Protected Provincial Heritage Property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

[33] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[34] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

As noted above, CHERs were recommended and subsequently conducted for the Dundas Street Bridge and Innes Avenue Pedestrian Bridge. A summary of the CHERs undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 5-21** below. See **Figure 5-10** through **Figure 5-11** for a visual representation of these CHRs.

Table 5-21: Summary of BR-1 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Dundas Street Bridge	Not Heritage	September 23rd, 2016	Not a Provincial Heritage Property
Innes Avenue Pedestrian Bridge	Not Heritage	August 15th, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, the Dundas Street and Innes Avenue Pedestrian Bridges do not meet the criteria contained within Ontario Regulations 9/06 or 10/06. As such, neither of these structures are Provincial Heritage Properties or Provincial Heritage Properties of Provincial Significance. A copy of the CHER prepared for Dundas Street Bridge and Innes Avenue Pedestrian Bridge is provided in **Appendix M**.

Figure 5-10: Dundas Street Bridge - South Elevation

Figure 5-11: Innes Avenue Pedestrian Bridge – General View of Bridge Elevation and Underside

5.3.9 Corridor & Bridges: Section BR-2 – Caledonia Station to Downsview Park Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-22** summarizes this resource and provides recommendations for it (see **Appendix C1** for the screening reports).

Table 5-22: Cultural Heritage Resources for BR-2

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[35]	Metrolinx Heritage Recognition[36]
N/A	Highway 401, Toronto	Highway 401 Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property

5.3.10 Corridor & Bridges: Section BR-3 – Downsview Park Station to Rutherford Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Four potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-23** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 5-23: Cultural Heritage Resources for BR-3

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[37]	Metrolinx Heritage Recognition[38]
N/A	595-A Canarctic Dr. North York	York University GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property

[35] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[36] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

[37] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[38] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[37]	Metrolinx Heritage Recognition[38]
N/A	699 Westburn Dr., Concord	Rutherford GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Highway 407, Vaughan	Highway 407 Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
BR-3-1	Concord	Don River Culvert	CHER previously completed, determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC Decision, July 23, 2013)

5.3.11 Corridor & Bridges: Section BR-4 – Rutherford Station to King City Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Four potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-24** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 5-24: Cultural Heritage Resources for BR-4

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[39]	Metrolinx Heritage Recognition[40]
N/A	Keele St., Vaughan	Maple TP Site	None	Non-heritage property; CHER is not required	Non-Heritage Property
BR-4-1	30 Station St., Vaughan	Maple GO Station	Located within the Village of Maple HCD, Part V Designation under the OHA (By-Law 167-2007); Designated under the Heritage Railway Station Protection Act.	Potential Provincial Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, January 11, 2017)
N/A	Keele St., Vaughan	Keele Street Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
BR-4-2	Vaughan	Village of Maple HCD	Designated under Part V of the OHA (By-Law 167-2007)	Protected property adjacent to the rail corridor and to Maple GO Station (BR-4-1); CHER is not required	Adjacent Protected Property

As noted above, a CHER was recommended and subsequently conducted for the Maple GO Station. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 5-25** below. See **Figure 5-12** for a visual representation of this CHR.

[39] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[40] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 5-25: Summary of BR-4 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Maple GO Station	9/06	January 11, 2017	Metrolinx Heritage Property

Based on the recommendations noted above, the Maple GO Station meets at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, it does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Maple GO Station does not hold Provincial significance and is not considered a Provincial Heritage Property of Provincial Significance. A copy of the CHER and Statement of Cultural Heritage Value is included in **Appendix M**.

Figure 5-12: Maple GO Station

5.3.12 Corridor & Bridges: Section BR-5 – King City Station to Bathurst Street

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Four potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance

(PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-26** summarizes these resources and provides recommendations for each (see Appendix C1 for the screening reports).

Table 5-26: Cultural Heritage Resources for BR-5

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[41]	Metrolinx Heritage Recognition[42]
N/A	7 Station Rd., King City	King City GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	King Rd.	King Road Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Keele St., King City	Keele Street Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
BR-5-1	12974 Keele Street, King City	Crawford and Maud Wells House	Designated under Part IV of the OHA (By-Law 2009-73)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

5.3.13 Corridor & Bridges: Section BR-6 – Bathurst Street to Aurora Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural

[41] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[42] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Heritage sections of Volume 3 – Impact Assessment. **Table 5-27** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 5-27: Cultural Heritage Resources for BR-6

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[43]	Metrolinx Heritage Recognition[44]
BR-6-1	121 Wellington St. E., Aurora	Aurora GO Station	Provincial Heritage Property of Provincial Significance; Identified as a National Historic Site; Designated under the Heritage Railway Stations Protection Act	Provincial Heritage Property of Provincial Significance; CHER is not required	Provincial Heritage Property of Provincial Significance (MHC Decision, August 14, 2014)
N/A	Bathurst St., Aurora	Bathurst Street Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
BR-6-2	520 Industrial Parkway South, Aurora	Radial Railway Bridge Abutment	Designated under Part IV of the OHA (By-Law 4850-06)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

5.3.14 Corridor & Bridges: Section BR-7 – Aurora Station to East Gwillimbury Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Six potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance

[43] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[44] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

(PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-28** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 5-28: Cultural Heritage Resources for BR-7

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[45]	Metrolinx Heritage Recognition[46]
N/A	590 Steven Ct., Newmarket	Newmarket TP Site	None	Non-heritage property	A CHER is not required
BR-7-1	465 Davis Dr., Newmarket	Newmarket GO Station	Listed on the Municipal Register of non-designated Heritage properties.	Potential Provincial Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, January 11, 2017)
N/A	845 Green Ln. E., East Gwillimbury	East Gwillimbury GO Station	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Queen Street, Newmarket	Queen Street Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
BR-7-2	115-117 Main St. South, Newmarket	Private Residence (Robinson House)	Designated under Part IV of the OHA (By-Law 1988-143)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property
BR-7-3	450/474 Davis Drive, Newmarket	Former Newmarket TrainStation	Designated under Part IV of the OHA (By-Law 1987-143); Designated under the Heritage Railway Station Protection Act	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

As noted above, a CHER was recommended and subsequently conducted for the Newmarket GO Station. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria

[45] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[46] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 5-29** below. See **Figure 5-13** for a visual representation of this CHR.

Table 5-29: Summary of BR-7 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Newmarket GO Station	9/06	January 11, 2017	Provincial Heritage Property

Based on the recommendations noted above, the Newmarket GO Station meets at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, it does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Newmarket GO Station does not hold Provincial significance and is not considered a Provincial Heritage Property of Provincial Significance. A copy of the CHER and Statement of Cultural Heritage Value is provided in **Appendix M**.

Figure 5-13: Newmarket GO Station

5.3.15 Corridor & Bridges: Section BR-8 – East Gwillimbury Station to Bradford Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-30** summarizes this resource and provides recommendations for it (see **Appendix C1** for the screening reports).

Table 5-30: Cultural Heritage Resources for BR-8

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[47]	Metrolinx Heritage Recognition[48]
N/A	Holland River, Bradford	Holland River Bridge, Mile 41.00	None	Potential Provincial Heritage Property: CHER recommended	Non-Heritage Property (MHC Decision, August 15, 2016)

As noted above, a CHER was recommended and subsequently conducted for the Holland River Bridge. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 5-31** below. See **Figure 5-14** for a visual representation of this CHRs.

Table 5-31: Summary of BR-8 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision

[47] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[48] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Holland River Bridge	Not Heritage	August 15, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, the Holland River Bridge does not meet the criteria contained within Ontario Regulations 9/06 or 10/06. As such, the structure is not a Provincial Heritage Property or Provincial Heritage Property of Provincial Significance. A copy of the CHER prepared for Holland River Bridge is provided in **Appendix M**.

Figure 5-14: Holland River Bridge – South Elevation

5.3.16 Corridor & Bridges: Section BR-9 – Bradford Station to 13th Line

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the

determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-32** summarizes this resource and provides recommendations for it (see Appendix C1 for previous heritage recognitions of the resource).

Table 5-32: Cultural Heritage Resources for BR-9

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[49]	Metrolinx Heritage Recognition[50]
BR-9-1	300 Holland St. E., Bradford	Bradford GO Station	Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC Decision, August 14, 2014)

5.3.17 Corridor & Bridges: Section BR-10 – 13th Line to 6th Line Section

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-33** summarizes this resource and provides recommendations for it (see **Appendix C1** for the screening reports).

[49] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[50] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 5-33: Cultural Heritage Resources for BR-10

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[51]	Metrolinx Heritage Recognition[52]
N/A	6th Line, Innisfil	6th Line Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property

5.3.18 Corridor & Bridges: Section BR-11 – 6th Line to Barrie South Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resource is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-34** summarizes this resource and provides recommendations for it (see **Appendix C1** for the screening reports).

Table 5-34: Cultural Heritage Resources for BR-11

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[53]	Metrolinx Heritage Recognition[54]
BR-11-1	1350 6th Line, Innisfil	Cortellucci Property	Designated under Part IV of the OHA (By-Law 037-11)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

[51] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[52] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

[53] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[54] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

5.3.19 Corridor & Bridges: Section BR-12 – Barrie South Station to Allandale Waterfront Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Five potential cultural heritage resources are located in this segment of the corridor and a sixth is west of BR-12. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 5-35** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 5-35: Cultural Heritage Resources for BR-12

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[55]	Metrolinx Heritage Recognition[56]
N/A	833 Yonge Street, Barrie	Barrie South GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Cox Mill Road, Barrie	Cox Mill Road Bridge	CHER previously completed. Determined to be a non-heritage property.	Non-Heritage Property; CHER is not required	Non-Heritage Property (MHC Decision, June 9, 2017)
N/A	Tollendale Creek, Barrie	Tollendale Creek Bridge	CHER previously completed. Determined to be a non-heritage property.	Non-Heritage Property; CHER is not required	Non-Heritage Property (MHC Decision, June 9, 2017)
BR-12-1	285 Bradford Street, Barrie	Former Allendale Train Station	Designated under Part IV of the OHA (By-Law 2009-144); Heritage Easement;	Protected property adjacent to the Allandale Waterfront GO	Adjacent Protected Property

[55] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[56] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[55]	Metrolinx Heritage Recognition[56]
			Designated under the Heritage Railway Stations Protection Act	Station; CHER is not required	
N/A	Big Bay Point Rd.	Big Bay Point Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
WEST OF SECTION BR-12					
N/A	Patterson Road, Barrie	Allandale TP Site	None	Non-heritage property; CHER is not required	Non-Heritage Property

5.4 Archaeology

A review of the historic land use of the Barrie corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. It is situated within the traditional territory occupied by the ancestral Huron-Wendat, however the Northshore of Lake Ontario was abandoned around the turn of the sixteenth century while Simcoe County was occupied until the mid-seventeenth century. The corridor was subsequently utilized by the Seneca First Nation for hunting until the late seventeenth century; and, subsequently occupied by Ojibwa First Nations until 1805 (Sections BR-1, BR-2, BR-3, BR-4, BR-5, BR-6 and BR-7); 1818 (Sections BR-9, BR-10, BR-11 and BR-12); and, 1923 (Sections Br-7 and BR-8) (AANDC 2013e; 2013f; Benn 2008; Ellis 2013; Williamson 2013). The background research also acknowledges that since the turn of the eighteenth century, the Métis have lived throughout the Province of Ontario but are often muted in the historical record (MNC n.d.; Stone and Chaput 1978: 607,608). Since 1805, the section has been occupied by Euro-Canadian peoples and is situated within the former Townships of King, Vaughan, Whitchurch and York, County of York; since 1818, within the former Townships of Innisfil and West Gwillimbury, County of Simcoe; and, since the 1790s, within the former Townships of East Gwillimbury and King, County of York and the former Township of Innisifil, County of Simcoe (Benn 2008; Mika and Mika 1977; Miles & Co. 1878; Rayburn 1997). A review of 19th century mapping indicates that the corridor includes both historic features and transportation routes (Belden & Co. 1881; Hogg 1871; Miles & Co. 1878; Tremaine 1860) (Figures 5-1 and 5-12 to 5-21).

Please refer to Section 1.5.4 for a description of the methodology followed for collection of archaeological baseline conditions data. Baseline conditions within each segment of the Barrie Corridor have been summarized below. Additional details can be found in the Archaeological Baseline Conditions Report contained in **Appendix D1**.

5.4.1 Allandale Tap Location (Preferred)

See **Figure 1-6** in Section 1.3 for the location of the proposed Preferred Allandale Tap site. The preferred Allandale Tap site is also currently part of the Hydro One Barrie Area Transmission upgrade project. Some

portions of the Preferred Allandale Tap site meetings the following criteria which are indicative of archaeological potential:

- Proximity to water
- Proximity to previously registered archaeological sites
- Physiographic characteristics
- Proximity to Euro-Canadian settlement

These criteria are indicative of the lands within the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment (AECOM 2017) completed (see **Appendix D2**).

5.4.2 Allandale Tap Location (Alternative)

See **Figure 1-6** in Section 1.3 for the location of the proposed Alternative Allandale Tap site. The Alternative Allandale Tap meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Northern Railway)
- Well-drained sandy soils (Tioga sandy loam)

These criteria are indicative of the lands within the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

5.4.3 Allandale TPS

See **Figure 1-6** in Section 1.3 for the location of the proposed Allandale TPS site. The Allandale TPS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Northern Railway)
- Well-drained sandy soils (Tioga sandy loam)
- Proximity to Euro-Canadian transportation routes (Tiffin Street; Northern Railway)
- Proximity to historic Euro-Canadian settlement (Allandale)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

5.4.4 Barrie-Collingwood Railway 25kV Feeder Route

See **Figure 1-18** in Section 1.3 for the location of the proposed 25kV Feeder Route. The 25kV Feeder Route meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Northern Railway)
- Well-drained sandy soils (Tioga sandy loam)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

5.4.5 Newmarket SWS

See **Figure 1-7** in Section 1.3 for the location of the proposed Newmarket SWS site. The Newmarket SWS meets the following criteria which are indicative of archaeological potential:

- Proximity to water source (East Holland River)

This criterion is indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments that have been completed within the Newmarket SWS.

5.4.6 Gilford PS

See **Figure 1-8** in Section 1.3 for the location of the proposed Gilford PS site. The Gilford PS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Northern Railways)
- Well-drained sandy soils (Bondhead sandy loam)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

There are no known previous assessments which have been completed within the Gilford PS.

5.4.7 Maple PS

See **Figure 1-9** in Section 1.3 for the location of the proposed Maple PS site. The Maple PS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Northern Railway; Keele Street)
- Proximity to historic features (farmsteads)
- Well-drained sandy soils (Woburn sandy loam)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. The entire Maple PS has however been subject to previous Stage 2 archaeological assessment (Archeoworks 2010) (see Figure 7-14 in **Appendix D1**).

The Maple PS is immediately adjacent to the Hope Primitive Methodist Cemetery (Figure 7-14 in **Appendix D1**). These lands should be protected and avoided from any planned impacts by the project. Full details of mitigating impacts to the cemetery are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

The Maple PS includes lands modeled to possess potential for an ancestral Huron-Wendat Ossuary (Figure 7-14 in **Appendix D1**). Full details of further assessment required to mitigate impacts to these lands are included in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

5.4.8 Corridor & Bridges: Section BR-1 – Parkdale Junction to Caledonia Station

Section BR-1 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Brockton)
- Proximity to historic transportation route (Northern Railway)
- Proximity to historic features (farmsteads)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Review of 19th century mapping indicates that part of Section BR-1 includes a portion of the former property of St. Helen's Roman Catholic Church (Goad 1890; Robertson 1908) (see Figure 7-1 in **Appendix D1**). While the available 19th century mapping does not indicate a cemetery on the church property, this does not preclude the probability that an associated cemetery may remain intact on the property (*cf*. ASI 2015d:1; 2015f). Further background research on the property was conducted as part of the impact assessment (see **Appendix D2**).

Part of this section has been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-1 and 7-12 in **Appendix D1**). Approximately 30.6 ha have been previously assessed. ASI (*In-preparation*) at the time of writing was conducting a Stage 1 archaeological assessment for the Barrie Rail Corridor Expansion (BRCE) Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-1 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.9 Corridor & Bridges: Section BR-2 – Caledonia Station to Downsview Park Station

Section BR-2 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Village of Weston)
- Proximity to historic transportation route (Northern Railway)
- Proximity to historic features (farmsteads; historic community of Weston Station)
- Proximity to water source (Maple Leaf Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Section BR-2 includes lands within the Mt. Sinai Memorial Park cemetery (Figure 7-13 in **Appendix D1**). These lands should be protected and avoided from any planned impacts by the project. Full details of mitigating impacts to the cemetery are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Part of this section has been subject to previous archaeological assessment (ASI2016) (see Figures 7-12 and 7-13 in **Appendix D1**). Approximately 44.6 ha have been previously assessed. ASI (*In-preparation*) is currently conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00. The draft BRCE Stage 1 archaeological assessment report recommends that part of Section BR-2 will require additional archaeological assessment (see **Appendix D1**).

5.4.10 Corridor & Bridges: Section BR-3 – Downsview Park Station to Rutherford Station

Section BR-3 meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Northern Railway)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (AlGu-22)
- Proximity to water source (Don River West Branch)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Two previously registered archaeological sites are located within 50 m of Section BR-3 (AkGu-30; and, AlGu-22) (Figure 7-14 in **Appendix D1**). Site AlGu-22 does not require further assessment as MTCS records indicate that it does not possess any further CHVI. Site AkGu-30 is reported to possess CHVI but has most likely been destroyed by subsequent development (MTCS 2015). Its condition was confirmed as part of the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-13 and 7-14 in **Appendix D1**). Approximately 53.1 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-3 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.11 Corridor & Bridges: Section BR-4 – Rutherford Station to King City Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (King City; Maple)
- Proximity to historic transportation route (Northern Railway; Major Mackenzie Drive; Keele Street)
- Proximity to historic features (farmsteads)
- Well-drained sandy soils (Woburn sandy loam)
- Proximity to previously registered archaeological sites (AlGu-23)
- Proximity to water source (tributary of Don River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered archaeological site is located within 50 m of Section BR-4 (AlGu-23) (Figure 7-14 in **Appendix D1**). Site AlGu-23 is reported to possess CHVI but most likely has been destroyed by subsequent development (MTCS 2015). Its condition was confirmed as part of the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Section BR-4 encroaches upon the Maple United Cemetery (Figure 7-14 in **Appendix D1**). These lands should be protected and avoided from any planned impacts by the project. Full details of mitigating impacts to the cemetery are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Section BR-4 includes lands modeled to possess potential for an ancestral Huron-Wendat Ossuary (Figure 7-14 in **Appendix D1**). Full details of further assessment required to mitigate impacts to these lands are included in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-14 and 7-15 in **Appendix D1**). Approximately 57.1 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-4 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.12 Corridor & Bridges: Section BR-5 – King City Station to Bathurst Street

Section BR-5 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (King City/Springhill)
- Proximity to historic transportation route (Northern Railway; Bathurst Street)
- Proximity to historic features (farmsteads)
- Well-drained sandy soils (Woburn sandy loam)
- Proximity to water source (tributary of Humber River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figure 7-15 in **Appendix D1**). Approximately 20.9 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-5 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see Appendix D1).

5.4.13 Corridor & Bridges: Section BR-6 – Bathurst Street to Aurora Station

Section BR-6 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Town of Aurora)
- Proximity to historic transportation route (Northern Railway; Yonge Street)
- Proximity to historic features (farmsteads)
- Well-drained sandy soil (Pontypool sandy loam)
- Proximity to water source (tributary of East Holland River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figure 7-16 in **Appendix D1**). Approximately 23.9 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-6 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.14 Corridor & Bridges: Section BR-7 – Aurora Station to East Gwillimbury Station

Section BR-7 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Aurora; Newmarket)
- Proximity to historic transportation route (Northern Railway)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (BaGu-49)
- Proximity to water source (East Holland River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered archaeological site is located within 50 m of Section BR-7 (BaGu-49) (Figure 7-17 in **Appendix D1**). Site BaGu-49 will not be disturbed by the project and does not require further assessment because it has been determined to have no further CHVI (MTCS 2015).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-16 and 7-17 in **Appendix D1**). Approximately 40.3 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-7 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see Appendix D1).

5.4.15 Corridor & Bridges: Section BR-8 – East Gwillimbury Station to Bradford Station

Section BR-8 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Bradford; Holland Landing)
- Proximity to historic transportation route (Holland River; Northern Railway; Yonge Street; Toronto Carrying Place Trail)
- Proximity to historic features (farmsteads)
- Well-drained sandy soil (Pontypool sandy loam)
- Proximity to previously registered archaeological sites (BaGu-141)
- Proximity to water source (Holland River)
- Associated occupation (Ojibwa settlement at Holland Landing)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered archaeological site is located within 50 m of Section BR-7 (BaGu-141) (Figure 7-17 in **Appendix D1**). BaGu-141 will not be disturbed by this project and does not require further assessment because it does not possess any further CHVI (MTCS 2015).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-17 and 7-18 in **Appendix D1**). Approximately 36.2 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-8 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.16 Corridor & Bridges: Section BR-9 – Bradford Station to 13th Line

Section BR-9 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Bradford)
- Proximity to historic transportation route (Northern Railway)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (BaGv-18)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered archaeological site is located within 50 m of Section BR-9 (BaGv-18) (Figure 7-18 in **Appendix D1**). Site BaGv-18 is reported to possess CHVI (MTCS 2015). Full details of further archaeological assessment was included as part of the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-18 and 7-19 in **Appendix D1**). Approximately 28.9 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-9 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.17 Corridor & Bridges: Section BR-10 – 13th Line to 6th Line Section

Section BR-10 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Lefroy)
- Proximity to historic transportation route (Northern)
- Proximity to historic features (farmsteads)
- Well-drained sandy soils (Bondhead sandy loam; Tioga sandy loam)
- Proximity to water source (Innisfil Creeks)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Section BR-10 includes lands adjacent to the historic Lefroy United Church (Figure 7-19 in **Appendix D1**). These lands required further background research to determine if a historic cemetery associated with the church was located on the property. Background research and any recommendations on mitigating potential impacts by the project were provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figure 7-19 in **Appendix D1**). Approximately 29.6 ha have been previously assessed. ASI (*In-preparation*) at the time of writing were conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the

Study Area within the BR-10 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.18 Corridor & Bridges: Section BR-11 – 6th Line to Barrie South Station

Section BR-11 meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Craigvale)
- Proximity to historic transportation route (Northern Railway; Yonge Street/Penetang Road)
- Proximity to historic features (church; school; post office)
- Well-drained sandy soils (Sargent sandy loam)
- Proximity to previously registered archaeological sites (BbGv-50; BbGv-51; BbGv-52)
- Proximity to water source (Hewitts Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Three previously registered archaeological sites are located within 50 m of Section BR-10 (BbGv-50; BbGv-51; and, BbGv-52) (Figure 7-20 in **Appendix D1**). Site BbGv-50 is reported to possess CHVI (MTCS 2015). Full details of further archaeological assessment are included as part of the Stage 1 Archaeological Assessment Report (see **Appendix D2**). Information on BbGv-51 and BbGv-52 is limited but both sites are reported to have CHVI. Further background research and recommendations on their CHVI was included as part of the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Section BR-11 includes lands within the St. Pauls Innisfil Cemetery (Figure 7-20 in **Appendix D1**). These lands should be protected and avoided from any planned impacts by the project. Full details of mitigating impacts to the cemetery are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figures 7-19 and 7-20 in **Appendix D1**). Approximately 30.1 ha have been previously assessed. ASI (*In-preparation*) was at the time of writing conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing, the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-11 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

5.4.19 Corridor & Bridges: Section BR-12 – Barrie South Station to Allandale Waterfront Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Allandale)
- Proximity to historic transportation route (Northern Railway; Kempenfelt Bay)
- Proximity to historic features (farmsteads)
- Well-drained sandy soils (Sargent sandy loam; Tioga sandy loam)
- Proximity to previously registered archaeological sites (BbGv-20; BcGw-69)
- Proximity to water source (Lovers Creek; Kempenfelt Bay)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Two previously registered sites are located within 50 m of Section BR-12 (BbGv-20; BcGw-69) (Figures 7-20 and 7-21 in **Appendix D1**). Site BbGv-20 is identified as an ancestral Huron-Wendat village site. The site is reported to be intact and it, therefore, possesses further CHVI (MTCS 2015). Background research to determine if the site extends into the Study Area, as well as recommendations on mitigating potential impacts of the project to the site, was included in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Site BcGw-60 is also identified as an ancestral Huron-Wendat settlement site and is located within the Study Area. Human remains, likely from an ossuary associated with the village site have also been identified extensively across the site. Full details on the requirements to mitigate impacts from the project to the site are included in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Parts of this section have been subject to previous archaeological assessment (ASI *In-preparation*) (see Figure 7-21 in **Appendix D1**). Approximately 29.3 ha have been previously assessed. ASI (*In-preparation*) was at the time of writing conducting a Stage 1 archaeological assessment for the BRCE Transit Project Assessment from Mile 3.00 to Mile 63.00 under the project direction of Paul David Ritchie (P392-0170-2015); at the time of writing the Stage 1 archaeological assessment report was still in draft. Parts of the Study Area within the BR-12 section were recommended by the BRCE Stage 1 archaeological assessment as requiring further archaeological assessment (see **Appendix D1**).

Based on the available background documents, all sections and TPFs within the Barrie Corridor, include areas which had not been previously subject to archaeological assessment. Therefore, parts of the Barrie Rail Corridor required further archaeological assessment. For further details on the specific areas that

were furthered assessed, please refer to Figures 7-1 and 7-12 to 7-20 of the Archaeology Baseline Conditions Report (**Appendix D1**).

5.5 Land Use & Socio-Economic

Please refer to Section 1.5.5 for a description of the methodology followed for collection of land use and socio-economic baseline conditions data. Baseline conditions within each segment of the Barrie Corridor have been summarized below. Additional details can be found in the Land Use and Socio-Economic Baseline Conditions Report contained in **Appendix E1**.

From USRC, the Barrie Corridor transitions from urban to suburban areas with a variety of residential, commercial, and employment uses. This continues until northern Vaughan where agricultural and rural uses begin to be more dominant and act as buffers between the suburban/urban centres of municipalities of the Township of King, the Town of Aurora, and the Town of Newmarket. The Towns of East Gwillimbury, Bradford/West Gwillimbury, and Innisfil present significantly more rural characteristics. The end of the rail corridor transitions to more urban development in the City of Barrie. The route passes through two Regional municipalities (York Region and Simcoe County).

There are 91 sensitive receptor facilities (schools, child care centres, and long term care centres) in the vicinity (i.e., within approximately 500 m) of the Barrie Corridor. There are no hospitals in the vicinity of the rail corridor. Of these, three are less than 40 m from the rail corridor, four are between 40 and 100 m from the rail corridor, and the remaining 84 are between 100 and 500 m from the rail corridor (see Table 4-6 and Figures BR-1 to BR-71 in **Appendix E1**).

5.5.1 Allandale Tap Location (Preferred)

5.5.1.1 Existing Land Use

The proposed Allandale Tap site is composed of small areas of vegetation/open space, and electrical transmission and distribution infrastructure including a hydro corridor, as well as some office, commercial/industrial buildings and parking areas. A small portion of the Tap Area extends south of Tiffin Street and meets the proposed TPS Area. One property, on the south side of Tiffin Street, at 329 Tiffin Street, is located within the Tap area and appears to be a residence. Three additional residential properties are a minimum of 50m from the proposed Tap Area on the north side of Tiffin Street.

1.1.1.1 Planned Land Use

The Tap Area location is zoned *Light Industrial*, *General Commercial* and *Highway Industrial* (LI, C4 and HI respectively).

5.5.2 Allandale Tap Location (Alternative)

5.5.2.1 Existing Land Use

The proposed Alternate Allandale Tap area (**Figure 1-6**) is located on the south side of Tiffin Street. The area is a mix of open space / vacant lot The site is otherwise surrounded by warehouses, commercial buildings and parking lots, the rail corridor to the south, and Patterson Road to the east. Across the rail corridor are the backyards of residential properties on Phillips Street and Patterson Road. These residential properties are 12 m from the site and separated from it by an existing rail corridor. The Tap location site is zoned *Light Industrial (LI)*. Planned Land Use

The proposed site is currently zoned for *Business Park* (EM1 SP-245) and *Highway 400 Industrial* (EM2).

5.5.3 Allandale TPS

5.5.3.1 Existing Land Use

The proposed Allandale TPS site (**Figure 1-6**) is currently located in the City of Barrie and the area is a mix of open space / vacant lot, along with a number of commercial and industrial buildings and outdoor storage/parking for industrial purposes. The TPS footprint is located approximately 65 m away from a single low-rise residential building on the north side of Tiffin Street, and a potential residence is located within the TPS footprint, but outside of the proposed fence line at 329 Tiffin Street. The site is otherwise surrounded by warehouses, commercial buildings and parking lots on three sides and the rail corridor to the south. Across the rail corridor are the backyards of residential properties on Phillips Street and Patterson Road. These residential properties are 12 m from the site and separated from it by an existing rail corridor. The TPS location site is zoned *Light Industrial (LI)*. Official Plan Land use designations at this TPS site are shown in Figures BR-69 to BR-70 in **Appendix E1**.

Figure 5-15: Existing Land Use at the Proposed Allandale TPS Site (East of Site, Facing West)

There are no recreational amenities in the vicinity of the proposed Allandale TPS site, and the closest sensitive receptor to site is Georgian Oaks Academy, about 500 m away on Patterson Road.

5.5.3.2 Planned Land Use

The Allandale TPS site is not subject to any Secondary Plans, and there are no development applications at the site.

There are no planned and approved recreational amenities in the vicinity of the proposed Allandale TPS site, and the site is zoned *Light Industrial* under the City of Barrie Zoning By-law 2009-141.

5.5.4 Barrie-Collingwood Railway 25kV Feeder Route

The 25kV Feeder route (**Figure 1-18**) will run along the Barrie Collingwood Railway (BCRY) from the Allandale TPS to the Allandale GO Station in the City of Barrie. The feeder line passes through areas of land use which generally consists of open space, treed areas, industrial uses, commercial uses, and small section of low-rise residential uses. This connection is proposed to consist of an above ground feeder line in the existing right of way. The Feeder Route passes through Areas zoned as Light Industrial (LI), Highway Industrial (HI SP-135), General Industrial (GI), General Commercial (C4 SP-278), Central Area 1 Commercial (C1-1, C1-1 SP366), and Open Space.

The closest sensitive receptor facility is a nursery that is approximately 500 m away and therefore no footprint impacts will occur at this facility.

5.5.4.1 Planned Land Use

The lands for the 25kV Feeder Route are not subject to any planned land uses. There are no development applications for or adjacent to the Feeder Route, and no planned and approved recreational amenities in the vicinity of the route.

5.5.5 Newmarket SWS

5.5.5.1 Existing Land Use

The proposed Newmarket SWS site (**Figure 1-7**) is located in the Town of Newmarket on property which includes the Newmarket Hydro building and parking lot, as well as open space with some trees and manicured grass. It is surrounded by hydro corridor / open space and other commercial / warehouse buildings and parking lots. An existing residential subdivision is located to the south of the Newmarket SWS site. The site is zoned *Heavy Employment (EH)*. Permitted uses within EH areas include a variety of commercial, service, manufacturing, and storage uses.

Official Plan Land use designations at this SWS site are shown in Figures BR-35 to BR-36 in **Appendix E1**.

Figure 5-16: Existing Land Use at the Proposed Newmarket SWS (Alt 6) Site (Southeast of Site, Facing North)

There are no trails, large parks or other recreational amenities in the vicinity of the proposed Newmarket SWS site, and no sensitive receptor facilities in the vicinity of the site.

5.5.5.2 Planned Land Use

The lands at the Newmarket SWS site are not subject to any planned land uses. There are no development applications at the Newmarket SWS site, and no planned and approved recreational amenities in the vicinity of the site.

Under the Town of Newmarket Zoning By-law 2010-40 the Newmarket SWS site is zoned *Heavy Employment.*

5.5.6 Gilford PS

5.5.6.1 Existing Land Use

The proposed Gilford PS (**Figure 1-8**) is located in the Town of Innisfil on a property which is a fenced off area that is currently designated open space covered with vegetation including a few trees. It is

surrounded by the rail corridor and further open space to the west and south. Residential properties are located to the immediate east of the site. The site does not have active zoning, being indicated as "Rail" in the Town of Innisfil's Zoning By-law 080-13 (similar to the rail corridor itself). Official Plan land use designations at this PS site are shown in Figures BR-55 and BR-56 in **Appendix E1**.

Figure 5-17: Existing Land Use at the Proposed Gilford PS Site (North of Site, Facing South)

There are no trails, large parks or other recreational amenities in the vicinity of the proposed Gilford PS site, and no sensitive receptor facilities in the vicinity of the site.

5.5.6.2 Planned Land Use

The proposed Gilford PS is located in the Town of Innisfil on a property which is currently designated open space covered with vegetation including a few trees. It is surrounded by the rail corridor and additional open space to the west and south. Residential properties are located to the immediate east of the site. The site does not have active zoning, being indicated as "Rail" in the Town of Innisfil's Zoning By-law 080-13 (similar to the rail corridor itself). Permitted uses within this designation include only those uses directly associated with the rail line, so the presence of the PS is not expected to conflict with this designation. There are no sensitive receptors within 500 m of the proposed Gilford PS location and therefore there will be no footprint impacts to sensitive receptors. Presently there are no applications for development within the site study area.

5.5.7 Maple PS

5.5.7.1 Existing Land Use

The proposed Maple PS site (**Figure 1-9**) is located in the City of Vaughan, in an area designated as agricultural/rural land, adjacent to park/open space/recreational area and employment and industrial area. The site is zoned Agricultural (A). The proposed PS is situated on lands that are being studied for the future Block 27 Secondary Plan. Specifically, the proposed PS is located on lands designated for a future GO Station/Local Centre Precinct and will be surrounded by a mix of commercial and residential uses. Official Plan Land use designations at this PS site are shown in Figures BR-20 to BR-21 in **Appendix E1**.

Figure 5-18: Existing Land Use at the Proposed Maple PS Site (East of Site, Facing Southwest)

Figure 5-19: Existing Land Use at the Proposed Maple PS Site (Private Cemetery, Northeast of the Site)

There are no trails, large parks or other recreational amenities in the vicinity of the proposed Maple PS site, and no sensitive receptor facilities in the vicinity of the site.

5.5.7.2 Planned Land Use

At the time of writing the baseline report, the City of Vaughan was planning a new residential community (Block 27), north of Teston Road, through preparation of a secondary plan. The new residential community, approximately 400 ha, is to be located between Kirby Road to the north, Keele Street to the east, Teston Road to the south and Jane Street to the west. The new residential community will support a mix of land uses that includes commercial, and low and mid-rise residential. A new GO Station, Kirby GO Station, is proposed for this area, planning activities are currently underway. Lands along the rail corridor within Block 27 are currently designated *New Community Areas* with some *Natural Areas.*

In the Township of King, the rail corridor passes through the King City Community Secondary Plan. The King City Community Secondary Plan extends from the Township municipal boundary to the south, 15th Sideroad to the north, Jane Street to the west and Dufferin Street to the east. The King City Community

Secondary Plan designates land surrounding the rail corridor for future mixed use including residential development, employment, institutional and other land uses.

The proposed PS is situated on lands that are being studied for the future Block 27 Secondary Plan. Specifically, the proposed PS is located on lands designated for a future GO Station/Local Centre Precinct and will be surrounded by a mix of commercial and residential uses.

There are no development applications at the Maple PS site, and no planned and approved recreational amenities at the site. Under the City of Vaughan Zoning By-law 1-88 the site is zoned *Agricultural*.

5.5.8 Corridor & Bridges: Section BR-1 – Parkdale Junction to Caledonia Station

5.5.8.1 Existing Land Use

Land use from the Parkdale Junction is a mix of *Employment Area*, residential *Neighbourhoods* and *Mixed Use*, with generally small areas of *Apartment Neighbourhoods* and *Parks*. Of note is a *Regeneration Area* at Dupont Avenue which is under development and a large *Park* area between Davenport Road and St. Clair Avenue West. Within this section, a utility corridor runs parallel to the rail corridor. The utility corridor crosses the rail corridor south of Davenport Road and parallels it on the west side. The hydro corridor then recrosses the rail corridor at St. Clair Avenue West and parallels it to the east until veering away from the corridor north of Caledonia GO station. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-1 to BR-5 in **Appendix E1**.

Earlscourt Park, to the east of the rail corridor between Davenport Road and St. Clair Avenue West, is the only large park adjacent to this section of the rail corridor. One sensitive receptor facility (St Nicholas of Bari Catholic Elementary School) is within 40 m of the rail corridor.

5.5.8.2 Planned Land Use

This section of the rail corridor passes alongside lands affected by the Davenport Village Secondary Plan. The Davenport Village Secondary Plan is designed to encourage a mixed use neighbourhood and allow light industrial uses until the area is redeveloped.

The City of Toronto is currently undertaking a Municipal Class EA for the West Toronto Rail Path South Extension. The proposed project would extend this multi-use trail south from Dundas Street West to Queen Street West, potentially crossing over the Barrie Corridor at the Parkdale Junction. As of the time of writing, the Environmental Study Report had been completed and the report underwent a 30-day public review period ending on February 15, 2016. Design coordination will be required between Metrolinx and the City of Toronto in this area to ensure that the electrification design on the bridge accommodates the final design of the Railpath.

Under the City of Toronto Zoning By-law 569-2013 the rail corridor is zoned *Utility and Transportation*.

5.5.9 Corridor & Bridges: Section BR-2 – Caledonia Station to Downsview Park Station

5.5.9.1 Existing Land Use

North of planned Caledonia GO Station, land use transitions into primarily Employment Area, which continues to the planned Downsview Park GO Station. Land use adjacent to the rail corridor is interspersed with some residential Neighbourhoods / Apartment Neighbourhoods, Parks, Natural Areas, and Other Open Space Areas. A majority of the Parks and Other Open Space Area designations occurs within the Downsview Park Area. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-5 to BR-11 in **Appendix E1**.

Mount Sinai Memorial Park is located north of Wilson Avenue, on the east side of the rail corridor. Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Kay Gardner Beltline Trail. The Kay Gardner Beltline Trail, a multi-purpose trail, begins on the east side of the rail corridor north of Eglinton Avenue West and continues north and east towards Castlefield Avenue.

North of George Buchart Drive, the rail corridor passes through Downsview Park, a former Canadian Forces Base. This site has been designated as "Canada's first urban national park" by the federal government, and includes a variety of sports fields as well as large green spaces for events and recreation.

There are no sensitive receptor facilities within 40 m of the rail corridor.

5.5.9.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor, and no planned and approved recreational amenities bordering this section of the rail corridor. Under the City of Toronto Zoning By-law 569-2013 the rail corridor is zoned *Utility and Transportation*.

5.5.10 Corridor & Bridges: Section BR-3 – Downsview Park Station to Rutherford Station

5.5.10.1 Existing Land Use

Land use between Downsview Park GO Station and the municipal border is entirely *Employment Areas*, crossed by *Utility Corridor* (the Finch Hydro Corridor). There are undeveloped lands on both sides of the rail corridor north of Finch Avenue West.

Entering the City of Vaughan, lands adjacent to the rail corridor are characterized by a mix of *Prestige* and *General Employment*, *Low-Rise Residential*, and pockets of *Natural Area*. Surrounding Highway 407 are lands designated as *Infrastructure and Utilities* and *Parkway Belt West Land.* North of Highway 407, the primary land use remains *General Employment*, though there are also large areas of *High-Rise Mixed Use*, *Open Space*, *Natural Area* (subject to change), and *Mid-Rise Mixed Use* at the Rutherford GO Station.

Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-10 to BR-19 in **Appendix E1**.

Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Kay Gardner Beltline Trail. The Kay Gardner Beltline Trail, a multi-purpose trail, begins on the east side of the rail corridor north of Eglinton Avenue West and continues north and east towards Castlefield Avenue. In Vaughan, one large park borders this section of the rail corridor: Langstaff Park, located at Langstaff Road. The rail corridor also passes over the Langstaff Multi Use Trail at Langstaff Road just east of Keele Street.

There are no sensitive receptor facilities within 40 m of the rail corridor.

5.5.10.2 Planned Land Use

Within Toronto, this section of the rail corridor passes through the Downsview Area Secondary Plan. The main goals of the Downsview Area Secondary Plan are to encourage the development of appropriate built-form while maintaining the character of the park and open space uses of the area. This will include the development of a major public park along Keele Street that is integrated with the Black Creek and West Don River water systems. Development will take advantage of the Downsview subway station and will allow for enough open space for future military activities.

In Vaughan, the rail corridor passes through the Concord GO Centre Secondary Plan. This Secondary Plan aims to create an area that acts as a Local Urban Centre (as defined in the Growth Plan for the Greater Golden Horseshoe) well serviced by different transit options.

There are no planned and approved recreational amenities bordering this section of the rail corridor. Under the City of Toronto Zoning By-law 569-2013 the rail corridor is zoned *Utility and Transportation,* under the City of Vaughan Zoning By-law 1-88 the rail corridor is zoned *Parkway Belt Linear Facilities, Agricultural, Open Space Conservation, and Employment Area Transportation.*

5.5.11 Corridor & Bridges: Section BR-4 – Rutherford Station to King City Station

5.5.11.1 Existing Land Use

North of Rutherford Road, employment uses become less dominant in favor of *Low-Rise Residential*, with a small vacant area just north of Rutherford Road. There are two smaller sections of *Major Institutional* (Vaughan City Hall) and *Mid-Rise Mixed Use* along the rail corridor at Major Mackenzie Drive West. Between Major Mackenzie Drive West and Teston Road uses include *Parks* and *Private Open Spaces*, *Infrastructure and Utilities*, *Low-Rise Mixed Use*, and a large swath of *General Employment.* Some undeveloped areas are on the east side of the rail corridor adjacent to the east side of the Maple GO Station, as well as north of McNaughton Road.

North of Teston Road, lands are largely undeveloped and transition to a more rural character that is predominantly designated *New Community Areas*, *Natural Areas*, *Agricultural*, and various designations of the *Oak Ridges Moraine (Natural Linkage, Natural Core and Countryside)* to the municipal border.

In the Township of King, the rail corridor passes through the King City Community Plan and lands designated Mixed Use – GO Station Area, Environmental Protection Area, Low Density Residential 2 Area, and Existing Low Density Residential Area before entering the GO Station Area associated with the King City GO Station. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-18 to BR-26 in **Appendix E1**.

Based on currently available information, trails within the City of Vaughan in the vicinity of this section of the rail corridor include a paved bike path that begins north of Rutherford Road and follows on the east side of the rail corridor to Petticoat Road. There are no sensitive receptor facilities within 40 m of the rail corridor.

5.5.11.2 Planned Land Use

The rail corridor passes by lands affected by the Maple GO Station Secondary Plan in Vaughan, which is currently subject to approval. These lands include the undeveloped areas adjacent to the east side of the Maple GO Station. The undeveloped areas north of McNaughton Road are designated as *General Employment*.

The rail corridor also passes Block 27, a new residential community in Vaughan being planned through preparation of a secondary plan. The new residential community is to be located between Kirby Road to the north, Keele Street to the east, Teston Road to the south and Jane Street to the west. The new residential community will support a mix of land uses that includes commercial, and low and mid-rise residential. A new GO Station, Kirby GO Station, is proposed for this area. Planning for this Station is currently underway under the Block 27 – Kirby GO Transit Hub Sub-Study. Lands along the rail corridor within Block 27 are currently designated *New Community Areas* with some *Natural Areas.*

In the Township of King, the rail corridor passes through the King City Community Secondary Plan. The King City Community Secondary Plan extends from the Township municipal boundary to the south, 15th Sideroad to the north, Jane Street to the west and Dufferin Street to the east. The King City Community Secondary Plan designates land surrounding the rail corridor for future mixed use including residential development, employment, institutional and other land uses.

There are no planned and approved recreational amenities bordering this section of the rail corridor.

The rail corridor under the City of Vaughan Zoning By-law 1-88 is zoned *Transportation Industrial*. The Township of King Zoning By-law 74-53 shows the rail corridor passing through several *Industrial General* zones, however is not designated for a portion, and is zoned *Transitional* for the remaining portion.

5.5.12 Corridor & Bridges: Section BR-5 – King City Station to Bathurst Street

5.5.12.1 Existing Land Use

North of the King City GO Station, land uses adjacent to the rail corridor are within the King City Community Secondary Plan area and designated Existing *Low Density Residential Areas* to the east. Further north, the land use designation shifts into *Mixed Use Core Areas, Existing Low Density Residential Areas, Institutional, Environmental Protected Area, Mixed Use Area* and *Low Density Residential 3 Areas* and *Low Density Residential 5 Areas.* As it leaves the King City Community area towards the Town of Aurora, lands are largely undeveloped and are designated as *Oak Ridges Moraine Natural Linkage Area.* Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-26 to BR-30 in **Appendix E1**.

Wellesley Park, located at the north-west corner of King Road in the Township of King, and a park located on the south side of the rail corridor west of Dufferin Street are the only parks adjacent to this section of the rail corridor.

Based on currently available information, trails within the Township of King in the vicinity of this section of the rail corridor include existing hiking trails throughout the *Environmental Protected Areas* within the King City Community Secondary Plan, including a pedestrian underpass that crosses the rail corridor west of Dufferin Street north of Alex Campbell Crescent.

There is one sensitive receptor facility (Kidz World Child Care Centre) within 40 m of the rail corridor.

5.5.12.2 Planned Land Use

In the Township of King, the rail corridor passes through the King City Community Secondary Plan. The King City Community Secondary Plan extends from the municipal boundary to the south, 15th Sideroad to the north, Jane Street to the west and Dufferin Street to the east. The King City Community Secondary Plan designates land surrounding the rail corridor as future mixed use including residential development, employment, institutional and other land uses.

A new subdivision (Valley King) has been approved by the Township of King. The subdivision will be located south of King Road and west of the rail corridor. The lands are currently designated as *Low Density Residential 1 Area and Environmental Protection Area* within the King City Community Secondary Plan. The subdivision will include a new *Community or Neighbourhood Park Site* at the south-west corner of King Road and the rail corridor.

Lands immediately south of King Road and west of the rail corridor are designated for a *Community or Neighbourhood Park Site.* A signed bike route is proposed along Keele Street crossing the rail corridor at King Road in King City. An extension of the existing pedestrian underpass that crosses the rail corridor west of Dufferin Street, north of Alex Campbell Crescent is proposed at 161 Dennison Street within the Township of King Trails Master Plan.

Under the Township of King Zoning By-law 74-53 the rail corridor is zoned *Industrial General* for a portion, and does not have a designation for the remaining eastern portion.

5.5.13 Corridor & Bridges: Section BR-6 – Bathurst Street to Aurora Station

5.5.13.1 Existing Land Use

Entering the Town of Aurora, land uses that abut the rail corridor to the south are primarily *Estate Residential* and *Cluster Residential*, with *Urban Residential 1* and *Public Parkland* to the north. As the rail corridor passes Henderson Drive and shifts north, land uses largely transition to employment uses including *General Industrial* and *Light Industrial/Service*, with the Aurora GO Station being located in *The Aurora Promenade*. Some open spaces are located along this stretch of the rail corridor, between Yonge Street and Engelhard Drive. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-30 to BR-34 in **Appendix E1**.

Sheppard's Bush, a 26 ha conservation area, is adjacent to the rail corridor south of Wellington Street East.

The Aurora Trails Master Plan shows both existing and proposed trails near or crossing this section of the corridor. There are a number of existing soft surface special use trails which terminate at Industrial Parkway South (adjacent to the rail corridor), and a network of similar trails are located in a green space east of Bathurst St., north of the rail corridor and south of Dawlish Ave. Part of the Oak Ridges Moraine Trail also runs adjacent to the rail corridor on Ross Street.

There are no sensitive receptor facilities within 40 m of the rail corridor.

5.5.13.2 Planned Land Use

The rail corridor runs adjacent to the Yonge Street South Secondary Plan between Bathurst Street and Yonge Street. The general goal of this plan is to guide future development so as to create a low intensity, environmentally sensitive, primarily residential precinct. Undeveloped areas between Yonge Street and Engelhard Drive are designated *General Industrial*.

The Aurora Trails Master Plan proposes a number of trails that either cross or would be located adjacent to this section of the rail corridor. These are:

- Oak Ridges Moraine Trail/soft surface multi-use trail with secondary railway crossing and underpass just north of Elderberry Trail;
- Soft surface multi-use trail with major railway grade separation just south of Henderson Drive;
- Soft surface multi-use trail with secondary rail crossing between Allaura Blvd. and Industrial Pkwy. S.; and,

- Soft surface multi-use trail with major railway grade separation on Cousins Dr. E. and Industrial Pkwy. S.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor has no zoning designation under the Town of Aurora Zoning By-law 2213-78.

5.5.14 Corridor & Bridges: Section BR-7 – Aurora Station to East Gwillimbury Station

5.5.14.1 Existing Land Use

The western portion of the rail corridor north of Wellington Street West *is Urban Residential 1*, with lands to the east, including some undeveloped lands, designated as *The Aurora Promenade*, *Light Industrial/Service* and *General Industrial*. Approaching the municipal border, land use becomes *Public and Private Parkland* around St. John's Sideroad.

Entering the Town of Newmarket, land is predominantly a mix of *Parks and Open Space, Natural Heritage System*, and *Stable Residential*; however, a large section of *Mixed Employment* and *General Employment* is centred on Mulock Drive. Passing through the downtown area, the rail corridor crosses lands designated as *Mixed Use* and *Parks and Open Space*. North of Davis Drive, land use transitions into primarily *Parks and Open Space* continuing to the municipal border.

When entering the Town of East Gwillimbury, land west of the rail corridor is designated as *Community Area* while land east of the rail corridor is designated as *Natural Heritage System*. A swath of undeveloped land is located directly south of the East Gwillimbury GO Station. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-34 to BR-41 in **Appendix E1**.

The St. Andrews Valley Golf Club is located just north of St. John's Sideroad, on the east side of the rail corridor.

Three large green spaces are located adjacent to this section of the rail corridor:

- Bailey Ecological Park;
- Wesley Brooks Conservation Area; and
- Mabel Davis Conservation Area.

Additionally, the Audrie Sanderson Park and three multi-use trails are in the vicinity of the rail corridor: the Tom Taylor and Nokiida trail cross the rail corridor at St. John's Sideroad East, and the Nokiida Trail parallels the rail corridor for most of its route between Timothy Street and the East Gwillimbury GO Station, with several crossover points. The Oak Ridges Moraine Trail crosses the rail corridor on Wellington St., just north of the Aurora GO Station. One sensitive receptor facility (Aurora Montessori School) is within 40 m of the rail corridor.

5.5.14.2 Planned Land Use

The rail corridor passes through the Newmarket Urban Centres Secondary Plan. The general purpose of this plan is to promote the Yonge Street and Davis Drive corridors as a node of activity characterized by a mixed use environment. There is a proposal for a new GO Station at Mulock Drive and Bayview Avenue. Planning for this station is presently underway. The undeveloped land directly south of the East Gwillimbury GO Station is designated as *Community Area*.

The Aurora Trails Master proposes the following trails/crossings within this section of the rail corridor:

- A soft-surface multi-use trail and major railway grade separation just north of Mark St.;
- A major railway grade separation on St. John's Sideroad; and,
- An underpass north of St. John's Sideroad, connecting with trails in Newmarket.

The rail corridor does not have any zoning designation under the Town of Newmarket Zoning By-law 2010-40. The rail corridor falls within multiple zoning designations under the Town of East Gwillimbury Zoning By-law 97-50.

5.5.15 Corridor & Bridges: Section BR-8 – East Gwillimbury Station to Bradford Station

5.5.15.1 Existing Land Use

As the rail corridor turns north-west in East Gwillimbury, land use on the west is largely agricultural / open space and remains *Community Area*, while the east is entirely designated as *Natural Heritage System*. North of 2nd Concession Road, both sides of the rail corridor are *Natural Heritage System* before transitioning to *Prestige Employment* and *Low Density Residential* to the west and *Low Density Residential* and *General Employment* to the east, continuing to the municipal border. Some agriculture / open space is located to the south of the rail corridor west of 2nd Concession Road, and around the residential development at Samuel Lount Road.

Leaving East Gwillimbury, the rail enters the Township of King and passes through largely agricultural / open space areas designated as *Oak Ridges Moraine Plan Area* to the boarder of the Town of Bradford-West Gwillimbury.

Entering the Town of Bradford-West Gwillimbury, lands surrounding the rail corridor are designated as *Service Commercial* to the south and *Marsh Agricultural* to the north, to the Bradford GO Station. Agricultural / undeveloped land is present on the north of the rail corridor between Private Drive and Given Road, and on the south of the rail corridor at Private Drive. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-41 to BR-46 in **Appendix E1**.

The Rogers Reservoir Conservation Area, located to the east and north of the rail corridor between Green Line East and 2nd Concession Road, is the only large recreational amenity that borders this section of the rail corridor. The Nokiidaa Trail continues through this section of the rail corridor following east of the rail corridor through the Rogers Reservoir Conservation Area. No sensitive receptor facilities are within 40 m of the rail corridor.

5.5.15.2 Planned Land Use

The rail corridor passes through two Secondary Plan areas (Green Lane Secondary Plan and Holland Landing Secondary Plan). The area surrounding the rail corridor within the Green Lane Secondary Plan is designated primarily for a mix of residential and commercial uses while the Holland Landing Secondary Plan promotes primarily employment uses.

The agriculture / open space land located to the south of the rail corridor west of 2nd Concession Road is designated as *Recreation Area* for the development of a golf course. The open space lands around the residential development at Samuel Lount Road are designated for *Low Density Residential*.

There are no Secondary Plans affecting the lands adjacent to the rail corridor in Bradford-West Gwillimbury. The undeveloped land north of the rail corridor is designated as *Marsh Agricultural*, while south of the rail corridor undeveloped land is designated *Service Commercial*.

The rail corridor falls within multiple zoning designations under the Town of East Gwillimbury Zoning By-law 97-50. At the south municipal boundary the rail corridor is designated *Environmental Zone* (E1) and *Rural* (RU), the rail corridor moves west through lands zoned *Open Space* (O1-18) and *Rural* (RU). The rail corridor is zoned *General Industrial* (M2), *Residential Urban* (R1-17) and *General Industrial* (M2) as it moves west to the Township of King. The rail corridor does not have any designation under the Township of King Zoning By-law 74-53. Under the Town of Bradford-West Gwillimbury Zoning By-law 2010-050 the rail corridor does not have any zoning designation.

5.5.16 Corridor & Bridges: Section BR-9 – Bradford Station to 13th Line

5.5.16.1 Existing Land Use

As the rail corridor shifts north, it passes through *Industrial/Commercial* and a small pocket of *Commercial Core* to the west of the rail corridor, with *Open Space – Conservation* to the east. This transitions into entirely *Industrial* to the west and *Open Space – Conservation* with some *Provincially Significant Wetlands* to the east as the rail corridor exits the Bradford Urban Area. North of this, the rail corridor is *Agricultural* to the west and *Provincially Significant Wetlands* and *Open Space – Conservation* to the east. Undeveloped areas are located north of Industrial Road, between 8th Line and 9th Line, and for most of the area between 10th Line and 13th Line. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-46 to BR-53 in **Appendix E1**.

The Bradford Layover will be located on the western side of the rail corridor, just north of 8th Line. These lands are currently open space and are adjacent to industrial/commercial uses. The lands are designated *Industrial* in Bradford West Gwillimbury's Official Plan 2002.

Scanlon Creek Conservation Area, located on both sides of the rail corridor between Line 9 and Line 10 is the only large recreational amenity that borders this section of the rail corridor. No sensitive receptor facilities are within 40 m of the rail corridor.

5.5.16.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor, and no planned and approved recreational amenities bordering this section of the rail corridor. Undeveloped areas along the rail corridor are designated as *Industrial* within the Bradford Urban Area and *Agricultural* outside of this.

Under the Town of Bradford West Gwillimbury Zoning By-law 2010-050 the rail corridor does not have any zoning designation.

5.5.17 Corridor & Bridges: Section BR-10 – 13th Line to 6th Line Section

5.5.17.1 Existing Land Use

As the rail corridor passes through Innisfil, adjacent land is mainly characterized by Agricultural Area and Natural Environmental Area up to just north of 5th Line. North of 5th Line, the rail corridor passes through a few hamlets that contain land uses unique to their surrounding areas. In Gilford, the rail corridor passes through a small area of Village Residential Area. In Lefroy, the main adjacent land use is Natural Environmental Area; however, large sections of Residential Low Density 1 and 2 and smaller sections of Institutional, Core Commercial Area, and Stormwater Management Facilities are also present. Just north of 5th Line, land uses include large sections of Rural Area, Agricultural Area, and Special Rural Area. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-53 to BR-62 in **Appendix E1**.

The Luck Property, a large undeveloped 20 ha conservation area, is the only large recreational amenity that borders this section of the rail corridor. The Luck Property is located to the west of the rail corridor, north of Shore Acres Drive and east of 20th Sideroad. This section of the rail corridor is not in the vicinity of any sensitive receptor facilities.

5.5.17.2 Planned Land Use

This section of the rail corridor passes through two Secondary Plan areas: the Village Settlement of Gilford and the Lefroy Secondary Plan. The main purpose of these Plans are to retain natural features and small town character of the respective areas while providing local residents with the amenities they need for future growth.

There is a proposal for a new subdivision (Innisgreen Estates Gilford), east of the rail corridor that has been approved by the Town of Innisfil. The subdivision is to be located south of 2nd Line, north-west of the Village Settlement of Gilford area. Lands in this area are currently designated *Agricultural Area, Parks and Open Space, and Estate Residential.* There are to be 50 single detached units within the subdivision. A new subdivision (Christina Homes), west of the rail corridor and the Gilford PS site, has been approved by the Town of Innisfil. The subdivision is located south of Gilford Road. The lands in this area are partially within the Village Settlement of the Gilford Area and are currently designated *Village Residential Area and Village Commercial Area.* Lands outside the Village Settlement of the Gilford Area are currently designated *Agricultural Area* and *Natural Environment Area.* PA group of new subdivisions (LSAMI P1, LSAMI P2, LSAMI P3 and LSAMI P4), west of the rail corridor have also been approved by the Town of Innisfil. The subdivisions are located between 3rd Line and Belle Aire Beach Road. The lands in this area are currently under the Lefroy Secondary Plan. Lands in the Lefroy Secondary Plan area are currently designated *Residential Low Density 1 & 2, Natural Environment Area, Neighbourhood Commercial/Mixed Use, Institutional* and *Core Commercial Area.* There are to be 426 units as part of LSAMI P1, 121 units as part of LSAMI P2, 202 units as part of LSAMI P2 and 387 units as part of LSAMI P4. The proposed subdivisions are to be comprised of a mix of single-detached, semi-detached and townhouse units. Under the Town of Innisfil Trails Master Plan, there are a number of Secondary trails proposed in the vicinity of the rail corridor to the north and south of Killarney Beach Road. These proposed Secondary trails serve as connectors between Multi-Use trails and a number of proposed Park/Open Space areas between 3rd Line and Belle Aire Beach Road in the Lefroy Secondary Plan area. In addition there is a proposed Secondary trail that follows the rail corridor, on the east side of the corridor between Belle Aire Beach Road and 7th Line. Pedestrian crossings are proposed at Belle Aire Beach Road and 6th Line. A Multi-Use trail is proposed along 6th Line crossing the rail corridor. A Sharrow (shared roadway, cycling route) is proposed along Gilford Road north of the Gilford PS site. A Park/Open space is proposed at the north-west corner of the Shore Acres Drive and the rail corridor.

The rail corridor does not have any zoning designation under the Town of Innisfil Zoning By-law 080-13.

5.5.18 Corridor & Bridges: Section BR-11 – 6th Line to Barrie South Station

5.5.18.1 Existing Land Use

This section of the rail corridor primarily agricultural, with residential uses at hamlets. In Alcona, the rail corridor runs adjacent to mainly Residential Low Density 1, but also a small section of Neighbourhood *Commercial Special* area. Finally, the rail corridor runs adjacent to *Village Residential Area* in Stroud. Land use remains rural up until Lockhard Road. Lands between Lockhard Road and Mapleview Drive are part of the approved Hewitt Secondary Plans. Under this plan lands are designated *Med / High Density Residential Area, Yonge Mixed Use Corridor, Natural Heritage System,* and *Residential Area.* Towards Barrie GO Station lands transition to *General Commercial* and *Residential.* Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-62 to BR-68 in **Appendix E1**.

There are no trails, large parks or other recreational amenities in the vicinity of this section of the rail corridor, and no sensitive receptor facilities in the vicinity of the rail corridor.

5.5.18.2 Planned Land Use

This section of the rail corridor passes through the Alcona Secondary Plan and the Stroud Secondary Plan areas in the Town of Innisfil and six secondary plan areas in the City of Barrie. The main purpose of the Innisfil secondary plans is to retain natural features and small town character of the respective areas while providing local residents with the amenities they need for future growth. The Barrie secondary plans generally promote and guide where growth should occur in order to meet population targets while creating mixed use environments in key locations.

A new GO Station is proposed for Innisfil at 6th line and the railway (east of 20th Sideroad). Planning for this new station is presently underway. Additionally there is a proposal in this area for increased density multi-storey residential and commercial development. Any other future development will be in accordance with the land use designations outlined in Section 4.4.11.1 in **Appendix E1**.

As advised by the Town of Innisfil a draft plan has been approved for a new subdivision (Sleeping Lion). The subdivision is located north of 6th Line east of the rail corridor. The lands are currently designated *Rural Area* and *Natural Environmental Area.* There is approximately 1,757 residential units within the subdivision with recreation amenities such as parks and trails. A draft plan for a new multi-phase subdivision (San Diego Homes) has been approved by the Town of Innisfil. The subdivision is located south of 7th Line east of the rail corridor. The lands are within the Alcona Secondary Plan. Lands in the Alcona Secondary Plan are currently designated *Residential Low Density 1 & 2, Residential Medium Density, Neighbourhood Commercial Area, Institutional Area, Natural Environment Area* and some small areas of *Parks and Open Space.* A draft plan of a new subdivision (Alcona Downs) has also been approved by the Town of Innisfil. The subdivision is located between Innisfil Beach Road and 7th Line within the Alcona Secondary Plan area. Lands in the Alcona Secondary Plan area are currently designated *Residential Low Density 1 & 2, Residential Medium Density, Neighbourhood Commercial Area, Natural Environmental Area,* and a small area of *Parks and Open Space.* There are 303 units as part of Alcona Downs, comprised of a mix of single-detached, semi-detached and townhouse units. In addition the Innisfil Executive Estates subdivision draft plan has been approved by the Town of Innisfil. The subdivision is located north of 10th Line, west of the rail corridor. The lands are within the Stroud Secondary Plan area. The lands are currently designated as *Village Residential Area.* There are 38 single-detached units as part of the subdivision. A single family development is also proposed south of Shore Acres Drive, east of the rail corridor. As this single family development proposed south of Shore Acres Drive has not been approved by the Town of Innisfil no further assessment will be completed on it.

Lands between Lockhard Road and Mapleview Drive previously within the Town of Innisfil have been annexed to the City of Barrie. These lands are part of the approved Hewitt's Secondary Plan. The lands

within the Hewitt's Secondary Plan are designated for mixed use with low, medium and high density residential areas (**Figures BR-66 to BR 67 in Appendix E1.**)

A Secondary trail following the east side of the rail corridor between Belle Aire Beach Road and 7th Line is proposed in the Town of Innisfil Trails Master Plan. In addition, Multi-Use trails are proposed along 6th Line and 7th Line, crossing the rail corridor. A pedestrian crossing is proposed at 6th Line and the rail corridor. A Multi-Use trail is proposed along 20th Sideroad, crossing the rail corridor at Innisfil Beach Road. In addition a Multi-Use trail is proposed off of 20th Sideroad, crossing the rail corridor north of Innisfil Beach Road.

The rail corridor does not have any zoning designation under the Town of Innisfil Zoning By-law 080-13 and the City of Barrie Zoning By-law 2009-141.

5.5.19 Corridor & Bridges: Section BR-12 – Barrie South Station to Allandale Waterfront Station

5.5.19.1 Existing Land Use

The most significant use found along the rail corridor in Barrie is *Residential*, which makes up the majority of adjacent land approaching Allandale GO Station. Amongst these, variously-sized tracts of land are designated as *General Commercial*, *Open Space*, and *Environmental Protection Area*. The area that surround the Allandale GO Station is designated as *City Centre*. Large undeveloped areas are located at Country Lane and around the Allandale Waterfront GO Station. Official Plan Land use designations along this section of the rail corridor are shown in Figures BR-68 to BR-70 in **Appendix E1**.

The Barrie Sewage Treatment Facility is located in proximity to the Allandale GO Station and the Allandale feeder route at Bradford Road and Tiffin Street.

Three large parks border this section of the rail corridor: Lovers Creek Ravine, Allandale GO Station Park and South Shore Park. Additionally, a portion of the Trans Canada Trail crosses the rail corridor on Minets Point Road. There are no sensitive receptor facilities within 40 m of the rail corridor.

5.5.19.2 Planned Land Use

This section of the rail corridor passes through two Secondary Plan areas. The main purpose of the Lakeshore Secondary Plan is to promote the preservation of natural space along Lake Simcoe. The main purpose of the Allandale Secondary Plan is to promote and guide where growth should occur in order to meet population targets while creating mixed use environments in key locations.

The undeveloped lands at Country Lane are designated *Residential*, and those at the Allandale Waterfront GO Station are designated *City Centre*. This section of the corridor falls within the City Centre Revitalization Urban Growth Centre which seeks to increase density to 150 persons, jobs per hectare and is anticipated

to transition to a mobility hub with medium to high residential density as a result of the proximity to Allandale GO Station.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor does not have any active zoning designation under the City of Barrie Zoning By-law 2009-141.

5.6 Air Quality

Portions of the Barrie Corridor have been classified as Urban, Suburban and Rural land use categories. A brief summary of the findings for each category are provided below.

In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of $PM_{2.5}$ (respirable particulate matter), and PM_{10} (inhalable particulate matter) are slightly exceeded.

Pollutant concentrations in the suburban areas are somewhat lower than those in the urban areas. However, annual average benzene and benzo(a)pyrene concentrations still exceed their criteria. Criterion for 24-hour concentration of $PM_{2.5}$ is slightly exceeded. Data on PM_{10} were unavailable for the suburban land use category.

Pollutant concentrations are lowest in the rural areas. All contaminants are within their applicable air quality criteria, with the exception of benzo(a)pyrene which, even in the rural areas, significantly exceeds its MOECC criterion for annual average concentration.

Table 5-36 through Table 5-38 show air quality statistics for each land use category (urban, suburban and rural). See **Appendix F1** for station-by-station summaries of the air quality monitoring data.

Table 5-36 through Table 5-38 also show the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQCs except for $PM_{2.5}$ which has a CAAQS, as described in Section 1.5.6.

Table 5-36: Summary of Urban Baseline Conditions

Contaminant	Criterion ($\mu g/m^3$)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean ($\mu g/m^3$)	Maximum Concentration ($\mu g/m^3$)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
$PM_{2.5}$	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM_{10}	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 5-37: Summary of Suburban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	205	255	362	757	1-hr	229	2437	N/A	1509
Nitrogen Dioxide	400	200	-	-	18	27	47	80	1-hr	23	121	71	N/A
$PM_{2.5}$	-	27	8.8	-	5	8	14	28	1-hr	6.7	62	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.46	0.58	0.80	1.14	24-hr	0.57	N/A	1.77	N/A
1,3-Butadiene	-	10	2	-	0.03	0.05	0.07	0.12	24-hr	0.04	N/A	0.13	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	N/A	N/A	N/A	N/A	24-hr	0.00018	N/A	0.0036	N/A

Note: N/A – data not available

Table 5-38: Summary of Rural Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	N/A	N/A	N/A	N/A	1-hr	N/A	N/A	N/A	N/A
Nitrogen Dioxide	400	200	-	-	9	15	28	54	1-hr	13	81	51	N/A
$PM_{2.5}$	-	27	8.8	-	4	7	13	25	1-hr	5.8	47	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	1.96	2.55	3.89	5.06	24-hr	2.06	N/A	5.21	N/A
Acetaldehyde	-	500	-	500 (½-hr)	0.56	0.80	1.15	1.93	24-hr	0.64	N/A	2.18	N/A
Benzene	-	2.3	0.45	-	0.22	0.38	0.51	0.87	24-hr	0.28	N/A	1.03	N/A
1,3-Butadiene	-	10	2	-	0.00	0.01	0.01	0.04	24-hr	0.01	N/A	0.06	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.000013	0.000018	0.000031	0.000064	24-hr	0.000018	N/A	0.000067	N/A

Table 5-35 summarizes the Barrie Corridor sections and the air quality categories for the corridor.

Table 5-39: Summary of Barrie Corridor Air Quality Baseline Conditions

Corridor Section		Length (km)	Traction Power Facilities	Baseline Air Quality Category	Baseline Air Quality Table Reference
BR-1	Parkdale Junction to Caledonia Station	5.2		Urban	5-32
BR-2	Caledonia Station to Downsview Park Station	7.0		Urban	5-32
BR-3	Downsview Park Station to Rutherford Station	9.5		Urban	5-32
BR-4	Rutherford Station to King City Station	9.4	Maple PS	Suburban	5-33
BR-5	King City Station to Bathurst Street	6.2		Suburban	5-33
BR-6	Bathurst Street to Aurora Station	5.6		Suburban	5-33
BR-7	Aurora Station to East Gwillimbury Station	9.0	Newmarket SWS	Suburban	5-33
BR-8	East Gwillimbury Station to Bradford Station	9.5		Rural	5-34
BR-9	Bradford Station to 13th Line	9.2		Rural	5-34
BR-10	13th Line to 6th Line	10.4	Gilford PS	Rural	5-34
BR-11	6th Line to Barrie South Station	9.2		Rural	5-34
BR-12	Barrie South Station to Allandale Waterfront Station	5.8		Suburban	5-33
	Traction Power Facility located west of BR-12 Segment		Allandale TPS Allandale Tap	Suburban	5-33

5.7 Noise & Vibration

Receptors for this assessment include the following noise sensitive land uses:

- Residences;
- Hotels, motels and campgrounds;
- Schools, universities, libraries and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and

- Churches and places of worship.

Receptors within the Study Area are mainly residential houses located adjacent to the Barrie rail corridor. In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Modelling was completed for all these receptors; however, results are presented for selected representative receptors. **Table 5-40** presents the predicted baseline noise levels for the Barrie Corridor. Maps depicting the Receptor IDs identified in **Table 5-40** and **Table 5-41** are shown below.

Table 5-40: Predicted Baseline Noise Levels for the Barrie Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R001	Daytime	47.1
	Nighttime	39.5
R002	Daytime	52.2
	Nighttime	43.5
R003	Daytime	54.3
	Nighttime	45.9
R004	Daytime	65.0
	Nighttime	52.2
R005	Daytime	60.0
	Nighttime	51.4
R006	Daytime	68.3
	Nighttime	64.3
R007	Daytime	54.7
	Nighttime	50.6
R008a	Daytime	68.3
	Nighttime	64.4
R008b	Daytime	51.5
	Nighttime	47.6
R009	Daytime	50.7
	Nighttime	51.0
R010	Daytime	50.0
	Nighttime	42.4
R011	Daytime	56.7
	Nighttime	49.6
R012	Daytime	55.1
	Nighttime	48.2
R013	Daytime	57.4
	Nighttime	50.8
R014	Daytime	59.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	53.3
R015	Daytime	60.0
	Nighttime	54.3
R016	Daytime	55.6
	Nighttime	49.7
R017	Daytime	52.3
	Nighttime	47.1
R018	Daytime	53.9
	Nighttime	48.8
R019	Daytime	60.7
	Nighttime	49.8
R020	Daytime	62.9
	Nighttime	49.8
R021	Daytime	55.4
	Nighttime	49.5
R022	Daytime	52.9
	Nighttime	47.0
R023	Daytime	47.0
	Nighttime	39.7
R024	Daytime	48.4
	Nighttime	42.2
R025	Daytime	53.1
	Nighttime	48.5
R026	Daytime	51.9
	Nighttime	47.0
R027	Daytime	45.2
	Nighttime	46.0
R028	Daytime	52.5
	Nighttime	48.6
R029	Daytime	50.1
	Nighttime	50.2
R030	Daytime	60.3
	Nighttime	52.4
R031a	Daytime	49.9
	Nighttime	45.8
R031b	Daytime	50.9
	Nighttime	45.9
R032	Daytime	53.0

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	47.7
R033	Daytime	58.7
	Nighttime	54.4
R034	Daytime	59.4
	Nighttime	55.2
R035	Daytime	50.8
	Nighttime	45.3
R036	Daytime	52.3
	Nighttime	48.2
R037a	Daytime	50.1
	Nighttime	43.1
R037b	Daytime	48.9
	Nighttime	44.7
R038a	Daytime	50.2
	Nighttime	47.9
R038b	Daytime	57.4
	Nighttime	54.4
R039	Daytime	68.5
	Nighttime	66.7
R040	Daytime	59.8
	Nighttime	55.6
R041	Daytime	57.1
	Nighttime	55.5
R042	Daytime	57.5
	Nighttime	56.2
R043	Daytime	62.0
	Nighttime	60.5
R044	Daytime	47.5
	Nighttime	46.7
R045	Daytime	49.1
	Nighttime	45.0
R046	Daytime	46.1
	Nighttime	44.3
R047	Daytime	52.5
	Nighttime	48.1
R048	Daytime	59.2
	Nighttime	54.0
R049	Daytime	66.2

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	57.2
R050	Daytime	64.3
	Nighttime	62.1
R051	Daytime	56.4
	Nighttime	55.0
R052	Daytime	53.4
	Nighttime	52.8
R053	Daytime	51.2
	Nighttime	49.9
R054	Daytime	44.9
	Nighttime	51.2
R055	Daytime	49.9
	Nighttime	48.8
R056	Daytime	43.0
	Nighttime	42.6
R057	Daytime	49.1
	Nighttime	44.9
R058	Daytime	49.9
	Nighttime	47.9
R059a	Daytime	54.3
	Nighttime	52.0
R059b	Daytime	56.1
	Nighttime	51.8
R059c	Daytime	59.5
	Nighttime	57.6
R060	Daytime	60.4
	Nighttime	58.2
R061	Daytime	55.3
	Nighttime	50.5
R062	Daytime	53.0
	Nighttime	49.1
R063	Daytime	53.0
	Nighttime	51.8
R064	Daytime	52.0
	Nighttime	50.3
R065	Daytime	50.1
	Nighttime	46.3
R066	Daytime	49.0

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	47.1
R067	Daytime	50.0
	Nighttime	45.3
R068	Daytime	58.0
	Nighttime	55.3
R069	Daytime	57.4
	Nighttime	50.7
R070	Daytime	60.5
	Nighttime	55.3
R071	Daytime	56.5
	Nighttime	55.2
R072	Daytime	60.3
	Nighttime	58.8
R073	Daytime	51.9
	Nighttime	55.0
R074	Daytime	51.7
	Nighttime	51.7
R075	Daytime	60.9
	Nighttime	55.4
R076	Daytime	52.8
	Nighttime	47.3
R077	Daytime	58.4
	Nighttime	49.7
R078	Daytime	60.4
	Nighttime	54.0
R079	Daytime	56.6
	Nighttime	52.3
R080	Daytime	59.3
	Nighttime	59.1
R081	Daytime	54.5
	Nighttime	52.3
R082	Daytime	54.2
	Nighttime	52.0
R083	Daytime	61.4
	Nighttime	51.3
R084	Daytime	63.8
	Nighttime	55.7
R085	Daytime	69.6

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	63.5
R086	Daytime	56.2
	Nighttime	51.5
R087a	Daytime	58.8
	Nighttime	52.4
R087b	Daytime	57.6
	Nighttime	56.4
R088	Daytime	65.8
	Nighttime	64.7
R089	Daytime	61.5
	Nighttime	58.2
R090	Daytime	65.3
	Nighttime	63.3
R091	Daytime	62.1
	Nighttime	60.7
R092	Daytime	54.7
	Nighttime	50.8
R093	Daytime	55.0
	Nighttime	52.1
R094	Daytime	58.3
	Nighttime	57.0
R095	Daytime	56.0
	Nighttime	50.3
R096	Daytime	60.8
	Nighttime	59.2
R097	Daytime	60.2
	Nighttime	57.5
R098	Daytime	60.0
	Nighttime	56.0
R099	Daytime	60.3
	Nighttime	58.6
R100	Daytime	63.3
	Nighttime	54.0
R101	Daytime	64.7
	Nighttime	58.7
R102	Daytime	65.2
	Nighttime	61.1
R103	Daytime	66.2

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	62.1
R104	Daytime	57.3
	Nighttime	54.9
R105	Daytime	55.4
	Nighttime	51.3
R106	Daytime	58.5
	Nighttime	57.1
R107	Daytime	58.0
	Nighttime	50.5
R108	Daytime	62.4
	Nighttime	58.3
R109	Daytime	56.3
	Nighttime	53.5
R110	Daytime	57.3
	Nighttime	52.3
R111	Daytime	54.9
	Nighttime	49.9
R112	Daytime	62.6
	Nighttime	58.8
R113	Daytime	57.9
	Nighttime	54.5
R114	Daytime	61.7
	Nighttime	60.4
R115	Daytime	55.5
	Nighttime	53.5
R116	Daytime	62.5
	Nighttime	51.5
R117	Daytime	59.8
	Nighttime	56.2
R118	Daytime	62.6
	Nighttime	58.7
R119	Daytime	61.6
	Nighttime	53.3
R120	Daytime	64.1
	Nighttime	59.7
R121	Daytime	51.9
	Nighttime	49.9
R122	Daytime	53.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	51.8
R123	Daytime	64.5
	Nighttime	58.0
R124	Daytime	64.9
	Nighttime	58.0
R125	Daytime	65.2
	Nighttime	63.3
R126	Daytime	65.2
	Nighttime	62.9
R127	Daytime	51.7
	Nighttime	48.3
R128	Daytime	61.2
	Nighttime	54.5
R129	Daytime	52.2
	Nighttime	51.5
R130	Daytime	49.6
	Nighttime	46.5
R131	Daytime	52.9
	Nighttime	48.7
R132	Daytime	59.8
	Nighttime	59.2
R133	Daytime	16.7
	Nighttime	16.5

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Table 5-41 presents the predicted baseline vibration levels for the Barrie Corridor.

Table 5-41: Predicted Baseline Vibration Levels for the Barrie Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
Go Train	R015	96	No	19	0.11
Freight Train		56			0.77
Go Train	R032	120	No	42	0.06
Freight Train		32			0.16

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
Go Train	R014	96	No	20	0.11
Freight Train		56			0.73
Go Train	R039	96	No	25	0.09
Freight Train		32			0.32
Go Train	R049	96	No	30	0.07
Freight Train		32			0.25
Go Train	R027	120	No	38	0.07
Freight Train		56			0.32

[1] See Figure 2s for receptor location in Appendix G

Figure 5-20: Barrie Corridor Receptor and Existing Barrier Locations 1

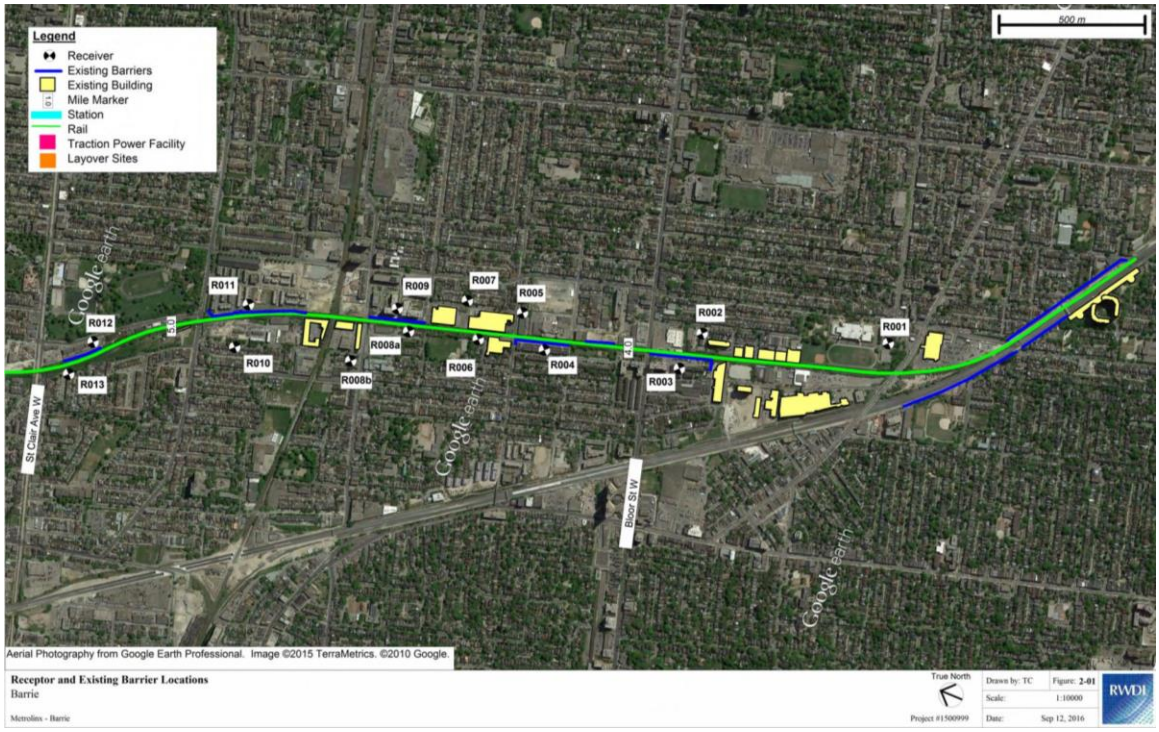


Figure 5-21: Barrie Corridor Receptor and Existing Barrier Locations 2

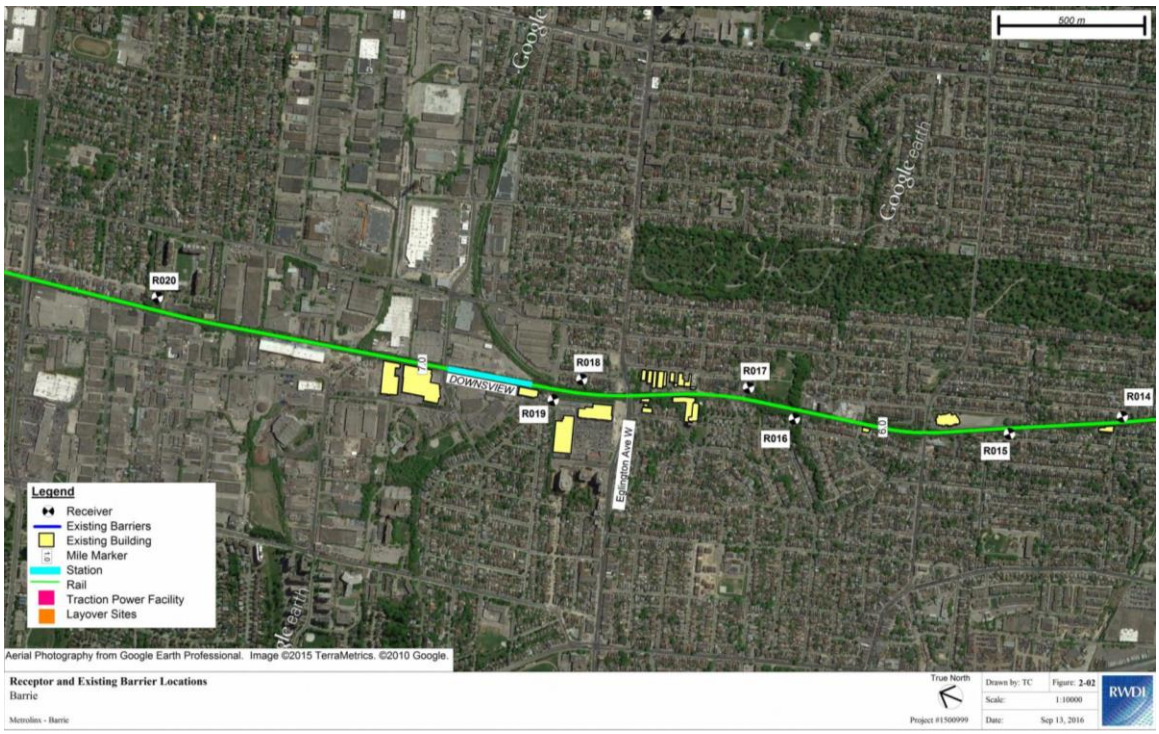


Figure 5-22: Barrie Corridor Receptor and Existing Barrier Locations 3

Figure 5-23: Barrie Corridor Receptor and Existing Barrier Locations 4

Figure 5-24: Barrie Corridor Receptor and Existing Barrier Locations 5

Figure 5-25: Barrie Corridor Receptor and Existing Barrier Locations 6

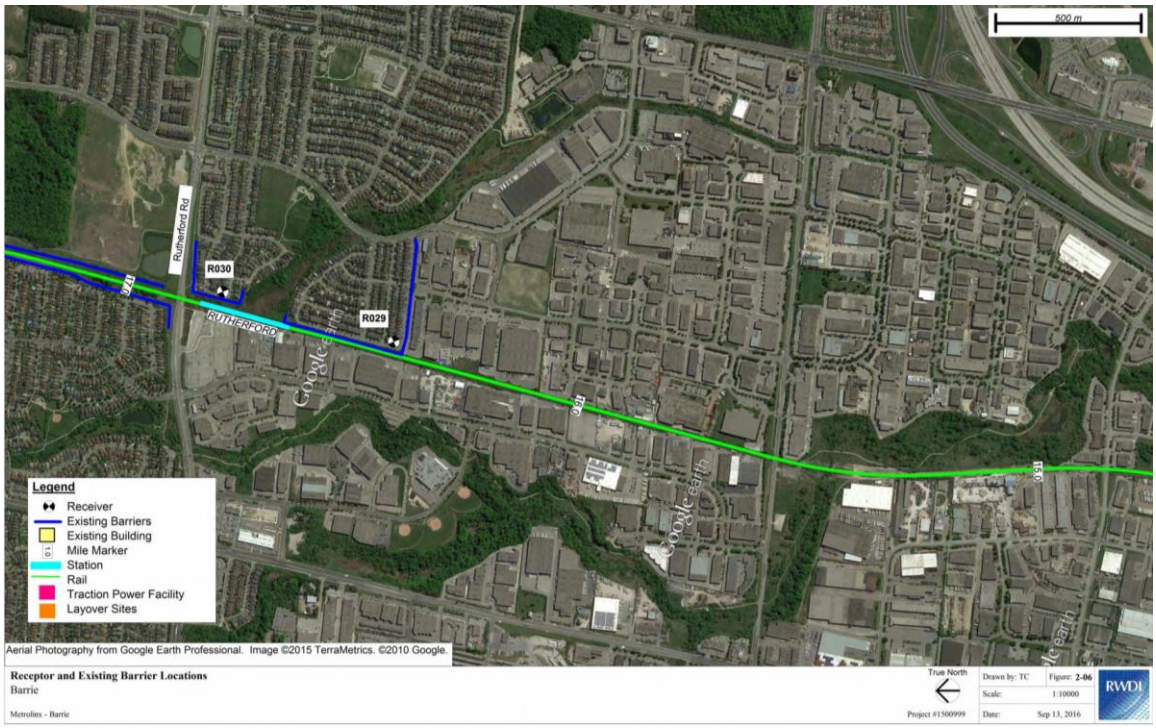


Figure 5-26: Barrie Corridor Receptor and Existing Barrier Locations 7

Figure 5-27: Barrie Corridor Receptor and Existing Barrier Locations 8

Figure 5-28: Barrie Corridor Receptor and Existing Barrier Locations 9

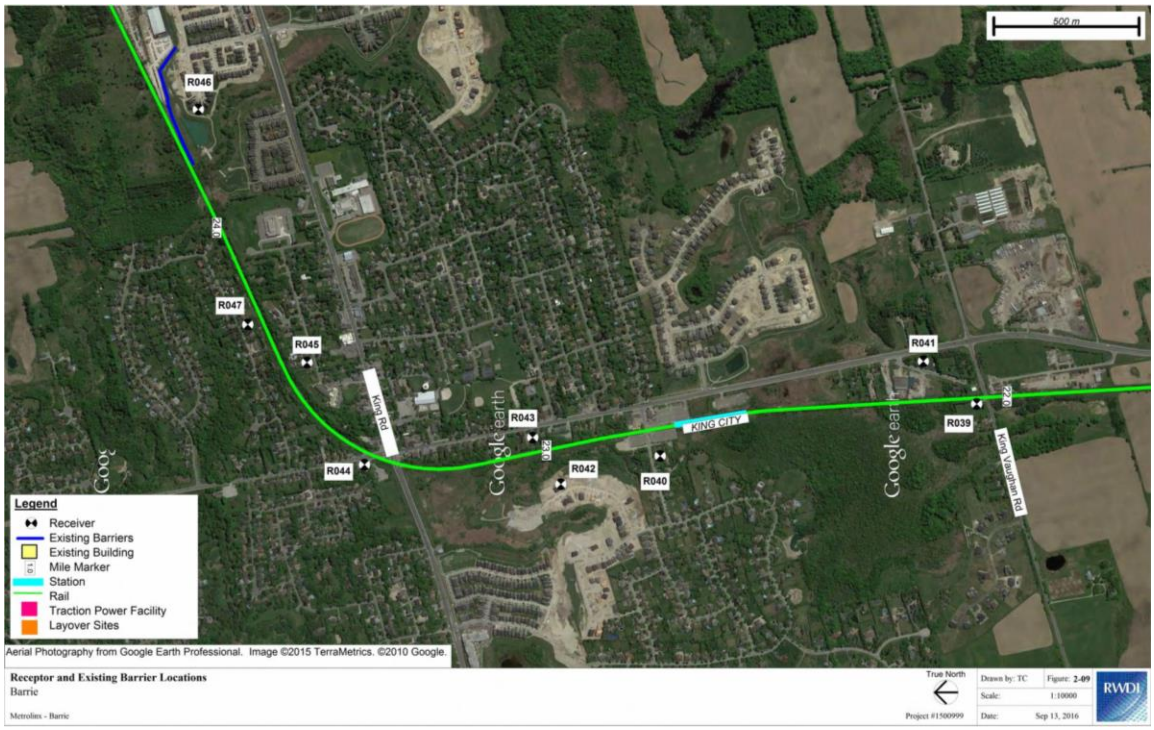


Figure 5-29: Barrie Corridor Receptor and Existing Barrier Locations 10

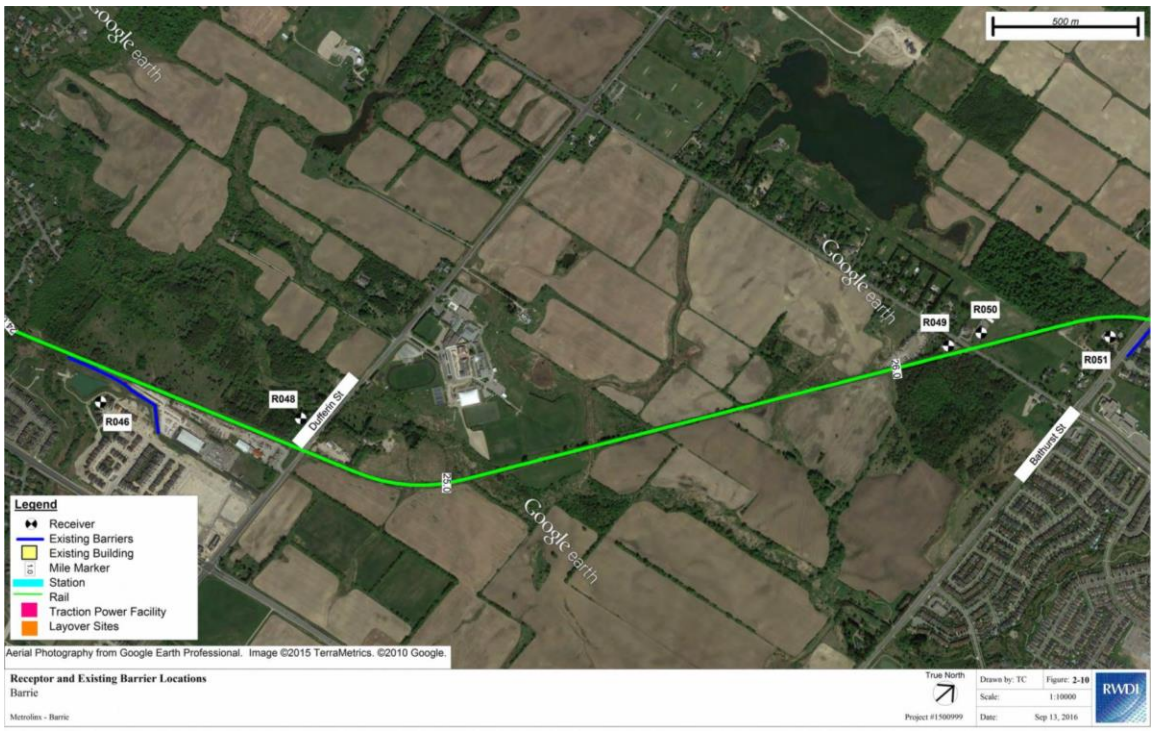


Figure 5-30: Barrie Corridor Receptor and Existing Barrier Locations 11

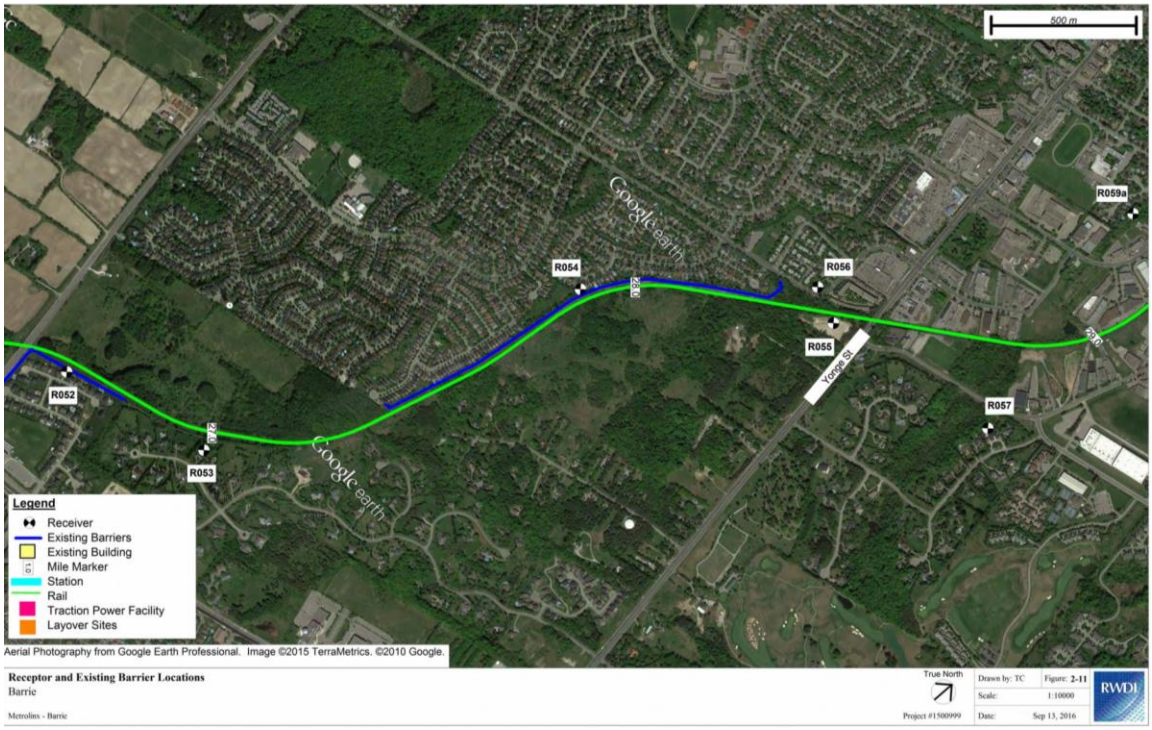


Figure 5-31: Barrie Corridor Receptor and Existing Barrier Locations 12

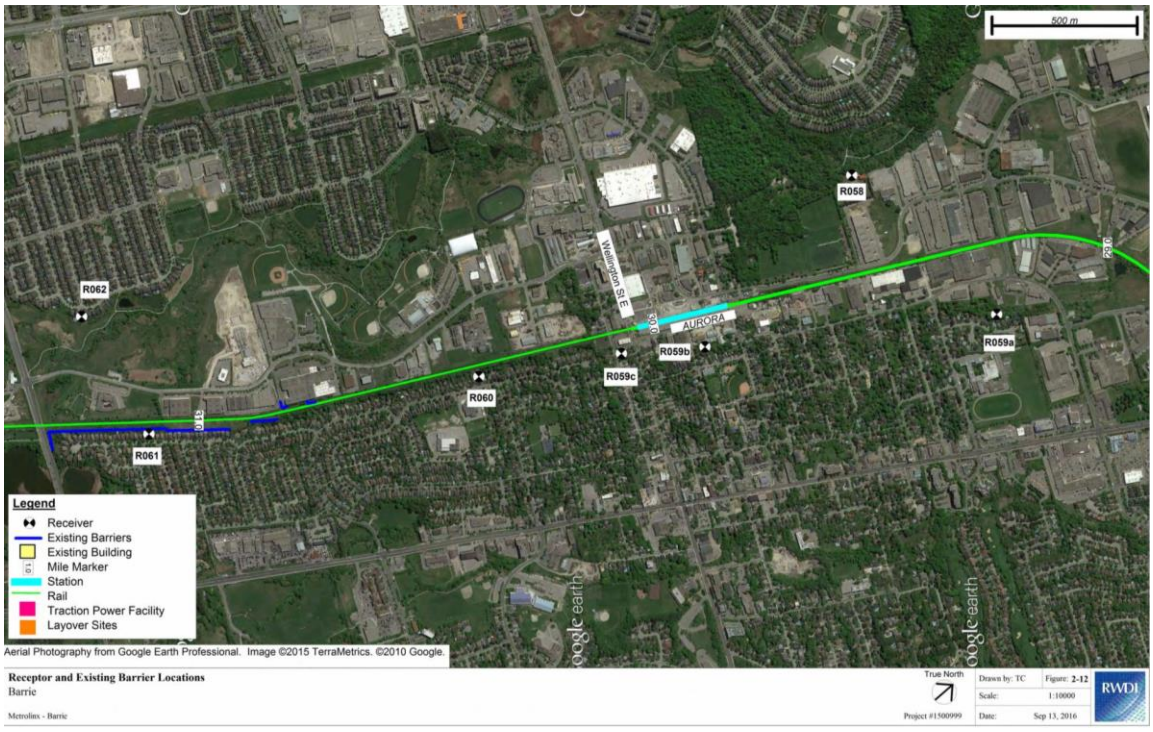


Figure 5-32: Barrie Corridor Receptor and Existing Barrier Locations 13

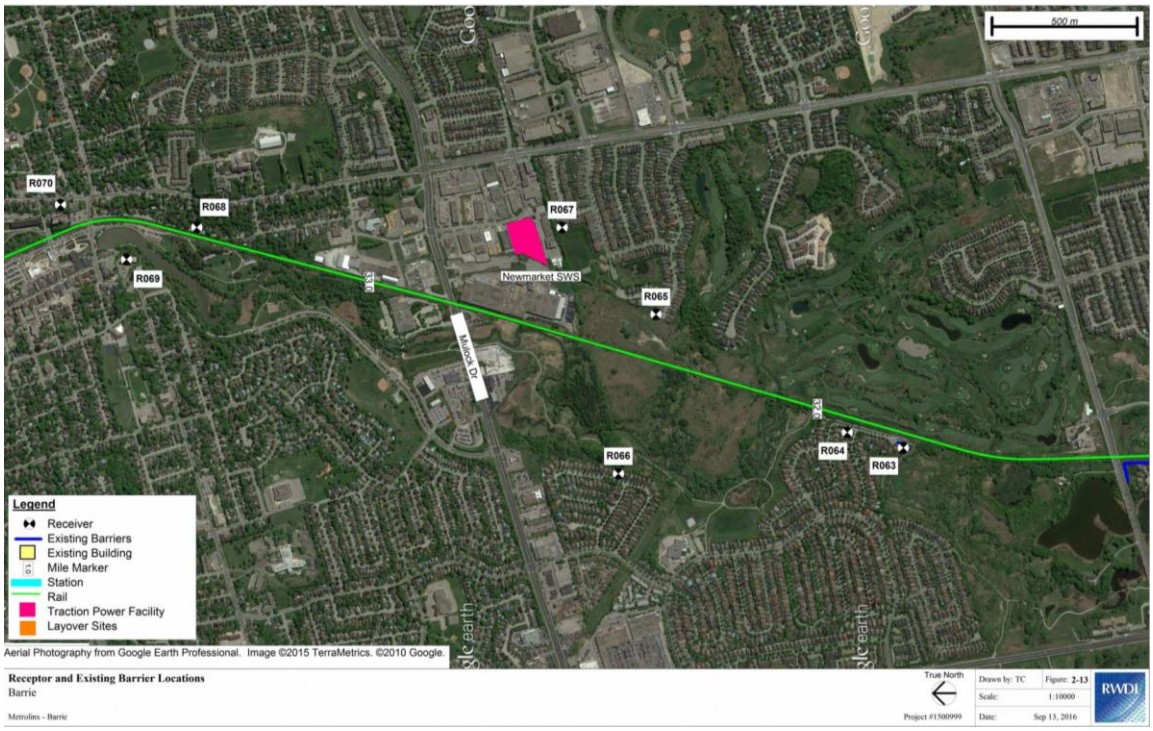


Figure 5-33: Barrie Corridor Receptor and Existing Barrier Locations 14

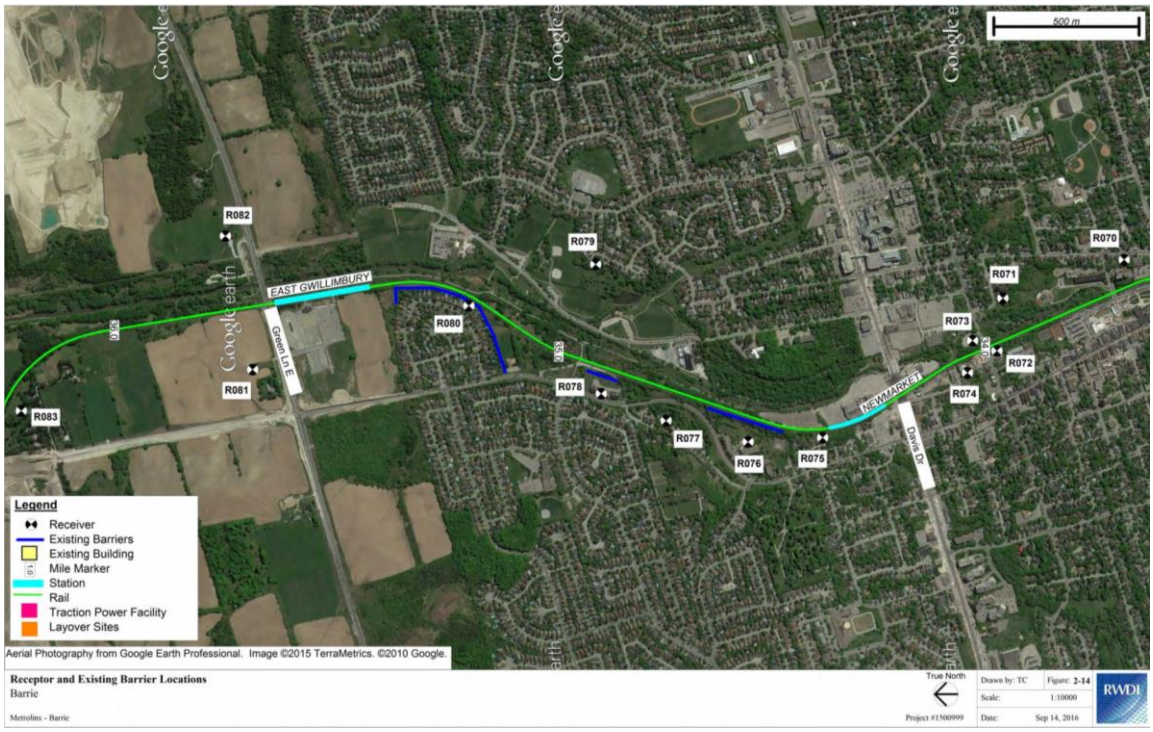


Figure 5-34: Barrie Corridor Receptor and Existing Barrier Locations 15

Figure 5-35: Barrie Corridor Receptor and Existing Barrier Locations 16

Figure 5-36: Barrie Corridor Receptor and Existing Barrier Locations 17

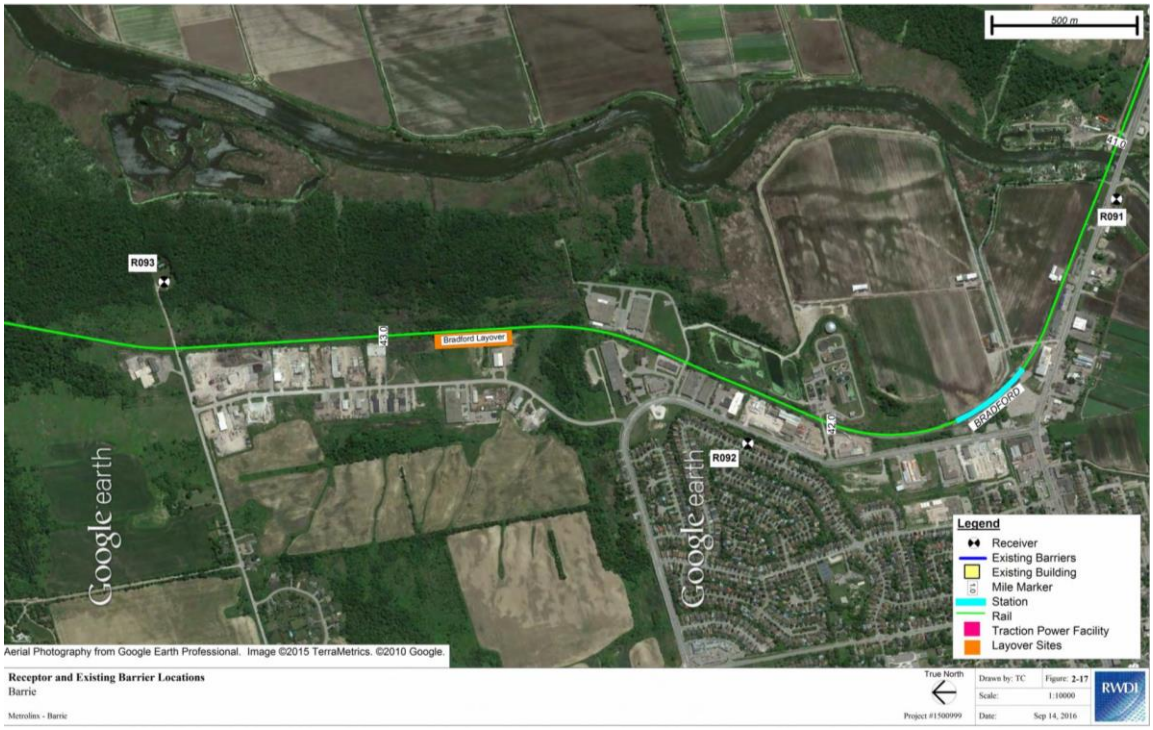


Figure 5-37: Barrie Corridor Receptor and Existing Barrier Locations 18

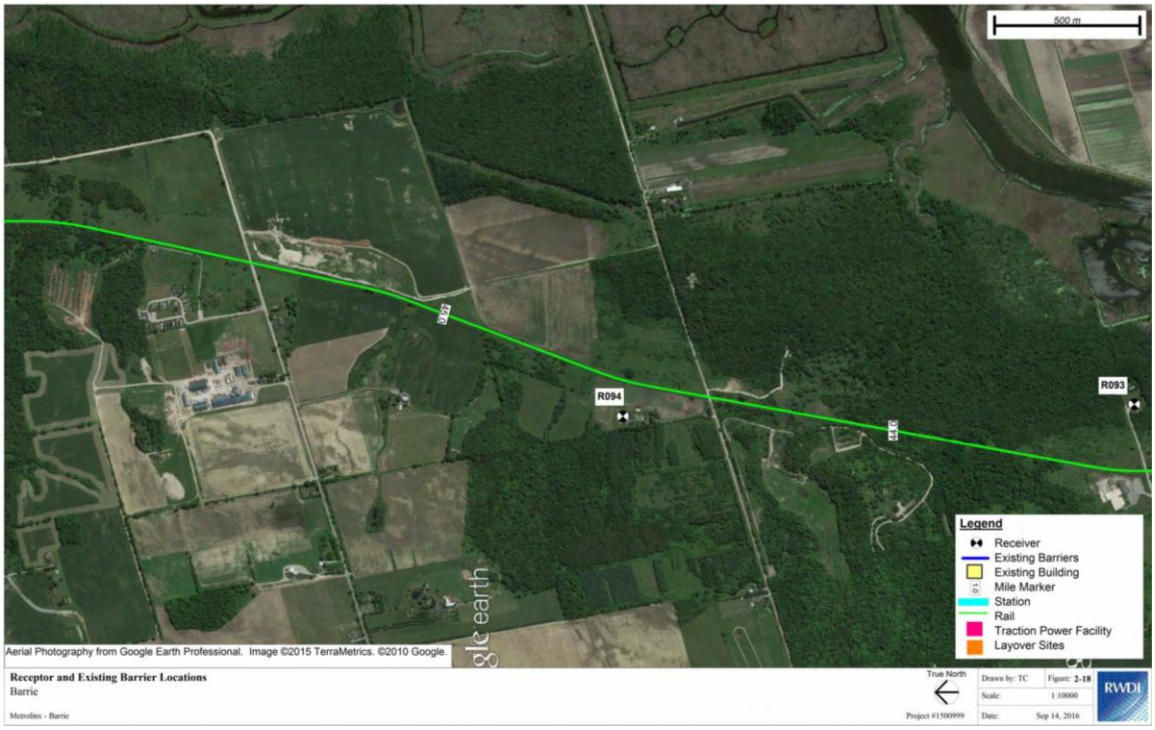


Figure 5-38: Barrie Corridor Receptor and Existing Barrier Locations 19

Figure 5-39: Barrie Corridor Receptor and Existing Barrier Locations 20

Figure 5-40: Barrie Corridor Receptor and Existing Barrier Locations 21

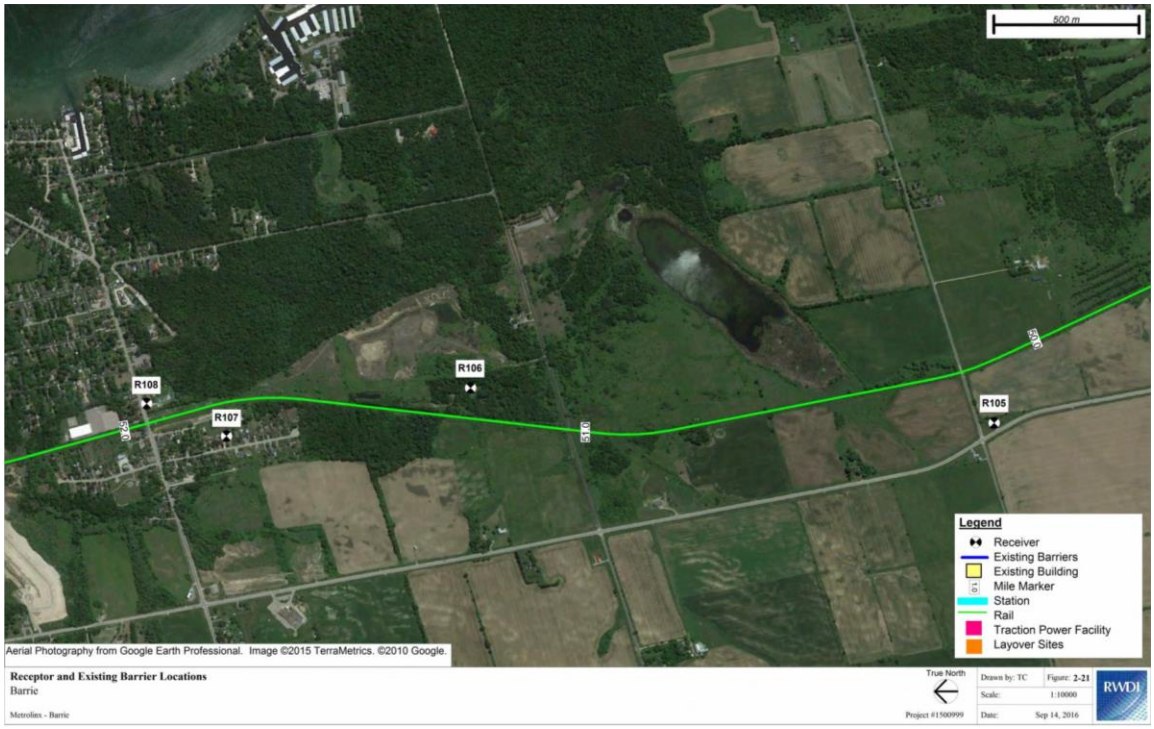


Figure 5-41: Barrie Corridor Receptor and Existing Barrier Locations 22

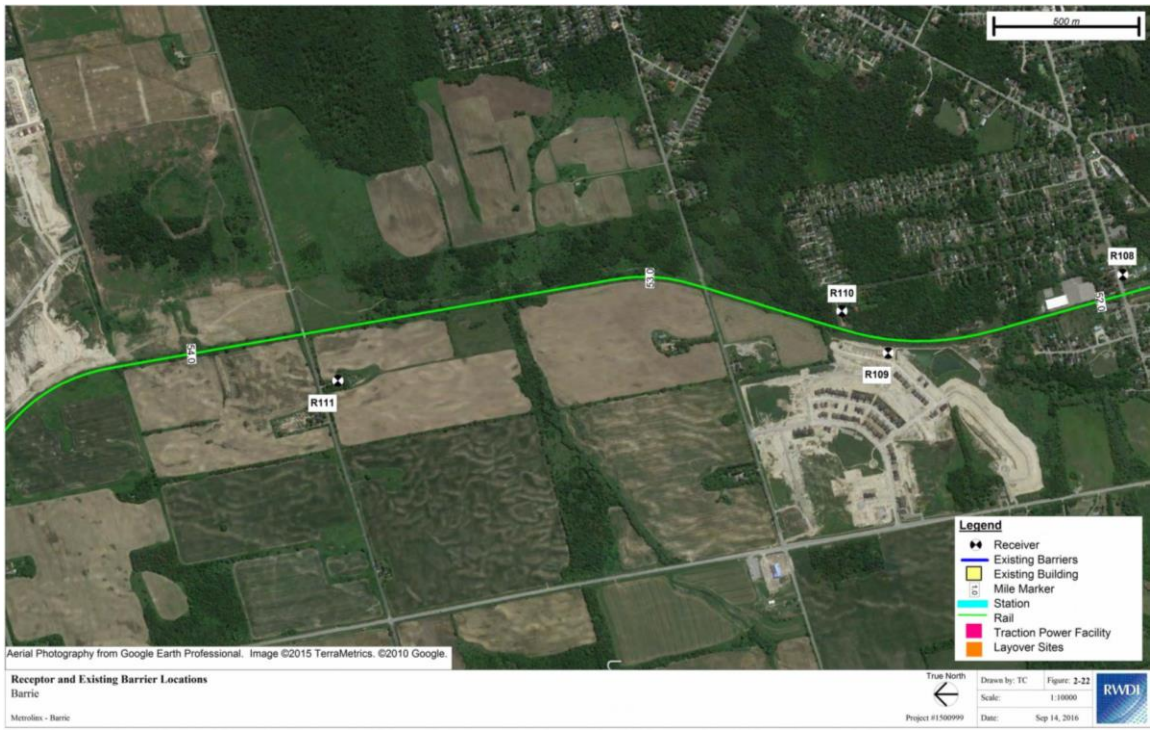


Figure 5-42: Barrie Corridor Receptor and Existing Barrier Locations 23

Figure 5-43: Barrie Corridor Receptor and Existing Barrier Locations 24

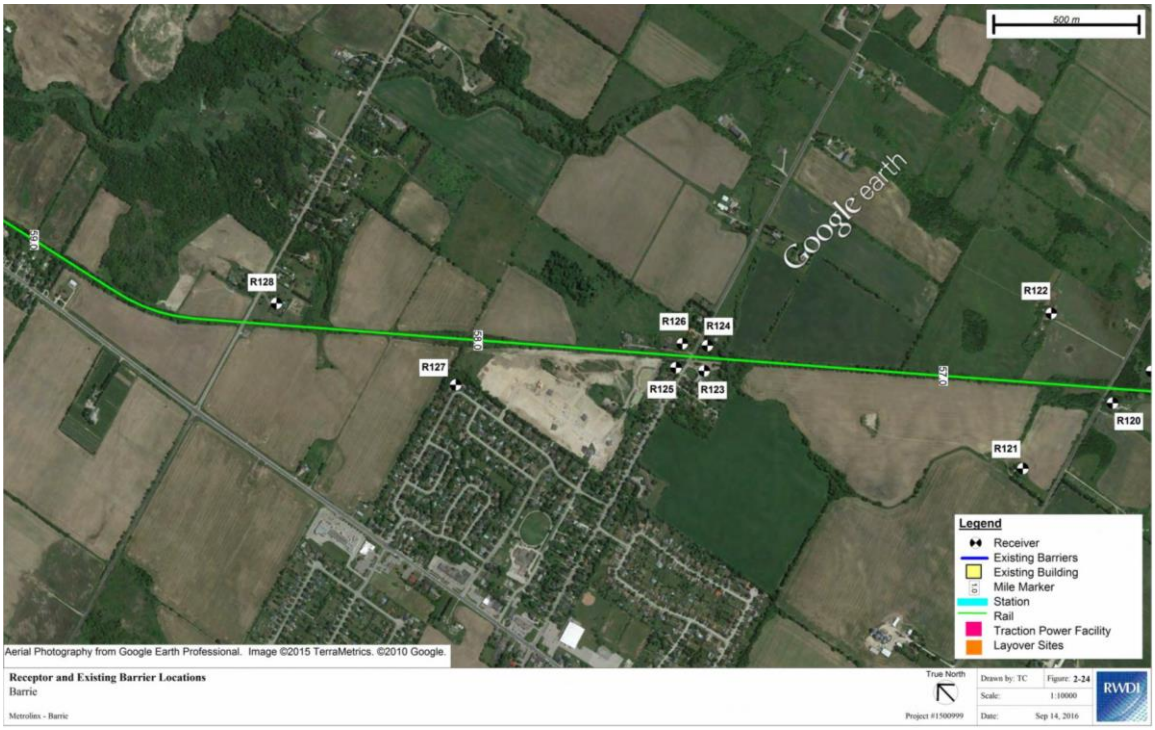


Figure 5-44: Barrie Corridor Receptor and Existing Barrier Locations 25

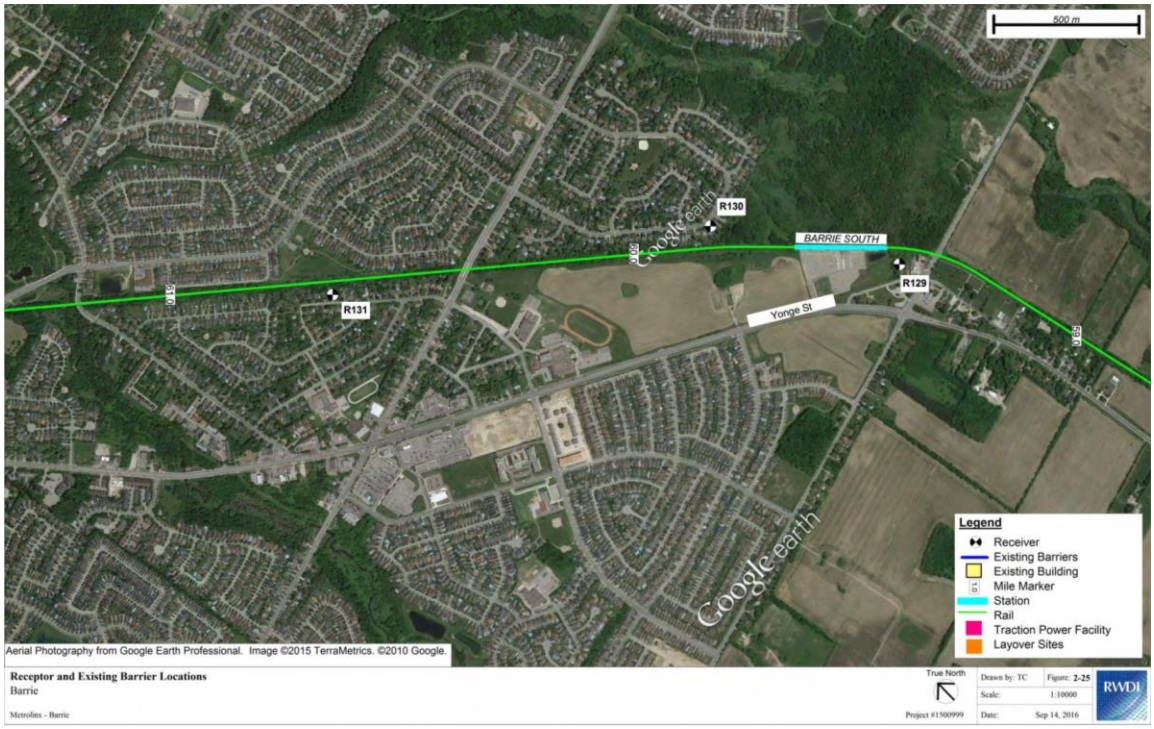
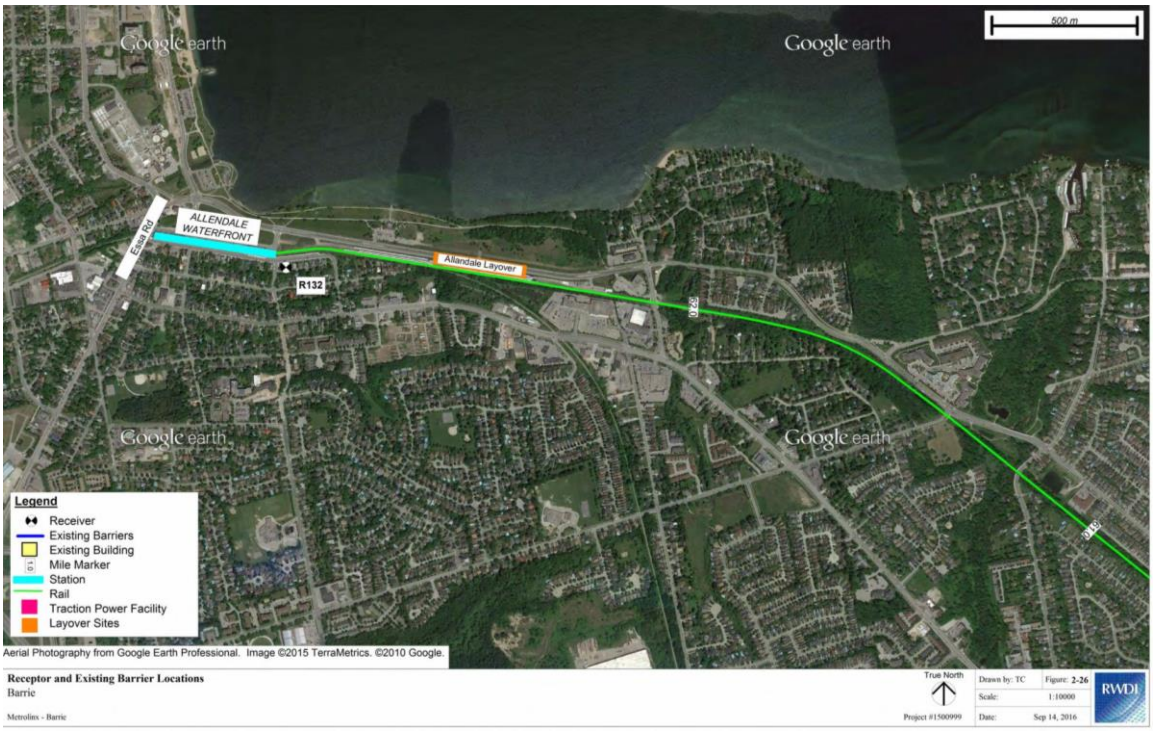


Figure 5-45: Barrie Corridor Receptor and Existing Barrier Locations 26



5.8 Visual

Please refer to Section 1.5.8 for a description of the methodology followed for collection of visual baseline conditions data. Baseline conditions within each segment of the Barrie Corridor have been summarized below. Additional details can be found in the Visual Assessment Baseline Conditions Report contained in **Appendix H1**.

5.8.1 Allandale Tap Location (Preferred)

See **Figure 1-6** in Section 1.3 for the location of the proposed Preferred Allandale Tap Location site.

The Preferred Allandale Tap Area is located north of Tiffin Street adjacent to an existing Hydro One facility. The site is largely screened from Tiffin Street by existing mature vegetation consisting of a mix of deciduous and evergreen trees. . A number of Hydro One transmission lines cross Tiffin Street in the vicinity of the Hydro One power station.

5.8.2 Allandale Tap Location (Alternative)

See **Figure 1-6** in Section 1.3 for the location of the proposed Alternative Allandale Tap Location site.

The Alternative Allandale TAP is located on vacant land adjacent to an existing electric power transformer station. The site is partly surrounded by wooded areas and industrial development. There is no visual impact and therefore no mitigation is required.

5.8.3 Allandale TPS

See **Figure 1-6** in Section 1.3 for the location of the proposed Allandale TPS site.

The site for the Allandale TPS is located approximately 1700 metres beyond Allandale Station. The site is immediately north of the railroad on the west side of Patterson Road. Patterson Road is a local street accessing a mix of land uses including residential, commercial and industrial. The site is currently vacant with industrial facilities to the immediate north, east and west.

To the south, on the opposite side of the railroad, there are residential homes with side and backyards backing up to the rail ROW. Although there is some existing vegetation, there are views from these homes of the proposed TPS site that may be altered by the construction of the electrification infrastructure. The view from Patterson Avenue sidewalk has no buffer along the edge of the ROW.

5.8.4 Barrie-Collingwood Railway 25kV Feeder Route

See **Figure 1-19** in section 1.3 for the location of the proposed 25kV feeder route. The Barrie-Collingwood 25kV feeder route is located within the Barrie Collingwood Rail Corridor, a single-track rail corridor that passes through mostly industrial development. The only exception is where the rail corridor parallels Jacobs Terrace and residential properties front on Jacobs Terrace between Alfred and Anne Streets.

Residents look out across Jacobs Terrace to the railroad which is only approximately 20 metres from their front doors. There is no existing screening between these homes and the rail corridor.

5.8.5 Newmarket SWS

See **Figure 1-7** in Section 1.3 for the location of the proposed Newmarket SWS site.

The site for the Newmarket SWS is located on Steven Court, an industrial cul-de-sac east of the rail corridor and south of Mulock Drive. The site is surrounded by industrial buildings.

5.8.6 Gilford PS

See **Figure 1-8** in Section 1.3 for the location of the proposed Gilford PS site.

The site for the Gilford PS is located on the south side of Gilford Road immediately east of the railroad. Views from the road are long and open and the Gilford PS will be visible from the road approaching from both the east and west as well as from several residential properties.

5.8.7 Maple PS

See **Figure 1-9** in Section 1.3 for the location of the proposed Maple PS site.

The site for the Maple PS is located on a triangular parcel of land east of the rail corridor, west of Keele Street just north of the bridge over the railroad. There is industrial development east of the site on the opposite side of Keele Street and is otherwise surrounded by open farmland. In general, the site is open and visible from Keele Street.

5.8.8 Corridor & Bridges: Section BR-1 – Parkdale Junction to Caledonia Station

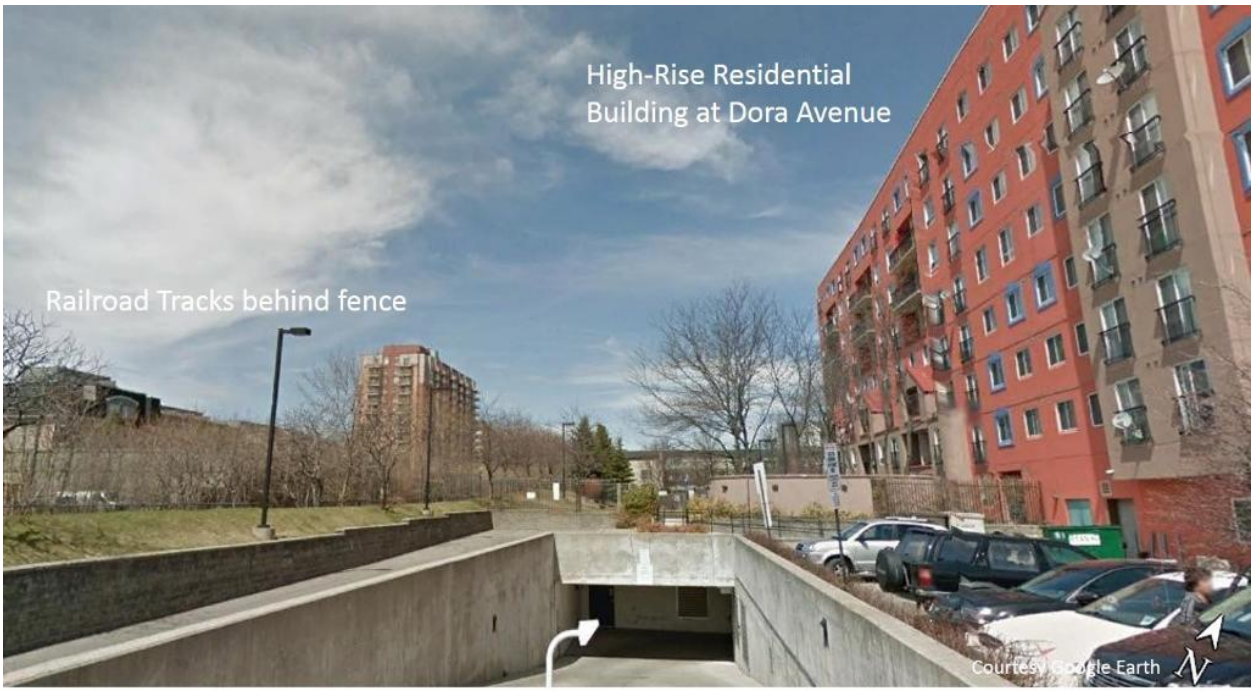
This section is entirely within the City of Toronto. From Parkdale Junction, the railroad passes under the Dundas Street Bridge that affords open views up and down the railroad from sidewalks and bike lanes. To the east of the railroad is a private Catholic school (Saint-Frère-André Secondary School), with playing fields immediately adjacent to the railroad that form part of the open view from the Dundas Street Bridge.

Figure 5-46: View from Dundas Street Bridge looking North

North towards Eglinton Avenue, the rail corridor passes through a mix of low-rise, mostly single-family, residential development and small-scale industrial buildings which back up to the rail right-of-way. Many of the houses have backyards adjacent to the railroad. While the right-of-way is currently buffered by some vegetation, views through this buffer, especially in winter, afford residents with views of the rail corridor. These views may be slightly changed by the introduction of electrification infrastructure. Several small parks also abut the railroad, but are typically well buffered with vegetation and view from these areas would not likely be affected by the introduction of the electrification infrastructure.

There are several high-rise residential buildings immediately adjacent to, or close to the tracks, that afford views of the rail corridor. On either side of Bloor Street, west of the tracks, is a cluster of several high-rise residential buildings as well as a building at Dora Avenue, all with clear views of the rail corridor that may be affected by the introduction of electrification infrastructure **(Figure 5-47).**

Figure 5-47: High-Rise Residential Building at Dora Avenue with Views over Track (behind Chain Link Fence to the Left)



Two additional high rise residential buildings abut the tracks to the east, between Dupont Street and Lappin Avenue, and additional residential buildings are under construction between Dupont Street and Davenport Road, that may also have clear views of the railroad and electrification infrastructure.

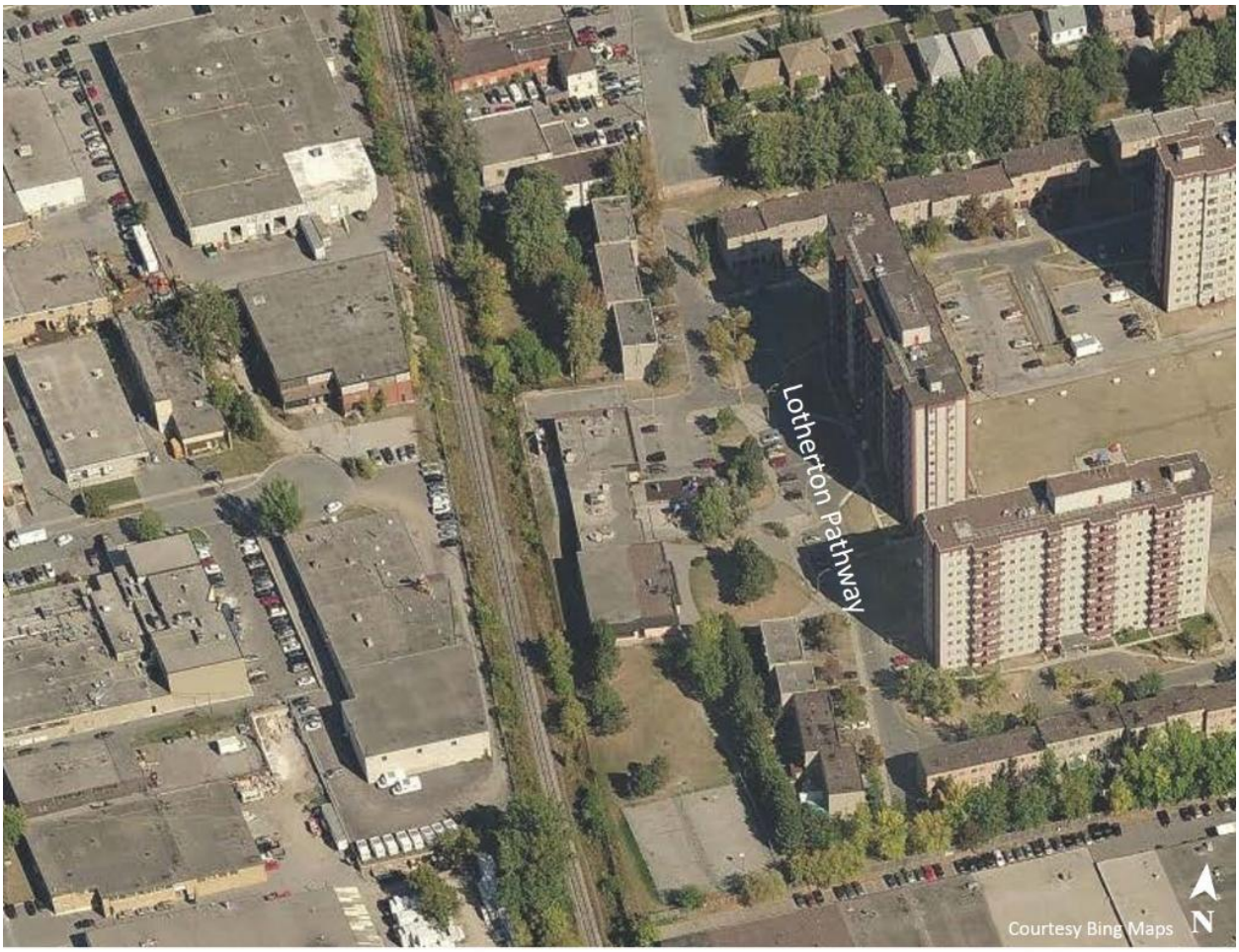
There are two bridges over the railroad at Dundas Street West and Eglinton Avenue. There are five bridges where the railroad passes over local streets at Bloor Street, Dupont Street, Davenport Road, St. Clair Avenue West, and Rogers Road. Where street bridges pass over the railroad, the view from bridges will be changed by safety barriers installed to protect pedestrians from the catenary wires passing under these bridges. **Figure 5-46** illustrates an open view which may be changed by introducing a barrier along the back of the sidewalk on the Dundas Street West Bridge. Eglinton Avenue has sidewalks crossing the bridge. Where the rail corridor crosses over perpendicular streets, views of railroad bridges from the street may change with the introduction of the OCS. There is one grade crossing at Wallace Avenue in a mixed use/residential neighborhood. A pedestrian bridge connects residential neighborhoods across the railroad between Innes Avenue and Prescott Avenue. This is an attractively landscaped and designed bridge that may be changed by building bridge barriers on the bridge where it crosses the tracks.

There are no stations within this section.

5.8.9 Corridor & Bridges: Section BR-2 – Caledonia Station to Downsview Park Station

This section is entirely within the City of Toronto. Between Eglinton Avenue and Lawrence Avenue, the railroad passes through an area which consists almost entirely of industrial properties with only a few pockets of residential homes bordering the tracks. There is one high-rise development on Lotherton Pathway that, although set back from the tracks with low-rise buildings between it and the railroad, may afford views of the electric infrastructure from the upper floors. North between Lawrence Avenue and Highway 401, the east side of the tracks continues through an industrial area. However, to the west of the tracks is a single family residential neighbourhood with lots backing up to the rail right-of-way. These lots as well as a park, North Park, appear to be well buffered from the rail corridor by vegetation.

Figure 5-48: High Rise Residential Building on Lotherton Pathway overlooking Railroad to the West



North of Highway 401 to Sheppard Avenue, the east side of the track continues through an industrial area which includes the Downsview Airport, a private airport operated by Bombardier Aerospace as a test site. While views are open to the airport field, none of this development is sensitive to the introduction of

electrification infrastructure on the rail corridor. On the west side of the tracks, there is a cemetery and a major new park, Downsview Park, which currently has immature vegetation with open views but is buffered from the rail corridor by the topography which has been created in the park.

There is a bridge over the railroad at Highway 401. Where street bridges pass over the railroad, the view from bridges maybe affected by safety barriers installed to protect pedestrians from the OCS passing under these bridges. This will be less of an issue for the Highway 401 Bridge, since there are no sidewalks or bike lanes and traffic is travelling too fast to afford views for users. There are three bridges where the railroad crosses over a road at Lawrence Avenue, Wilson Avenue, and Sheppard Avenue. Views of railroad bridges from the street may change with the introduction of catenary wires and structures. There are two grade crossings in this section at Castlefield Avenue and Carl Hall Road. Both of these grade crossings are in industrial areas.

Figure 5-49: View of Rail Corridor in Industrial Area close to Downsview Airport at Carl Hall Road Grade Crossing

There is a planned station (Caledonia GO Station) which will be constructed at the corner of Eglinton Avenue and Croham Road. Depending on which project is built first, station views for passengers could be altered by the electrification project. There is also a new station under construction (Downsview Park GO Station) at Sheppard Avenue. It appears that this station will have a large parking lot for commuters accessing the station. Views from the parking lot may be altered by the introduction of the electrification infrastructure.

5.8.10 Corridor & Bridges: Section BR-3 – Downsview Park Station to Rutherford Station

This section is partly in the City of Toronto and partly in the City of Vaughan. The rail corridor right-of-way widens out in this section to accommodate various sidings and passing tracks. The land use on either side of the track is industrial throughout the entire section, with buildings close to the tracks and the occasional vacant parcel where the view widens out, but is not sensitive to the introduction of electrification infrastructure.

There are no bridges where roadways pass over the railroad, and only one bridge where the railroad passes over the roadway at Finch Avenue. Views of railroad bridges from the street may change with the introduction of the OCS, but they are not seen as sensitive to the introduction of electrification infrastructure in such an industrial area.

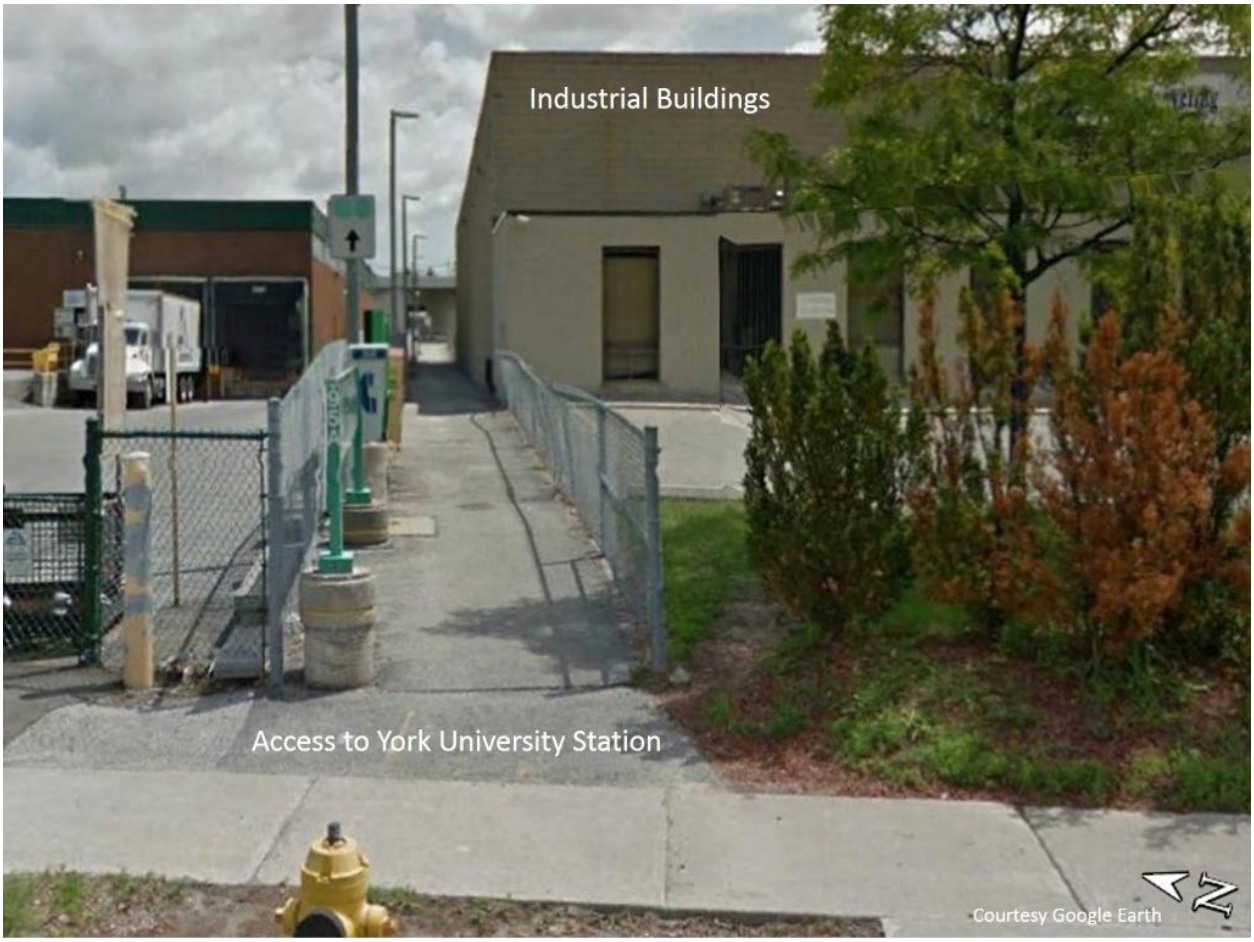
The railroad crosses the York University Busway and the Finch Hydro Corridor Recreational Trail at a grade crossing. Views for passengers on buses and people using the trail may be altered by the introduction of electrification infrastructure

The section beyond the busway consists almost entirely of industrial properties with a few areas of single-family residential development backing up to the tracks both east and west of the railroad. While the right-of-way is buffered by some vegetation, views through this buffer, especially in winter, afford residents with views of the rail corridor that may be changed by the introduction of electrification infrastructure.

Between Rivermede Road and Langstaff Road, the rail follows a stream valley which is part of Langstaff Park. The park has a recreational trail running through the parkland. Views of the railroad from trail users may be altered by the introduction of electrification infrastructure. A rail siding which is included in the project area branches off the main rail right-of-way and parallels Langstaff Road behind the park. There is also a small cemetery called Langstaff Cemetery backing up to this rail siding (to be verified with information from the Cultural Heritage Report).

There are no road bridges over the railroad in this section. However, there are four bridges over roadways at Steeles Avenue, Highway 407, Highway 7 and Rivermede Road. Views of rail bridges from the street may change with the introduction of catenary wires and structures. While traffic is traveling at high speed on Highway 407, the rail bridge across the highway can be seen from a distance by people in vehicles. The rail corridor also crosses over an east-west freight line south of Highway 407.

Figure 5-50: Access to York University Station between Industrial Buildings



There are two additional grade crossings (other than the busway) in this section at Rivermede Road and Langstaff road which are both in industrial areas.

There are two stations in this section: York University GO Station and Rutherford GO Station. York University Station is a small station with no parking or bus access, located behind industrial buildings with little or no visibility beyond the rail right-of-way. Rutherford GO Station is a larger station with a sizable parking lot. Views from the parking lot and the station may be altered by the introduction of electrification infrastructure.

5.8.11 Corridor & Bridges: Section BR-4 – Rutherford Station to King City Station

This section is within the limits of the City of Vaughan. From Rutherford Station to McNaughton Road, just north of Maple GO Station, the railroad passes through an area which consists almost entirely of single-family residential development with homes both backing up to and facing the railroad. Even where these homes are protected by right-of-way fencing or vegetative buffers, electrification infrastructure may be visible to residents. Other adjacent uses in this segment are open land and a school.

Beyond McNaughton Road, the character of the surrounding area changes radically to industrial properties and vacant land. While there are views of the rail corridor from a greater distance, because the development is set back and vegetation in limited, none of the views of the rail corridor are regarded as sensitive in this section.

Figure 5-51: Keele Street Bridge Approach

There is one road bridge over the railroad at Keele Street. This is a skew bridge as Keele Street and the rail corridor are not perpendicular to one another, so that the rail corridor is very visible from the bridge on the approaches. However, there are no sidewalks over the bridge. The view will be altered by the introduction of electrification infrastructure and by the protective barriers that will be erected on the bridge parapets if required. There is only one bridge where the rail corridor crosses over a road at Major MacKenzie Drive. Views of this railroad bridge from the street may change with the introduction of the OCS. Grade crossings exist at Rutherford Road and McNaughton Road, which are both in industrial areas, and at Teston, Kirby and King Vaughan Roads, which are all in more open areas of undeveloped farmland.

There is one station in this section: Maple GO Station. This station has a large open parking lot with views to the track and station platform. These views may be altered by the introduction of electrification infrastructure.

Figure 5-52: Maple Station

5.8.12 Corridor & Bridges: Section BR-5 – King City Station to Bathurst Street

This section is entirely within the Township of King. The first part of this section passes through an area of single-family residential development with homes backing up to the tracks. Some areas are currently buffered by vegetation while others are relatively open with clear views from backyards and rear windows to the rail corridor. Electrification infrastructure may be clearly visible from at least some of the homes in this area.

Farther north, there is virtually no development and the rail corridor passes through open and cultivated land. Views are open but not particularly sensitive to the introduction of electrification infrastructure. However, there are one or two individual homes with views that should be evaluated further **(Figure 5-53).**

The only bridges in this section are at the intersection of Keele Street and King Road, where two of the legs of the intersection bridge over the railroad. This intersection appears to be the gateway to the small, picturesque town centre of King City with gateway parks/features at two of the corners. The protective barriers required on the bridges may alter the aesthetics of this area. There are two grade crossings at Dufferin Street and15th Sideroad, both in relatively open areas.

Figure 5-53: Typical Home Adjacent to Grade Crossing at 15th Sideroad

Figure 5-54: Bridges over Railroad at Keele Street and King Road

Figure 5-55: Second View of Keele Street Bridge and Gateway to King City

There is only one station in this section: King City GO Station. The station is located at Station Road and Keele Street, and has parking lots located on three corners of the grade crossing at the station. Though not one of the largest GO stations, the views may be altered for passengers arriving at or departing from the station by new electrification infrastructure.

5.8.13 Corridor & Bridges: Section BR-6 – Bathurst Street to Aurora Station

This section is located in the Town of Aurora. From Bathurst Street to Yonge Street, this section passes through residential development and open space. There are both small lot single-family homes backing up directly to the rail right-of-way, as well as large lots with larger homes which, while farther from the right-of-way, still have uninterrupted views of the rail corridor. Both types of homes may have changed views due to the introduction of electrification infrastructure.

North of Yonge Street, development along the right-of-way consists entirely of industrial development except for two parks, Highland Park and Sheppard's Bush. There is no existing landscaping between the rail corridor and these parks to protect them from views of the railroad and future electrification.

There is a bridge over the tracks at Bathurst Street and a bridge under the railroad at Yonge Street. **Figure 5-56** illustrates the view from the Bathurst Street Bridge and the proximity of homes overlooking the rail corridor. Even though the homes have right-of-way fencing, electrification infrastructure may be tall enough to be viewed over this fencing. There is one grade crossing at Engelhard Drive in an industrial area.

Figure 5-56: Bathurst Street Bridge looking North

5.8.14 Corridor & Bridges: Section BR-7 – Aurora Station to East Gwillimbury Station

This section is located partly in the Town of Aurora and partly in the Town of Newmarket. From Aurora GO Station to St. John's Sideroad, the west side of the right-of-way is adjacent to single-family residential development with homes backing up to the rail corridor. Although there is some existing vegetation, there are views from these homes of the railroad corridor that may be altered by the construction of the electrification infrastructure.

On the east side, land use is entirely industrial with a few interspersed vacant parcels. There are no sensitive views on this side of the tracks.

From St. John's Sideroad north to East Gwillimbury GO Station, the railroad follows a creek that meanders from one side of the right-of-way to the other. The Nokiidaa Bike Trail follows the creek through this section through the Wesley Brooks Conservation Area and Mabel Davis Park to downtown Newmarket. The rail corridor is visible from this bike trail, which may be impacted by the construction of electrification infrastructure. East of the tracks in this section is the St. Andrew's Valley Golf Course. The golf course immediately abuts the rail right-of-way with little vegetation to protect golfers from views of the electrification infrastructure. Through much of this area, single-family homes line the open space along the creek. In some areas, the homes are adjacent to the rail right-of-way while in others they are set back but still visible across the open space to the rail corridor. The view from these homes may be altered by

the construction of electrification infrastructure. There are also some intermittent industrial/commercial buildings in this segment that are not sensitive to changes in the view-shed.

There is one road bridges over the rail corridor in this section at Queen Street in Newmarket. There are nine grade crossings in all, one of which is a multi-use trail accessing the Nokiidaa Bike Trail. The others are mostly in areas of mixed commercial and residential development. Grade crossings exist at Wellington street, Centre Street, Mulock Drive, St. John's Sideroad, Water Street, Timothy Street, Queen Street (in a residential area) and at Davis Drive adjacent to Newmarket GO Station.

There are two stations in this section: Newmarket and East Gwillimbury GO Stations. Newmarket Station is located behind a retail complex recently converted from an industrial building and has only a small parking lot. East Gwillimbury Station has a large parking lot and bus drop-off facility bringing passengers to the station. The view for these passengers coming to or departing from these stations may be altered by the introduction of electrification infrastructure.

5.8.15 Corridor & Bridges: Section BR-8 – East Gwillimbury Station to Bradford Station

This section passes through the Townships of East and West Gwillimbury and the Township of King. North of East Gwillimbury GO Station to Bradford Street, the rail corridor continues to follow the creek and bike trail. Views of the rail corridor exist from these facilities all along this stretch, and these may be altered by the introduction of electrification infrastructure. The opposite side (west) of the rail corridor in this section is mostly open fields with a few clusters of residential development from which views could be altered by the electrification project.

From Bradford Street to Bathurst Street, both sides of the rail corridor have a mix of residential development, industrial properties, and open farm land. Some homes are close to the rail right-of-way and have the potential for views to be changed by the electrification project.

North of Bathurst Street there is no residential development, only open land, woods and industrial uses. The rail corridor parallels Holland Landing Road and Bridge Street, both of which provide clear views to the rail corridor with no existing screening. The rail corridor crosses the West Holland River, which is a scenic view with vegetated banks interspersed with boat houses and yards. The view from the river may be altered by the introduction of electrification infrastructure over the bridge. In addition, Bridge Street parallels the railroad to the east in this section. Where Bridge Street crosses the river, views from this road bridge are across the rail bridge to the river beyond, and electrification infrastructure may interrupt the existing view.

Figure 5-57: West Holland River Crossing from Bridge Street Bridge

Land on either side of the rail corridor north of the river crossing is similar in nature to that to the south – open farmland and industrial development – and views from these areas are unlikely to be impacted by the electrification project.

There are no bridges in this section and seven grade crossings at Highway 2, Yonge Street, Bradford Street, Oriole Drive, Bathurst Street, Kelver Street and Given Road, all of which are in non-residential areas.

There are no stations in this section.

5.8.16 Corridor & Bridges: Section BR-9 – Bradford Station to 13th Line

This section passes through the Townships of East Gwillimbury and King. From Bradford GO Station to Line 10, both sides of the railroad contain a mixture of industrial properties and open land, which is not sensitive to the visual intrusion of electrification infrastructure. Between Line 9 and Line 10, both sides of the right-of-way are densely wooded and unpopulated, and views in this area will not be adversely affected by the electrification project.

From Line 10 to the end of the section, there is a mix of open farm land, wooded areas and the occasional large single-family house. These houses are typically set far back from the right-of-way.

There are no road bridges under or over the rail right-of-way in this section. Six grade crossings exist at Industrial Road and 9th to 13th Line, none of which are in residential areas.

There is only one station in this section: Bradford GO Station. This station has a medium-sized parking lot with bus drop-off facilities. Views of the station and railroad may be altered by the construction of electrification infrastructure for passengers arriving at or departing from the station.

Figure 5-58: Bradford GO Station from Bridge Street Entrance

5.8.17 Corridor & Bridges: Section BR-10 – 13th Line to 6th Line Section

This section passes through the Townships of Bradford West Gwillimbury and Innisfil. The section is almost entirely undeveloped with farmland, open land and wooded lots as the primary land uses along the corridor. None of these uses would be adversely affected by the electrification project from a visual/aesthetics perspective. However, the rail corridor passes through two small communities within the Town of Innisfil: Gilford and Lefroy. In both communities, there are single-family homes with backyards adjacent to the track. While some of these yards are long and heavily landscaped, others have homes close enough to the right-of-way to have potential adverse visual effects from the introduction of electrification infrastructure.

There are no bridges with roads that pass under or over the rail corridor in this section. All crossings are grade crossings. Gilford Road, Shore Acres Drive and Killarney Beach Road are all residential streets and gateways to Gilford and Lefroy. The introduction of electrification infrastructure across these grade crossings could influence the character of these gateway streets. There are four additional grade crossings that are not in sensitive areas at 2 Line, 3 Line, Belle Aire Beach Road and 6 Line.

Figure 5-59: 'Gateway' to Lefroy on Killarney Beach Road - Railroad Grade Crossing can be seen in Distance

There are no stations in this section.

5.8.18 Corridor & Bridges: Section BR-11 – 6th Line to Barrie South Station

This section passes through the Township of Innisfil and the City of Barrie, and is almost entirely characterized as open land and farmland. There are a few individual houses within the view-shed but not close to the right-of-way. Between 7th Line and Innisfil Beach Road, on the east side of the track is a new subdivision with homes backing up to subdivision streets adjacent to the rail right-of-way. Electrification infrastructure may be visible from these homes. This subdivision appears to have additional sections currently under construction.

Earlier residential development is clustered around Victoria Street/10th Line and along Yonge Street backing up to the rail right-of-way. The backyards and views from rear windows of these homes may be affected by the electrification project.

There are no road bridges over or under the railroad in this section. There are six grade crossings, two of which are on residential streets at 10 Line and Mapleview Drive. The remaining four – 7 Line, Innisfil Beach Road, 9 Line and Lockhart are mostly surrounded by open farmland.

No stations are located in this section.

5.8.19 Corridor & Bridges: Section BR-12 – Barrie South Station to Allandale Waterfront Station

The railroad continues as a single-track facility through this section until just north of Minet's Point Road, where the corridor widens out to accommodate four tracks, all of which will be electrified, and where commuter trains are stored overnight. This section is in the City of Barrie and is more developed than areas to the immediate south. The railroad is mostly lined on both sides with single-family residential development, which is close to the tracks and may be affected by the introduction of electrification infrastructure.

Beyond Minet's Point Road, views to the waterfront from the rail right-of-way open up across Lakeshore Drive. This lakefront is continuous parkland, known as Allandale Station Park/South Shore Park. The park includes a tourist centre and a waterfront trail. Users of the park have a clear view of the rail corridor, including the storage yard. When these tracks are electrified, these views may be altered.

Figure 5-60: Cox Mill Road Bridge looking West

There are two bridges in this section, one where Big Bay Point Road crosses over the railroad, and one where Cox Mill Road passes under the railroad (see **Figure 5-60**), as well as two grade crossings at Little Avenue and Minet's Point Road both in residential areas.

The final station of the Barrie Corridor, Allandale Waterfront GO Station, is located in this section. There is a small parking lot at the station, as well as a large drop-off/pick-up area for both buses and cars immediately in front of the station. On the other side of the station driveway is the old, station building which is currently in the process of being renovated and awaiting a new use. This building looks directly at the new station and views from it may be impacted by the electrification project.

Figure 5-61: Allandale Waterfront GO Station

Figure 5-62: Old Station Building at Allandale Waterfront GO Station looking North from Station

5.9 Utilities

Please refer to Section 1.5.9 for a description of the methodology followed for collection of utilities baseline conditions data. Baseline conditions within each segment of the Barrie Corridor have been summarized below. Additional details can be found in the Utilities Baseline Conditions Report contained in **Appendix I1**.

At the time of writing the Utilities Baseline Conditions Report a concurrent utility study was being undertaken for a 100-m-swathe centered on the Barrie Corridor (Mi. 1.35 (Parkdale Junction) to Mi. 62.9 (Allandale Waterfront GO Station) on the Newmarket Subdivision) by another Metrolinx project team. Four tasks are associated with the concurrent study:

- Task 1: Utility Inventory;
- Task 2: Drafting;
- Task 3; Identifying Conflicts and Proposed Solutions; and
- Task 4: Notices and Solution Validation.

At the time of writing the baseline conditions report Task 1 had been completed. The information collected by the other project team was incorporated into the Utilities Baseline Conditions Report, and the associated deliverables are included within **Appendix I1**. No data was available regarding the location of identified utilities along the length of the corridor.

5.9.1 Allandale Tap Location (Preferred)

See **Figure 1-6** in Section 1.3 for the location of the proposed Preferred Allandale Tap Location site.

Utility	Description
Hydro	There are no records of third party underground hydro plant on the proposed tap site. However, there are overhead transmission lines crossing the site, to which a connection is proposed for the Preferred Allendale Tap and TPS. There is also a local distribution pole line on the site with overhead lines running parallel to the transmission lines.
Pipelines	There are no records found of third party pipelines on or near the proposed Preferred Allandale Tap site.
Watermains	The City of Barrie confirmed the presence of watermains in proximity to the proposed Preferred Allandale Tap site.
Sanitary Sewers	The City of Barrie confirmed the presence of sanitary sewers in proximity to the proposed Alternative Preferred Tap site.
Stormwater Sewers	The City of Barrie confirmed the presence of stormwater sewers in proximity to the proposed Preferred Allandale Tap site.
Gas Mains	Enbridge Gas owns one gas main on or near the Allandale Tap site.
Communication Companies	Bell and Rogers confirmed the presence of buried conduits near the proposed Preferred Allandale Tap site. There are also Rogers-owned overhead utilities on and near the proposed site.

5.9.2 Allandale Tap Location (Alternative)

See **Figure 1-6** in Section 1.3 for the location of the proposed Alternative Allandale Tap Location site.

An ON1Call planning request was logged for the entire property for the proposed Alternative Allandale Tap location. To augment the information received, a visual survey of the site was also performed using Google Earth.

ON1Call notified two communication companies: Bell and Rogers. The City of Barrie was also contacted individually for further information on their utilities in the area of the Alternative Allandale Tap location.

Table 5-42: Summary of Utilities at Proposed Alternative Allandale Tap Site

Utility	Description
Hydro	There are no records of third party underground hydro plant on the proposed tap site. However, there are overhead transmission lines crossing the site, to which a connection is proposed for the Alternative Allendale Tap and TPS. There is also a local distribution pole line on the site with overhead lines running parallel to the transmission lines.
Pipelines	There are no records found of third party pipelines on or near the proposed Alternative Allandale Tap site.

Utility	Description
Watermains	The City of Barrie confirmed the presence of watermains adjacent to the proposed Alternative Allandale Tap site.
Sanitary Sewers	The City of Barrie confirmed the presence of sanitary sewers along a road adjacent to the proposed Alternative Allandale Tap site.
Stormwater Sewers	The City of Barrie confirmed the presence of stormwater sewers along a road adjacent to the proposed Alternative Allandale Tap site.
Gas Mains	There are no records found of third party gas mains on or near the proposed Alternative Allandale Tap site.
Communication Companies	Bell and Rogers confirmed the presence of buried conduits near the proposed Alternative Allandale Tap site. There are also Rogers-owned overhead utilities on and near the proposed site.

5.9.3 Allandale TPS

See **Figure 1-6** in Section 1.3 for the location of the proposed Allandale TPS site.

An ON1Call planning request was logged for the entire property for the proposed Allandale TPS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

For the proposed Allandale TPS site, ON1Call notified two communication companies: Bell and Rogers. The City of Barrie was also contacted individually for further information on their utilities in the area of the Allandale TPS.

Table 5-43: Summary of Utilities at Proposed Allandale TPS Site

Utility	Description
Hydro	There are no records of third party underground hydro plant on the proposed site. However, the visual survey performed using Google Earth identified that there are overhead transmission lines crossing the site, to which a connection is proposed for the Allendale TPS. There is also a local distribution pole line on the site with overhead lines running parallel to the transmission lines.
Pipelines	There are no records found of third party pipelines on or near the proposed Allandale TPS site.
Watermains	The City of Barrie confirmed the presence of active and abandoned watermains along a road adjacent to the proposed Allandale TPS.
Sanitary Sewers	The City of Barrie confirmed the presence of sanitary sewers along a road adjacent to the proposed Allandale TPS.
Stormwater Sewers	The City of Barrie confirmed the presence of stormwater sewers located in proximity to the Allandale TPS.
Gas Mains	There are no records found of third party gas mains on or near the proposed Allandale TPS site.

Utility	Description
Communication Companies	Bell and Rogers confirmed the presence of buried conduits near the proposed Allandale TPS. There are also Rogers-owned overhead utilities on and near the proposed site.

5.9.4 Barrie-Collingwood Railway 25kV Feeder Route

See **Figure 1-18** in Section 1.3 for the location of the proposed Barrie Collingwood 25kV feeder route.

Table 5-44: Summary of Utilities at Proposed 25kV Feeder Route (Barrie Collingwood Rail ROW)

Utility	Description
Hydro	Hydro One owns one overhead 44kV hydro distribution line within the Allandale 25kV Feeder Route.Alectra owns four overhead hydro distribution lines with the Site.
Pipelines	There are no records found of third party pipelines along or near the proposed 25kV feeder route.
Watermains	City of Barrie owns 11 buried watermains on or near the Allandale 25kV Feeder Route.
Sanitary Sewers	City of Barrie owns four buried sanitary sewers on or near the Allandale 25kV Feeder Route.
Stormwater Sewers	City of Barrie owns nine buried stormwater sewers on or near the Allandale 25kV Feeder Route. City of Barrie also owns one ditch culvert on or near the Site.
Gas Mains	City of Barrie owns one 300mm-diameter buried gas main on or near the Allandale 25kV Feeder Route. Enbridge Gas owns seven buried gas mains on or near the Allandale 25kV Feeder Route.
Communication Companies	Bell owns nine buried cables and 21 buried conduits on or near the Allandale 25kV Feeder Route. Rogers owns three overhead cables and four buried conduits on or near the Site.

5.9.5 Newmarket SWS

See **Figure 1-7** in Section 1.3 for the location of the proposed Newmarket SWS site.

An ON1Call planning request was logged for the entire property for the proposed Newmarket SWS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Newmarket SWS notified three communication companies: Allstream, Bell and Rogers. Hydro One, Newmarket-Tay Power and York Region were also notified. These companies, as well as the Town of Newmarket were contacted individually by MH regarding existing and future plant in the area of the proposed site.

Table 5-45: Summary of Utilities at Proposed Newmarket SWS Site

Utility	Description
Hydro	Hydro One owns one buried hydro distribution line on or near the Newmarket SWS. Newmarket Hydro owns four overhead hydro distribution lines on or near the Site.
Pipelines	There are no records found of third party pipelines on or near the proposed site.
Watermains	Town of Newmarket owns one 300mm-diameter buried watermain on or near the Newmarket SWS.
Sanitary Sewers	Town of Newmarket owns two buried sanitary sewers on or near the Newmarket SWS.
Stormwater Sewers	A privately-owned buried stormwater sewer is located on or near the Newmarket SWS.
Gas Mains	Enbridge Gas owns three buried gas mains on or near the Newmarket SWS.
Communication Companies	Bell owns two buried conduits on or near the Newmarket SWS. Rogers owns two buried conduits on or near the Newmarket SWS.

5.9.6 Gilford PS

See **Figure 1-8** in Section 1.3 for the location of the proposed Gilford PS site.

An ON1Call planning request was logged for the entire property for the proposed Gilford PS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

For the proposed Gilford PS, ON1Call notified two communication companies: Bell and Rogers. InnPower was also notified Bell, Rogers, InnPower, and the Town of Innisfil were contacted by MH for information regarding their existing and future plant.

Table 5-46: Summary of Utilities at Proposed Gilford PS Site

Utility	Description
Hydro	InnPower owns three overhead hydro distribution lines on or near the Gilford PS.
Pipelines	There are no records found of third party pipelines on or near the proposed Gilford PS site.
Watermains	There are no records found of third party watermains on or near the proposed Gilford PS site.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the proposed Gilford PS site.
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed Gilford PS site.
Gas Mains	Enbridge Gas owns one 4in.-diameter buried gas main on or near the Gilford PS.
Communication Companies	Bell owns one buried conduit on or near the Gilford PS. Rogers owns one overhead cable and one buried conduit on or near the Site.

5.9.7 Maple PS

See **Figure 1-9** in Section 1.3 for the location of the proposed Maple PS site.

An ON1Call planning request was logged for the entire property for the proposed Maple PS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Maple PS notified two communication companies: Bell and Rogers, and one pipeline company: Trans-Canada. The City of Vaughan and York Region were also advised by the ON1Call planning ticket. These third parties were contacted individually by MH for information regarding their existing and future plant.

Table 5-47: Summary of Utilities at Proposed Maple PS Site

Utility	Description
Hydro	There are no records found of third party hydro lines on or near the Maple PS.
Pipelines	There are no records found of third party pipelines on or near the proposed Maple PS site.
Watermains	York Region owns two buried watermains on or near the Maple PS.
Sanitary Sewers	There are no records found of third party sanitary sewers near the proposed Maple PS site.
Stormwater Sewers	City of Vaughan owns one ditch culvert on or near the Maple PS.
Gas Mains	There are no records found of third party gas mains on or near the proposed Maple PS site.
Communication Companies	Bell owns one buried cable and three buried conduits on or near the Maple PS.

5.9.8 Utilities within the Barrie Corridor

Table 5-48: Summary of Utilities within Barrie Corridor

Utility Provider / Owner	Description
Zayo	Zayo owns six buried conduit crossings, three buried conduits running parallel to the ROW, and one conduit on the Highway 401 overpass in the Barrie Study Area.
Beanfield	Beanfield owns one buried conduit that crosses the Barrie Study Area near Wallace Ave.
Bell Canada	Bell owns 173 telecommunication utilities in the Barrie Study Area: one overhead cable crossing, 44 buried cable crossings, 85 buried duct bank crossings, 23 buried cables that run parallel to the ROW, one buried conduit that runs parallel to the ROW,

Utility Provider / Owner	Description
	17 duct banks that run parallel to the ROW, and two duct banks on the King Rd and Keele St overpasses, respectively.
Bombardier	Bombardier owns one buried 1500mm-diameter stormwater sewer crossing in the Barrie Study Area near John Drury Dr.
City Barrie	City of Barrie owns eight buried watermain crossings, six buried sanitary sewer crossings, 13 buried stormwater sewer crossings, 15 buried stormwater sewers that run parallel to the ROW, and two ditch culvert crossings in the Barrie Study Area.
City of Toronto	City of Toronto owns two buried watermain crossings, three buried sanitary sewer crossings, and six buried stormwater sewer crossings in the Barrie Study Area.
City of Vaughan	City of Vaughan owns 10 buried watermain crossings, 11 buried sanitary sewer crossings, seven buried stormwater sewer crossings, and 13 ditch culvert crossings in the Barrie Study Area.
Cogeco Peer 1	Cogeco Peer 1 owns one overhead cable crossing near Wilson Ave, three buried cable crossings, and one buried conduit crossing near Finch Ave W in the Barrie Study Area.
County of Simcoe	County of Simcoe owns one overhead cable that runs parallel to the ROW in the Barrie Study Area near Innisfil Beach Rd.
Enbridge Gas	Enbridge Gas owns 53 buried gas main crossings and two gas mains that run parallel to the ROW in the Barrie Study Area.
Enbridge Pipelines	Enbridge Pipelines owns one buried fuel transmission pipeline crossing in the Barrie Study Area near the York University Busway.
Hydro One	Hydro One owns 11 overhead hydro transmission crossings, two overhead hydro transmission lines that run parallel to the ROW, and one buried hydro transmission line that runs parallel to the ROW from Dufferin St to Brandon St in the Barrie Study Area. Hydro One also owns 25 overhead hydro distribution crossings, six overhead hydro distribution lines that run parallel to the ROW, and one buried hydro distribution line that runs parallel to the ROW near Station Rd in the Barrie Study Area.
Imperial Oil	Imperial Oil owns two buried fuel transmission pipeline crossings in the Barrie Study Area.
InnPower	InnPower owns 13 overhead hydro distribution crossings and four overhead hydro distribution lines that run parallel to the ROW in the Barrie Study Area.
Level 3 Communication	Level 3 owns two buried conduit crossings in the Barrie Study Area.
Ministry of Transportation (MTO)	MTO owns one conduit on the Highway 401 overpass in the Barrie Study Area.
Newmarket-Tay Power	Newmarket-Tay Power owns 13 overhead hydro distribution crossings and three overhead hydro distribution lines that run parallel to the ROW in the Barrie Study Area.

Utility Provider / Owner	Description
Parc Downsview Park	Parc Downsview Park owns three overhead hydro distribution crossings, one overhead hydro distribution line that runs parallel to the ROW near Carl Hall Rd, one conduit that runs parallel to the ROW near Carl Hall Rd, and one stormwater sewer that runs parallel to the ROW near Carl Hall Rd in the Barrie Study Area.
Alectra (formerly PowerStream)	Alectra owns 34 overhead hydro distribution crossings, eight overhead hydro distribution lines that run parallel to the ROW, eight buried conduit crossings, and one buried conduit that runs parallel to the ROW in the Barrie Study Area.
Rogers	Rogers owns 21 overhead cable crossings, five overhead cables that run parallel to the ROW, 43 buried conduit crossings, and one buried conduit that runs parallel to the ROW near Carl Hall Rd in the Barrie Study Area.
Sun-Canadian Pipelines	Sun-Canadian owns one 200mm-diameter buried fuel transmission pipeline crossing in the Barrie Study Area near the York University Busway.
Suncor Pipelines	Suncor owns two buried fuel transmission pipeline crossings in the Barrie Study Area.
Telus	Telus owns one overhead cable crossing near Steeles Ave W, three buried conduits that run parallel to the ROW, and one buried duct bank that runs parallel to the ROW near Steeles Ave W in the Barrie Study Area.
Telus Mobility	Telus Mobility owns one piece of standalone infrastructure (likely related to a signal broadcast tower) near Cousins Dr in the Barrie Study Area.
Toronto Transit Commission (TTC)	TTC owns one buried conduit crossing in the Barrie Study Area near Bloor St W.
Toronto Hydro	Toronto Hydro owns 12 overhead hydro distribution crossings, three buried conduit crossings, 15 buried duct bank crossings, one buried conduit that runs parallel to the ROW near Antler St, and two conduits on the Dundas St W overpass in the Barrie Study Area.
Town of Aurora	Town of Aurora owns nine buried watermain crossings, two buried stormwater sewer crossings, and one buried stormwater sewer that runs parallel to the ROW near Engelhard Dr in the Barrie Study Area.
Town of Bradford West Gwillimbury	Town of Bradford West Gwillimbury owns five buried watermain crossings, two buried sanitary sewer crossings, one ditch culvert crossing near Toll Rd, and one buried conduit crossing near Dissette St in the Barrie Study Area.
Town of East Gwillimbury	The Town of East Gwillimbury owns one 500mm-diameter buried watermain crossing near Bradford St and one 600mm-diameter ditch culvert crossing near Chapman St in the Barrie Study Area..
Town of Innisfil	Town of Innisfil owns two buried watermain crossings, two buried sanitary sewer crossings, and one 1200mm-diameter buried stormwater sewer crossing near Shore Acres Dr in the Barrie Study Area.
Town of Newmarket	Town of Newmarket owns one 150mm-diameter buried watermain crossing near Timothy St, 10 buried sanitary sewer crossings, five buried stormwater sewer crossings, and six ditch culvert crossings in the Barrie Study Area.

Utility Provider / Owner	Description
Township of King	The Township of King owns three buried watermain crossings, one 750mm-diameter buried sanitary sewer crossing near Station Rd, three buried stormwater sewer crossings, one ditch culvert crossing near King Blvd, and one conduit on the Dennison St overpass in the Barrie Study Area.
TransCanada	TransCanada owns three buried fuel transmission pipeline crossings in the Barrie Area
Trans-Northern Pipelines	Trans-Northern Pipelines owns one 250mm-diameter buried fuel transmission pipeline crossing in the Barrie Study Area, near the York University Busway.
York Region	York Region owns 11 buried watermain crossings, one 500mm-diameter watermain on the 2nd Concession Rd overpass, 12 buried sanitary sewer crossings, one 350mm-diameter sanitary sewer on the 2nd Concession Rd overpass, and two ditch culvert crossings in the Barrie Study Area.
York Region Telecom	York Region Telecom owns four overhead cable crossings, one overhead cable that runs parallel to the ROW near Industrial Parkway S, 12 buried conduit crossings, and two buried conduits that run parallel to the ROW in the Barrie Study Area.

5.10 EMI & EMF

5.10.1 Traction Power Facilities

Table 5-49 summarizes the ELF EMF measurements for the traction power facilities within the Barrie Corridor, as well as the GPS coordinates where the measurements were taken. For those locations where the Resultant Flux Density magnitude was less than 1.0 mG, the designation of "Background Only" is shown.

Table 5-49: ELF EMF Measurement Results at Barrie Corridor Traction Power Facilities

Facility Name	Latitude	Longitude	Resultant Flux Density Magnitude (mG)	Comments
Maple PS	43.882809	-79.519062	Background Only	Measured at end of service road, near fence.
Newmarket SWS, Alt 6	44.038247	-79.454277	Background Only	Measured in parking lot in front of Newmarket Hydro.
Newmarket SWS, Alt 5	#N/A	#N/A	N/A	One measurement used to cover both sites.
Gilford PS	44.236563	-79.553503	Background Only	Measured from roadside, near crossing.
Allandale TPS	44.369404	-79.706938	Background Only	Measured from parking lot near Metroland Media Group.

5.10.2 Barrie Corridor

5.10.2.1 EMI Sensitive Sites

Based on the baseline mapping for the Barrie Corridor, no EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the corridor.

5.10.2.2 ELF EMF Measurements

The tables in Section 4.2.5.2 to Section 4.2.5.13 in the EMI/EMF Baseline Conditions Report (**Appendix J1**) present the ELF EMF measurements at select points along the Barrie Corridor. There were no high-ELF (> 10 mG) areas along this corridor, so there no locations where post-electrification measurement of ELF EMF is recommended.

5.11 Stormwater Management

Please refer to Section 1.5.11 for a description of the methodology followed for collection of stormwater management baseline conditions data. Baseline conditions for each TPF site within the Barrie Rail Corridor has been summarized below. Additional details can be found in the Preliminary Stormwater Management Assessment Report contained in **Appendix K**.

5.11.1 Allandale Tap Location (Preferred)

The proposed site is a tributary to the Hotchkiss Creek and is located within the conservation area of Lake Simcoe Region Conservation Authority (LSRCA). A portion of the property is within the regulated area. The existing drainage pattern for the preferred Allandale Tap study area is shown on **Figure 5-63** as Option 1. The total Assessment Area for the preferred Tap site is approximately 2.55 ha.

There is a ditch adjacent to the east boundary of the Allandale TPS site which originate between the homes on Phillip Street. The ditch flows from south to north direction towards Tiffin Street, crosses the Tiffin Street via a culvert within the Tap property parcel and turns towards the Highway 400 culvert to discharge into Hotchkiss Creek further downstream. A site investigation was carried out by the LSRCA in summer 2016 at this location which proved that this ditch is not a watercourse. Stormwater from the Tap site runs overland and sheet flows to discharge to the ditch.

The area designated for the Tap equipment is approximately 0.4 ha and is an undeveloped land. The estimated runoff coefficient for this area is 0.2 and the percent impervious at 0.2 or 0%.

Based on the information extracted from South Sheet, Soil Survey Report No. 29 by Simcoe County, Ontario, the soil type for the Allandale Tap area is generally Loamy Sand (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. As the external flow contribution to the existing ditches and culverts, and the capacities of the

conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

5.11.2 Alternative Allandale Tap/TPS

The proposed Alternative Allandale Tap and TPS site is a tributary to the Hotchkiss Creek and is located within the conservation area of Lake Simcoe Region Conservation Authority (LSRCA), however the site is not located within the regulated area.

The existing drainage pattern for the Alternate Allandale Tap and TPS site is shown on **Figure 5-63** as Option 2. The total TPF Assessment Area for the alternative Tap and TPS is approximately 1.76 ha.

There is a ditch adjacent to the east boundary of the TPS site which originate between the homes on Phillip Street. The ditch flows from south to north direction towards Tiffin Street, crosses the Tiffin Street via a culvert and turns towards the Highway 400 culvert to discharge into Hotchkiss Creek further downstream. A site investigation was carried out by the LSRCA in summer 2016 at this location which proved that this ditch is not a watercourse.

Stormwater from the TPS site runs overland and discharges either to catchbasins on Tiffin Street or to the ditch mentioned above. Stormwater from the Tap site for both options runs overland and sheet flows to discharge to the ditch.

Within the property parcel areas are designated for the construction and placement of TPS and Tap equipment. The portion of the parcel designated for the TPS equipment, including 0.05 ha for the future access road, is approximately 0.73 ha. Under existing condition, approximately 50 % of the TPS area is paved. The rest of the area is undeveloped open land. The estimated runoff coefficient for this area is 0.5 and the percent impervious at 0.5 or 43%.

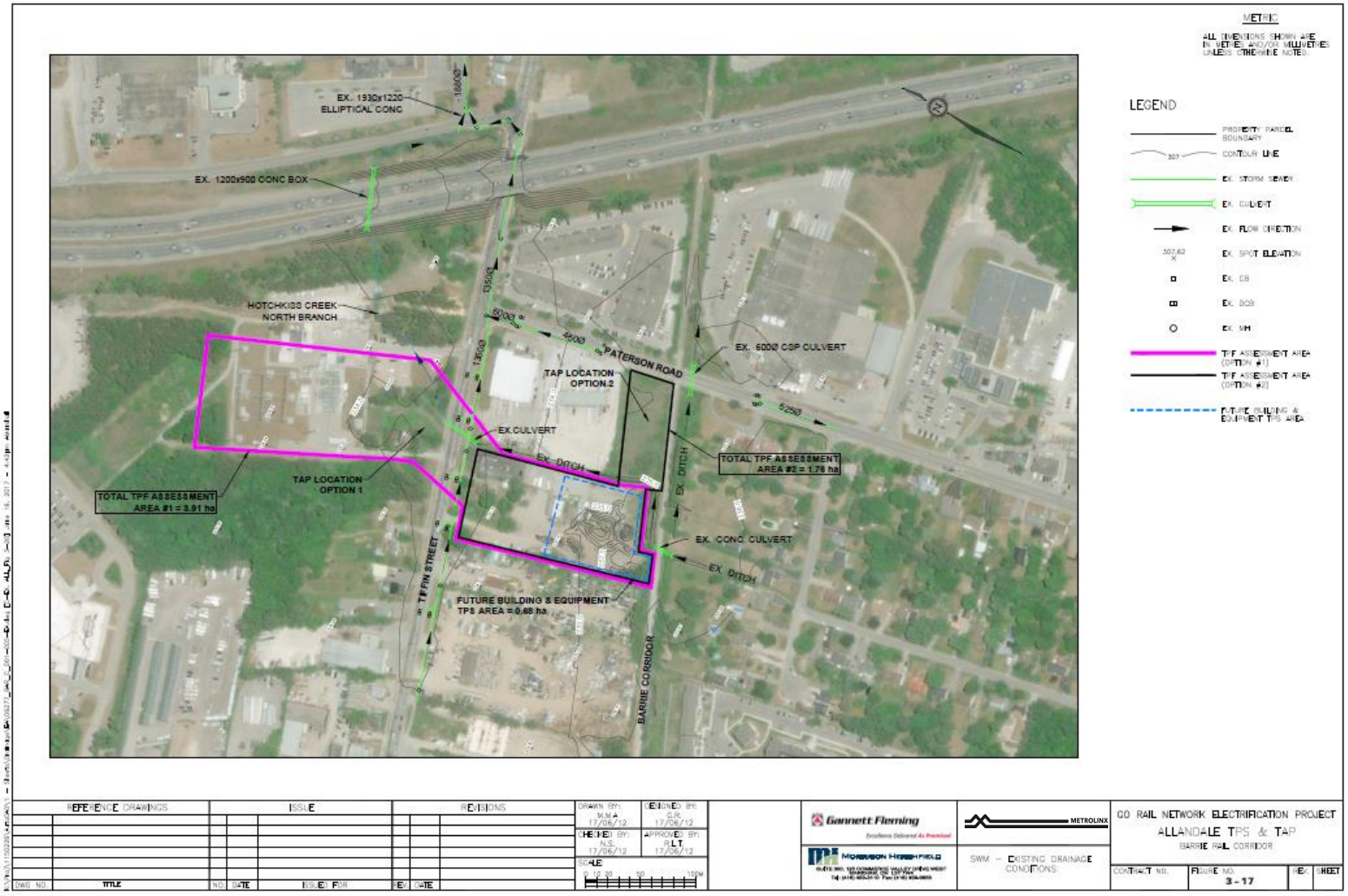
Based on the information extracted from South Sheet, Soil Survey Report No. 29 by Simcoe County, Ontario, the soil type for the Alternate Tap and TPS site is generally Loamy Sand (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. As the external flow contribution to the existing ditches and culverts, and the capacities of the conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

City of Barrie's Comprehensive Stormwater Management Master Plan Interim Draft Report (2015) mentions the possibility of siting a future stormwater management facility where the Allandale TPS site is proposed. However, the report mentions that this site is a low priority for a SWM pond as the final assessment of many potential facilities ranked this location 26 out of a possible 28 SWM pond locations

within the LSRCA watersheds. Additionally, this was a high level study requiring additional detailed assessment of natural environment and ownership of land parcels. Proposed Location for the SWM pond is currently owned by Hydro One Networks Inc. and is shown on the same property parcel as the Alternative Allandale Tap location Option 2. Hydro One Networks Inc. is a Co-Proponent with Metrolinx on the Electrification TPAP. Further discussions, at a later stage, between Metrolinx and the City of Barrie shall be undertaken to better understand the timeline for the City's future study/plans/implementation in order to establish a solution, if required for any possible conflicts.

Figure 5-63: Preferred and Alternative Allandale Tap/TPS Existing Drainage Conditions



5.11.3 Gilford PS

The proposed site is a tributary to the Gilford Creek and is located within the jurisdiction of LSRCA regulated area. The site is located approximately one km to the west of the Lake Simcoe. The existing drainage pattern for the Gilford PS site is shown on **Figure 5-64**. The total TPF Assessment Area including future access road is approximately 0.22 ha of undeveloped land.

Under existing conditions, there is no defined drainage system for the site area. Storm water runs overland in the south east direction to Gilford Creek which flows from west to east direction. Further downstream, it runs along the Gilford Road for some distance and then discharges into Lake Simcoe.

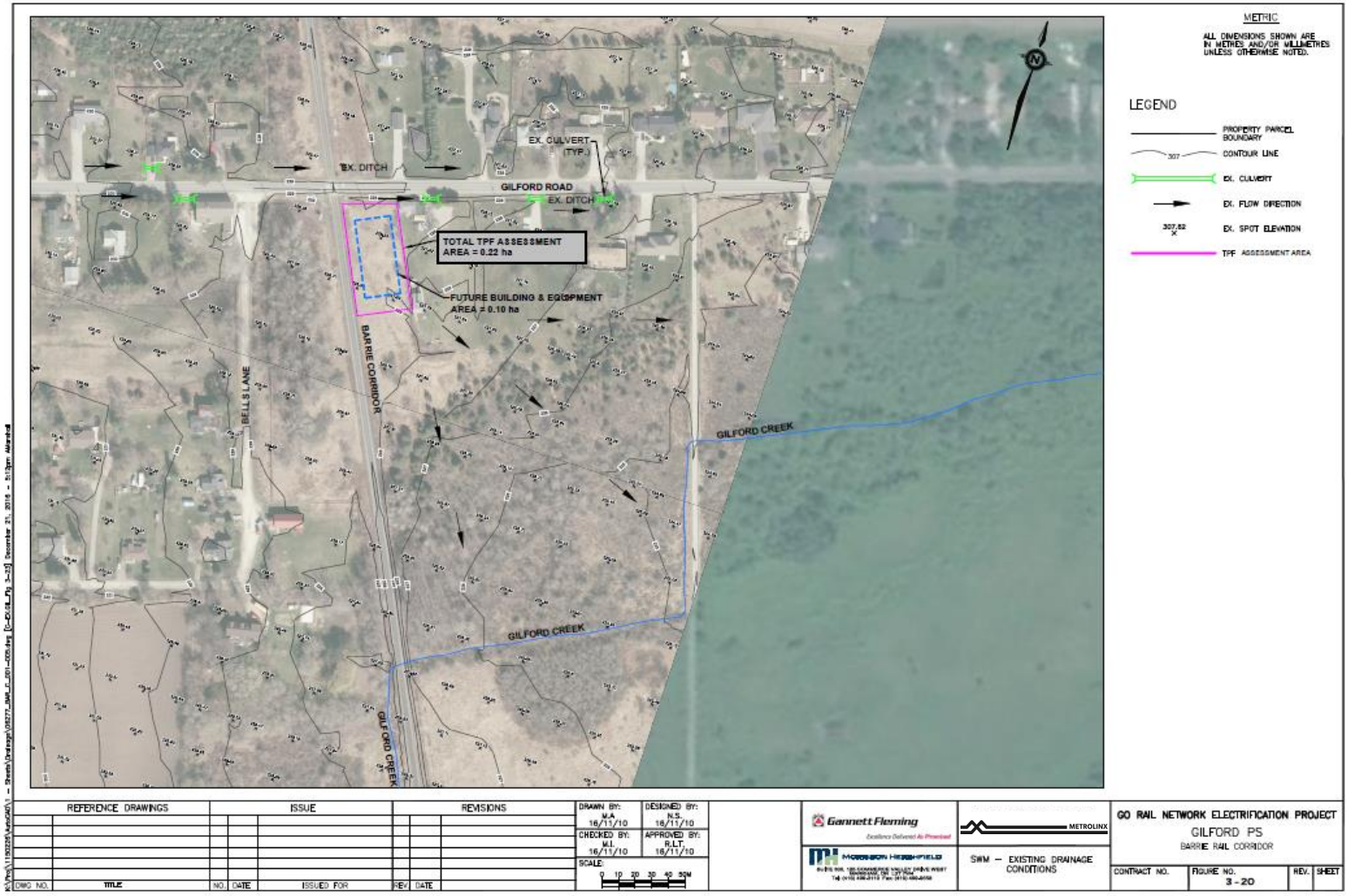
Gilford Road is adjacent to the site and has a well defined ditch on the south side of the road which flows in an easterly direction to discharge into Gilford Creek.

For the existing condition, based on the type of land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0%.

Based on the information extracted from South Sheet, Soil Survey Report No. 29 by Simcoe County, Ontario, the soil type for the Gilford PS Site is generally Loam (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. As the external flow contribution to the existing watercourse, ditches and culverts, and the capacities of the conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 5-64: Gilford PS Existing Drainage Conditions



5.11.4 Newmarket SWS

The existing drainage pattern for the Newmarket SWS site is shown on **Figure 5-65**. The total TPF Assessment Area is approximately 1.2 ha consisting of a building, parking area and undeveloped area.

Under existing conditions, in general the property parcel drains towards south west to an existing ponding area at the southwest corner of the property parcel. The area designated for the SWS is an undeveloped field area and drains to an existing ditch, located on the south side of the property, which discharges to the same ponding area.

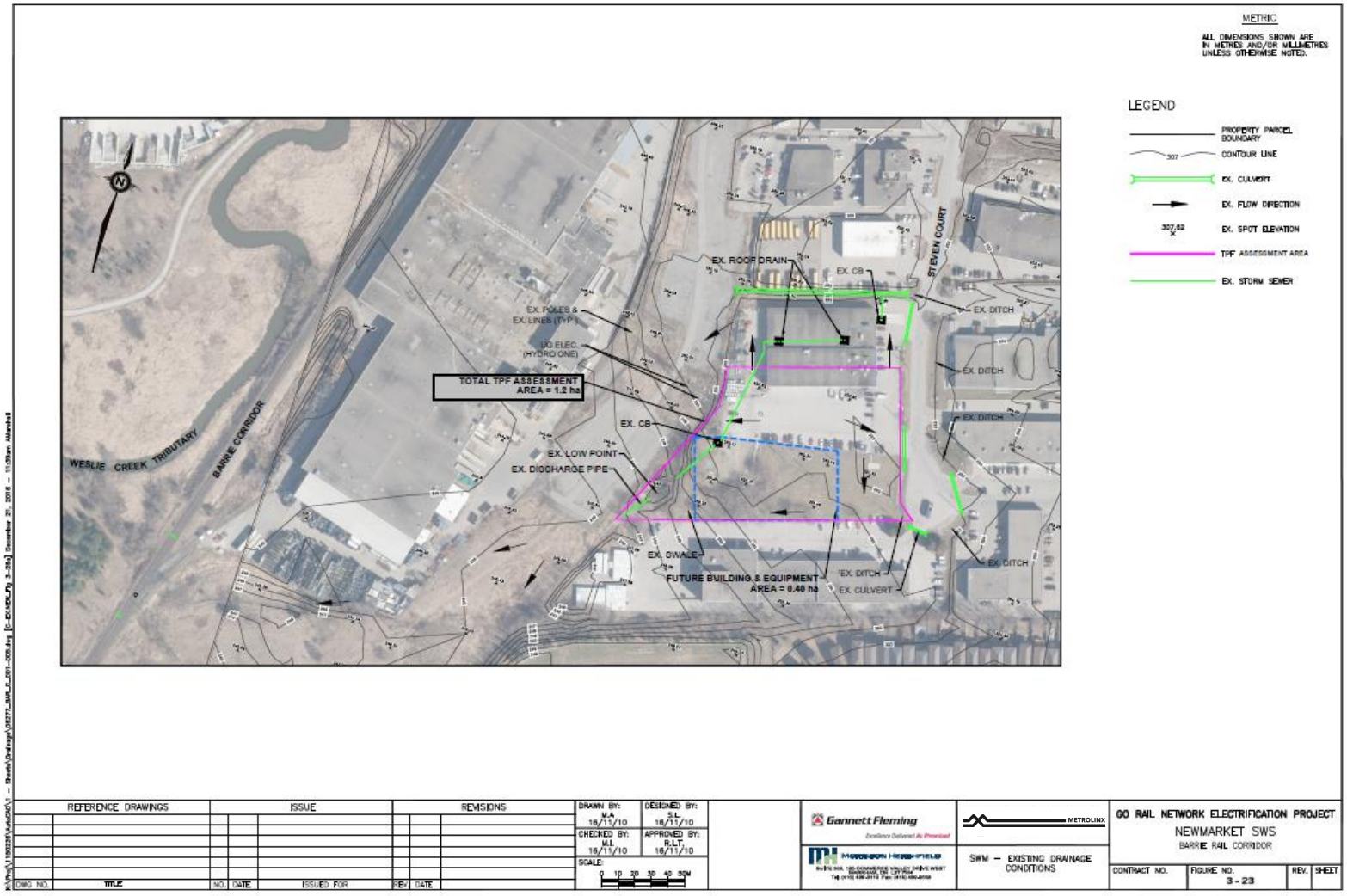
The outflow from the ponding area keeps flowing in a westerly direction to ultimately discharge into the Weslie Creek.

Based on the information extracted from Ontario Soil Survey Report No. 19 by Regional Municipality of York, the soil type for the Newmarket SWS site is generally Clay Loam (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

For the existing conditions, based on the soil type and land use, the runoff coefficient, 'C' is estimated at 0.3 and the percent impervious at 0.3 or 14% for the drainage area of 0.43 ha.

The stormwater drainage outlets mentioned above for the site are for both the minor and the major storm runoff. As the external flow contribution to the existing ditches and culverts, and the capacity of the conveyance system is not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 5-65: Newmarket SWS Existing Drainage Conditions



5.11.5 Maple PS

The existing drainage pattern for the Maple PS site is shown on **Figure 5-66**. The total TPF Assessment Area is approximately 2.74 ha and consists of agriculture land.

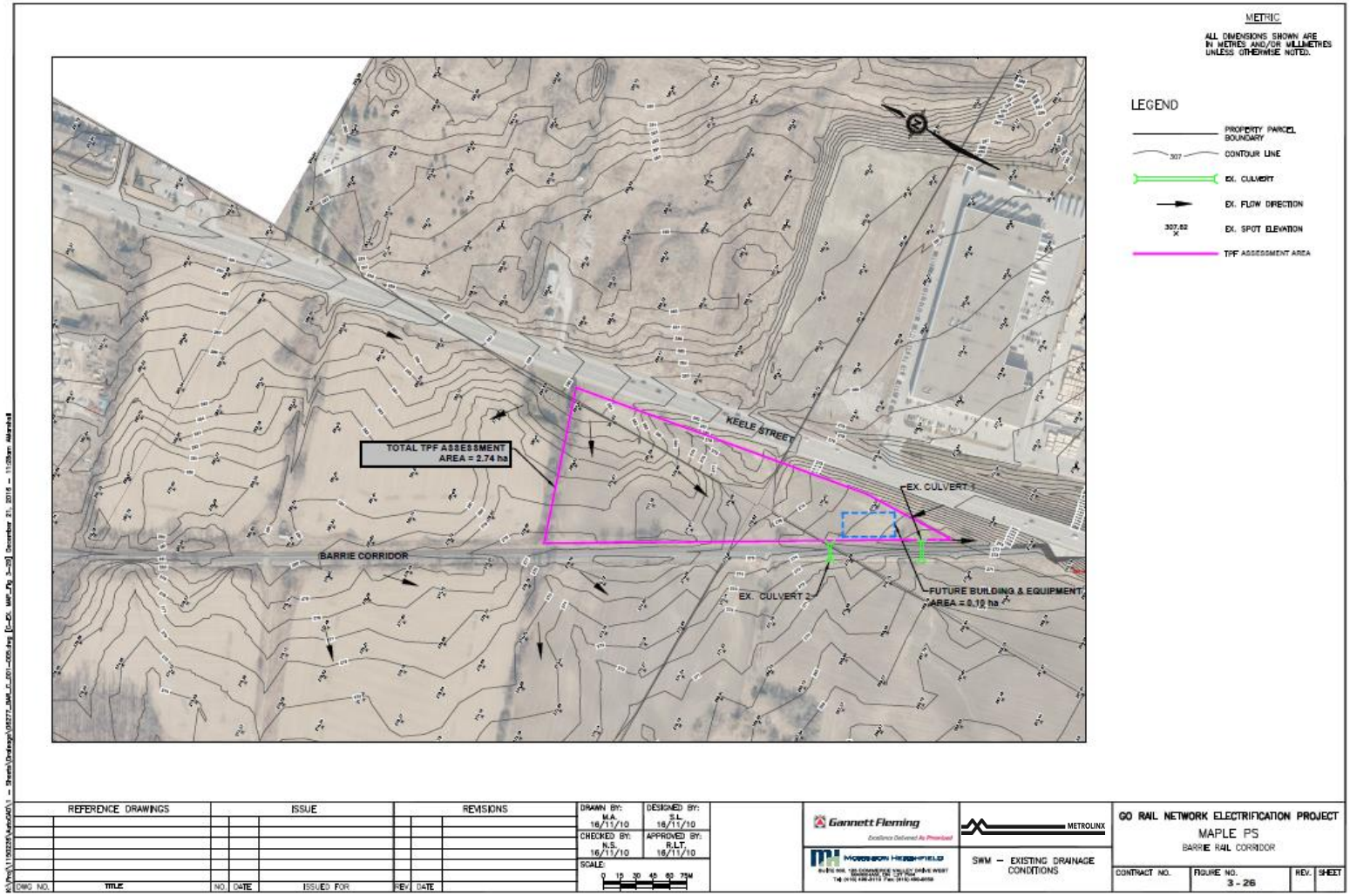
Under existing conditions, in general the property parcel drains overland to south west towards two existing culverts across the rail corridor which convey runoff to the west side of the corridor to eventually discharge to a branch of the Upper West Don River.

Based on the information extracted from Ontario Soil Survey Report No. 19 by Regional Municipality of York, the soil type for the Maple PS site is generally Sandy Loam (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type

For the existing condition, based on the soil type and land use, the runoff coefficient, 'C' is estimated at 0.25 and the percent impervious at 0.25 or 7% for the drainage area of 0.18 ha.

The stormwater drainage outlets mentioned above for the site are for both the minor and the major storm runoff. As the external flow contribution to the existing ditches and culverts, and the capacity of the conveyance system is not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 5-66: Maple PS Existing Drainage Conditions



5.12 Groundwater and Wells

Please refer to Section **1.5.12** for a description of the methodology followed for collection of Groundwater and Wells baseline conditions data. Baseline conditions within the Barrie Rail Corridor has been summarized below. Additional details can be found in the Groundwater Impact Assessment Report contained in **Appendix V**.

5.12.1 Allandale Tap Location

There were 36 domestic supply wells, two (2) agricultural supply wells, four (4) industrial/commercial supply wells and one (1) municipal supply well identified within 500 m of the Preferred Allandale Tap location. The surrounding area is characterized by an urban setting and the use of private water wells in this area is likely negligible. Of the identified wells, one (1) domestic supply well, one (1) agricultural supply well and one (1) industrial/commercial supply well are shown as being located within the property boundaries of the Tap location. There is one (1) waterbody, Bear Creek Wetland, located within 500 m of the tap location.

5.12.2 Alternate Allandale Tap Location

There were 36 domestic supply wells, two (2) agricultural supply wells, four (4) industrial/commercial supply wells and one (1) supply well of unknown type identified within 500 m of the alternate Allandale Tap location. The surrounding area is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Bear Creek Wetland, located within 500 m of the tap location.

5.12.3 Allandale TPS

There were 36 domestic supply wells, two (2) agricultural supply wells, four (4) industrial/commercial supply wells and one (1) supply well of unknown type identified within 500 m of the Allandale traction power station. The surrounding area is characterized by an urban setting and the use of private water wells in this area is likely negligible. Of the identified wells, three (3) domestic supply wells, one (1) agricultural supply well and one (1) industrial/commercial supply well are shown as being located within the property boundaries of the TPS. There is one (1) waterbody, Bear Creek, located within 500 m of the TPS location.

5.12.4 Barrie-Collingwood Railway 25kV Feeder Route

There were two (2) domestic supply wells, one (1) agricultural supply well, two (2) industrial/commercial supply wells and two (2) municipal supply wells identified within 500 m of the Barrie-Collingwood 25kV Feeder Route. However, this section is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, Lake Simcoe and unnamed creek, located within 500 m of the 25kV Feeder Route.

5.12.5 Newmarket SWS

There were four (4) domestic supply wells and two (2) agricultural supply wells identified within 500 m of the Newmarket switching station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, Holland River East Branch, located within 500 m of the SWS location.

5.12.6 Gilford PS

There were 20 domestic supply wells and two (2) supply wells of unknown type identified within 500 m of the Gilford paralleling station. The surrounding area is characterized by rural setting with likely private water well use. There are two (2) waterbodies, White Birch Creek and Gilford Creek, located within 500 m of the tap location.

5.12.7 Maple PS

There were eight (8) domestic supply wells and two (2) industrial/commercial supply wells identified within 500 m of the Maple paralleling station. The surrounding area is characterized by a mixed urban and rural setting with possible private water well use. There is one (1) waterbody, an unnamed pond, located within 500 m of the rail corridor.

5.12.8 OCS & Bridges: Section BR-1 – Parkdale Junction to Caledonia Station

There was one (1) industrial/commercial supply well identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There were no waterbodies identified within 500 m of the rail corridor in this section.

5.12.9 OCS & Bridges: Section BR-2 – Caledonia Station to Downsview Park Station

There was one (1) domestic supply well and one (1) agricultural supply well identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There is one (1) waterbody, Maple Leaf Creek, located within 500 m of the rail corridor.

5.12.10 OCS & Bridges: Section BR-3 – Downsview Park Station to Rutherford Station

There were 28 domestic supply wells, seven (7) industrial/commercial supply wells, one (1) agricultural supply well, two (2) municipal supply wells, and two (2) supply wells of unknown type identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are three (3) waterbodies, an unnamed pond, Don River West Branch, and Westminster Creek, located within 500 m of the rail corridor.

5.12.11 OCS & Bridges: Section BR-4 – Rutherford Station to King City Station

There were 72 domestic supply wells, 22 industrial/commercial supply wells, six (6) agricultural supply wells and four (4) municipal supply wells identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There are three (3) waterbodies, King-Vaughan Wetland Complex, Don River West Branch, and East Humber River, located within 500 m of the rail corridor.

5.12.12 OCS & Bridges: Section BR-5 – King City Station to Bathurst Street

There were 53 domestic supply wells, one (1) agricultural supply well, four (4) commercial/industrial supply wells and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There are three (3) waterbodies, Eaton Hall-Mary-Hackett Lakes Wetland Complex, King-Vaughan Wetland Complex, and East Humber River, located within 500 m of the rail corridor.

5.12.13 OCS & Bridges: Section BR-6 – Bathurst Street to Aurora Station

There were 113 domestic supply wells, four (4) agricultural supply well, one (1) commercial/industrial supply well and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There is one (1) waterbody, Holland River East Branch, located within 500 m of the rail corridor.

5.12.14 OCS & Bridges: Section BR-7 – Aurora Station to East Gwillimbury Station

There were 15 domestic supply wells, eight (8) agricultural supply wells, two (2) commercial/industrial supply wells, two (2) municipal supply wells, and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. However, the section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There are five (5) waterbodies, Aurora (McKenzie) Marsh Wetland Complex, Newmarket Wetland, Rogers Reservoir, Holland River East Branch, and Clubinis Creek, located within 500 m of the rail corridor.

5.12.15 OCS & Bridges: Section BR-8 – East Gwillimbury Station to Bradford Station

Potential Effects and Mitigation Measures

There were 142 domestic supply wells, five (5) agricultural supply wells, 22 commercial/industrial supply wells, three (3) municipal supply wells and five (5) supply wells of unknown type identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There are three (3) waterbodies, Rogers Reservoir, Holland Marsh Wetlands Complex, and Holland River East Branch, located within 500 m of the rail corridor.

5.12.16 OCS & Bridges: Section BR-9 – Bradford Station to 13th Line

There were 29 domestic supply wells, three (3) agricultural supply wells, eight (8) commercial/industrial supply wells and one (1) municipal supply well, identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There are two (2) waterbodies within this segment, Holland Marsh Wetlands Complex and Holland River West Branch, located within 500 m of the rail corridor.

There are no bridge modifications in this section of the rail corridor.

5.12.17 OCS & Bridges: Section BR-10 – 13th Line to 6th Line Section

There were 189 domestic supply wells, three (3) commercial/industrial supply wells, one (1) municipal supply well, and 15 supply wells of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by a primarily rural setting with likely private water well use. There are seven (9) waterbodies, Holland Marsh Wetlands Complex, Carson Creek, Gilford Creek, White Birch Creek, Belle Aire Creek, Wilson Creek, Wilson Creek Marsh, Little Cedar Point (wetland), and Holland River West Branch, located within 500 m of the rail corridor.

5.12.18 OCS & Bridges: Section BR-11 – 6th Line to Barrie South Station

There were 84 domestic supply wells, three (3) agricultural supply wells, three (3) commercial/industrial supply wells, two (2) municipal supply wells, and one (1) supply wells of unknown type identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There are three (3) waterbodies, St. Paul's Swamp, Hewitt's Creek, and Banks Creek, located within 500 m of the rail corridor.

5.12.19 OCS & Bridges: Section BR-12 – Barrie South Station to Allandale Waterfront Station

There were 139 domestic supply wells, two (2) agricultural supply wells, six (6) commercial/industrial supply wells, five (5) municipal supply wells and six (6) supply wells of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by a mixed urban and rural setting with possible private water well use. There are three (3) waterbodies, Lake Simcoe, Whiskey Creek, and Lovers Creek, located within 500 m of the rail corridor.

6 Baseline Conditions – Stouffville Corridor

6.1 Natural Environment

Based on review of available background information, **Table 6-1** lists all SAR with habitat within the immediate or general surrounding area of the Stouffville Corridor. SAR with suitable habitat *and* potential to occur within each portion of the Study Area are discussed in the appropriate sections below.

Table 6-1: Summary of Potential Species at Risk within the Immediate and General Area of the Stouffville Corridor

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Vascular Plants						
Butternut	*Juglans cinerea*	END	END	SARA	ESA 2007	MNRF Aurora
Birds						
Bank Swallow	*Riparia **riparia***	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora
Barn Swallow	*Hirundo rustica*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora
Bobolink	*Dolichonyx oryzivorus*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; TRCA
Canada Warbler	*Wilsonia canadensis*	THR (Sched 1)	SC	SARA;MBCA	-	OBBA
Chimney Swift	*Chaetura pelagica*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora; OBBA
Common Nighthawk	*Chordeiles minor*	THR (Sched 1)	SC	SARA;MBCA	-	OBBA
Eastern Meadowlark	*Sturnella magna*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; TRCA
Eastern Wood-pewee	*Contopus virens*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora; TRCA
Hooded Warbler	*Setophaga citrina*	THR (Sched 1)	-	SARA; MBCA	-	OBBA
Least Bittern	*Ixobrychus exilis*	THR (Sched 1)	THR	SARA;MBCA	ESA	OBBA
Peregrine Falcon	*Falco peregrinus*	SC (Sched 1)	SC		FWCA	OBBA
Red-headed Woodpecker	*Melanerpes erythrocephalus*	THR (Sched 1)	SC	SARA; MBCA		OBBA
Wood Thrush	*Hylocichla mustelina*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora; TRCA
Herpetofauna						

Species		Designations		Protection		Source
Common Name	Scientific Name	SARA Status**	ESA Status	Federal Legislation	Provincial Legislation	
Snapping Turtle	*Chelydra serpentina*	SC	SC	-	FWCA	MNRF Aurora
Mammals						
Eastern Small-footed Myotis	*Myotis leibii*	-	END	-	ESA	MNRF Aurora
Little Brown Myotis	*Myotis lucifugus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Northern Myotis	*Myotis septentrionalis*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Tri-coloured Bat	*Perimyotis subfl avus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Fish						
Redside Dace	*Clinostomas elongatus*	END	END	-	ESA 2007	MNRF Aurora

* ESA: Endangered Species Act; FWCA: Fish and Wildlife Conservation Act; SARA: Species at Risk Act; MBCA: Migratory Birds Convention Act
** General prohibitions do not apply to species identified as Special Concern (SC) in Schedule 1 and all species in Schedule 3of the SARA
Note – The ESA (2007) supersedes the FWCA; END – Endangered; SC – Special Concern; THR - Threatened

6.1.1 Scarborough Tap Location

6.1.1.1 Terrestrial

The Scarborough Tap Location is within Ecoregion 7E (see **Figure 1-10**).

Wetlands

There are no wetland features present within the Tap Location.

Vegetated Areas

The Scarborough Tap location is encompassed entirely within Green Land (CGL) communities. Vegetation within the CGL is mainly comprised of turf grass with sparse tree cover, including Kentucky Blue Grass (*Poa pratensis ssp. pratensis)*, Blue Spruce (*Picea pungens*), and Norway Maple. A small portion of the CVI contains vegetation commonly found in disturbed areas and edge habitats, including Tall Goldenrod, and Common Buckthorn.

Wildlife

The Tap Location does not provide any Significant Wildlife Habitat; however the limited treed areas within the study area may provide potential foraging and nesting habitat for breeding birds.

6.1.1.2 Aquatic

There are no aquatic features within the Tap study area.

6.1.1.3 Species at Risk

The Tap Location does not provide any suitable habitat for SAR.

6.1.1.4 Designated Areas

There are no Designated Areas present within the Scarborough Tap Location.

6.1.2 Scarborough TPS and 25kV Feeder Route

6.1.2.1 Terrestrial

The Scarborough TPS and 25kV Feeder Route is located within Ecoregion 7E (see **Figure 1-10** and **Figure 1-20:**). The 25kV Feeder, from Scarborough TPS south to Lakeshore East rail corridor, is entirely within the rail corridor and included in a portion of SV-1 segment (Scarborough Junction to Agincourt Station).

Wetlands

There are no wetland features present within the TPS or 25kV Feeder Route.

Vegetated Areas

The vegetation within the PS is comprised of seven (7) communities: Cultural Meadow (CUM), Meadow Marsh (MAM), Commercial and Institutional (CVC), Transportation and Utilities (CVI), Green Land (CGL), Deciduous Forest (FOD), and Residential (CVR) and typical of disturbed areas and edge habitat. Species within the study area include Trembling Aspen, Buckthorn, Tall Goldenrod, Willow species (*Salix sp*), and Phragmities (*Phragmites australis subsp. australis*).

Wildlife

The TPS or 25kV Feeder Route does not provide any Significant Wildlife Habitat; however CGL, FOD, and CVR communities may provide potential foraging and nesting habitat for breeding birds.

6.1.2.2 Aquatic

There are no aquatic features within the TPS or 25kV Feeder Route.

6.1.2.3 Species at Risk

There is moderate potential for Red-headed Woodpecker in the FOD community.

6.1.2.4 Designated Areas

There are no Designated Areas present within the Scarborough TPS study area.

6.1.3 Unionville PS

1.1.1.1 Terrestrial

Unionville PS is located within Ecoregion 7E (see **Figure 1-11**).

Wetlands

There are no wetland features present within the PS study area.

Vegetated Areas

The Unionville PS study area is comprised of six (6) communities: Agriculture (AG), Cultural Meadow (CUM), Commercial and Institutional (CVC), Transportation and Utilities (CVI), Shallow Marsh (MAS), and Treed Agriculture (TAG). Vegetation within these communities are typical of disturbed areas and edge habitat. Species within the study area include Dog Strangling Vine, Tall Goldenrod, White Clover, Canada Thistle (*Cirsium arvense*), and Canada Wild Rye (*Elymus canadensis*).

Wildlife

The Unionville PS study area does not provide any Significant Wildlife Habitat; however the TAG areas may provide potential foraging and nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

1.1.1.1 Aquatic

There are no aquatic features within the PS study area.

1.1.1.2 Species at Risk

There is a low potential for Eastern Meadowlark and Bobolink to occur within AG and CUM communities.

1.1.1.3 Designated Areas

There are no Designated Areas within the PS study area.

6.1.4 Lincolnville PS

1.1.1.4 Terrestrial

Lincolnville PS is located within Ecoregion 7E (see **Figure 1-12**).

Wetlands

There are no wetland features present within the PS study area.

Vegetated Areas

The Lincolnville PS study area is comprised of four (4) communities: Agriculture (AG), Cultural Meadow (CUM), Commercial and Institutional (CVC), and Transportation and Utilities (CVI). Vegetation within these

communities are typical of disturbed areas and edge habitat. Species within the study area include Trembling Aspen, Norway Maple, Manitoba Maple, and Buckthorn.

Wildlife

The Lincolnville PS study area does not provide any Significant Wildlife Habitat; however the treed areas within the CVI, adjacent to the rail, may provide suitable nesting habitat for breeding birds. The CUM may provide suitable habitat for pollinating insects.

1.1.1.5 Aquatic

There are no aquatic features within the PS study area.

1.1.1.6 Species at Risk

There is a low potential for Eastern Meadowlark and Bobolink to occur within the CUM communities.

1.1.1.7 Designated Areas

There are no Designated Areas within the PS study area.

6.1.5 Corridor & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

6.1.5.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of CVC, CVI, and CVR. The vegetated communities include CGL, WOD, MA, FOD, THD, and CUM. OA is present at Highland Creek. The ELC communities identified within this report are consistent with those identified within the *Stouffville Corridor Rail Service Expansion Environmental Study Report* (R.J. Burnside Ass. Ltd., 2014). One small woodlot was revised from an FOD (Deciduous Forest) to a WOD. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 6-1: OA and CVC Communities, looking west October 22, 2015

Wildlife

Highland Creek may provide a suitable migratory corridor for herpetofauna and the WOD, FOD, THD and CGL communities may provide foraging and nesting habitat for breeding birds. The CUM communities may also provide potential foraging habitat for pollinating insects.

6.1.5.2 Aquatic

There are two watercourses within the Study Area: Southwest Highland Creek and West Highland Creek. Both are within the Highland Creek watershed. Aquatic and terrestrial habitat in the Highland Creek watershed have been significantly altered and degraded as a result of development. Many of the watercourses have been filled, piped, channelized, or otherwise altered. There are over 90 instream barriers to fish movement, poor water quality, unstable flows, and only 32.2% of the watercourse has woody riparian vegetation. As a result, the resident fish community is dominated by pollution tolerant species (TRCA, 1999).

Within the Study Area there is one crossing of Southwest Highland Creek and three crossings of West Highland Creek. West Highland Creek is a concrete channel within the Study Area. The creek has steep banks in close proximity to highly developed areas. Southwest Highland Creek is also a concrete lined

channel with evidence of heavy siltation within the watercourse. All of the crossings within this section of the rail corridor are considered highly degraded (R.J. Burnside Ass. Ltd., 2014).

6.1.5.3 Species at Risk

A total of nine SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-2** below.

Table 6-2: Potential Species at Risk with Suitable Habitat and Potential to Occur within SV-1

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, THD, CVR) • Moderate (WOD, FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL, WOD, FOD)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA)
Eastern Small-footed Myotis	*Myotis leibii*	• Low (FOD, WOD)
Little Brown Myotis	*Myotis lucifugus*	• Low (FOD, WOD)
Northern Myotis	*Myotis septentrionalis*	• Low (FOD, WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (FOD, WOD)

[a]CGL – Green Land; CVR – Residential Lands; WOD – Deciduous Woodland; OA – Open Water; CUM – Cultural Meadow; CVC – Commercial and Institutional; CVI – Transportation and Utilities; FOD - Deciduous Forest; THD – Deciduous Thicket;

6.1.5.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

6.1.6 Corridor & Bridges: Section SV-2 – Agincourt Station to Milliken Station

6.1.6.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section are limited to small areas of Green Land (CGL), Cultural Meadow (CUM) and Agriculture (AG). The ELC communities identified within this report are consistent with those identified within the *Stouffville Corridor Rail Service Expansion Environmental Study Report* (R.J. Burnside Ass. Ltd., 2014). One CUM area was revised to AG based on current site conditions. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain minimal canopy cover (i.e., < 10%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The small patches of CGL may provide foraging and nesting habitat for breeding birds and the CUM communities may potentially provide foraging habitat for pollinating insects.

6.1.6.2 Aquatic

There are no watercourses within this portion of the Study Area.

6.1.6.3 Species at Risk

A total of five SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-3** below.

Table 6-3: Potential Species at Risk with Suitable Habitat and Potential to Occur within SV-2

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CVR)
Barn Swallow	*Hirundo rustica*	• Moderate (CGL, bridges structure over CUM)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CGL)
Snapping Turtle	*Chelydra serpentina*	• Low (OA)

[a]CGL – Green Land; CVR – Residential Lands; OA – Open Water; CUM – Cultural Meadow; CVC – Commercial and Institutional; CVI – Transportation and Utilities

6.1.6.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

6.1.7 Corridor & Bridges: Section SV-3 – Milliken Station to Unionville Station

6.1.7.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section are limited to Cultural Meadow (CUM) with and small areas of Green Land (CGL), Cultural Woodland (CUW), Deciduous Forest (FOD), Shallow Marsh (MAS), and Deciduous Swamp (SWD). The ELC communities identified within this report are consistent with those identified within the *Stouffville Corridor Rail Service Expansion Environmental Study Report* (R.J. Burnside Ass. Ltd., 2014). Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (i.e., < 10%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The small patches of CGL, SWD, and CUW may provide foraging and nesting habitat for breeding birds and the CUM communities may potentially provide foraging habitat for pollinating insects.

6.1.7.2 Aquatic

There are no watercourses within this portion of the Study Area.

6.1.7.3 Species at Risk

A total of eight SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-4** below.

Table 6-4: Potential Species at Risk with Suitable Habitat and Potential to Occur within SV-3

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Moderate (FOD, SWD) • Low (CGL, CUM, CVR)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over CUM, CGL)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (FOD, SWD) • Low (CGL, CUW)
Eastern Small-footed Myotis	*Myotis leibii*	• Low (FOD, SWD)
Little Brown Myotis	*Myotis lucifugus*	• Low (FOD, SWD)
Northern Myotis	*Myotis septentrionalis*	• Low (FOD, SWD)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (FOD, SWD)

[a]CGL – Green Land; CVR – Residential Lands; CUM – Cultural Meadow; CVC – Commercial and Institutional; CVI – Transportation and Utilities; FOD – Deciduous Forest; SWD – Deciduous Swamp; CUW – Cultural Woodland

6.1.7.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

6.1.8 Corridor & Bridges: Section SV-4 – Unionville Station to Markham Station

6.1.8.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are several identified unevaluated wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The larger vegetated communities within this corridor consist of Green Land (CGL), Swamp (SW), Deciduous Woodlands (WOD) and Cultural Meadow (CUM). A small Marsh (MA) area is located adjacent to Bruce Creek and the Tributary of Rouge River. Open Water (OA) is present at several watercourses. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community. WOD communities within this corridor segment have been designated as Woodlands by the City of Markham.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 6-2: CVC Community and Rail Crossing, looking south October 22, 2015

Wildlife

The MA and OA communities within the unevaluated wetlands, associated with the Beaver, Bruce, Eckardt, and Robinson Creeks may provide potential staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM communities may provide potential habitat for pollinating insects. The WOD and CGL communities may provide foraging and nesting habitat for breeding birds.

6.1.8.2 Aquatic

There are five watercourses within the Study Area: Rouge River, Bruce Creek, Eckardt Creek, Unnamed Tributary of Rouge River and Robinson Creek. The watercourse corridors associated with Rouge River, Robinson Creek, Eckardt Creek, and Bruce Creek are classified as Valleyland/Stream Corridors and are part of the City of Markham Natural Heritage Network. All watercourse are within the Rouge River Watershed.

Over the last 30 years 69 species have been recorded in the Rouge River watershed of which there are eight coldwater species, 26 coolwater species and 35 warmwater species. The most diversity is found within the upper reaches (1/3) of the watershed. Fish species documented throughout the Rouge River Watershed between 2000 and 2010 are listed in Section 4.5.4.2 of **Appendix A1**.

6.1.8.3 Species at Risk

A total of ten SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-5** below.

Table 6-5: Potential Species at Risk with Suitable Habitat and Potential to Occur within STV-4

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CGL, CUM, CVR) • Moderate (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)
Redside Dace	*Clinostomas elongates*	• Robinson Creek (OA) is Occupied Habitat • Bruce Creek (OA) is Recovery Habitat • Rouge River (OA) is Regulated Habitat
Eastern Small-footed Myotis	*Myotis leibii*	• Low (WOD, SW)
Little Brown Myotis	*Myotis lucifugus*	• Low (WOD, SW)
Northern Myotis	*Myotis septentrionalis*	• Low (WOD, SW)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (WOD, SW)

[a]CGL – Green Land; CUM – Cultural Meadow; CVR – Residential Lands; WOD - Deciduous Woodland; OA – Open Water; CVC – Commercial and Institutional; CVI – Transportation and Utilities; MA – Marsh; SW – Swamp

6.1.8.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

6.1.9 Corridor & Bridges: Section SV-5 – Markham Station to Mount Joy Station

6.1.9.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There is one small identified unevaluated wetland within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Transportation and Utilities (CVI) and Residential Lands (CVR) with some Commercial and Institutional lands (CVC). The vegetated communities within this corridor section are include Cultural Meadow (CUM), Green Land (CGL), Deciduous Thicket (THD) and a small Marsh (MA) area. Open Water (OA) is present at a pond just north of 16th Avenue. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (less than 10%). %). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

Mt. Joy Creek may provide a potential migratory corridor for herpetofauna, while the pond and MA community associated with this creek may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM communities may potentially provide foraging habitat for pollinating insects. The CGL and THD communities may provide foraging and nesting habitat for breeding birds.

6.1.9.2 Aquatic

There is one watercourse within the Study Area, Mt. Joy Creek, which within the Rouge River Watershed**.** The watercourse corridor is identified as Valley/Stream Corridor and are part of the City of Markham Natural Heritage Network. Over the last 30 years 69 species have been recorded in the Rouge River watershed of which there are eight coldwater species, 26 coolwater species and 35 warmwater species. The most diversity is found within the upper reaches (1/3) of the watershed. Fish species documented throughout the Rouge River Watershed between 2000 and 2010 are listed in Section 4.5.5.2 of **Appendix A1**.

6.1.9.3 Species at Risk

A total of six SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-6**.

Table 6-6: Potential Species at Risk with Suitable Habitat and Potential to Occur within SV-5

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CGL, THD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Low (OA)
Chimney Swift	*Chaetura pelagica*	• Low (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (CVR, CGL, THD)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)

[a] CVR – Residential Lands; OA – Open Water; CVC – Commercial and Institutional; MA – Marsh, CGL – Green Land; THD – Deciduous Thicket

6.1.9.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

6.1.10 Corridor & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

6.1.10.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are several identified unevaluated wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). Several Constructed (CV) areas were also identified. The vegetated communities within this corridor section include Cultural Meadow (CUM), Deciduous Woodland (WOD), Agriculture (AG), Marsh (MA), Swamp (SW), Deciduous Thicket (THD), Deciduous Forest (FOD), and Shallow Marsh (MAS). Open Aquatic (OA) areas are present at Little Rouge Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community. The MA and CUM communities where the corridor crosses 9th Line have been identified as Natural Heritage Network according to the City of Markham.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of

electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

In the vicinity of 9th Line and Elgin Mills Road, riparian plantings were installed in spring and fall of 2015 on the east side of 9th Line as part of restoration for the 9th Line road widening project completed by the Region of York in conjunction with TRCA. A small portion of the restoration plantings along the relocated tributary are located in CUM communities within the study area where the rail corridor crosses 9th Line.

Figure 6-3: CUM Community and Rail Crossing, looking west October 22, 2015

Wildlife

The SW, MA, and OA communities within the number of unevaluated wetlands in this Study Area may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may potentially provide nesting and foraging habitat for grassland birds and foraging habitat for pollinating insects. The WOD communities may potentially provide nesting and foraging habitat for breeding birds.

6.1.10.2 Aquatic

There are two watercourses within the Study Area, Mt. Joy Creek and Little Rouge Creek, both are within the Rouge River Watershed. The watercourse corridor associated with Little Rouge Creek is classified as a

Valleyland/Steam Corridor and is part of the City of Markham Natural Heritage Network. Over the last 30 years 69 species have been recorded in the Rouge River watershed of which there are eight coldwater species, 26 coolwater species and 35 warmwater species. The most diversity is found within the upper reaches (1/3) of the watershed. Fish species documented throughout the Rouge River Watershed between 2000 and 2010 are listed in Section 4.5.6.2 of **Appendix A1**.

Parks Canada is currently planning restoration work along portions of Little Rouge Creek, referred to as the "9th Line Tributary" directly adjacent to the corridor in the vicinity of 9th Line and Elgin Mills Road.

6.1.10.3 Species at Risk

A total of 15 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-7 below.**

Table 6-7: Potential Species at Risk with Suitable Habitat and Potential to Occur within SV-6

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CVR) • Moderate (WOD, THD, FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Low (OA)
Chimney Swift	*Chaetura pelagica*	• Low (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CVR FOD, SW)
Bobolink	*Dolichonyx oryzivorus*	• High (AG)
Eastern Meadowlark	*Sturnella magna*	• High (AG)
Eastern Wood Pewee	*Contopus virens*	• High (WOD, FOD)
Wood Thrush	*Hylocichla mustelina*	• High (WOD, FOD)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)
Redside Dace	*Clinostomas elongatus*	• Little Rouge Creek (OA) is Occupied Habitat
Eastern Small-footed Myotis	*Myotis leibii*	• Low (FOD, SW, WOD)
Little Brown Myotis	*Myotis lucifugus*	• Low (FOD, SW, WOD)
Northern Myotis	*Myotis septentrionalis*	• Low (FOD, SW, WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (FOD, SW, WOD)

[a] CVR – Residential Lands; WOD - Deciduous Woodland; CUM – Cultural Meadow; OA – Open Water; CVC – Commercial and Institutional; AG – Agriculture; MA – Marsh; THD – Deciduous Thicket; FOD – Deciduous Forest; MAS – Shallow Marsh, SW – Swamp; CGL; - Green Land

6.1.10.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. Portions of this Study Area are within the Greenbelt Protected Countryside Area, the Oak Ridges Moraine Conservation Plan Area and Rouge National Urban Park.

6.1.11 Corridor & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

6.1.11.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There is one identified evaluated wetland (Stouffville Marsh) within this Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section include Green Land (CGL), Cultural Meadow (CUM), Deciduous Woodland (WOD), Agriculture (AG), Marsh (MA), and Deciduous Forest (FOD). Open Water (OA) areas are present at Stouffville Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The Stouffville Marsh evaluated wetland as well as an unevaluated wetland east of the rail line and MA community may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The CUM and AG communities may potentially provide nesting and foraging habitat for grassland birds and foraging habitat for pollinating insects. The WOD and FOD communities may potentially provide nesting and foraging habitat for breeding birds.

6.1.11.2 Aquatic

There is one watercourse within the Study Area, Stouffville Creek, which is within the Duffins Creek Watershed. The Duffins Creek Watershed habitats are comprised of 40% small riverine coldwater, 36% small riverine warmwater, 22% intermediate riverine coldwater, and 1% large riverine. Fish species currently found in the Duffins Creek Watershed as of 2000 are listed in Section 4.5.7.2 of **Appendix A1**.

6.1.11.3 Species at Risk

A total of 14 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 6-8** below.

Table 6-8: Potential Species at Risk with Suitable Habitat and Potential to Occur within SV-7

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CVR, CGL) • Moderate (WOD, FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, FOD) • Low (CVR, CGL)
Bobolink	*Dolichonyx oryzivorus*	• Moderate(AG)
Eastern Meadowlark	*Sturnella magna*	• Moderate (AG)
Wood Thrush	*Hylocichla mustelina*	• Moderate (FOD, WOD)
Eastern Wood Pewee	*Contopus virens*	• Moderate (FOD, WOD)
Hooded Warbler	*Setophaga citrina*	• Moderate (FOD, WOD)
Canada Warbler	*Wilsonia canadensis*	• Moderate (FOD, WOD)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)
Eastern Small-footed Myotis	*Myotis leibii*	• Low (FOD, WOD)
Little Brown Myotis	*Myotis lucifugus*	• Low (FOD, WOD)
Northern Myotis	*Myotis septentrionalis*	• Low (FOD, WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Low (FOD, WOD)

[a] CVR – Residential Lands; WOD - Deciduous Woodland; FOD - Deciduous Forest; OA – Open Water; AG – Agriculture; MA – Marsh, CGL – Green Land

6.1.11.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. Stouffville Conservation Area, a municipally managed conservation area is located on both sides of the corridor just north of Millard Street.

Portions of this Study Area are within the Greenbelt Protected Countryside Area and the Oak Ridges Moraine Conservation Plan Area. The Stouffville Marsh evaluated wetland is present within this portion of the Study Area.

6.2 Preliminary Environmental Site Assessment

Please refer to Section 2.2 for a description of the methodology followed for collection of preliminary environmental site baseline conditions data. Baseline conditions at each TPF site associated with the Stouffville Corridor have been summarized below.

A summary of the background information review, observations from the site reconnaissance, findings, ranking, and recommendations for each TPF site are provided below. The location of identified issues, if any, are indicated on **Figure 6-4 to Figure 6-5**, below.

6.2.1 Scarborough Tap Location & TPS

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

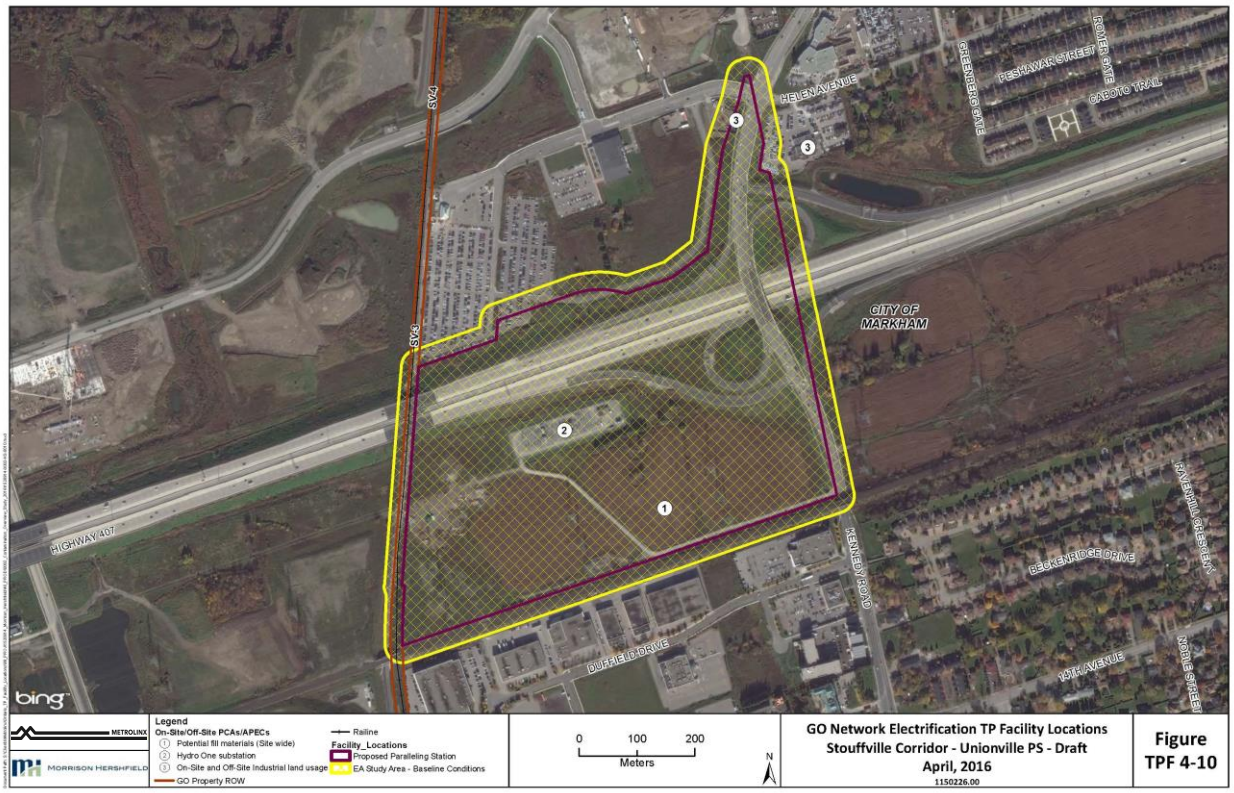
6.2.2 Unionville PS

Table 6-9 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Unionville PS site.

Table 6-9: Summary of Baseline Conditions at the Unionville PS Site

Drive-by Site Reconnaissance Key Observations	• The Site consists of a parcel of vegetated land with a hydro corridor crossing in a west to east direction. A hydro substation is present on the approximate center of the Site, with several access roads leading to the substation. The Site is also developed with portions of Highway 407, Kennedy Road, and associated on and off ramps. The vegetated area appears to be hummocky and potential fill may be present throughout the Site. The northeast portion of the Site was observed to be boarded off at the time of the Site visit; and, • Surrounding properties consist of the following: - North: A Go Transit parking lot, as well as vacant land and an industrial facility located at 8016 Kennedy Road; - East: Kennedy Road, vegetated land occupied by an overhead hydro corridor, and the parking area of an industrial facility located at 8016 Kennedy Road; - South: Rail tracks, followed by commercial and light industrial land uses along Duffield Drive; and, - West: Rail tracks, followed by vegetated land occupied by an overhead hydro corridor.
Identified APECs/PCAs	• Potential fill of unknown quality across the Site. • On-Site and off-Site Industrial Land use/hazardous waste generation; and, • A hydro substation with the potential for PCB storage is present on the approximate center of the Site.
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired; • Complete a Limited Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from adjacent/nearby land uses; and, • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 6-4: Potential Sources of Contamination at Proposed Unionville PS Site Location



6.2.3 Lincolnville PS

Table 6-10 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Lincolnville PS site.

Table 6-10: Summary of Baseline Conditions at the Lincolnville PS Site

Drive-by Site Reconnaissance Key Observations	• The center of the Site consists of vacant land overgrown with vegetation, and appears to be uneven. A building occupied by GO Transit is present on the northeast portion of the Site. The west portion of the Site is occupied by rail tracks and the Lincolnville GO Station platform; and, • Properties to the north, and south of the Site consist of vacant land overgrown with vegetation and parking associated with the GO Station. Rail tracks are present adjacent to the east of the Site, followed by the GO train platform and associated parking area. York and Durham Line is present adjacent to the east of the Site.
Identified APECs/PCAs	• Potential fill materials of unknown composition may be present across the Site
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired. • Complete a Limited Subsurface Investigation to assess the presence and quality of fill. • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

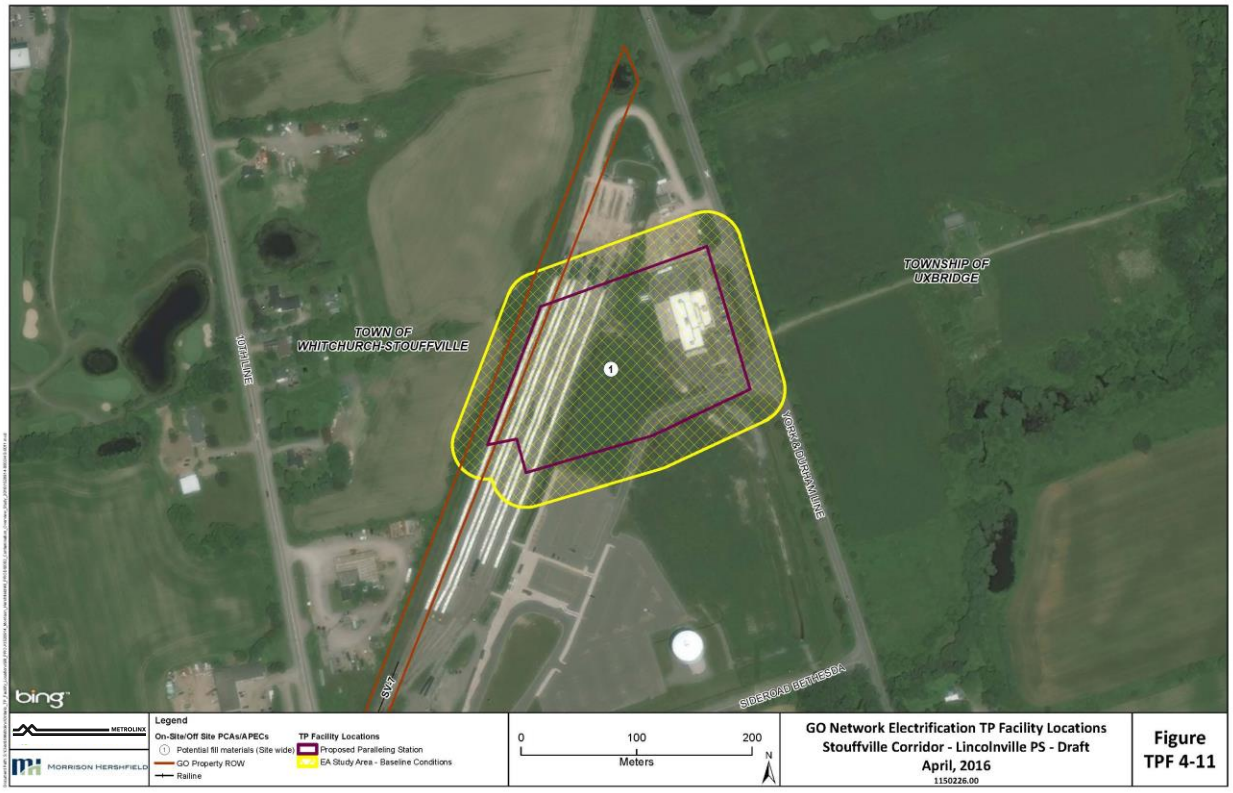


Figure 6-5: Potential Sources of Contamination at Proposed Lincolnville PS Site Location

6.2.4 Stouffville Corridor

The majority of the Stouffville Corridor was the subject of a Phase I and Phase II ESA conducted in 1999 and 2001 respectively. These two reports (CH2M Gore & Storrie Limited 1999 and Peto MacCallum Ltd. Consulting Engineers 2001) were completed as part of the transfer of the rail corridor from Canadian National Railways (CNR) to GO Transit. These studies cover approximately 46 km of the 50 km long corridor, and further information on the gap analysis is provided in **Appendix B**. There have also been a few site specific ESAs conducted typically associated with GO Station parking expansions at Agincourt, Centennial, Markham, Mount Joy and Stouffville, however most of these do not overlap with the proposed project OCS Impact Zone.

The short segment of the OCS Impact Zone between St. Clair Avenue and the beginning the Stouffville ROW at Scarborough Junction (where the Lakeshore East line crosses Midland Avenue) is addressed as part of the Phase I and Phase II ESAs of the Lakeshore East Corridor.

The general location of data gaps and previously identified areas of contamination are illustrated in **Figure 6-6** and described in the following sections. Detailed maps of the extent of previous investigations are

provided in **Appendix B**. A short segment extending north from the Stouffville GO Station to Lincolnville has not been assessed, being approximately 3.7 km long. Further work is recommended to address the data gaps identified to prepare a complete contamination overview study for the project footprint.

In addition to the data gaps identified above, the Phase II ESA completed in 2001 by Peto MacCallum identified six areas of known or potential contamination and recommended additional work. These areas where additional work was recommended are shown in the overview figure for this corridor (**Figure 6-6)** and **Appendix B**, and are characterized as:

1. Area #1: Investigate of the ROW/track area at the Stouffville GO Station to determine extent of hydrocarbon impacted soils identified as exceeding the MOE Table B Industrial/Commercial guideline;

2. Area #2: Investigate of the ROW/track area at the Markham GO Station to determine the extent of soils with high alkalinity;

3. Area #3: Additional investigations of the ROW between Ellesmere Road and Lawrence Avenue to assess potential chemical contamination (petroleum hydrocarbons and PCBs) of soil and groundwater in this section of the corridor;

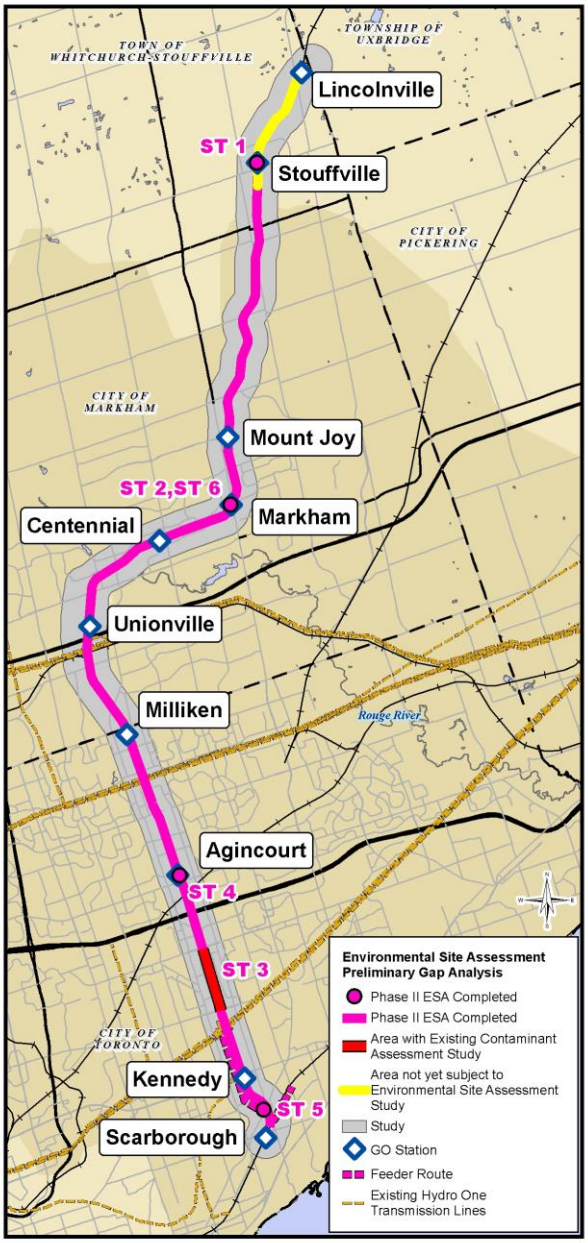
4. Area #4: Further soil quality assessment at Agincourt GO Station to assess if actual lead contamination of the soil exists;

5. Area #5: Further investigations near Scarborough Junction (west of Midland Avenue) to determine if actual hydrocarbon contamination of the soil or groundwater exists; and

6. Area #6: Further groundwater and soil investigations of potential hydrocarbon contamination of the ROW northeast of the Markham GO Station. This location adjacent property to the north (237-241 Main Street North, Markham) was the subject of remediation work in 2009 by AiMS Environmental however further work may be warranted to assess migration of potential contamination into the ROW.

None of these recommendations have been implemented based on the documentation reviewed. Presently none of these recommendations have been implemented and compliance with these recommendations would be required for any components of electrification which occurred within the study area of this assessment.

Figure 6-6: Stouffville Corridor Contamination Overview Map



6.3 Cultural Heritage

Please refer to Section 1.5.3 for a description of the methodology followed for collection of cultural heritagebaseline conditions data. Baseline conditions within each segment of the Stouffville Corridor have been summarized below. Additional details can be found in the Cultural Heritage Screening Report contained in **Appendix C1**. Please refer to Section 1.5.3.1 for a description of the resources that were used for the screening of Cultural Heritage Resources.

6.3.1 Scarborough Tap Location and TPS

See **Figure 1-10** in Section 1.4 for the location of the proposed Scarborough Tap Location site. There are no heritage properties identified at the Scarborough Tap Location and TPS. There are no further concerns from a cultural heritage perspective.

6.3.2 Unionville PS

See **Figure 1-11** in Section 1.4 for the location of the proposed Unionville PS site. There are no heritage properties identified at the Unionville PS.

6.3.3 Lincolnville PS

See **Figure 1-12** in Section 1.4 for the location of the proposed Lincolnville PS site. There are no heritage properties identified at the Lincolnville PS.

6.3.4 Corridor & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Ten potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 6-11** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 6-11: Cultural Heritage Resources for SV-1

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[57]	Metrolinx Heritage Recognition[58]
N/A	2467 Eglinton Ave. E., Toronto	Kennedy GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

[57] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[58] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[57]	Metrolinx Heritage Recognition[58]
N/A	Eglinton Ave., Toronto	Eglinton Avenue Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Eglinton Ave. E., Toronto	Scarborough TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Mooregate Ave./Tara Ave., Toronto	Mooregate/Tara Avenue Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Lawrence Ave. E., Toronto	Lawrence Avenue East Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Ellesmere Rd. , Toronto	Ellesmere Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Highway 401, Toronto	Highway 401 Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	West Highland Creek, Toronto	West Highland Creek Bridge	CHER previously completed. Determine to not be a Provincial Heritage Property.	Non-Heritage Property; CHER is not required	Non-Heritage Property (MHC Decision April 19 2016)
N/A	CP Belleville sub, Toronto	CP Belleville Sub Bridge	CHER previously completed. Determine to not be a Provincial Heritage Property.	Non-Heritage Property; CHER is not required	Non-Heritage Property (MHC Decision April 19 2016)
N/A	Sheppard Ave. E., Toronto	Sheppard Avenue East Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

6.3.5 Corridor & Bridges: Section SV-2 – Agincourt Station to Milliken Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs)

for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 6-12** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 6-12: Cultural Heritage Resources for SV-2

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[59]	Metrolinx Heritage Recognition[60]
N/A	4100 Sheppard Ave. E., Scarborough	Agincourt GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	39 Redlea Ave., Scarborough	Milliken GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
SV-2-1	City of Toronto	Proposed Agincourt HCD	Potential designation under Part V of the OHA	Potential protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

6.3.6 Corridor & Bridges: Section SV-3 – Milliken Station to Unionville Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Eight potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural

[59] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[60] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Heritage sections of Volume 3 – Impact Assessment. **Table 6-13** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 6-13: Cultural Heritage Resources for SV-3

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[61]	Metrolinx Heritage Recognition[62]
N/A	Kennedy Rd., Markham	Unionville TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	155 YMCA Blvd., Markham	Unionville GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	14th Ave. , Markham	14th Avenue Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	CN York Sub, Markham	CN York Sub Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Highway 407 East, Markham	Highway 407 East Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Highway 407 West, Markham	Highway 407 West Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
SV-3-1	99 YMCA Boulevard, Markham	Thomas Rivis House (previously 7996 Kennedy Road)	Designated under Part IV of the OHA (By-law 2002-170)	Protected property adjacent to the rail corridor and to Unionville GO Station; CHER is not required	Adjacent Protected Property
SV-3-2	4121 14th Avenue, Markham	Hagerman Schoolhouse	Designated under Part IV of the OHA (By-Law 187-98)	Protected property adjacent to the rail corridor;	Adjacent Protected Property

[61] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[62] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[61]	Metrolinx Heritage Recognition[62]
				CHER is not required	

6.3.7 Corridor & Bridges: Section SV-4 – Unionville Station to Markham Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Six potential cultural heritage resources are located in this segment of the corridor.). The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 6-14** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 6-14: Cultural Heritage Resources for SV-4

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[63]	Metrolinx Heritage Recognition[64]
N/A	320 Bullock Dr., Markham	Centennial GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Enterprise Dr., Markham	Enterprise Drive Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Bruce Creek, Markham	Bruce Creek Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
SV-4-1	137 Main St., Unionville	The James Eckardt House	Designated under Part IV of the OHA (By-Law 298-78)	Protected property adjacent to the rail corridor;	Adjacent Protected Property

[63] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[64] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[63]	Metrolinx Heritage Recognition[64]
				CHER is not required	
SV-4-2	Unionville	Unionville HCD	Designated under Part V of the OHA (By-Law 251-97)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property
SV-4-3	7 Station Lane, Unionville	Unionville Train Station (property also includes the Stiver Mill Complex)	Designated under the Heritage Railway Stations Protection Act; and designated under Part V of the OHA (By-Law 251-97)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

6.3.8 Corridor & Bridges: Section SV-5 – Markham Station to Mount Joy Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 6-15** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 6-15: Cultural Heritage Resources for SV-5

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[65]	Metrolinx Heritage Recognition[66]
SV-5-1	214 Main St., Markham	Markham GO Station	National Historic Site; Part IV and V Designations under the OHA (By-Law 204-91 and By-Law 120-90); Designated under the Heritage Railway Stations Protection Act.	Conditional Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, January 11, 2017)
N/A	1801 Bur Oak Ave., Markham	Mount Joy GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
SV-5-2	Markham	Markham Village HCD	Designated under Part V of the OHA (By-Law 120-90)	Protected property adjacent to the rail corridor and to Markham GO Station (SV-5-1); CHER is not required	Adjacent Protected Property

As noted above, a CHER was recommeded and subsequently conducted for the Markham GO Station. A summary of the CHER undertaken and Statement of Cultural Heritage Value based on the criteria contained within Ontario Regulations 9/06 and 10/06 is provided in **Table 6-17** below. See **Figure 6-7** for a visual representation of this CHR.

[65] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[66] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 6-16: Summary of SV-5 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Markham GO Station	9/06	January 11, 2017	Provincial Heritage Property

Based on the recommendations noted above, the Markham GO Station meets at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, it does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Markham GO Station does not hold Provincial significance and is not considered a Provincial Heritage Property of Provincial Significance. A copy of the CHER and Statement of Cultural Heritage Value is provided in **Appendix M**.

Figure 6-7: Markham GO Station

6.3.9 Corridor & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). One potential cultural heritage resources is located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural

Heritage sections of Volume 3 – Impact Assessment. **Table 6-18** summarizes this resource and provides recommendations (see **Appendix C1** for the screening reports).

Table 6-17: Cultural Heritage Resources for SV-6

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[67]	Metrolinx Heritage Recognition[68]
SV-6-1	1749 Meadowvale Rd., Markham	Rouge National Urban Park	Property protected under federal legislation (Rouge National Urban Park Act, S.C. 2015, c.10)	Protected property adjacent to the Stouffville and Lakeshore East rail corridors; CHER is not required	Adjacent Protected Property

6.3.10 Corridor & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Three potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 6-18** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

[67] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[68] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 6-18: Cultural Heritage Resources for SV-7

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[69]	Metrolinx Heritage Recognition[70]
N/A	York-Durham Line, Whitchurch-Stouffville	Lincolnville TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	6176 Main St., Stouffville	Stouffville GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	6840 Bethesda Rd., Stouffville	Lincolnville GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

6.4 Archaeology

A review of the historic land use of the Stouffville corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. It is situated within the traditional territory occupied by the ancestral Huron-Wendat, however, the north shore of Lake Ontario was abandoned around the turn of the sixteenth century. The corridor was subsequently utilized by the Seneca First Nation for hunting until the late seventeenth century; and, subsequently occupied by Ojibwa First Nations until 1805 (Benn 2008; Ellis 2013; Williamson 2013). The background research also acknowledges that since the turn of the eighteenth century, the Métis have lived throughout the Province of Ontario but are often muted in the historical record (MNC n.d.; Stone and Chaput 1978: 607,608). Since 1805, the corridor has been occupied by Euro-Canadian peoples and is situated within the former Townships of Markham, Scarborough and Whitchurch, County of York (Miles & Co. 1878). A review of 19th century mapping indicates that the corridor includes both historic features and transportation routes (Miles & Co. 1878; Tremaine 1860) (Figures 5-8 and 5-22 to 5-26).

Please refer to Section 1.5.4 for a description of the methodology followed for collection of utilities baseline conditions data. Baseline conditions within each segment of the Stouffville Corridor have been summarized below. Additional details can be found in the Archaeological Baseline Conditions Report contained in **Appendix D1**.

[69] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[70] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

6.4.1 Scarborough TPS, Tap Location & 25kV Feeder Route

See **Figure 1-10** in Section 1.3 for the location of the proposed Scarborough Tap Location and TPS site. The Scarborough TPS, Tap & 25kV Feeder Route meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Toronto & Nipissing Railway; Eglinton Avenue East)
- Well-drained sandy soils (Woburn sandy loam)

Proximity to historic features (farmsteads)These criteria are indicative of lands in the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

At least two archaeological assessments pertaining to the Scarborough TPS study area have been completed (ASI 2010a; 2014h) (see Figures 7-8 and 7-22 **Appendix D1**), and the majority of the proposed facility has been assessed.

A hydro station is also present, and its construction has removed archaeological potential.

6.4.2 Unionville PS

See **Figure 1-11** in Section 1.3 for the location of the proposed Unionville PS site. The Unionville PS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Toronto & Nipissing Railway; Kennedy Road)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (AlGt-211)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

At least one archaeological assessment pertaining to the Unionville PS study area has been completed (Stewart 1995) (see Figure 7-23 in **Appendix D1**). Approximately 14.5 ha was surveyed as part of the Highway 407 project, and Site (AlGt-211) was discovered (Stewart 1995).

One previously registered site is located within the Unionville PS (AlGt-211) (Figure 7-22 and 7-23 in **Appendix D1**). According to Ontario Archaeological Sites Database (OASD) records, site AlGt-211 has previously been fully mitigated and requires no further archaeological assessment.

6.4.3 Lincolnville PS

See **Figure 1-12** in Section 1.3 for the location of the proposed Lincolnville PS site. The Lincolnville PS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Toronto & Nipissing Railway; York-Durham Line)
- Proximity to historic features (farmsteads)
- Proximity to water source (West Duffins Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see Appendix D2).

6.4.4 Corridor & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Scarborough Junction)
- Proximity to historic transportation route (Toronto & Nipissing Railway; Danforth Road)
- Well-drained sandy soils (Woburn sandy loam)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (AkGt-16)
- Proximity to water source (tributary of Highland Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered site is located within 50 m of Section SV-1 (AkGt-16) which possibly extends into the Scarborough TAP site (Figure 7-8 in **Appendix D1**). Available information on Site AkGt-16 is limited. The site is reported to be approximately three acres in area and as such possibly extends into the Study Area. Background research was conducted to determine its CHVI within the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least two previous archaeological assessments (ASI 2010a; 2014h) (see Figures 7-8 and 7-22 in **Appendix D1**). Approximately 3.4 ha have been previously assessed. ASI (2014h) conducted a Stage 1 archaeological assessment for the Stouffville Corridor Rail Service Expansion GO Transit Class Environmental Assessment Study and Preliminary Design under the project direction of Paul David Ritchie (P392-0021-2013). This Stage 1 archaeological assessment report assessed only the existing GO ROW for the Stouffville Corridor from the Scarborough junction to Unionville GO Station as well as

some minor proposed property acquisitions. No other known previous archaeological assessments have been completed within the SV-1 section.

6.4.5 Corridor & Bridges: Section SV-2 – Agincourt Station to Milliken Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Milliken)
- Proximity to historic transportation route (Toronto & Nipissing Railway; Steeles Avenue)
- Proximity to historic features (farmsteads)
- Proximity to water source (tributary of Highland Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Section SV-2 includes lands which have been modeled to possess potential for an ancestral Huron-Wendat Ossuary (Figure 7-22 in **Appendix D1**). Full details of further assessment required to mitigate impacts to these land are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least four previous archaeological assessments (ASI 2004d; 2005a; 2005b; 2014h) (see Figure 7-22 in **Appendix D1**). Approximately one ha has been previously assessed. ASI (2014h) conducted a Stage 1 archaeological assessment for the Stouffville Corridor Rail Service Expansion GO Transit Class Environmental Assessment Study and Preliminary Design under the project direction of Paul David Ritchie (P392-0021-2013). This Stage 1 archaeological assessment report assessed only the existing GO ROW for the Stouffville Corridor from the Scarborough junction to Unionville GO Station as well as some minor proposed property acquisitions. No other known previous archaeological assessments have been completed within the SV-2 section.

6.4.6 Corridor & Bridges: Section SV-3 – Milliken Station to Unionville Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Milliken)
- Proximity to historic transportation route (Toronto & Nipissing Railway)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (AkGt-21)
- Proximity to water source (tributaries of Rouge River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered site is located within 50 m of Section SV-3 (AkGt-21) (Figures 7-22 and 7-23 in **Appendix D1**). Available information on Site AkGt-21 is limited. The site may extend into the Study Area. Skeletal remains are reported on the site (MTCS 2015). Additional background research was undertaken and the site is further discussed in the Stage 1 Archaeological Assessment (see **Appendix D2**).

This section has been subject to at least four previous archaeological assessments (ASI 1994; 2002; 2014c; 2014h) (see Figures 7-22 and 7-23 in **Appendix D1**). Approximately 6.8 ha have been previously assessed. ASI (2014h) conducted a Stage 1 archaeological assessment for the Stouffville Corridor Rail Service Expansion GO Transit Class Environmental Assessment Study and Preliminary Design under the project direction of Paul David Ritchie (P392-0021-2013). This Stage 1 archaeological assessment report assessed only the existing GO ROW for the Stouffville Corridor from the Scarborough junction to Unionville GO Station as well as some minor proposed property acquisitions. No other known previous archaeological assessments have been completed within the SV-3 section.

6.4.7 Corridor & Bridges: Section SV-4 – Unionville Station to Markham Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Markham; Unionville)
- Proximity to historic transportation route (Toronto & Nipissing Railway)
- Proximity to historic features (farmsteads)
- Proximity to water source (Rouge River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least three previous archaeological assessments (ASI 2002; 2011a; 2014h) (see Figure 7-23 in **Appendix D1**). Approximately 3 ha have been previously assessed. No other known previous archaeological assessments have been completed within the SV-4 section.

6.4.8 Corridor & Bridges: Section SV-5 – Markham Station to Mount Joy Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Markham)
- Proximity to historic transportation route (Markham Road; Toronto & Nipissing Railway)
- Proximity to historic features (farmsteads)
- Proximity to water source (tributary of Rouge River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 2000c) (see Figure 7-24 in **Appendix D1**). Approximately 1.9 ha has been previously assessed. No other known previous archaeological assessments have been completed within the SV-5 section.

6.4.9 Corridor & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Markham; Stouffville)
- Proximity to historic transportation route (Toronto 7 Nipissing Railway)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (AlGt-130; AlGt-259)
- Proximity to water source (Rouge River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Two previously registered sites are located within 50 m of Section SV-6 (AlGt-130; AlGt-259) (Figures 7-24 and 7-25 in **Appendix D1**). AlGt-130 is considered to possess CHVI and requires further archaeological assessment. Details are included in the impact assessment of the further work required (see **Appendix D2**). AlGt-259 is considered to not possess further CHVI.

This section has been subject to at least four previous archaeological assessments (ASI 2000a; 2000c; 2003; 2004b) (see Figures 7-24 to 7-26 in **Appendix D1**). Approximately 4.7 ha have been previously assessed. No other known previous archaeological assessments have been completed within the SV-6 section.

6.4.10 Corridor & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Stouffville)
- Proximity to historic transportation route (Toronto & Nipissing Railway)
- Proximity to historic features (farmsteads)
- Proximity to water source (West Duffins Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least two previous archaeological assessments (ASI 2006a; 2014g) (see Figures 7-25 and 7-26 in **Appendix D1**). Approximately 1.1 ha has been previously assessed. No other known previous archaeological assessments have been completed within the SV-7 section.

Based on the available background documents, all sections and TPFs within the Stouffville Corridor, as well as the Scarborough Tap Location include areas which had not been previously subject to archaeological assessment. Therefore, parts of the Stouffville Rail Corridor required further archaeological assessment. For further details on the specific areas that were further assessed, please refer to Figures 7-8 and 7-22 to 7-26 of the Archaeology Baseline Conditions Report (**Appendix D1**).

6.5 Land Use & Socio-Economic

Please refer to Section 1.5.5 for a description of the methodology followed for collection of land use and socio-economic baseline conditions data. Baseline conditions within each segment of the Stouffville Corridor have been summarized below. Additional details can be found in the Land Use and Socio-Economic Baseline Conditions Report contained in **Appendix E1**.

From Scarborough Junction, lands adjacent to the Stouffville Corridor transition from urban development into a mix of suburban residential and employment uses. Employment uses become more prevalent towards the City of Markham. Though southern Markham land use is largely characterized by mixed use lands. In northern Markham, lands are generally characterized by rural and agricultural uses and this continues until the rail corridor passes through the suburban centres located in Whitchurch-Stouffville. It should be noted that the rail corridor does not actually cross into the Town of Uxbridge, but this municipality is included in the descriptions below due to the close proximity of the rail corridor to the municipal boundary. This rail corridor passes through one Regional municipality (York Region).

There are 103 sensitive receptor facilities (schools, child care centres, and long term care centres) in the vicinity (i.e., within approximately 500 m) of the Stouffville Corridor. There are no hospitals in the vicinity of the rail corridor. Of these, three are less than 40 m from the rail corridor, four are between 40 and 100 m from the rail corridor, and the remaining 95 are between 100 and 500 m from the rail corridor (see Table 4-7 and Figures SV-1 to SV-27 in **Appendix E1**).

6.5.1 Scarborough Tap,TPS Location & 25kV Feeder Route

6.5.1.1 Existing Land Use

The proposed Scarborough Tap (**Figure 1-10)** is currently located in open space / hydro corridor, and is on both sides of the rail corridor. The western part of the Tap location is surrounded by the rail corridor, a transformer station, hydro corridor/open space, and Jack Goodlad Park. There are also residential areas

in the vicinity of the site, to the east and southeast of the site. The eastern part is surrounded by the rail corridor, Arsandco Park, and hydro corridor/open space, with residential properties immediately to the south. The site is zoned Employment (E) under Scarborough's Former General Zoning By-law 24982. Given the existing hydro corridor and transformer station at the site, the Tap location is likely a compatible land use with the existing zoning for the property and no adverse effects on land use are anticipated. The proposed Scarborough TPS location is currently located in open space and an existing transformer station. There are also residential areas immediately to the north and west of the site, with hydro corridor / open space and institutional uses to the south/southwest.

The 25kV Scarborough Feeder route will run along the Stouffville and Lakeshore East rail corridors from the Scarborough TPS to the Scarborough SWS. From the Scarborough TPS to the Kennedy GO Station, land use consists of a hydro transmission corridor to the west of the rail corridor and low rise residential to the east. South of the Kennedy GO Station is characterized by parking lots, open spaces, Corvette Park, and varying densities of residential. This connection is proposed to consist of an aerial connection along the existing rail corridor.

The closest sensitive receptor facility is approximately 500 m away.

6.5.1.2 Planned Land Use

The site is zoned primarily under Scarborough's Former General Zoning By-law 24982 with a small section of *Utility Corridor (UT)*.

6.5.2 Unionville PS

6.5.2.1 Existing Land Use

The proposed Unionville PS site (**Figure 1-11**) is currently located on property which is mainly open space/vacant lot with highways and roads, and includes some of the Unionville GO Station parking lot as well as a hydro substation. Surrounding land uses include parking lots, vacant land, and commercial buildings. The site is zoned primarily *Agriculture (A1) and Rural Residential (RR4)*.

The Unionville PS site is partially located within the Markham Centre Secondary Plan lands, which seeks to promote a vibrant mixed use environment that is characterized by high-density residential use and a range of commercial uses. The proposed changes to Viva's Blue route, which involve an extension of the existing bus Rapidway to the Unionville GO Station, will not intersect the Unionville PS lands.

Official Plan Land use designations at this PS site are shown in Figures SV-12 to SV-13 in **Appendix E1**.

Figure 6-8: Existing Land Use at the Proposed Unionville PS Site

There are no recreational amenities in the vicinity of the Unionville PS site, and it is approximately 420 m from the closest sensitive receptor facility, the Bill Crothers Secondary School.

6.5.2.2 Planned Land Use

The Unionville PS site is located within the Markham Centre Secondary Plan lands. The purpose of the Markham Centre Secondary Plan is to promote a vibrant mixed use environment that is characterized by high-density residential use and a range of commercial uses.

There are no planned and approved recreational amenities bordering the proposed Unionville PS site, and the site is zoned primarily *Agriculture*.

6.5.3 Lincolnville PS

6.5.3.1 Existing Land Use

The proposed Lincolnville PS site (**Figure 1-12**) is designated as *Rural Area*, and is currently open space, rail corridor, and the GO Transit Lincolnville Rail and Bus Facility. The site is bordered to the northwest by agricultural fields; north by the Lincolnville Layover; the east by Regional Road 30, and the south by open

space, the entranceway to the Lincolnville GO Station parking lot, and the rail corridor. Official Plan Land use designations at this PS site are shown in Figure SV-27 in **Appendix E1**.

Figure 6-9: Existing Land Use at the Proposed Lincolnville PS Site (GO Transit Lincolnville Rail and Bus Facility in the Background)

In Uxbridge, the Granite Golf Club is located directly across the York-Durham Line, approximately 150 m from the proposed Lincolnville PS site. There are no sensitive receptor facilities in the vicinity of the site.

6.5.3.2 Planned Land Use

The Lincolnville PS site is affected by the Stouffville Secondary Plan. The purpose of this plan is to maintain the "small town" character of the area while meeting growth targets and remaining environmentally conscious of surrounding resources.

While there are no privately initiated development applications at the Lincolnville PS site, the site is subject to OPA 137 (Town Secondary Plan Amendment) to the Town of Whitchurch-Stouffville's Official Plan and is proposed to change designation from Rural Area to Major Transit Station Area. Undeveloped lands around Bethesda Road are designated *Rural*.

There are no planned and approved recreational amenities bordering the Lincolnville PS site, and the site is zoned *Institutional* under the Town of Whitchurch Stouffville Zoning By-law 2010-001-ZO.

6.5.4 Corridor & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

6.5.4.1 Existing Land Use

North of the Scarborough Junction to Lawrence Avenue, lands are characterized by a combination of *Mixed Use*, *Employment*, and *Neighbourhood* lands, with smaller areas of *Apartment Neighbourhoods*, *Parks*, and *Natural Areas*. From just south of Lawrence Avenue to Agincourt GO Station, land uses along the rail corridor are characterized by large portions of *Employment Areas*, interspersed with smaller pockets of *Apartment Neighbourhood* and *Mixed Use Areas*. Small parcels of undeveloped land are located at Ellesmere Road west of the rail corridor and at the Agincourt GO Station east of the rail corridor. Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-1 to SV-7 in **Appendix E1**.

Two large parks are adjacent to this section of the rail corridor: Corvette Park and Jack Goodlad Park. Based on the currently available information on trails within the City of Toronto, the Gatineau Hydro Corridor Trail is located in the vicinity of this section of the rail corridor. The Gatineau Hydro Corridor Trail runs adjacent to the rail corridor from north of Kennedy GO Station to Jack Goodlad Park. Additionally a segment of the Pan Am Path passes through the Study Area at Mooregate/Tara Avenue.

One sensitive receptor facility (Heart Beatz Child Care) is within 40 m of the rail corridor.

6.5.4.2 Planned Land Use

This section of the rail corridor passes through the Agincourt Secondary Plan just before Agincourt GO Station. The purpose of this plan is to accommodate new employment and residential targets that have resulted from the development of the Sheppard Subway and to provide site-specific densities and policies to accommodate development prior to construction of the subway. Undeveloped lands at Ellesmere Road and the Agincourt GO Station are designated *Mixed Use Areas*.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned for *Utility and Transportation* under the City of Toronto Zoning By-law 569-2013.

6.5.5 Corridor & Bridges: Section SV-2 – Agincourt Station to Milliken Station

6.5.5.1 Existing Land Use

Between Sheppard Avenue and Finch Avenue, land uses are characterized by *Neighbourhoods* on both sides of the rail corridor with small tracts of *Park* land. North of Finch Avenue, lands become *Employment Areas* up to the municipal border, crossed by Utility Corridor (the Finch Hydro Corridor). Some undeveloped lands are located north of Finch Avenue on the east side of the rail corridor, and north and

south of McNicoll Avenue on both sides of the rail corridor. Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-6 to SV-10 in **Appendix E1**.

There are no large parks or other recreational amenities along this section of the rail corridor. Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Finch Hydro Corridor Trail south of McNicoll Avenue.

One sensitive receptor facilities (Bill Crothers Secondary School) is within 40 m of the rail corridor.

6.5.5.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor in Toronto. The corridor is within study area for the Steeles-Redlea Regeneration Area Study between Passmore Avenue and Steeles on the west side of the corridor. This study redesignated employment areas to regeneration areas which provide for a mixture of employment, institutional, residential, and parks and open spaces uses.

As advised by the City of Toronto, there are a number of Site Plan Control Applications within the vicinity of the rail corridor. These include a Site Plan Control Application at 208 McNicoll Avenue (Kennedy Road and McNicoll Avenue) for a TTC McNicoll Bus Garage, 4140 Finch Avenue East for a partial demolition and interior alteration to permit a private school and an application at 65 Passmore Avenue for a wet ready-mix concrete facility.

Undeveloped lands at Finch Avenue and McNicoll Avenue are designated *Employment Areas*.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned for *Utility and Transportation* under the City of Toronto Zoning By-law 569-2013.

6.5.6 Corridor & Bridges: Section SV-3 – Milliken Station to Unionville Station

6.5.6.1 Existing Land Use

From Milliken GO Station to Unionville GO Station, lands are predominantly *Industrial* with minor sections of *Residential* and *Parkway Belt West* and *Utility* lands surrounding Highway 407. Undeveloped lands are located east of the rail corridor on both sides of Kennedy Road; west of the corridor north of 14th Avenue, and on both sides of the rail corridor around Highway 407. Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-10 to SV-13 in **Appendix E1**. Milliken Mills Park is located on the eastern side of the rail corridor just south of 14th Avenue, and there are no sensitive receptor facilities within 40 m of the rail corridor.

6.5.6.2 Planned Land Use

Beginning at Milliken GO Station, the rail corridor passes through the Milliken Centre Secondary Plan. The purpose of this plan is to establish a Local Urban Centre in the Milliken area that supports transit through an intensified, mixed-use environment. Uses include residential of varying densities, commercial mixed

use buildings, public and park uses, including an elementary school site. North of Highway 407, the rail corridor passes into lands under the Markham Centre Secondary Plan, mentioned in Section 6.5.2.2. It additionally follows through the Heritage Centre Markham Village Heritage Conservation District, Heritage Centre - Unionville Heritage Conservation District,

Undeveloped lands along this section of the rail corridor have the following designations: *Residential Low Rise* at Kennedy Road; *General Employment* at 14th Avenue; and *Parkway Belt West* and *Mixed Use Office Priority* at Highway 407.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and this section of the rail corridor is zoned *Transportation and Utilities* within the City of Markham.

6.5.7 Corridor & Bridges: Section SV-4 – Unionville Station to Markham Station

6.5.7.1 Existing Land Use

North of the Unionville GO Station, the rail corridor passes through *Mixed Use Low-rise*, *Greenway*, *Mixed Use High-rise* and *Mixed Use Office Priority* lands to the Centennial GO Station. The rail corridor also passes through *Mixed Use Heritage Main Street* and *Residential Low Rise* designations within the Unionville Heritage Conservation District Area. The Unionville Heritage Conservation District Area encompasses lands along Main Street Unionville. East of Centennial GO Station, land south of the rail corridor are *Mixed Use Mid-rise* then transition to *Service Employment* closer to the Markham GO Station. On the northern side of the rail corridor, lands are almost entirely composed of *Low-rise Residential* with one section of *Greenway* at Cedar Valley Park. Undeveloped vacant lands are located west of the rail corridor to the north of Enterprise Boulevard and south of the rail corridor near Graham Crescent. Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-13 to SV-16 in **Appendix E1**.

There are three large parks in this section of the rail corridor: Quantztown Park, Markham Centennial Park, and Cedar Valley Park. Based on currently available information, trails within the City of Markham in the vicinity of this section of the rail corridor include a part of the Unionville Valleylands Trail System. This trails crosses the rail corridor west of Kennedy Road.

No sensitive receptor facilities are within 40 m of the rail corridor.

6.5.7.2 Planned Land Use

Secondary Plans and Future Development

This section of the rail corridor passes through two Secondary Plan areas: the Markville Secondary Plan Heritage Centre Markham Village Heritage Conservation District, Heritage Centre - Unionville Heritage Conservation District, and the Markham Centre Secondary Plan. The general purpose of these plans is to promote a vibrant mixed use environment that is characterized by high-density residential use, protect

existing heritage uses and a range of commercial uses. Undeveloped lands are designated *Mixed Use High Rise* at Enterprise Drive and *Service Employment* near Graham Crescent.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned *Transportation and Utilities* within the City of Markham.

6.5.8 Corridor & Bridges: Section SV-5 – Markham Station to Mount Joy Station

6.5.8.1 Existing Land Use

North of Markham GO Station, the rail corridor passes through some *Greenway*, *Mixed Use Low Rise* and Residential Low Rise before reaching 16th Avenue. At the Mount Joy GO Station, land surrounding the rail corridor is designated as a combination of *Mixed Use Mid Rise* and *Mixed Use High Rise*. Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-16 to SV-18 in **Appendix E1**.

Mount Joy Lake Park is the only large recreational amenity adjacent to this section of the rail corridor. One sensitive receptor facility (Little Readers Academy) is within 40 m of the rail corridor.

6.5.8.2 Planned Land Use

This section of the rail corridor passes through the Markham Road Corridor-Mount Joy Secondary Plan. The general purpose of this plan is to promote a vibrant mixed use environment that is characterized by a range of residential uses and a significant concentration of employment and commercial uses. A major focus of this plan is also to retain and promote existing heritage features of the rail corridor. The rail corridor additionally follows through the Heritage Centre Markham Village Heritage Conservation District.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned *Transportation and Utilities* within the City of Markham.

6.5.9 Corridor & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

6.5.9.1 Existing Land Use

The rail corridor passes through some *Greenway* and *Mixed Use Low Rise* before it hits 16th Avenue. At the Mount Joy GO Station, land surrounding the rail corridor is designated as a combination of *Mixed Use Mid Rise* and *Mixed Use High Rise*. A large swath of undeveloped land is located east of the rail corridor across from the Mount Joy GO Station.

South of the Markham-Stouffville border to the Stouffville GO Station, land use is characterized by *Greenland Area, Residential Area*, and *Existing Residential Area* lands. Approaching the Stouffville GO Station, this transitions into the *Community Core Area*. This contains a variety of land uses such as *Core*

Area – Main Street, *Core Area – Mixed Use*, and *Greenland Area*. Some undeveloped land is located west of the rail corridor south of Major Mackenzie Drive East. Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-18 to SV-25 in **Appendix E1**.

This segment of the rail corridor passes through Rouge National Urban Park. The park aims to support the priorities of the Government of Canada's National Conservation Plan. The Plan has a number of Guiding Principles which include: maintaining and improving ecological health and scientific integrity, honouring diversity, local heritage, cultural inclusiveness past, present and future, and collaboration to ensure multi-modal connectivity and access. There are no sensitive receptor facilities within 40 m of the rail corridor.

6.5.9.2 Planned Land Use

The rail corridor continues through the Heritage Centre Markham Village Heritage Conservation District, Markham Road Corridor-Mount Joy Secondary Plan up to Major Mackenzie Drive and, beginning at the Stouffville border, passes through the Community of Stouffville Secondary Plan (see Section 6.5.3.2).

Undeveloped lands at the Mount Joy GO Station (part of the Markham Road Corridor-Mount Joy Secondary Plan) are designated *Mixed Use High Rise*. Those at Major Mackenzie Drive East are designated *Mixed Use Mid Rise.*

There are no planned and approved recreational amenities bordering this section of the rail corridor. A number of enhancement proposals are proposed within the northern segment of the Rouge National Urban Park, including a welcome area at the corner of 19thAvenue and 9th Line at Rouge Beach as part of ongoing park planning, under the Parks Canada 2014 draft Management Plan. The rail corridor is zoned *Transportation and Utilities* in the City of Markham. Under the Town of Whitchurch Stouffville Zoning By-law 2010-001-ZO the rail corridor does not have any zoning designation.

6.5.10 Corridor & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

6.5.10.1 Existing Land Use

Lands north of Stouffville GO Station are characterized on either side by *Employment* uses up until the Stouffville Conservation Area. Other than a smaller pocket of *Low-rise Residential* on the east side of the rail corridor just north of Millard Street, lands along the rest of the rail corridor are designated as a mix of *Rural* and *Greenlands*. Small patches of undeveloped lands are located on either side of the rail corridor north and south of Bethesda Side Road.

The end of the rail corridor is adjacent to lands in the Township of Uxbridge. These are designated as *Major Recreational Use.* Official Plan Land use designations along this section of the rail corridor are shown in Figures SV-24 to SV-27 in **Appendix E1**.

The Stouffville Conservation Area is located on the northern side of the rail corridor north of Millard Street. In Uxbridge, the Granite Golf Club is directly across the York-Durham Line from the Lincolnville GO

Station, approximately 150 m from the proposed Lincolnville PS site. A snowmobile trail follows the rail corridor in this section from north of Millard Street to north of the Lincolnville PS, crossing the rail corridor north of Greenwood Road. There are no sensitive receptor facilities within 40 m of the rail corridor.

6.5.10.2 Planned Land Use

The Community of Stouffville Secondary Plan continues for the remainder of the rail corridor (see Section 6.5.3.2). Undeveloped lands around Bethesda Road are designated *Rural*.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor does not have any zoning designation under the Town of Whitchurch Stouffville Zoning By-law 2010-001-ZO the rail corridor does not have any zoning designation.

6.6 Air Quality

Portions of the Stouffville Corridor have been classified as Urban, Suburban and Rural land use categories. A brief summary of the findings for each category are provided below.

In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of $PM_{2.5}$ (respirable particulate matter), and PM_{10} (inhalable particulate matter) are slightly exceeded.

Pollutant concentrations in the suburban areas are somewhat lower than those in the urban areas. However, annual average benzene and benzo(a)pyrene concentrations still exceed their criteria. Criterion for 24-hour concentration of $PM_{2.5}$ is slightly exceeded. Data on PM_{10} were unavailable for the suburban land use category.

Pollutant concentrations are lowest in the rural areas. All contaminants are within their applicable air quality criteria, with the exception of benzo(a)pyrene which, even in the rural areas, significantly exceeds its MOECC criterion for annual average concentration.

Table 6-19 through **Table 6-21** show air quality statistics for each land use category (urban, suburban and rural). See Appendix F1 for station-by-station summaries of the air quality monitoring data.

Table 6-19 through **Table 6-21** also show the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQCs except for $PM_{2.5}$ which has a CAAQS, as described in Section 1.5.6.

Table 6-19: Summary of Urban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
$PM_{2.5}$	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM_{10}	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 6-20: Summary of Suburban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	205	255	362	757	1-hr	229	2437	N/A	1509
Nitrogen Dioxide	400	200	-	-	18	27	47	80	1-hr	23	121	71	N/A
$PM_{2.5}$	-	27	8.8	-	5	8	14	28	1-hr	6.7	62	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.46	0.58	0.80	1.14	24-hr	0.57	N/A	1.77	N/A
1,3-Butadiene	-	10	2	-	0.03	0.05	0.07	0.12	24-hr	0.04	N/A	0.13	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	N/A	N/A	N/A	N/A	24-hr	0.00018	N/A	0.0036	N/A

Note: N/A – data not available

Table 6-21: Summary of Rural Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	N/A	N/A	N/A	N/A	1-hr	N/A	N/A	N/A	N/A
Nitrogen Dioxide	400	200	-	-	9	15	28	54	1-hr	13	81	51	N/A
$PM_{2.5}$	-	27	8.8	-	4	7	13	25	1-hr	5.8	47	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	1.96	2.55	3.89	5.06	24-hr	2.06	N/A	5.21	N/A
Acetaldehyde	-	500	-	500 (½-hr)	0.56	0.80	1.15	1.93	24-hr	0.64	N/A	2.18	N/A
Benzene	-	2.3	0.45	-	0.22	0.38	0.51	0.87	24-hr	0.28	N/A	1.03	N/A
1,3-Butadiene	-	10	2	-	0.00	0.01	0.01	0.04	24-hr	0.01	N/A	0.06	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.000013	0.000018	0.000031	0.000064	24-hr	0.000018	N/A	0.000067	N/A

Table 6-22 summarizes the Stouffville Corridor sections and the air quality categories for the corridor

Table 6-22: Summary of Stouffville Corridor Air Quality Baseline Conditions

Corridor Section		Length (km)	Traction Power Facilities	Baseline Air Quality Category	Baseline Air Quality Table Reference
SV-1	Scarborough Junction Agincourt Station	7.8	Scarborough TPS Scarborough Tap	Suburban	6-21
SV-2	Agincourt Station to Milliken Station	4.7		Suburban	6-21
SV-3	Milliken Station to Unionville Station	3.4	Unionville PS	Urban	6-20
SV-4	Unionville Station to Markham Station	5.9		Suburban	6-21
SV-5	Markham Station to Mount Joy Station	2.2		Suburban	6-21
SV-6	Mount Joy Station to Stouffville Station	8.1		Suburban	6-21
SV-7	Stouffville Station to Lincolnville Station	3.0	Lincolnville PS	Rural	6-22

6.7 Noise & Vibration

Receptors of interest for this assessment include the following noise sensitive land uses:

- Residences;
- Hotels, motels and campgrounds;
- Schools, universities, libraries and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and
- Churches and places of worship.

Receptors of interest within the Study Area are mainly residential houses located adjacent to the Stouffville rail corridor. In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Modelling was completed for all these receptors; however, results are presented for selected representative receptors. **Table 6-23** presents the predicted baseline noise levels for the Stouffville Corridor. Maps depicting the Receptor IDs identified in **Table 6-23** and **Table 6-24** are shown below.

Table 6-23: Predicted Baseline Noise Levels for the Stouffville Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R01	Daytime	50.0
	Nighttime	41.2
R02a	Daytime	50.5
	Nighttime	42.2
R02b	Daytime	56.4
	Nighttime	47.8
R03	Daytime	51.9
	Nighttime	43.9
R04	Daytime	52.8
	Nighttime	42.5
R05	Daytime	51.1
	Nighttime	41.8
R06	Daytime	53.2
	Nighttime	49.9
R07	Daytime	51.9
	Nighttime	50.0
R08a	Daytime	52.8
	Nighttime	40.1
R08b	Daytime	49.7
	Nighttime	40.7
R09a	Daytime	51.8
	Nighttime	43.0
R09b	Daytime	51.2
	Nighttime	42.9
R10a	Daytime	51.1
	Nighttime	45.1
R10b	Daytime	49.4
	Nighttime	44.4
R11	Daytime	53.2
	Nighttime	44.0
R12	Daytime	50.1
	Nighttime	42.1
R13	Daytime	51.9
	Nighttime	42.5
R14	Daytime	45.8

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	40.2
R15	Daytime	42.5
	Nighttime	35.3
R16	Daytime	55.2
	Nighttime	47.0
R17	Daytime	58.5
	Nighttime	50.9
R18	Daytime	45.0
	Nighttime	37.3
R19	Daytime	43.3
	Nighttime	35.5
R20	Daytime	43.9
	Nighttime	36.9
R21a	Daytime	53.6
	Nighttime	42.0
R21b	Daytime	48.3
	Nighttime	39.0
R22	Daytime	45.9
	Nighttime	35.4
R23	Daytime	56.3
	Nighttime	44.0
R24	Daytime	55.5
	Nighttime	41.9
R25	Daytime	62.1
	Nighttime	54.5
R26	Daytime	65.9
	Nighttime	50.3
R27a	Daytime	51.1
	Nighttime	40.9
R27b	Daytime	55.6
	Nighttime	57.2
R28	Daytime	53.3
	Nighttime	45.4
R29	Daytime	52.7
	Nighttime	53.5
R30	Daytime	64.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	53.2
R31	Daytime	70.6
	Nighttime	62.9
R32	Daytime	60.1
	Nighttime	52.0
R33	Daytime	67.8
	Nighttime	60.8
R34	Daytime	64.6
	Nighttime	59.8
R35a	Daytime	64.0
	Nighttime	59.5
R35b	Daytime	67.9
	Nighttime	56.6
R36	Daytime	63.5
	Nighttime	59.3
R37	Daytime	63.0
	Nighttime	60.4
R38	Daytime	53.4
	Nighttime	50.2
R39a	Daytime	44.6
	Nighttime	50.2
R39b	Daytime	64.2
	Nighttime	53.2
R40a	Daytime	62.8
	Nighttime	58.7
R40b	Daytime	60.1
	Nighttime	54.8
R40c	Daytime	62.3
	Nighttime	52.0
R40d	Daytime	61.1
	Nighttime	55.5
R41	Daytime	46.9
	Nighttime	42.8
R42a	Daytime	55.1
	Nighttime	50.5
R42b	Daytime	58.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	51.3
R43	Daytime	61.4
	Nighttime	51.6
R44	Daytime	65.1
	Nighttime	55.5
R45	Daytime	62.7
	Nighttime	57.2
R46	Daytime	58.8
	Nighttime	56.3
R47a	Daytime	64.0
	Nighttime	59.5
R47b	Daytime	55.5
	Nighttime	46.5
R47c	Daytime	62.4
	Nighttime	47.6
R48a	Daytime	66.4
	Nighttime	62.0
R48b	Daytime	56.9
	Nighttime	49.4
R49	Daytime	67.4
	Nighttime	50.3
R50	Daytime	50.8
	Nighttime	44.1
R51	Daytime	60.2
	Nighttime	50.9
R52	Daytime	63.0
	Nighttime	55.6
R53	Daytime	62.5
	Nighttime	55.4
R54	Daytime	62.0
	Nighttime	51.5
R55	Daytime	51.4
	Nighttime	42.6
R56	Daytime	59.7
	Nighttime	53.1
R57a	Daytime	65.0

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	56.7
R57b	Daytime	62.3
	Nighttime	51.0
R58a	Daytime	57.7
	Nighttime	51.4
R58b	Daytime	63.1
	Nighttime	51.7
R59	Daytime	61.5
	Nighttime	57.5
R60	Daytime	62.1
	Nighttime	57.5
R61	Daytime	60.4
	Nighttime	51.2
R62	Daytime	60.5
	Nighttime	51.0
R63	Daytime	61.6
	Nighttime	50.5
R64a	Daytime	65.5
	Nighttime	54.4
R64b	Daytime	56.0
	Nighttime	49.6
R65	Daytime	51.2
	Nighttime	42.8
R66	Daytime	52.6
	Nighttime	45.1
R67	Daytime	51.7
	Nighttime	42.2
R68	Daytime	53.4
	Nighttime	47.6
R69	Daytime	49.4
	Nighttime	42.3

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Table 6-24 presents the predicted baseline vibration levels for the Stouffville Corridor.

Table 6-24: Predicted Baseline Vibration Levels for the Stouffville Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Closest Track	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s) r.m.s.
GO Train	R06	64	No	28	0.050
Freight Train		40			0.340
GO Train	R09	64	No	35	0.039
Freight Train		40			0.256
GO Train	R14	64	No	40	0.034
Freight Train		40			0.215
GO Train	R22	80	No	30	0.058
Freight Train		40			0.313
GO Train	R24	80	No	45	0.037
Freight Train		40			0.186

[1] See Figures for receptor location in Appendix G.

Figure 6-10: Stouffville Corridor Receptor and Existing Barrier Locations 1

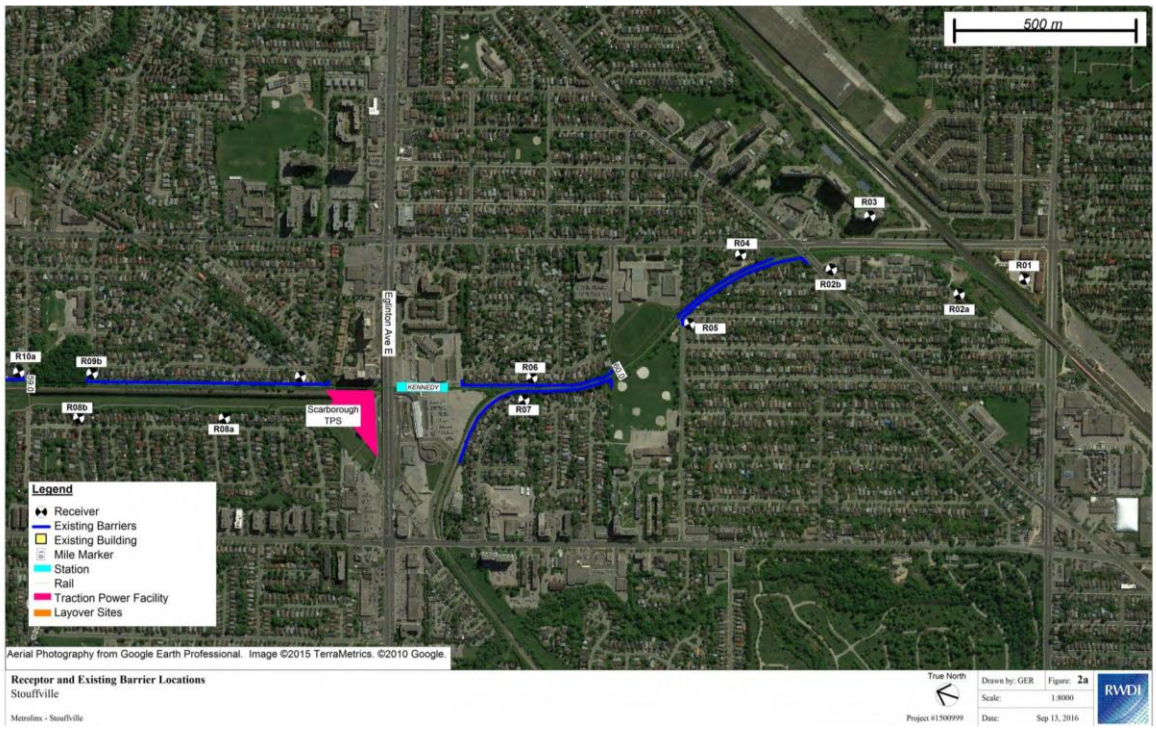


Figure 6-11: Stouffville Corridor Receptor and Existing Barrier Locations 2

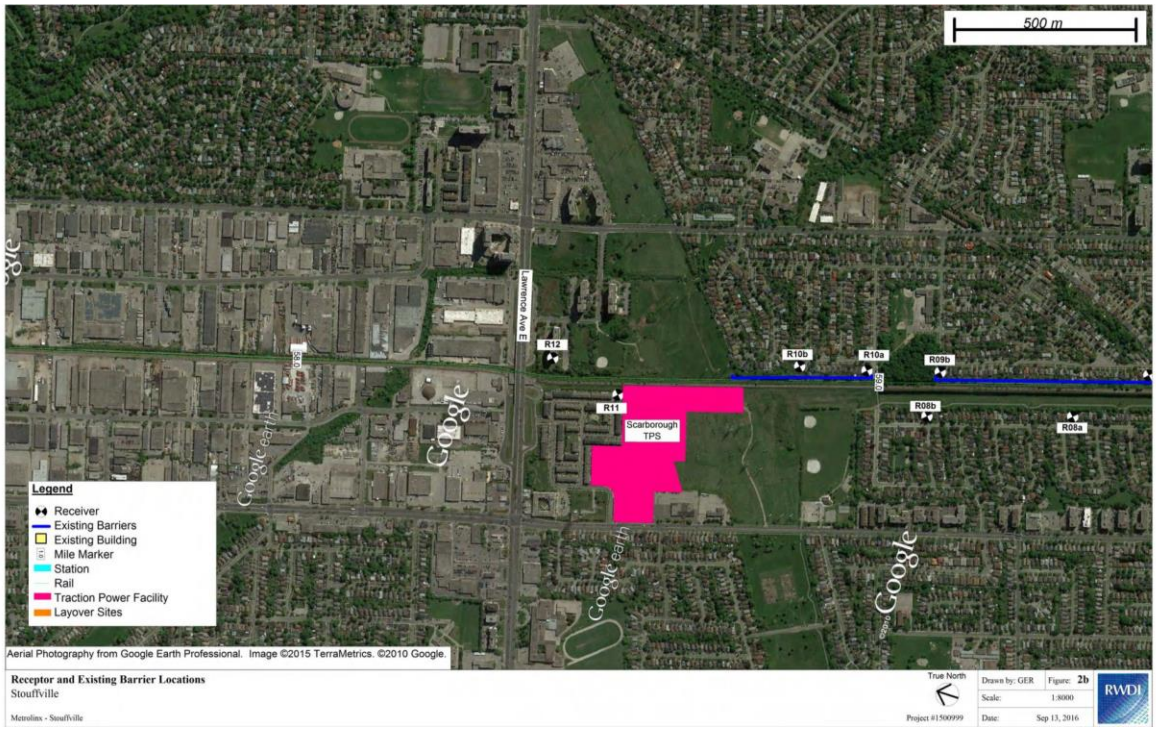


Figure 6-12: Stouffville Corridor Receptor and Existing Barrier Locations 3

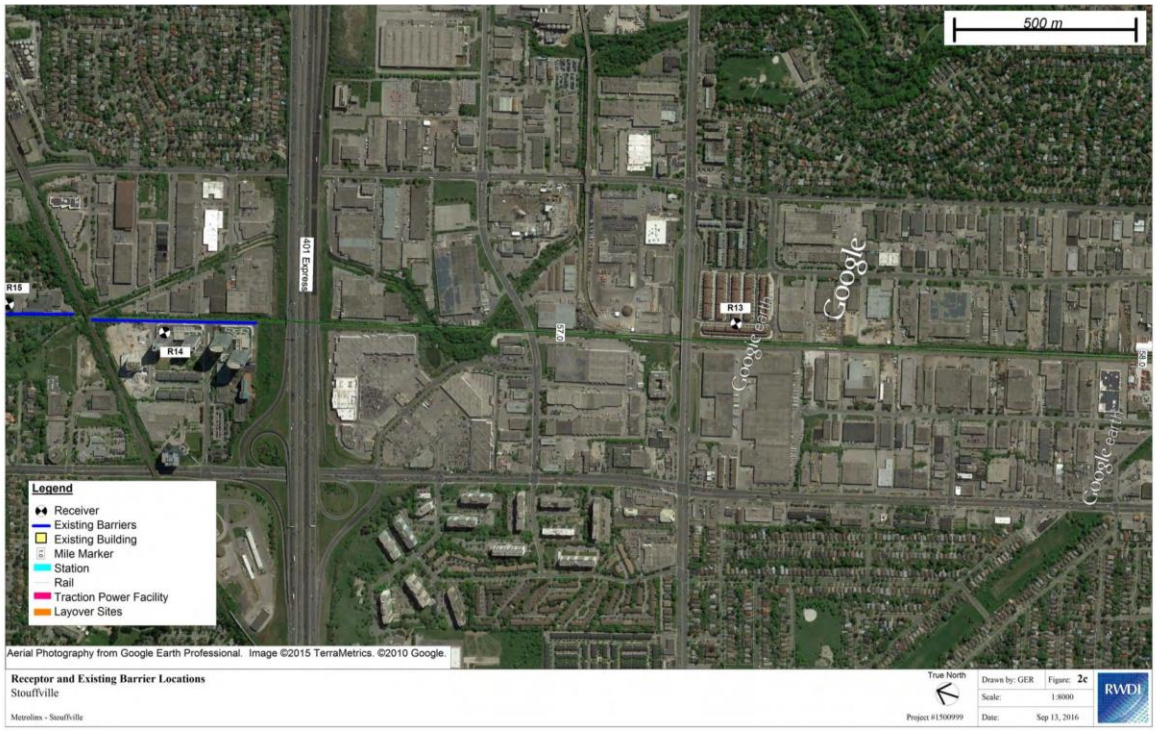


Figure 6-13: Stouffville Corridor Receptor and Existing Barrier Locations 4

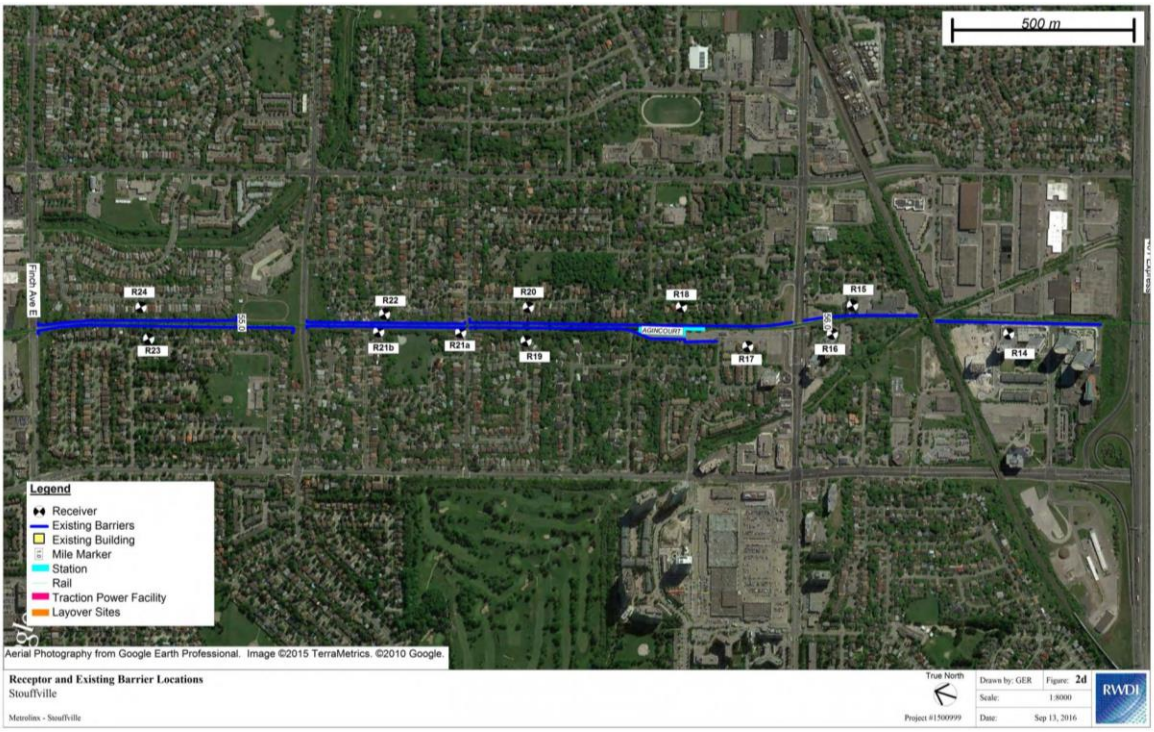


Figure 6-14: Stouffville Corridor Receptor and Existing Barrier Locations 5

Figure 6-15: Stouffville Corridor Receptor and Existing Barrier Locations 6

Figure 6-16: Stouffville Corridor Receptor and Existing Barrier Locations 7

Figure 6-17: Stouffville Corridor Receptor and Existing Barrier Locations 8

Figure 6-18: Stouffville Corridor Receptor and Existing Barrier Locations 9

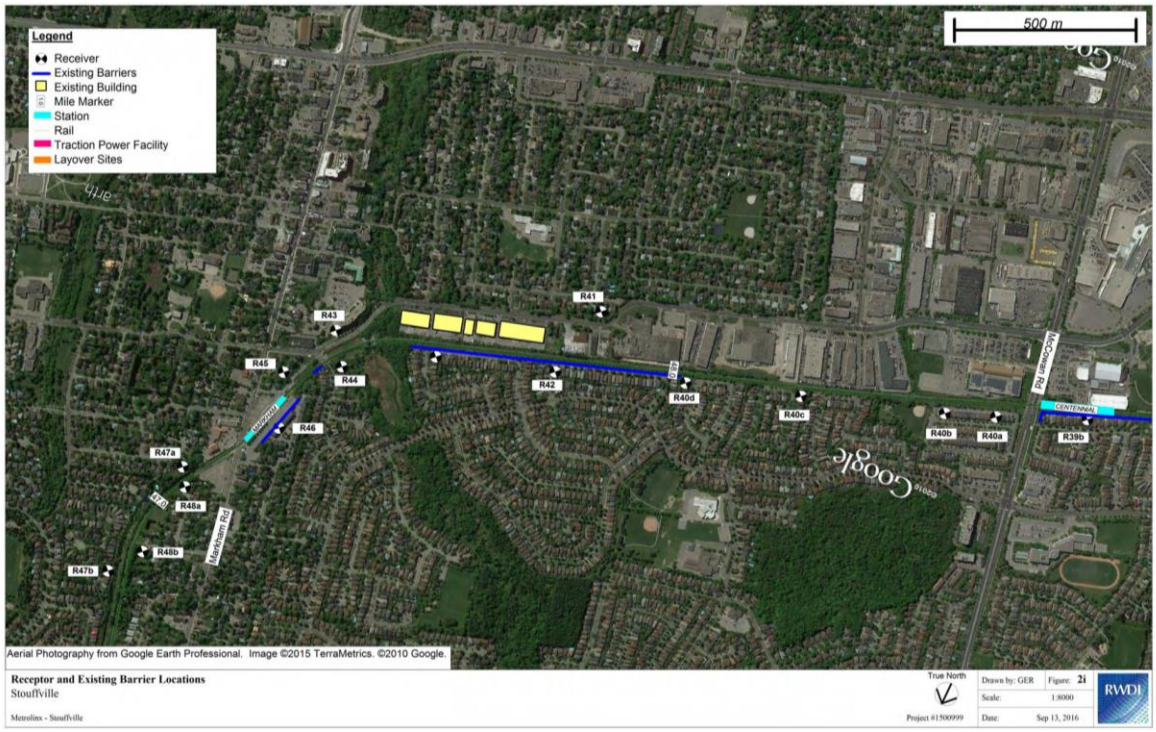


Figure 6-19: Stouffville Corridor Receptor and Existing Barrier Locations 10

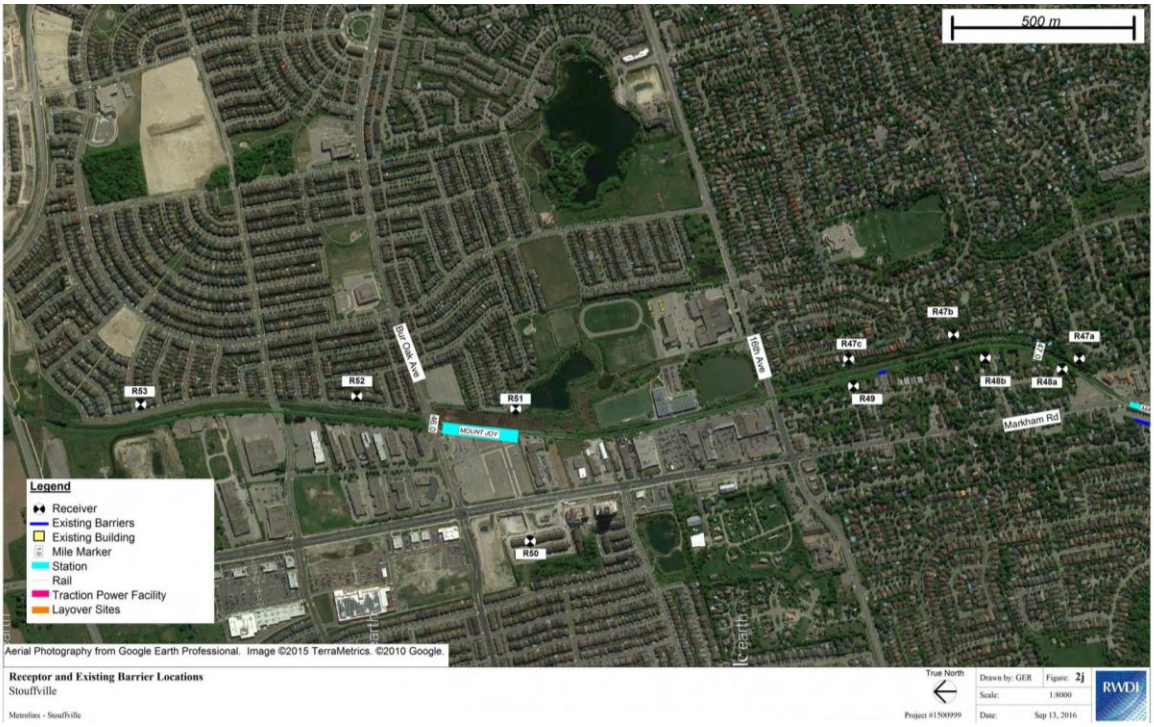


Figure 6-20: Stouffville Corridor Receptor and Existing Barrier Locations 11

Figure 6-21: Stouffville Corridor Receptor and Existing Barrier Locations 12

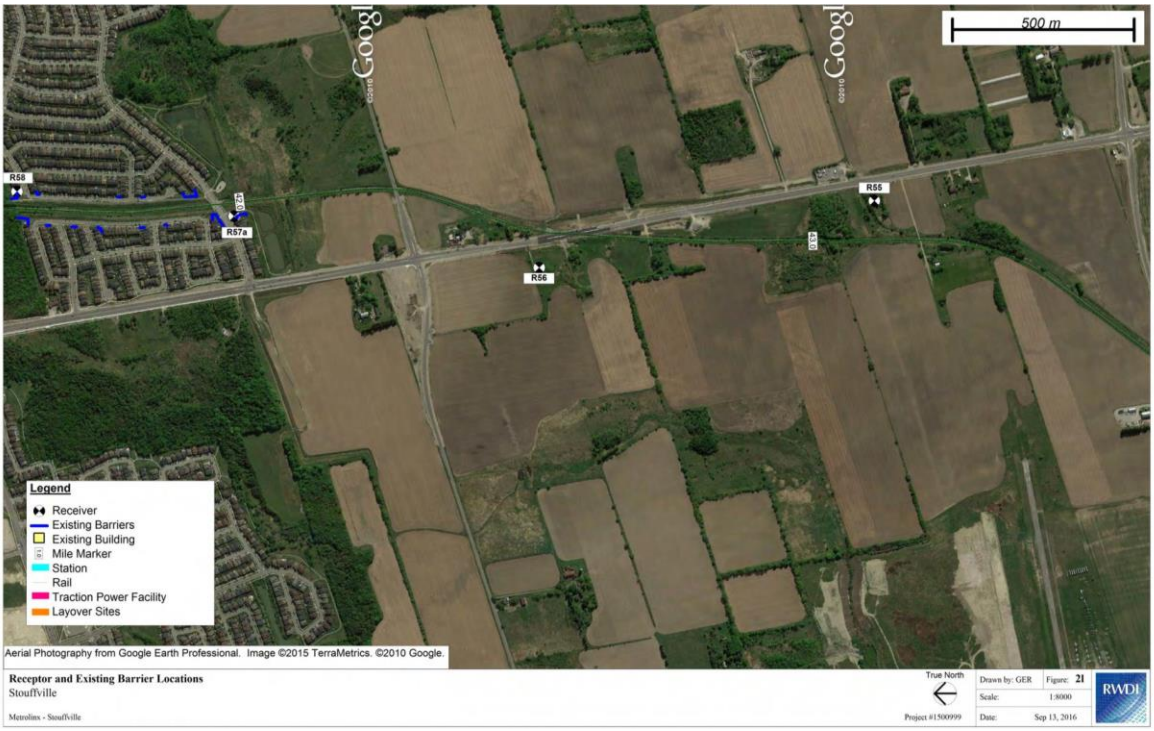
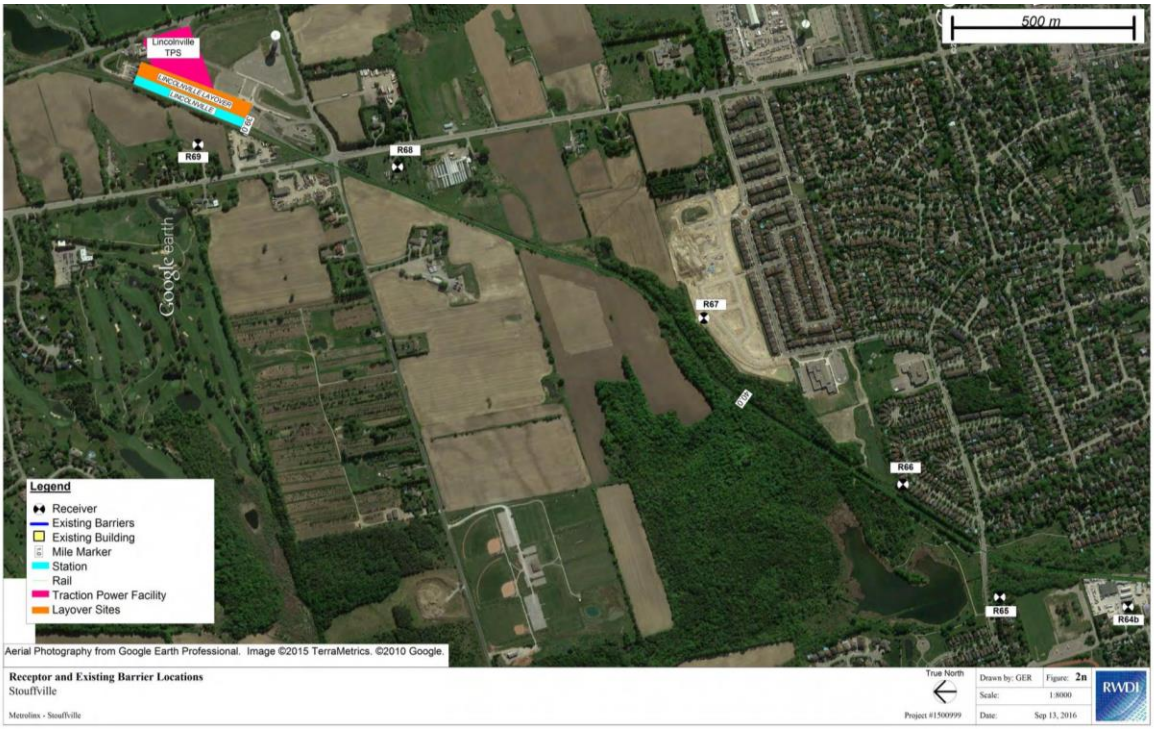


Figure 6-22: Stouffville Corridor Receptor and Existing Barrier Locations 13

Figure 6-23: Stouffville Corridor Receptor and Existing Barrier Locations 14



6.8 Visual

Please refer to Section 1.5.8 for a description of the methodology followed for collection of visual baseline conditions data. Baseline conditions within each segment of the Stouffville Corridor have been summarized below. Additional details can be found in the Visual Assessment Baseline Conditions Report contained in **Appendix H1**.

6.8.1 Scarborough Tap Location and TPS

See **Figure 1-10** in Section 1.3 for the location of the proposed Scarborough Tap Location and TPS site. The Scarborough Tap location is in a major electric transmission corridor on the west side of the railroad immediately behind other electric infrastructure. The site is far enough removed from nearby homes and Arsandco Park (which is on the east side of the tracks) for there to be no visual impact, and therefore no mitigation measures are required.

6.8.2 Unionville PS

See **Figure 1-11** in Section 1.3 for the location of the proposed Unionville PS site. The site for the Unionville PS is located in this section. The site is south of the 407 Express Toll Road on the east side of the railroad on a vacant parcel of land behind a Power Stream facility. The site is open and visible form its surroundings which are either vacant land or industrial uses.

6.8.3 Lincolnville PS

See **Figure 1-12** in Section 1.3 for the location of the proposed Lincolnville PS site. The site for the Lincolnville PS is immediately north of the station on open land behind the Lincolnville Rail and bus facility. The site is open and clearly visible from the station access road.

6.8.4 Corridor & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

This section is within the City of Toronto. The rail corridor branches off the Lakeshore East Corridor immediately west of Midland Avenue. The Lakeshore East Corridor crosses Midland Avenue on a bridge whereas the Stouffville Corridor drops down to grade and parallels Midland Avenue. The Stouffville Corridor crosses Danforth Avenue at grade and from there continues in its own right-of-way with private properties on either side of the track. On the opposite side of Midland Avenue from the track there is a high-rise residential development with clear views across the rail right-of-way. This development also has views of the Lakeshore East Corridor to its south.

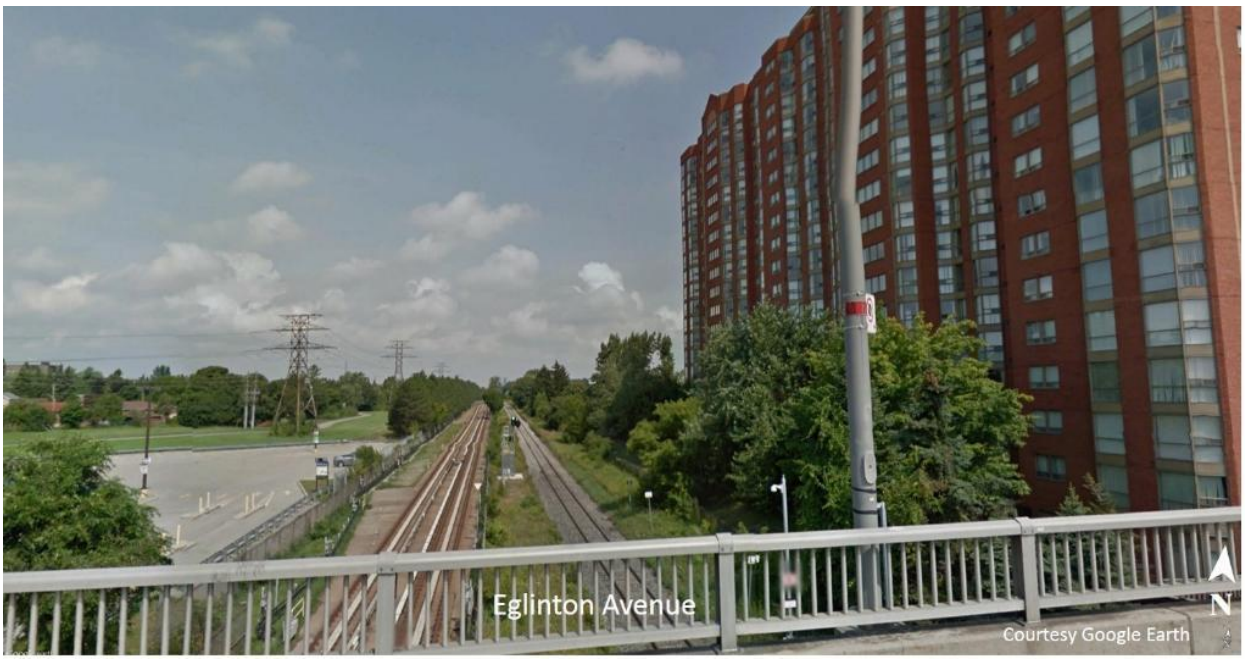
Figure 6-24: High Rise Housing on Midland Avenue overlooking Track on the Left of the Picture

Most development between Midland Avenue and Eglinton Avenue East is single-family housing backing up to the rail corridor. Although the rail corridor is currently buffered with vegetation along the edge of the right-of-way, there is potential for views through this buffer from backyards and rear windows of these homes, especially during winter when the leaves are off the trees.

There are two schools, Scarborough Centre for Alternative Studies and Corvette Junior Public School, as well as Corvette Park on opposite sides of the track. Immediately north of Eglinton Avenue East is a high-rise residential development which overlooks the tracks; otherwise, north to the electric transmission lines, single-family residences continue to back up to the rail corridor on the east side.

On the west side, the Stouffville Corridor is paralleled by the TTC's Scarborough Line from the Kennedy GO Station to Ellesmere Road, which is fenced with a dense evergreen buffer to its west. This buffer will protect the homes and bike trail that parallel the west side of the corridor from any views of future electrification infrastructure in this area. North of the electric transmission lines and south of Lawrence Avenue East there is a low-rise multi-family development to the west and a high-rise residential development to the east. Both have views of the rail corridor which may change with the electrification project.

Figure 6-25: High Rise North of Eglinton Avenue East overlooking Track showing TTC Line and Evergreen Buffer to the West. The Scarborough TPS site is in the Parking Lot on the Left Side of the Picture



North of Eglinton Avenue East to Highway 401, the character of the rail corridor changes and uses adjacent to it are almost entirely industrial and commercial. There is only one exception: a townhouse development immediately adjacent to the track south of Ellesmere Road. In this location, the track is below an embankment behind the homes and there are also garages with steeply pitched roofs between the homes and the tracks. However, views of the proposed electrification infrastructure may be visible from the third storey windows of these homes.

North of Highway 401, the east side of the right-of-way is industrial, but on the west side are three relatively new high-rise residential projects overlooking the tracks. These high-rises sit on parking garages,

so electrification infrastructure may only be visible for residents of upper floors looking down to the tracks below.

Figure 6-26: Townhouses backing up to Rail Corridor South of Ellesmere Road - Railroad is behind fence on Right of Picture

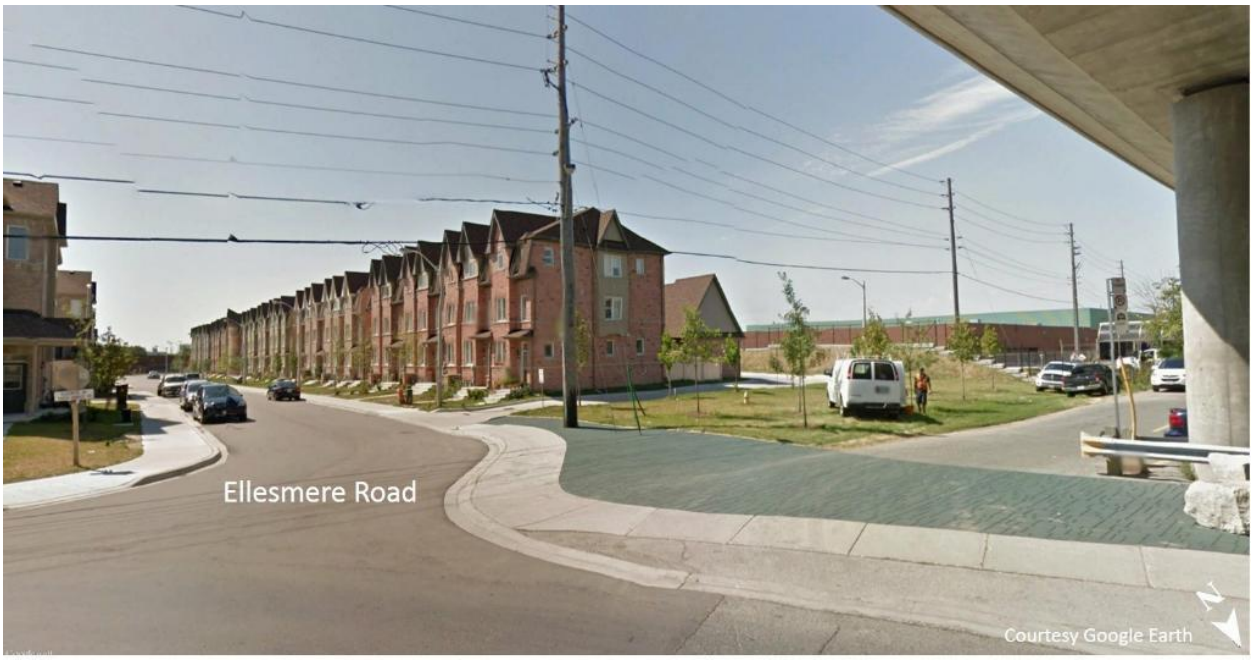
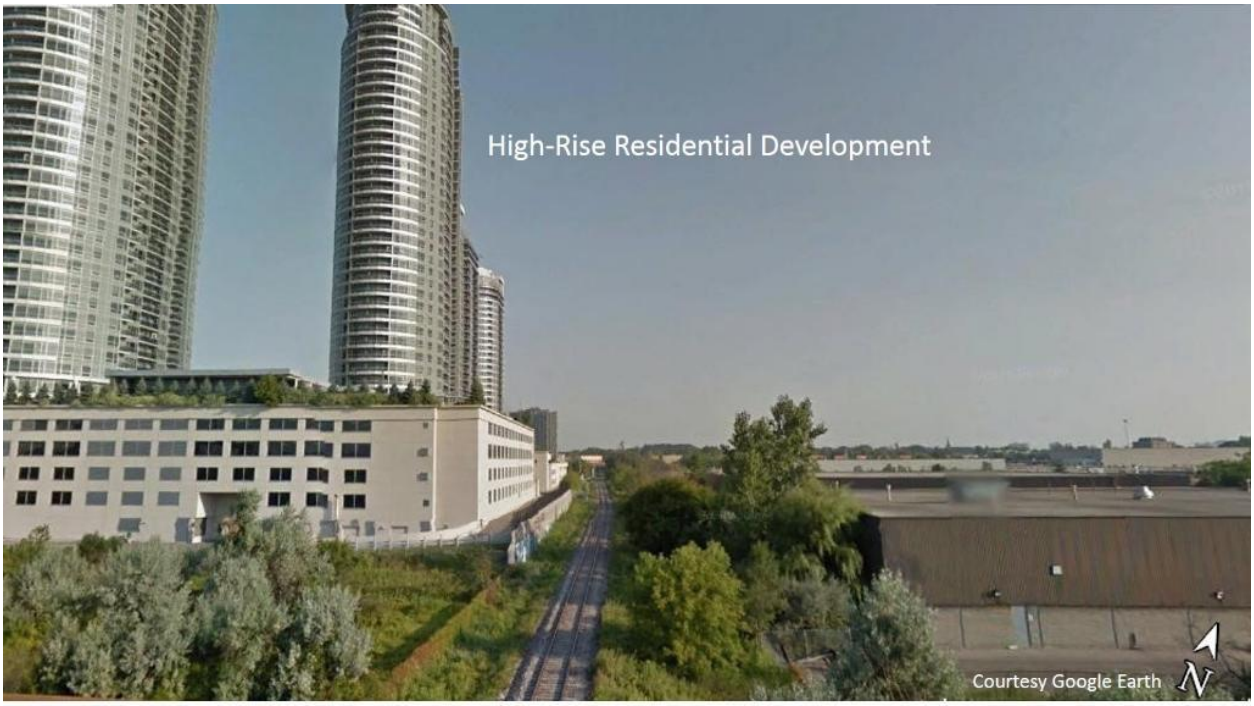


Figure 6-27: High Rise Residential Development north of Highway 401 overlooking Railroad



There are four road bridges over the railroad in this section at Eglinton Avenue East, Lawrence Avenue East, Ellesmere Road and Highway 401. Views from these bridges, especially for pedestrians, will be altered due to the protective barriers that will be erected to provide protection from the electrification infrastructure. There is also one rail bridge over the Stouffville Corridor at Sheppard Avenue East. **Figure 6-28** shows the rail bridge and the high-rise buildings beyond that overlook the rail corridor. There are three grade crossings, two of which (at Danforth Avenue and Corvette Road) are in residential areas and the remaining one at Progress Road in an industrial area.

Figure 6-28: Sheppard Avenue under Rail Bridge looking East

There are two pedestrian crossings of the rail corridor, one grade crossing and one bridge. The pedestrian experience may be changed by the addition of electrification infrastructure to the corridor, especially at the pedestrian bridge where protective barriers may be erected on both sides of the bridge.

Figure 6-29: Pedestrian Bridge at Tara Avenue

There is one station in this section: Kennedy GO Station, which is located adjacent to the Kennedy Subway Station. Views from the parking lots to the station will be changed by the introduction of electrification infrastructure.

6.8.5 Corridor & Bridges: Section SV-2 – Agincourt Station to Milliken Station

This section is also entirely within the City of Toronto. From Sheppard Avenue East to Finch Avenue East, the rail corridor is bordered exclusively by single-family residential neighbourhoods with homes backing up to the rail right-of-way. Although there is currently a vegetative buffer along the rail corridor and rear yard fences along many of the backyards, electrification infrastructure may be visible from backyards and rear windows especially in winter when deciduous trees have shed their leaves A neighbourhood park (Havendale Park) and a school (Sir William Osler High School) also border the rail corridor.

Figure 6-30: Homes behind Vegetation at Havendale Road Grade Crossing

From Finch Avenue East to Steeles Avenue East, the end of Section SV-2, the railroad is entirely bordered with industrial uses that will not be sensitive to the introduction of electrification infrastructure.

There are no bridges in this section. There are five grade crossings, two of which are in residential neighbourhoods at Havendale Road and Huntingwood Drive where electrification will change the view of the crossing. The remaining three grade crossings at Finch Avenue, McNichols Avenue and Passmore Avenue are all in industrial areas.

Two stations are located in this section: Agincourt GO Station and Milliken GO Station. Agincourt GO Station is surrounded by residential development. The station building is a picturesque older building which has been carefully restored. . Parking is located along the tracks so that passengers have a clear view of the rail corridor as they exit their cars and walk to and from the platform. Milliken GO Station has a similar building and open views of the rail corridor from the parking lot.

Figure 6-31: Agincourt GO Station Building and Parking along Rail Right of Way

6.8.6 Corridor & Bridges: Section SV-3 – Milliken Station to Unionville Station

This section is within the Town of Markham. The entire section passes through an area which is almost entirely industrial. However, there are a few residential developments interspersed within this area, some of which, like the example in **Figure 6-32**, have clear views across the rail corridor which may be changed by electrification infrastructure.

Figure 6-32: Townhouses at Sunset Drive facing Rail Corridor which is elevated on an Embankment

There are two road bridges over the railroad in this section at Highway 407 and 14th Avenue. The bridge at Highway 407 does not have sidewalks and traffic is moving at high speed, limiting views of the rail corridor and minimizing the visual impact of the electrification infrastructure. The view is open on both sides of the highway leading up to the bridge and any protective barriers erected on the bridge would have little impact on the view of passing motorists. 14th Avenue is in an industrial area.

The rail corridor is in a trench and passes under another, east-west rail corridor south of Highway 407. There are two grade crossings at Kennedy Road and Dennison Street in mixed use areas with some residential development close to the crossings. Electrification infrastructure across these grade crossings may change the view from the approaches and surroundings. There is also one grade crossings in industrial areas at Steeles Avenue.

There is only one station in this section: Unionville GO Station, which is located in an open area with a parking lot adjacent to the track. Views of the station for passengers may be altered by electrification infrastructure.

6.8.7 Corridor & Bridges: Section SV-4 – Unionville Station to Markham Station

This section is also in the Town of Markham. North of Unionville GO Station to Highway 7, land use abutting the rail corridor is either industrial or vacant land with no visual sensitivity related to electrification infrastructure. However, north of Highway 7, the character of the rail corridor changes, with mostly residential development interspersed with parks abutting the rail right-of-way. Some homes back up to the track while in other areas they front the track facing a local street that closely parallels the

railroad. Many homes are currently buffered with fences and vegetation but some views through to the rail corridor also exist and may be affected by the future electrification project. There are several parks in this section, including Austin Drive Park, Stargell Park, Markham Centennial Park, and Cedar Valley Park. Several of these parks follow stream valleys with trails running alongside them. The rail bridges over these streams have scenic views that may be changed by the introduction of electrification infrastructure. To the west of the tracks, there is some small-scale industrial development backing up to the tracks which is not sensitive to changes in the view from electrification infrastructure.

Enterprise Boulevard is in an area of vacant industrial land, and is not likely to be sensitive to a change in the view due to the electrification infrastructure project. This area will be investigated further in the visual assessment phases.

Figure 6-33: Homes facing Tunney Crescent - Railroad is behind the Fence on the Right of the Picture

There is one rail bridge over Enterprise Boulevard and no bridges where the railroad passes under a road. There are six grade crossings of which four are in residential areas at Eureka Street, Main Street Unionville, Kennedy Road and Snider Drive and two are in mixed use or commercial areas at Highway 7 and McCowan Road. Main Street Unionville grade crossing is at a picturesque spot and is a gateway to downtown Unionville.

There is only one station in this section: Centennial GO Station, which has a parking garage adjacent to the tracks and a pick-up area directly facing the tracks. Views for passengers will be altered by the introduction of electrification infrastructure.

6.8.8 Corridor & Bridges: Section SV-5 – Markham Station to Mount Joy Station

This section is also in the Town of Markham, and is entirely residential from its southern end at Markham Station to 16th Avenue, with homes backing onto the rail right-of-way. As elsewhere, there is existing fencing and vegetation but electrification infrastructure could still be visible from these homes, especially in winter months when the leaves are off the trees.

North of 16th Avenue on the east side of the tracks is industrial development, which is not sensitive to changes in the view due to electrification infrastructure. On the west side of the tracks is some residential development, as well as Mount Joy Lake Park and ball fields. Views from the park and backyards in this area will be considered during the visual evaluation.

There are no bridges either under or over the rail corridor in this section, but there are two grade crossings at Markham Road and 16th Avenue in mixed use/residential areas where the view may be altered by the introduction of electrification infrastructure. There are several grade crossings in residential areas.

Two stations are located in this section: Markham GO Station and Mount Joy GO Station. At both stations, parking lots abut the track and views may be altered for passengers arriving at and leaving the station due to the electrification project. The Markham GO Station is the gateway to the Markham Village Heritage Conservation District which is a picturesque town center with attractive buildings and manicured streetscapes.

6.8.9 Corridor & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

This section is partly within the Town of Markham and partly in the Town of Whitchurch-Stouffville. From Mount Joy GO Station at Bur Oak Avenue to Major MacKenzie Drive, there is industrial development on the east side of the track and residential development on the west side, where the sides or fronts of homes face the tracks. Since these buildings are relatively new, little vegetation shields them from the rail corridor and views from these homes will be affected by future electrification infrastructure.

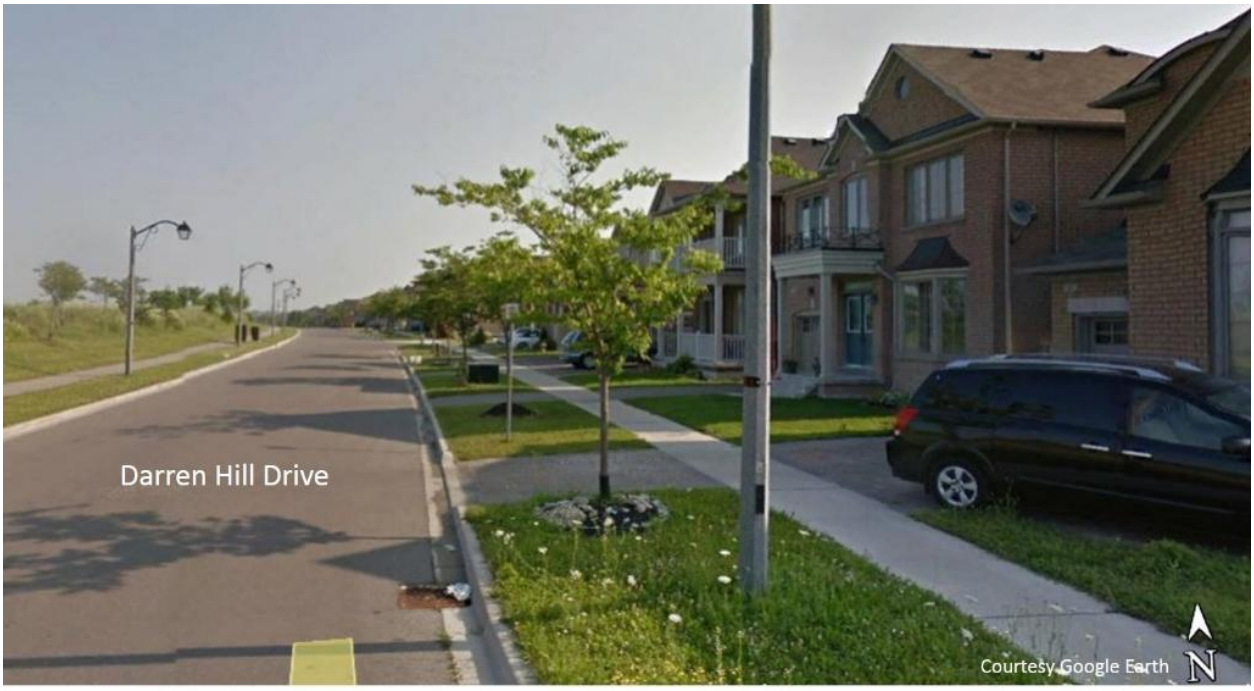
North from Major MacKenzie Drive to the Town of Whitchurch-Stouffville is entirely open farmland. There are a few farmhouses and homes within the view-shed, but not particularly close to the track.

This section passes through the Rouge National Urban Park. The Rouge National Urban Park covers almost 80 sq kms of important natural, cultural and agricultural landscapes and is Canada's first national urban park. It is home to over 1,700 species of plants and animals and contains some of the last remaining working farms in the Greater Toronto Area.

In Stouffville, there are homes facing and backing up to the tracks. The newer homes have no vegetation to interrupt views of the rail corridor, while older homes have some existing vegetative buffer that will

help shield views. In either case, there is potential for views of electrification infrastructure from these homes.

Figure 6-34: Homes on Darren Hill Drive facing Rail Corridor (on Embankment to the Left)



There are no bridges crossing over or under the railroad in this section. However, there are nine grade crossings, four of which at Bur oak Avenue, Castlemore Avenue, Reeves Way and Hoover Drive are in residential areas where electrification infrastructure may be visible from residential streets and surrounding development. The Main Street grade crossing is in the picturesque Stouffville downtown. The remaining grade crossings at Major McKenzie Drive, Eglin Mill Road, 9th Line and 19th Avenue are in open rural areas.

Stouffville GO Station is the only station in this section. Stouffville GO Station is located on the Main Street of the attractive downtown of Stouffville. There is also a fairly new mid-rise apartment building close to the tracks behind some of the station parking. Views of the station and the grade crossing may be altered with the introduction of electrification infrastructure.

Figure 6-35: Stouffville GO Station in Downtown Stouffville

Figure 6-36: Second View of Stouffville GO Station showing Midrise Apartment Building close to Rail Corridor in Distance behind Station Parking Lot

6.8.10 Corridor & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

This section is in the Town of Whitchurch-Stouffville. There is a small section of residential development north of the Stouffville GO Station that backs up to the track. Otherwise, there is little development in this section. The tracks abut the Stouffville Conservation Area, which is mostly forested. There are a few farms and individual residences within the view-shed, but not immediately adjacent to the rail corridor. Views from some of these homes may be affected by the introduction of electrification infrastructure.

There are no bridges either under or over the rail corridor in this section, but there are three grade crossings at Millard Street, Bethesda Sideroad and 10th Line. Only Millard Street is in a residential neighbourhood where the introduction of electrification may alter the view of the road and surrounding development.

The only station in this section is Lincolnville GO Station, the terminal station of the Stouffville Corridor. Storage tracks at the station store trains overnight for the morning commute, with trains returning in the evening. All the tracks including the storage tracks will be electrified. Passengers walk across these storage tracks to access buses and cars from their trains. The view may be changed for these passengers as they walk under the electrification infrastructure. Currently, there is no development around the station that would be affected by the electrification project.

6.9 Utilities

Please refer to Section 1.5.9 for a description of the methodology followed for collection of utilities baseline conditions data. Baseline conditions within each segment of the Stouffville Corridor have been summarized below. Additional details can be found in the Utilities Baseline Conditions Report contained in **Appendix I1**.

6.9.1 Scarborough Tap Location and TPS

See **Figure 1-10** in Section 1.3 for the location of the proposed Scarborough Tap Location site.

Table 6-25: Summary of Utilities at Proposed Scarborough Tap Location and TPS

Utility	Description
Hydro	Hydro One owns five 230kV overhead lines on or near the Scarborough TPS and Tap Location. Hydro One owns three buried lines of unknown voltage on or near the Scarborough TPS and Tap Location. Toronto Hydro owns two 27.6kV overhead lines, one buried conduit, and one buried duct bank on or near the Scarborough TPS and Tap Location.
Pipelines	There are no records found of third party pipelines on or near the Scarborough TPS and Tap Location.

Utility	Description
Watermains	City of Toronto owns two buried watermains on or near the Scarborough TPS and Tap Location.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the Scarborough TPS and Tap Location.
Stormwater Sewers	City of Toronto owns one buried stormwater sewer of unknown size on or near the Scarborough TPS and Tap Location.
Gas Mains	There are no records found of third party gas mains on or near the Scarborough TPS and Tap Location.
Communication Companies	Bel owns two buried conduits on or near the Scarborough TPS and Tap Location.

Using the criteria set out in Utilities Impact Assessment, the potential conflicts identified above are spatial in nature, meaning that they may occupy the same physical space as TPF infrastructure. This has been a conservative approach as the final layout of the TPF infrastructure is not determined. It is most likely that the majority of conflicts can be mitigated by placing the TPF infrastructure such that utilities are avoided. Where this is not possible, other mitigation measures include removal, relocation, reconfiguration or burying of the utility in question.

6.9.2 Scarborough 25kV Feeder Route

Table 6-26: Scarborough 25kV Feeder Route

Utility	Description
Hydro	Hydro One owns two overhead 230kV lines on or near the Scarborough 25kV Feeder Route. Toronto Hydro owns four overhead lines, three buried conduits, five buried duct banks, and two conduits on the Eglinton Ave E overpass within the Scarborough 25kV Feeder Route. TTC owns one buried conduit on or near the Scarborough 25kV Feeder Route.
Pipelines	There are no records found of third party pipelines on or near the Scarborough 25kV Feeder Route.
Watermains	City of Toronto owns four buried watermains on or near the Scarborough 25kV Feeder Route.
Sanitary Sewers	City of Toronto owns two buried sanitary sewers on or near the Scarborough 25kV Feeder Route.
Stormwater Sewers	City of Toronto owns two buried stormwater sewers on or near the Scarborough 25kV Feeder Route.
Gas Mains	Enbridge Gas owns two buried gas mains on or near the Scarborough 25kV Feeder Route.

Utility	Description
Communication Companies	Zayo owns one buried conduit on or near the Scarborough 25kV Feeder Route. Bell owns one overhead cable, five buried cables, and 12 buried conduits on or near the Site. Cogeco Connexion owns one buried conduit crossing the Site. Rogers owns one overhead cable crossing and three buried conduits on or near the Site. Telus owns one buried duct bank that runs parallel to the ROW within the Site.

Using the criteria set out in Utilities Impact Assessment, the potential conflicts identified above are spatial in nature, meaning that they may occupy the same physical space as TPF infrastructure. This has been a conservative approach as the final layout of the TPF infrastructure is not determined. It is most likely that the majority of conflicts can be mitigated by placing the TPF infrastructure such that utilities are avoided. Where this is not possible, other mitigation measures include removal, relocation, reconfiguration or burying of the utility in question.

6.9.3 Unionville PS

See **Figure 1-11** in Section 1.3 for the location of the proposed Unionville PS site. In addition to the utility requests for Section SV-3 (see section 6.9.7), an ON1Call planning request was logged for the entire property for the proposed Unionville PS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Unionville PS notified four communication companies: Allstream, Bell, Rogers, and Telus. York Region and Hydro One were also notified by ON1Call. These utility companies and the City of Markham were contacted individually by MH for information regarding existing and future buried and overhead utilities.

Table 6-27: Summary of Utilities at Proposed Unionville PS Site

Utility	Description
Hydro	Hydro One owns one overhead 230kV line, one overhead 500kV line, and one buried 230kV line on or near the Unionville PS. Hydro One owns two buried conduits of unknown voltage on or near the Unionville PS. Alectra Owns two overhead 27.6kV lines on or near the Site.
Pipelines	There are no records found of third party pipelines on or near the proposed Unionville PS site.
Watermains	City of Markham owns one buried 400mm-diameter watermain on or near the Unionville PS. York Region owns one buried 1500mm-diameter watermain on or near the Site.
Sanitary Sewers	City of Markham owns one buried 375mm-diameter sanitary sewer on or near the Unionville PS.
Stormwater Sewers	City of Markham owns 10 buried stormwater sewers on or near the Unionville PS.
Gas Mains	There are no records found of third party gas mains on or near the proposed Unionville PS site.

Utility	Description
Communication Companies	Bell owns one overhead cable and nine buried conduits on or near the Unionville PS. Rogers owns three overhead cables and five buried conduits on or near the Site. Telus owns one buried conduit on or near the Site.

6.9.4 Lincolnville PS

See **Figure 1-12** in Section 1.3 for the location of the proposed Lincolnville PS site. In addition to the utility requests for Section SV-7 (see Section 6.9.12), an ON1Call planning request was logged for the entire property for the Lincolnville PS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Lincolnville PS notified two communication companies: Bell and Rogers. York Region was also identified as having plant in the area. These utility companies and the Town of Whitchurch-Stouffville were contacted individually by MH for existing and future information regarding buried and overhead utilities.

Table 6-28: Summary of Utilities at Proposed Lincolnville PS Site

Utility	Description
Hydro	There are no records found of third party hydro transmission lines on or near the Lincolnville PS. There are no records found of third party hydro distribution lines on or near the Lincolnville PS.
Pipelines	There are no records found of third party pipelines on or near the proposed Lincolnville PS site.
Watermains	York Region confirmed that the proposed Lincolnville PS site is clear of York Region watermains, however watermains exist on the surrounding roads to service the GO Station.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the proposed Lincolnville PS site.
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed Lincolnville PS site.
Gas Mains	There are no records found of third party gas mains on or near the proposed Lincolnville PS site.
Communication Companies	Bell owns one overhead cable on or near the Lincolnville PS.

6.9.5 Corridor & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

Table 6-29: Summary of Utilities within Section SV-1

Utility		Description
Hydro	***Transmission***	Hydro One owns three overhead 230kV crossings in Section SV-1.

Utility		Description
	Local Distribution	Hydro One owns one overhead 27.6kV crossing in Section SV-1. Toronto Hydro owns seven overhead crossings, ranging in voltage from 120V to 27.6kV in this Section. Toronto Hydro owns one conduit and five duct bank crossings in this Section. Toronto Hydro also owns three duct banks that run parallel to the ROW and six duct banks on overpasses in this Section. TTC owns one buried conduit crossing near Eglinton Ave E in this Section.
Pipelines		There are no records found of third party pipelines in Section SV-1.
Watermains		The City of Toronto owns five buried watermain crossings of varying size in Section SV-1..
Sanitary Sewers		The City of Toronto owns three sanitary sewer crossings ranging from 250mm to 350mm in diameter in Section SV-1.
Stormwater Sewers		The City of Toronto owns four stormwater sewer crossings ranging from 300mm to 1800mm in diameter in SV-1. City of Toronto also owns two ditch culvert crossings in this Section.
Gas Mains		Enbridge Gas owns six buried gas main crossings in Section SV-1, varying in size from 2in. to 16in. in diameter. Enbridge Gas also owns one 1-¼in.-diameter buried gas main that runs parallel to the ROW in this Section.
Communication Companies		Zayo owns one buried conduit crossing and one conduit on the Highway 401 overpass in Section SV-1. Bell owns two buried cables, five buried conduits, and six buried duct bank crossings in this Section. Bell also owns three buried cables and one buried duct bank near Danforth Rd that run parallel to the ROW in this Section. Cogeco Peer 1 owns one overhead cable near Lawrence Ave E and two buried conduit crossings in Section SV-1. Rogers owns three overhead cable crossings, three buried conduit crossings, and one buried cable crossing near Sheppard Ave E in this Section. Telus owns one buried crossing conduit near Sheppard Ave E, one buried duct bank crossing near Sheppard Ave E, and one buried duct bank that runs parallel to the ROW from Midland Ave to Kennedy Rd in Section SV-1.

6.9.6 Corridor & Bridges: Section SV-2 – Agincourt Station to Milliken Station

Table 6-30: Summary of Utilities within Section SV-2

Utility		Description
Hydro	***Transmission***	Hydro One owns three overhead 230kV crossings and one idle overhead crossing in Section SV-2.
	Local Distribution	Toronto Hydro owns five overhead crossings of varying voltage in Section SV-2. Toronto Hydro owns nine buried conduit crossings and one buried duct bank crossing near Finch Ave E in this Section. Toronto Hydro also owns one buried conduit near Havendale Rd and two buried duct banks that run parallel to the ROW in this Section.

Utility	Description
Pipelines	Trans-Northern owns one 250mm-diameter fuel transmission pipeline crossing in Section SV-2. Enbridge Pipelines owns one 900mm-diameter fuel transmission pipeline crossing in this Section.
Watermains	City of Toronto owns seven buried watermain crossings varying in size in Section SV-2.
Sanitary Sewers	City of Toronto owns two buried sanitary sewer crossings in Section SV-2: one is 300mm and the other is 525mm in diameter.
Stormwater Sewers	City of Toronto owns two buried stormwater sewer crossings in Section SV-2: one is 1650mm and the other is 2250mm in diameter. In addition, City of Toronto owns one ditch culvert that runs parallel to the ROW in this Section.
Gas Mains	Enbridge Gas owns six buried gas main crossings of varying size in Section SV-2.
Communication Companies	Zayo owns one buried conduit crossing in Section SV-2. Bell owns two buried cables, four buried conduits, and two buried duct bank crossings in Section SV-2. Cogeco Peer 1 owns one overhead cable crossing near McNicoll Ave and one buried conduit crossing near Huntingwood Dr in this Section. Rogers owns one overhead cable crossing and four buried conduit crossings in this Section.

6.9.7 Corridor & Bridges: Section SV-3 – Milliken Station to Unionville Station

Table 6-31: Summary of Utilities within Section SV-3

Utility		Description
Hydro	***Transmission***	Hydro One owns one overhead 230kV crossing near Highway 407 and two overhead 500kV crossings in Section SV-3.
	Local Distribution	Alectra owns five overhead crossings ranging from 16kV to 27.6kV and one buried 27.6kV conduit that runs parallel to the ROW near 14th Ave in Section SV-3. Toronto Hydro owns one overhead crossing near Steeles Ave E and one buried duct bank crossing near Steeles Ave E in this Section.
Pipelines		There are no records found of third party pipelines in Section SV-3.
Watermains		City of Markham owns three 600mm-diameter buried watermain crossings in Section SV-3. City of Toronto owns one 2400mm-diameter buried watermain crossing in this Section.
Sanitary Sewers		City of Markham owns one 600mm-diameter and one 1350mm-diameter buried sanitary sewer crossing in Section SV-3.
Stormwater Sewers		City of Markham owns four buried stormwater sewer crossings in SV-3, ranging in size from 1350mm to 3050mm in diameter.

Utility	Description
Gas Mains	Enbridge Gas owns three buried gas main crossings of varying size in Section SV-3.
Communication Companies	Zayo owns three buried conduit crossings and one buried conduit that runs parallel to the ROW near 14th Ave in Section SV-3. Bell owns two buried cables, one buried conduit near Steeles Ave E, and four buried duct bank crossings in this Section. Bell also owns five buried cables and two buried conduits that run parallel to the ROW in this Section. Cogeco Peer 1 owns one buried conduit crossing in this Section, near Steeles Ave E. Rogers owns three overhead cables, one buried cable near 14th Ave, and two buried conduit crossings in this Section. Rogers also owns one buried conduit that runs parallel to the ROW near Steeles Ave E in this Section. Telus owns three buried duct bank crossings and one buried duck bank that runs parallel to the ROW near Kennedy Rd in this Section.

6.9.8 Corridor & Bridges: Section SV-4 – Unionville Station to Markham Station

Table 6-32: Summary of Utilities within Section SV-4

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section SV-4.
	Local Distribution	Alectra owns three overhead crossings and three buried cable crossings ranging from 16kV to 27.5kV in Section SV-4. Alectra also owns one 16kV overhead line that runs parallel to the ROW in this Section from Highway 7 to Pavillion St.
Pipelines		There are no records found of third party pipelines in Section SV-4.
Watermains		City of Markham owns five buried watermain crossings of varying size in Section SV-4. York Region owns one 900mm-diameter buried watermain crossing in this Section, near McCowan Rd.
Sanitary Sewers		City of Markham owns eight buried sanitary sewer crossings in Section SV-4, ranging in size from 200mm to 1050mm in diameter. York Region owns one 2100mm-diameter buried sanitary sewer crossing in this Section, near Enterprise Blvd.
Stormwater Sewers		City of Markham owns one 825mm-diameter buried stormwater sewer crossing Enterprise Blvd and one 300-mm diameter buried stormwater sewer that runs parallel to the ROW in Section SV-4, both near Enterprise Blvd. In addition, City of Markham owns two ditch culvert crossings in this Section. York Region owns three buried stormwater sewer crossings of varying size in this Section and one 300mm-diameter stormwater sewer that runs parallel to the ROW near McCowan Rd.
Gas Mains		Enbridge Gas owns three 4in. to 6in.-diameter buried gas main crossings in Section SV-4..

Utility	Description
Communication Companies	Bell owns two buried cables, three buried conduits, and five buried duct bank crossings in Section SV-4. Bell also owns two buried cables that run parallel to the ROW in this Section. Rogers owns one overhead cable near Highway 7 and three buried conduit crossings in this Section. Rogers also owns one overhead cable that runs parallel to the ROW from Highway 7 to Pavillion St in this Section. York Telecom Network (YTN) owns four buried conduit crossings in this Section. YTN also has three future buried conduit crossing installations planned in this Section.

6.9.9 Corridor & Bridges: Section SV-5 – Markham Station to Mount Joy Station

Table 6-33: Summary of Utilities within Section SV-5

Utility		Description
Hydro	***Transmission***	There are no records found of third party transmission lines in Section SV-5.
	Local Distribution	Alectra owns two 27.6kV overhead crossings in Section SV-5.
Pipelines		There are no records found of third party pipelines in Section SV-5.
Watermains		Y City of Markham owns two buried watermain crossings in Section SV-5: one is 300mm and the other is 600mm in diameter. York Region owns one 750mm-diameter buried watermain crossing in this Section.
Sanitary Sewers		City of Markham owns one 12in.-diameter and one 380mm-diameter buried sanitary sewer crossing in Section SV-5. York Region owns one 2650mm-diameter buried sanitary sewer crossing in this Section.
Stormwater Sewers		City of Markham owns one 450mm-diameter and one 1800mm-diameter buried storm sewer crossing in Section SV-5. City of Markham also owns one ditch culvert crossing in this Section, near Mount Joy GO Station. York Region owns one 800mm-diameter buried storm sewer crossing in this Section.
Gas Mains		Enbridge Gas owns two 2in.-diameter and one 10in.-diameter buried gas main crossings in Section SV-5.
Communication Companies		Bell owns one overhead cable crossing, one buried cable crossing, and one buried conduit crossing, all near Main St Markham, and three buried duct bank crossings in Section SV-5. Bell also owns one buried cable that runs parallel to the ROW near Main St Markham in this Section. Bell Mobility owns one signal broadcast tower in this Section. Rogers owns one overhead cable crossing near 16th Ave, and two buried conduit crossings in this Section. Rogers also owns one buried conduit that runs parallel to the ROW near Station St in this Section.

Utility	Description
	York Telecom Network has two future buried conduit crossings planned in this Section.

6.9.10 Corridor & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

Table 6-34: Summary of Utilities within Section SV-6

Utility		Description
Hydro	***Transmission***	There are no records found of third party transmission lines in Section SV-6.
	Local Distribution	Hydro One owns two 11kV overhead crossings and three buried crossings of unknown voltage in Section SV-6. Alectra owns four overhead crossings ranging from 16kV to 27.6kV and one buried 27.6kV crossing near Bur Oak Ave in Section SV-6.
Pipelines		TransCanada owns two buried fuel transmission pipeline crossings in Section SV-6, near 9th Line: one is 610mm and the other is 510mm in diameter.
Watermains		City of Markham owns two 900mm-diameter buried watermain crossings in Section SV-6. Town of Whitchurch-Stouffville owns four buried watermain crossings of varying size and one 6in.-diameter buried watermain that runs parallel to the ROW from Sunset Blvd to Main St Whitchurch-Stouffville in this Section. York Region owns one 1200mm-diameter buried watermain crossing in this Section, near Major Mackenzie Dr E.
Sanitary Sewers		Town of Whitchurch-Stouffville owns three buried sanitary sewer crossings ranging from 525mm to 1525 mm in diameter in Section SV-6. York Region owns one 2565mm-diameter buried sanitary sewer crossing in this Section.
Stormwater Sewers		Town of Whitchurch-Stouffville owns one 600mm-diameter buried stormwater sewer crossing near Main St Whitchurch-Stouffville and one 1050mm-diameter stormwater sewer that runs parallel to the ROW near Hoover Park Dr in Section SV-6. In addition, Town of Whitchurch-Stouffville owns two ditch culvert crossings and one ditch culvert that runs parallel to the ROW near Reeves Way Blvd in this Section.
Gas Mains		Enbridge Gas owns six buried gas main crossings ranging from 6in. to 12in. in diameter in Section SV-6. Enbridge Gas also owns one 1-¼in.-diameter buried gas main that runs parallel to the ROW from Sunset Blvd to Main St Whitchurch-Stouffville in this Section.
Communication Companies		Bell owns one overhead cable crossing near Elgin Mills Rd E, two buried cable crossings, three buried conduit crossings, and three buried duct bank crossings in Section SV-6. Rogers owns one overhead cable crossing near Main St Whitchurch-Stouffville and three buried conduit crossings in this Section. Rogers also owns one buried conduit that runs parallel to the ROW near Elgin Mills Rd E in this Section. York Telecom Network has two future buried conduit crossings planned in this Section.

6.9.11 Corridor & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

Table 6-35: Summary of Utilities within Section SV-7

Utility		Description
Hydro	***Transmission***	***There are no records found of third party transmission lines in Section SV-7.***
	Local Distribution	Hydro One owns three overhead crossings of varying voltage and one buried duct bank crossing in Section SV-7.
Pipelines		There are no records found of third party pipelines in Section SV-7.
Watermains		Town of Whitchurch-Stouffville owns one 12in.-diameter buried watermain crossing in Section SV-7. York Region owns three 200mm-diameter buried watermain crossings and one 200mm-diameter buried watermain that runs parallel to the ROW near Lincolnville GO Station in this Section.
Sanitary Sewers		There are no records found of third party sanitary sewers in Section SV-7.
Stormwater Sewers		Town of Whitchurch-Stouffville owns one ditch culvert crossing and one ditch culvert that runs parallel to the ROW in Section SV-7, both near Bethesda Side Rd.
Gas Mains		Enbridge Gas owns two buried gas main crossings of unknown size in Section SV-7.
Communication Companies		Bell owns one buried cable crossing near Schell St and one buried conduit crossing near Bethesda Side Rd in Section SV-7. Bell also owns one buried cable and one buried conduit that run parallel to the ROW in this Section, both near Bethesda Side Rd. Rogers owns two overhead cable crossings and one buried conduit crossing near Bethesda Side Rd in this Section.

6.10 EMI & EMF

6.10.1 Traction Power Facilities

Table 6-36 summarizes the ELF EMF measurements for the traction power facilities within the Stouffville Corridor, as well as the GPS coordinates where the measurements were taken. For those locations where the Resultant Flux Density magnitude was less than 1.0 mG, the designation of "Background Only" is shown.

Table 6-36: ELF EMF Measurement Results at Stouffville Corridor Traction Power Facilities

Facility Name	Latitude	Longitude	Resultant Flux Density Magnitude (mG)	Comments
Scarborough Tap	43.745318	-79.269927	4.8	Measured from parking lot near Jack Goodlad Park.

Facility Name	Latitude	Longitude	Resultant Flux Density Magnitude (mG)	Comments
Scarborough TPS	43.731891	-79.262114	Background Only	Measured from parking lot near GO Station.
Unionville PS	43.849406	-79.314711	Background Only	Measured from GO Station.
Lincolnville PS	43.996119	-79.232721	Background Only	Measured from GO Station.

6.10.2 Stouffville Corridor

6.10.2.1 EMI Sensitive Sites

Based on the baseline mapping for the Stouffville Corridor, four EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the corridor, as shown in **Table 6-37**. These were added to the list of candidate sites at which to collect baseline EMI scans during the Impact Assessment phase.

Table 6-37: EMI Sensitive Sites near the Stouffville Corridor

EMI Sensitive Site	Type	Coordinates	Distance to Closest Track
Agincourt Medical Imaging	Medical Imaging Facility	43°47'06.8"N, 79°16'37.3"W	Less than 100m
Gamma-Dynacare Laboratories	Medical Imaging Facility	43°48'08.8"N, 79°17'38.6"W	Greater than 100m; Less than 250m
Mount Joy Animal Hospital	Medical Imaging Facility	43°54'03.2"N, 79°15'54.4"W	Greater than 100m; Less than 250m
Medionics International Inc	Medical Imaging Facility	43°54'05.5"N, 79°15'56.8"W	Greater than 100m; Less than 250m

6.10.2.2 ELF EMF Measurements

The tables in Section 4.2.6.2 to Section 4.2.6.8 in the EMI/EMF Baseline Conditions Report (**Appendix J1**) present the ELF EMF measurements at select points along the Stouffville Corridor. There was one high-ELF (> 10 mG) area along this corridor, as shown in **Table 6-38**. **Figure 6-23** shows aerial views of this location in relation to the Study Area. This is a location where post-electrification measurement of ELF EMF is recommended.

Table 6-38: Summary of High ELF (> 10 mG) Area in the Stouffville Corridor

Area of Interest	Coordinates	Resultant Flux Density Magnitude (mG)	References
Under 3 Overhead Utilities Power Lines	43°50'45.9"N, 79°18'56.3"W	14.6	Figure 6-27

Figure 6-37: ELF Site in Stouffville Corridor – Overhead Utility Lines in relation to Study Area

6.11 Stormwater Management

Please refer to Section 1.5.11 for a description of the methodology followed for collection of stormwater management baseline conditions data. Baseline conditions for each TPF site within the Stouffville Rail Corridor has been summarized below. Additional details can be found in the Preliminary Stormwater Management Assessment Report contained in **Appendix K**.

6.11.1 Scarborough Tap/TPS

The proposed Scarborough Tap and TPS site is a tributary to the Southwest Highland Creek and is located within the jurisdiction of TRCA regulated area. The existing drainage pattern and drainage features for the site are shown on **Figure 6-38**. The total TPF Assessment Area is approximately 7 ha.

Drainage features near the site include a semicircular ditch, lined with corrugated steel, along both sides of the rail corridor. The ditch flows from north to south direction. Another vegetated ditch starts close to the North West corner of the development area, runs approximately 150 m in the field area to the south direction and then crosses the rail corridor via a culvert. Runoff from the steel lined ditch combines with the runoff from this ditch at this point and flows towards the southwest Highland Creek through an underground pipe system. Municipal data would be obtained at detail design stage to verify this statement.

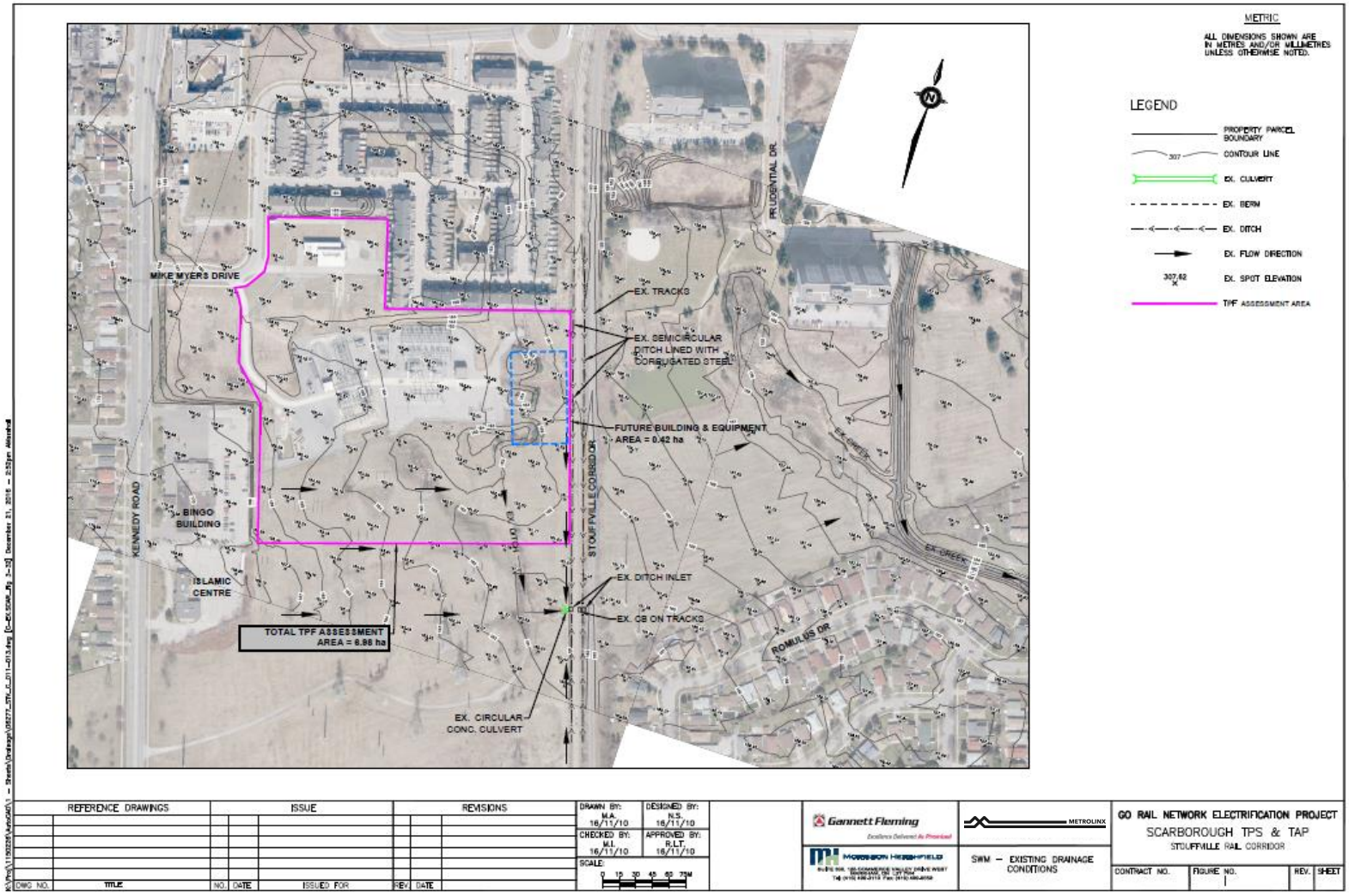
Hydro One provided Metrolinx with a copy of the Certificate of Approval from the Ministry of the Environment and Climate Change (formally Ministry of Environment and Energy) dated June 7, 1995. This document mentions that the Scarborough Transformer Station has a transformer spill containment facility that eventually discharges "via the station storm drainage system to the drainage ditch adjacent to the CNR/TTC railway line."

For the existing condition, based on the type of land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0% for the site area of 0.61 ha.

Based on the information extracted from Ontario Geological Survey, Preliminary Map P.2204, by Ministry of Natural Resources, Ontario, the soil type for the Scarborough Tap and TPS site is generally Clayey Silt Till (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. As the external flow contribution to the existing watercourse, ditches and culverts, and the capacities of the conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 6-38: Scarborough Tap/TPS Existing Drainage Condition



6.11.2 Unionville PS

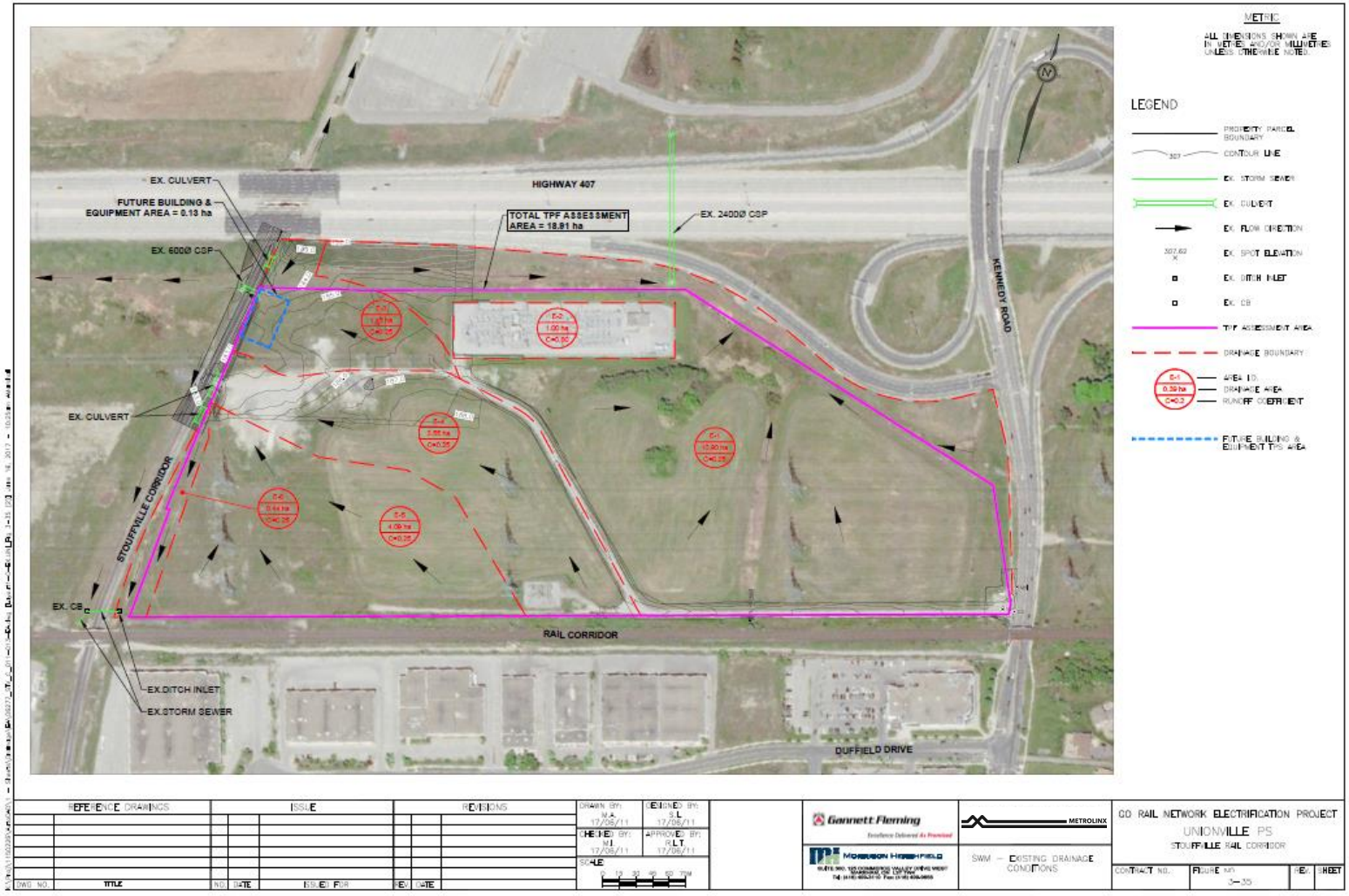
The Unionville PS site is a tributary to the Rouge River and is located within the conservation area of TRCA, but is outside the regulated area. The existing drainage pattern for the Unionville PS site is shown on **Figure 6-39**. The total TPF Assessment Area is approximately 18.9 ha and consists of an existing transformer station, access road to the transformer station, and hydro corridor. Most of the land area is undeveloped.

In general, the property parcel drains overland to north and west directions towards existing ditches along Stouffville Rail Corridor and Highway 407. The overland flow from the proposed TPF site area is discharging to an existing 600mm diameter CSP cross-track culvert, south of the railway underpass at Hwy 407. The runoff travels via ditch along the south side of Highway 407 and it is most likely conveyed north via culvert(s) under Highway 407 to discharge to a branch of the Rouge River.

Based on the information extracted from Ontario Soil Survey Report No. 19 by Regional Municipality of York, the soil type for the Unionville PS site is generally Sandy Loam (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type. For the existing condition, based on the soil type and land use, the runoff coefficient, 'C' is estimated at 0.25 and the percent impervious at 0.25 or 7% for the drainage area of 1.45 ha.

The stormwater drainage outlets mentioned above for the site are for both the minor and the major storm runoff. As the external flow contribution to the existing ditches and culverts, and the capacity of the conveyance system is not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 6-39: Unionville PS Existing Drainage Conditions



6.11.3 Lincolnville PS

The Lincolnville PS site is a tributary to the Duffins Creek and is located within the TRCA regulated area. The existing drainage pattern for the Lincolnville PS site is shown on **Figure 6-40**. The total TPF Assessment Area is approximately 2.6 ha and consists of an existing office building for the GO Station, road and parking area and a portion of the Rail Corridor. The building and the parking area drains through a storm sewer system to a watercourse south of the building after quality treatment by an OGS. The Rail Corridor area drains to ditches on the east and the west side of the corridor.

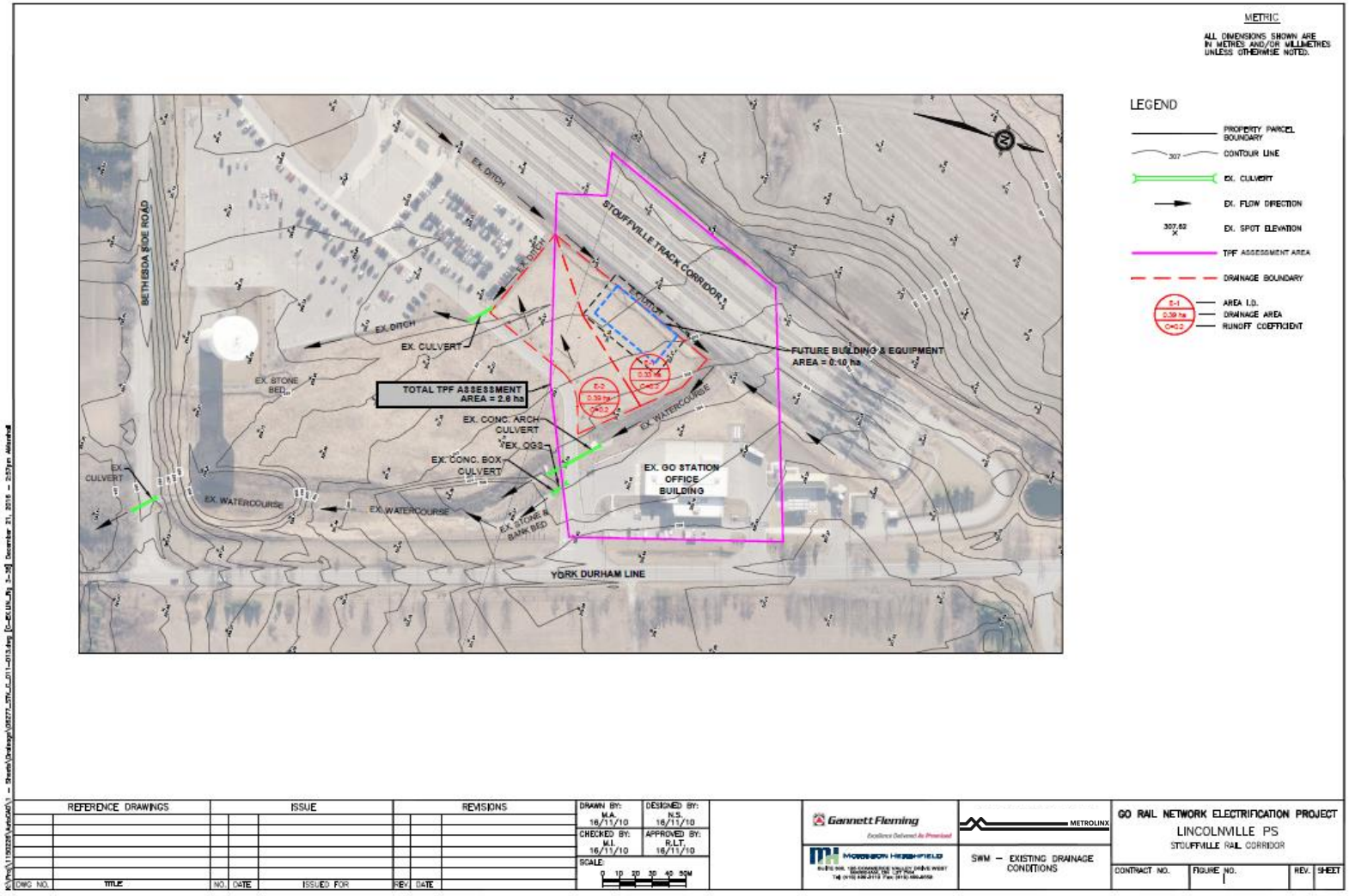
The portion of the site area affected by the development is approximately 0.72 ha and is marked as Area E-1 and E-2 on **Figure 6-40**. Area E-1 drains west to an existing ditch along the rail corridor, located on the east side of the rail corridor. The ditch flows to the north and discharges to a watercourse at the north end of the Area E-1. The receiving watercourse from this point flows in the south direction. A concrete Arch Culvert crosses the GO Station entrance road to convey the runoff from north to south. The watercourse crosses Bethesda Side Road, via a culvert, near the intersection of the York Durham line and Bethesda Side Road and discharges to a branch of Duffins Creek.

The runoff from the Area E-2 drains to a ditch, south of the area, between the GO Station parking area and the development area. This ditch flows from west to the east direction and crosses the GO Station Entrance Road via a 300 mm diameter CSP culvert. The runoff from this point continues flowing south towards the culvert across Bethesda Side Road, mentioned above, to discharge to a branch of Duffins Creek.

For the existing condition, based on the soil type and land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0% for the drainage area of 0.72 ha.

Based on the information extracted from Ontario Soil Survey Report No. 19 by Regional Municipality of York, the soil type for the Lincolnville PS site is generally Woburn Loam (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

Figure 6-40: Lincolnville PS Existing Drainage Conditions



6.12 Groundwater and Wells

Please refer to Section **1.5.12** for a description of the methodology followed for collection of Groundwater and Wells baseline conditions data. Baseline conditions within the Stouffville Rail Corridor has been summarized below. Additional details can be found in the Groundwater Impact Assessment Report contained in **Appendix V**.

6.12.1 Scarborough Tap

There was one (1) industrial/commercial supply well and one (1) supply well of unknown type identified within 500 m of the Scarborough Tap. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, Southwest Highland Creek, located within 500 m of the Tap location.

6.12.2 Scarborough TPS

There was one (1) industrial/commercial supply well and one (1) supply well of unknown type identified within 500 m of the Scarborough traction power station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, Southwest Highland Creek, located within 500 m of the traction power station.

6.12.3 Scarborough 25kV Feeder Route

There was one (1) industrial/commercial supply well and one (1) supply well of unknown type identified within 500 m of the Scarborough 25kV feeder route. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, Taylor Creek and Southwest Highland Creek, located within 500 m of the 25kV feeder route.

6.12.4 Unionville PS

There were 24 domestic supply wells, three (3) agricultural supply wells and two (2) industrial/ commercial supply wells identified within 500 m of the Unionville paralleling station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. Of the identified wells, one (1) domestic supply well is shown as being located within the property boundaries of the TPS. There is one (1) waterbody, Rouge River, located within 500 m of the paralleling station.

6.12.5 Lincolnville PS

There were 19 Domestic supply wells, two (2) agricultural supply wells and two (2) industrial/commercial supply wells identified within 500 m of the Lincolnville paralleling station. This section is characterized by a primarily rural setting with likely private water well use. There is one (1) waterbody, Tributary of West Duffins Creek, located within 500 m of the paralleling station.

6.12.6 OCS & Bridges: Section SV-1 – Scarborough Junction to Agincourt Station

There were one (1) domestic supply well, six (6) industrial/commercial supply wells and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, Massey Creek and Southwest Highland Creek, located within 500 m of the rail corridor.

6.12.7 OCS & Bridges: Section SV-2 – Agincourt Station to Milliken Station

There were eight (8) domestic supply wells, two (2) agricultural supply wells, three (3) industrial/commercial supply wells and two (2) supply wells of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, West Highland Creek and East Highland Creek located within 500 m of the rail corridor.

There are no bridge modifications in this section of the rail corridor.

6.12.8 OCS & Bridges: Section SV-3 – Milliken Station to Unionville Station

There were 25 domestic supply wells, two (2) agricultural supply wells, five (5) industrial/commercial supply wells and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. However, this section is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, Rouge River, located within 500 m of the rail corridor.

6.12.9 OCS & Bridges: Section SV-4 – Unionville Station to Markham Station

There were 85 domestic supply wells, six (6) agricultural supply wells, 16 industrial/commercial supply wells and two (2) municipal supply wells identified within 500 m of the rail corridor in this section. However, this section is characterized by an urban setting and the use of private water wells is likely negligible. There are five (5) waterbodies, Robinson Creek, unnamed tributary of the Rouge River, Eckardt Creek, Bruce Creek and Rouge River located within 500 m of the rail corridor.

6.12.10 OCS & Bridges: Section SV-5 – Markham Station to Mount Joy Station

There were five (5) domestic supply wells, one (1) agricultural supply well and six (6) industrial/commercial supply wells identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, Mount Joy Creek, located within 500 m of the rail corridor.

There are no bridge modifications in this section of the rail corridor.

6.12.11 OCS & Bridges: Section SV-6 – Mount Joy Station to Stouffville Station

There were 39 domestic supply wells, one (1) agricultural supply well and two (2) industrial/commercial supply wells identified within 500 m of the rail corridor in this section. The section is characterized by a mixed urban and rural setting with possible private water well use. There are four (4) waterbodies, Mount

Joy Creek, Greensborough Wetland Complex, Little Rouge Creek and Stouffville Creek, located within 500 m of the rail corridor.

6.12.12 OCS & Bridges: Section SV-7 – Stouffville Station to Lincolnville Station

There were 47 domestic supply wells, three (3) agricultural supply wells, four (4) industrial/commercial supply wells and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by a mixed urban and rural setting with possible private water well use. There are three (3) waterbodies, unnamed tributary of the West Duffins Creek, Stouffville Marsh and Stouffville Creek, located within 500 m of the rail corridor.

7 Baseline Conditions – Lakeshore East Corridor

7.1 Natural Environment

Please refer to Section 1.5.1 for a description of the methodology followed for collection of natural environmental baseline conditions data. Baseline conditions within each segment of the Lakeshore East Corridor have been summarized below. Additional details can be found in the Natural Environment Baseline Conditions Report contained in **Appendix A1**.

Based on review of available background information, **Table 7-1** lists all SAR with habitat within the immediate or general surrounding area of the Lakeshore East Corridor. SAR with suitable habitat *and* potential to occur within each portion of the Study Area are discussed in the appropriate sections below.

Table 7-1: Summary of Potential Species at Risk within the Immediate and General Area of the Lakeshore East Corridor

Species		Designations	Protection		Source	
Common Name	Scientific Name	SARA Status**	ESA Status		Federal Legislation	Provincial Legislation
Vascular Plants						
Butternut	*Juglans cinerea*	END (Sched 1)	END	SARA	ESA 2007	MNRF Aurora
Dense Blazing Star	*Liatris spicata*	THR (Sched 1)	THR	SARA	ESA 2007	MNRF Aurora
Birds						
Acadian Flycatcher	*Empidonax virescens*	END (Sched 1)	END END	SARA; MBCA	ESA	OBBA
Bank Swallow	*Riparia riparia*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; TRCA
Barn Swallow	*Hirundo rustica*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora
Black Tern	*Chlidonias niger*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora
Bobolink	*Dolichonyx oryzivorus*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; TRCA
Canada Warbler	*Cardellina canadensi*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
Chimney Swift	*Chaetura pelagica*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora; OBBA
Common Nighthawk	*Chordeiles minor*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA

Species		Designations	Protection		Source	
Common Name	Scientific Name	SARA Status**	ESA Status		Federal Legislation	Provincial Legislation
Eastern Meadowlark	*Sturnella magna*	No Status (No Sched)	THR	MBCA	ESA	MNRF Aurora; NHIC; TRCA
Eastern Wood-pewee	*Contopus virens*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora; OBBA; TRCA
Golden-winged Warbler	*Vermivora chrysoptera*	THR (Sched 1)	SC	MBCA	-	MNRF Aurora
Least Bittern	*xobrychus exilis*	THR (Sched 1)	THR	SARA; MBCA	ESA	MNRF Aurora
Peregrine Falcon	*Falco peregrinus*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora; OBBA
Red-headed Woodpecker	*Melanerpes erythrocephalus*	THR (Sched 1)	SC	SARA; MBCA	-	OBBA
Wood Thrush	*Hylocichla mustelina*	No Status (No Sched)	SC	MBCA	-	MNRF Aurora; TRCA
Herpetofauna						
Northern Map Turtle	*Graptemys geographica*	SC (Sched 1)	SC	-	FWCA	MNRF Aurora
Blanding's Turtle	*Emydoidea blandingii*	THR (Sched 1)	THR	SARA	ESA	MNRF Aurora
Snapping Turtle	*Chelydra serpentina*	SC (Sched 1)	SC	-	-	MNRF Aurora /TRCA
Fish						
Redside Dace	*Clinostomas elongatus*	SC (Sched 3)	END	-	ESA 2007	MNRF Aurora
American Eel	*Anguilla rostrata*	No Status (No Status)	END	-	ESA	MNRF Aurora
Molluscs						
Eastern Pondmussel	*Ligumia nasuta*	END (Sched 1)	END		ESA	MNRF Aurora; Parks Canada
Mammals						
Eastern Small-footed Myotis	*Myotis leibii*	-	END	-	ESA	MNRF Aurora

Species		Designations	Protection		Source	
Common Name	Scientific Name	SARA Status**	ESA Status		Federal Legislation	Provincial Legislation
Little Brown Myotis	*Myotis lucifugus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Northern Myotis	*Myotis septentrionalis*	END (Sched 1)	END	SARA	ESA	MNRF Aurora
Tri-coloured Bat	*Perimyotis subflavus*	END (Sched 1)	END	SARA	ESA	MNRF Aurora

* ESA: Endangered Species Act; FWCA: Fish and Wildlife Conservation Act; SARA: Species at Risk Act; MBCA: Migratory Birds Convention Act

** General prohibitions do not apply to species identified as Special Concern (SC) in Schedule 1 and all species in Schedule 3of the SARA

Note – The ESA (2007) supersedes the FWCA [a] END – Endangered; SC – Special Concern; THR - Threatened

7.1.1 East Rail Maintenance Facility Tap Location and TPS

7.1.1.1 Terrestrial

The East Rail Maintenance Facility (ERMF) Tap and TPS Location is within Ecoregion 7E (see **Figure 1-13**).

Wetlands

A small unevaluated Meadow Marsh (MAM) is present in the east portion of both the Tap and TPS Locations.

Vegetated Areas

The vegetation within the Tap and TPS study areas are comprised of four (4) communities: Constructed (CV), Transportation and Utilities (CVI), Cultural Meadow (CUM), and Meadow Marsh (MAM). The CV community does not contain any natural features. The MAM community is dominated by Narrow-leaved Cattail (*Typha angustifolia*) and Phragmites. Vegetation within the CUM community is typical of disturbed areas.

Wildlife

The Tap and TPS study areas do not provide any Significant Wildlife Habitat; however the MAM community may provide potential habitat for breeding amphibians. The CUM communities may also provide potential foraging habitat for pollinating insects.

7.1.1.2 Aquatic

There are no aquatic features within the Tap study area.

7.1.1.3 Species at Risk

There is low potential for Snapping Turtle to be present within the MAM community.

7.1.1.4 Designated Areas

A majority of the ERMF Tap and a portion of the TPS is located within the Central Lake Ontario Conservation Authority (CLOCA) Regulated Area.

7.1.2 Scarborough SWS & 25kV Feeder Route

7.1.2.1 Terrestrial

The Scarborough SWS and 25kV Feeder Route is located within Ecoregion 7E (see **Figure 1-14** and **Figure 1-20:**). The 25kV Feeder, from Scarborough TPS south to Lakeshore East rail corridor, is entirely within the rail corridor and included in a portion of the LSE-3 segment (Scarborough Station to Guildwood Station).

Wetlands

There are no wetland features present within the SWS or 25kV Feeder Route.

Vegetated Areas

The vegetation within the SWS is comprised of three (3) communities: Commercial and Institutional (CVC), Transportation and Utilities (CVI), and Residential (CVR). Vegetation within the CVI, CVC, and CVR is associated with edge habitat and disturbed areas, including Trembling Aspen, Dog Strangling Vine, and Common Buckthorn.

Wildlife

The SWS and 25kV Feeder Route does not provide any Significant Wildlife Habitat; however vegetation within the CVC and CVR communities may provide potential foraging and nesting habitat for breeding birds

7.1.2.2 Aquatic

There are no aquatic features within the SWS or 25kV Feeder Route.

7.1.2.3 Species at Risk

The Scarborough SWS or 25kV does not provide any suitable habitat for SAR.

7.1.2.4 Designated Areas

There are no Designated Areas present within the Scarborough SWS study area.

7.1.3 Durham SWS

1.1.1.8 Terrestrial

The Durham SWS is located within Ecoregion 7E (see **Figure 1-15**).

Wetlands

There are no wetland features present within the SWS study area.

Vegetated Areas

The Durham SWS area is comprised of four (4) communities: Green Land (CGL), Cultural Meadow (CUM), Commercial and Institutional (CVC), and Transportation and Utilities (CVI). The CGL community is a manicured lawn. Vegetation within the CUM, CVC, and CVI communities are typical of disturbed areas and edge habitat. Species within the study area include Trembling Aspen, Norway Maple, Manitoba Maple, and Buckthorn.

Wildlife

The SWS study area does not provide any Significant Wildlife Habitat; however treed areas within the CVC may provide suitable nesting habitat for breeding birds and the CUM may provide suitable habitat for pollinating insects.

7.1.3.1 Aquatic

There are no aquatic features within the SWS study area.

7.1.3.2 Species at Risk

There is a low potential for Butternut within the CVC community.

7.1.3.3 Designated Areas

There are no Designated Areas within the SWS study area.

7.1.4 Don Yard PS

1.1.1.9 Terrestrial

The Don Yard PS is located within Ecoregion 7E (see **Figure 1-16)**.

Wetlands

There are no wetland features present within the PS study area.

Vegetated Areas

The Don Yard PS study area is comprised of two (2) communities: Commercial and Institutional (CVC), and Transportation and Utilities (CVI). Vegetation within these communities are typical of disturbed areas and edge habitat. Species within the study area include Crack Willow (*Salix fragilis*), Silver Maple (*Acer saccharinum)*, Sugar Maple (*Acer saccharum*), and Staghorn Sumac (*Rhus typhina*).

Wildlife

Vegetation within the CVC community may provide suitable nesting habitat for breeding birds.

1.1.1.10 Aquatic

There are no aquatic features within the PS study area.

1.1.1.11 Species at Risk

There is a low potential for Butternut within the CVC community.

1.1.1.12 Designated Areas

The Don Yard PS is located entirely within the Toronto Region Conservation Authority (TRCA) Regulated Area.

7.1.5 Corridor & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

7.1.5.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section are limited to Green Land (CGL) areas and small pockets of Deciduous Woodlands (WOD). Open Water (OA) is present at the Don River. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the Natural Environment Impact Assessment Report (See **Appendix A2**)

Wildlife

This Study Area is mainly comprised of CVC, CVI and CVR lands therefore, no Significant Wildlife Habitat is present within this corridor. However, the small pockets of WOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds and the OA community associated with the Don River may potentially provide a migratory corridor for herpetofauna.

7.1.5.2 Aquatic

There is one watercourse within the Study Area: the Don River. The Lower Don River consist of two habitat types: one that is riverine from the confluence with the Lower East Don, Lower West Don and Taylor/Massey Creek down to within the Don Narrows where there is a transition to estuarine. Species

found in the Lower Don River Subwatershed between 2002 and 2005 are listed in Section 4.6.1.2 of **Appendix A1**.

7.1.5.3 Species at Risk

A total of twelve SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-2** below.

Table 7-2: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-1

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CVC, CGL) • Moderate (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA; areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Low (OA)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL)
Acadian Flycatcher	*Empidonax virescens*	• Low (WOD)
Snapping Turtle	*Chelydra serpentina*	• Low (OA)
Blanding's Turtle	*Emydoidea blandingii*	• Low (OA)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; WOD - Deciduous Woodland; OA – Open Water

7.1.5.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF.

Williamson Park, a designated ESA in the City of Toronto, is located within the south portion of the Study Area. This designated area contains deciduous upland and lowland forest along the steep slopes and ravine bottomlands.

7.1.6 Corridor & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

7.1.6.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetation communities within this corridor section are limited to Green Land (CGL), Cultural Meadow (CUM) and small pockets of Deciduous Woodlands (WOD). Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**)

Figure 7-1: WOD Community, looking north October 19, 2015

Wildlife

This Study Area is mainly comprised of CVC, CVI and CVR lands therefore, no Significant Wildlife Habitat is present within this corridor. However, the small pockets of WOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds. The CUM communities may also provide potential foraging habitat for pollinating insects.

7.1.6.2 Aquatic

There are no watercourses within this portion of the Study Area.

7.1.6.3 Species at Risk

A total of four SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-3**.

Table 7-3: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-2

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CVC, CGL) • Moderate (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, CUM and CGL areas adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; WOD - Deciduous Woodland; CUM - Cultural Meadow; OA – Open Water

7.1.6.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

7.1.7 Corridor & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

7.1.7.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are no identified wetlands within this portion of this Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). Similar to LSE-1 and LSE-2, the vegetated communities within this corridor section are limited to Green Land (CGL) areas and small pockets of Deciduous Woodlands (WOD). Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 7-2: WOD and CVI Communities at Rail Crossing, looking east October 19, 2015

Wildlife

No Significant Wildlife Habitat is present within this corridor; however, the small pockets of WOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds.

7.1.7.2 Aquatic

There is one watercourse within the Study Area: West Highland Creek. Aquatic and terrestrial habitat in the Highland Creek watershed have been significantly altered and degraded as a result of development. Many of the watercourses have been filled, piped, channelized, or otherwise altered. There are over 90 instream barriers to fish movement, poor water quality, unstable flows, and only 32.2% of the watercourse has woody riparian vegetation. As a result, the resident fish community is dominated by pollution tolerant species (TRCA, 1999).

7.1.7.3 Species at Risk

A total of twelve SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-4** below.

Table 7-4: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-3

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CVC, CGL) • Moderate (WOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL)
Eastern Wood Pewee	Contopus virens	• High
Northern Map Turtle	*Graptemys geographica*	• Low (OA)
Blanding's Turtle	*Emydoidea blandingii*	• Low (OA)
Snapping Turtle	*Chelydra serpentina*	• Low (OA)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; WOD - Deciduous Woodland; OA – Open Water

7.1.7.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. There are no designated areas within this portion of the Study Area.

7.1.8 Corridor & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

7.1.8.1 Terrestrial

This section of the corridor is located within Ecoregion 7E.

Wetlands

There are several identified unevaluated wetlands and one PSW (Highland Creek Wetland Complex) within this Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section include Green Land (CGL), Deciduous Woodland (WOD), Marsh (MA), Shallow Marsh (MAS), Open

Shoreline (SHO), Swamp (SW), Deciduous Thicket (THD), and Cultural Meadow (CUM).. Open Water (OA) is present at Highland Creek and Lake Ontario. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 7-3: CGL Community Adjacent to SHO Community, looking south October 19, 2015

Wildlife

The MA communities within the Highland Creek Wetland Complex PSW, and numerous unevaluated wetlands in this Study Area may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The WOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds. The CUM communities may also provide potential foraging habitat for pollinating insects.

7.1.8.2 Aquatic

There is one watercourse within the Study Area: Highland Creek. Aquatic and terrestrial habitat in the Highland Creek watershed have been significantly altered and degraded as a result of development. Many of the watercourses have been filled, piped, channelized, or otherwise altered. There are over 90 instream barriers to fish movement, poor water quality, unstable flows, and only 32.2% of the watercourse has woody riparian vegetation. As a result, the resident fish community is dominated by pollution tolerant species (TRCA, 1999).

7.1.8.3 Species at Risk

A total of sixteen SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-5** below.

Table 7-5: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-4

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CVC, CGL) • Moderate (WOD, THD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, CGL areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Moderation (OA, MA) • High (SHO)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL, THD)
Least Bittern	*Ixobrychus exilis*	• Low (OA, MA)
Black Tern	*Chlidonias niger*	• Moderate (OA, MA)
Eastern Wood Pewee	Contopus virens	• High (WOD)
Eastern Meadowlark	*Sturnella magna*	• Low (CVC)
Bobolink	*Dolichonyx oryzivorus*	• Low (CVC)
Northern Map Turtle	*Graptemys geographica*	• Moderate (OA, MAS, MA)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA,MAS, MA)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MAS, MA)
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD, SW)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD, SW)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD, SW)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD, SW)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; WOD - Deciduous Woodland; OA – Open Water; MA – Marsh; SW – Swamp; THD – Deciduous Thicket

7.1.8.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF.

The Provincially Significant Highland Creek Wetland Complex occurs within a river mouth valley that cuts through the Iroquois Plain. It encompasses four individual wetlands, with communities roughly evenly divided between marsh and swamp (mainly dominated by willow), with 98% on predominantly clay-loam soils and 2% on sandy soils. 85% of the wetland complex is lacustrine and 15% is palustrine. The wetlands are in most cases along the floodplain of Highland Creek, which near its mouth is highly influenced by the levels of Lake Ontario. The natural area surrounding the marshes is extensive, including the steep wooded valley walls of Highland Creek as well as intervening forests and successional areas (North-South Env. Ltd, 2009).

The Stephenson's Swamp, a designated ESA in the City of Toronto, and is located within the boundaries of the Highland Creek Wetland Complex.

The East Point Bluffs is located within the Study Area and is a designated Life Science ANSI and ESA and is considered Regionally and Locally Significant. This area contains active bluffs and gullies which represents the east end of the Scarborough Bluffs.

7.1.9 Corridor & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

7.1.9.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are two PSWs (Rouge River Marshes Wetland Complex and Frenchman's Bay Coastal Wetland Complex) located within this Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section include Green Land (CGL), Deciduous Woodland (WOD), Swamp (SW), Deciduous Thicket (THD), Cultural Meadow (CUM), Marsh (MA), and Open Shoreline (SHO). Open Water (OA) is present at Lake Ontario and Rouge River. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community. Portions of these communities are considered natural cover areas according to the City of Pickering.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of

electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 7-4: MA and OA Communities, Rouge River Wetland Complex looking north October 19, 2015

Wildlife

The Rouge River Marshes Wetland Complex PSW, the Rouge River Valley Life Science ANSI, the Frenchman's Bay Coastal Wetland Complex PSW, the Frenchman's Bay Coastal Marsh Candidate Life Science ANSI, and MA communities within these designated areas may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The WOD, SW, THD and CGL communities may potentially provide nesting and foraging habitat for breeding birds. According to Parks Canada, the Rouge River Marsh Wetland and associated SHO areas are a known migratory bird route. The CUM communities may potentially provide foraging habitat for pollinating insects.

7.1.9.2 Aquatic

There are five watercourses within the Study Area: Rouge River, Petticoat Creek, Amberlea Creek, Dunbarton Creek, and Pine Creek**.** These are all identified as Stream Valleys according to the City of Pickering. Over the last 30 years 69 species have been recorded in the Rouge River of which there are

eight coldwater species, 26 coolwater species and 35 warmwater species. The most diversity is found within the upper reaches (1/3) of the watershed. Fish species documented throughout the Rouge River Watershed between 2000 and 2010 are listed in Section 4.6.5.2 of **Appendix A1**.

The Petticoat Creek watershed is characterized as a warm water system, with its headwaters originating south of the Oak Ridges Moraine on the South Slope. Known species in the upstream sections of the watershed are listed in Section 4.6.5.2 of **Appendix A1**. The downstream section towards the Lake Ontario shoreline is a warmwater fish community predominantly composed of baitfish species similar to the upstream reaches of the watershed. Small number of adult migratory coldwater fish have been observed seasonally in in the lower sections of the watershed, such as Rainbow Trout in the spring and Chinook Salmon in the fall. Historically Smallmouth Bass, Largemouth Bass, Rock Bass, Pumpkinseed, Spotfin Shiner, Northern Redbelly Dace, Northern Hog Sucker, and Stonecat have also been captured (TRCA, 2012).

Fisheries surveys were conducted by Toronto and Region Conservation Authority (TRCA) in 2006 on Frenchman's Bay Tributaries, including: Dunbarton Creek, Amberlea Creek, and Pine Creek. These surveys indicated the presence of fish species tolerant of high levels of turbidity and high temperatures in all but Kronso Creek. Dunbarton Creek contained the second highest species richness of three species including: Blacknose Dace, Creek Chub, and Goldfish. Dunbarton Creek had the highest species abundance of 34 individuals. Amberlea Creek was found to contain two species, blacknose dace and white sucker, with species abundance of 11 individuals. Pine Creek was found to contain Blacknose Dace and Creek Chub with species abundance of 11 individuals (TRCA, 2009).

7.1.9.3 Species at Risk

A total of nineteen SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-6** below.

Table 7-6: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-5

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CVC, CGL) • Moderate (WOD, THD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, CUM areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• High (OA, SHO)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, THD, CGL)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (WOD)

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Least Bittern	*Ixobrychus exilis*	• High (OA, MA)
Black Tern	*Chlidonias niger*	• Moderate (OA, MA, SHO)
Eastern Wood Pewee	Contopus virens	• High (WOD)
Bobolink	*Dolichonyx oryzivorus*	• High (CVC)
Northern Map Turtle	*Graptemys geographica*	• High (OA, MA)
Blanding's Turtle	*Emydoidea blandingii*	• High (OA, MA)
Snapping Turtle	*Chelydra serpentina*	• High (OA, MA)
Redside Dace	*Clinostomas elongatus*	• Rouge River (OA) is Recovery Habitat
American Eel	*Anguilla rostrata*	• Rouge River (OA) is Recovery Habitat
Eastern Pondmussel	*Ligumia nasuta*	• Critical Habitat
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (WOD, SW)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (WOD, SW)
Northern Myotis	*Myotis septentrionalis*	• Moderate (WOD, SW)
Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (WOD, SW)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; CUM – Cultural Meadow; WOD - Deciduous Woodland; OA – Open Water; THD - Deciduous Thicket; MA – Marsh; SW - Swamp

7.1.9.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF. Petticoat Creek Conservation Area, managed by the TRCA, is located south of the corridor between Rodd Avenue and Broadgreen Street.

The Provincially and Locally Significant Rouge River Marshes Wetland Complex and Provincially Significant Frenchman's Bay Coastal Wetland Complex are present within the Study Area. The Rouge River Marshes Wetland Complex is a designated Life Science, PSW and ESA area and is composed of six individual wetlands, comprising 36% swamp and 64% marsh, cutting into the Iroquois Plain physiographic region. This PSW is generally considered one of the most significant wetlands in the City of Toronto in terms of size, quality and diversity. Twenty-three vegetation communities were described within the wetland. The areas of deepest water support high-diversity aquatic marsh types including submerged and floating aquatic types such as bullhead lily (*Nuphar variegatum*), fragrant water-lily (*Nymphaea odorata*), pondweeds (*Potamogeton spp.*), bladderworts (*Utricularia spp.*), water smartweed (*Polygonum amphibium*), waterweed (*Elodea canadensis*) and water-milfoil (*Myriophyllum spicatum*). Shallow marsh types in areas of standing water up to 50 cm deep are mainly dominated by broad-leaved cattail (*Typha latifolia*) and hybrid cattail (*Typha x glauca*). Other shallow marsh types include narrow-leaved sedge

marsh. Canada bluejoint (*Calamagrostis canadensis*) meadow marsh dominates the drier edges of these areas. Meadow marshes dominated by sedges (*Carex spp.*) or forbs are common in these areas. Rarer shallow marshes on organic soils, dominated by water arum (*Calla palustris*), marsh cinquefoil (*Potentilla palustris*) and arrowhead (*Sagittaria latifolia*) occur in the northern reaches of the PSW just south of Highway 401. Thicket swamps occur in the upper portions of the lakefront marsh. They are dominated by red-osier dogwood (*Cornus stolonifera*), speckled alder (*Alnus rugosa*) and shrub willows (*Salix spp*.). Treed swamps within the PSW are found along the margins of the lakefront marsh and in old river meanders. Dominants most commonly include ash (*Fraxinus spp*.), Manitoba maple (*Acer negundo*) and hybrid willow trees (*Salix x rubens*), with a large proportion of non-native plants in the understory and ground layer (North-South Env. Ltd, 2009).

Frenchman's Bay Wetland is a designated Life Science ANSI and PSW area and has a small but heavily residential watershed delivers urban run-off to the bay while the permanent connection to the lake allows cleaner Lake Ontario water to flush into the bay during seiches. Despite its small size, the watershed's influence on the marsh's water is considerable with and high conductivity and nutrient concentrations. In addition, the bay and its marsh remain quite turbid through sediment re-suspension from a combination of Common Carp disturbance and wind and wave action on the large open-water section of the wetland. In the smaller, secluded back bays of the marsh, the water is less turbid and allowed the establishment of patches of submerged pondweeds and floating water lilies. These areas also supported a disturbance-sensitive submerged plant – wild celery. Emergent marsh habitat in the bay has been reduced to several patches along the north and west perimeter of the wetland. Fair numbers of common amphibians including Green Frog and American Toad, and low numbers of the indicator species Northern Leopard Frog were found in these cattail-dominated areas (Environment Canada, 2004).

The Frenchman's Bay Coastal Marsh Candidate Life Science ANSI and Rouge River Valley Life Science ANSI are both considered Provincially Significant.

The Rouge National Urban Park is managed by Parks Canada, and is Canada's first national urban park. It includes a combination of natural, cultural and agricultural features including 1,700 species of plants and animals, over 10,000 years of human history, and some of the rarest and best remaining wetlands, forests and agricultural lands in the Greater Toronto Area. Once fully established, Rouge National Urban Park will be 79.1 km2 in size, making it one of the largest and best protected urban parks of its kind in the world.

7.1.10 Corridor & Bridges: Section LSE-6 – Pickering Station to Ajax Station

7.1.10.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There is one PSW (Lower Duffins Creek Wetland Complex) located within the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC) and Transportation and Utilities (CVI). The vegetated communities within this corridor section include Green Land (CGL), Deciduous Woodland (WOD), Cultural Meadow (CUM), Marsh (MA), Meadow Marsh (MAM), Deciduous Thicket (THD), and Agriculture (AG). Open Water (OA) is present at Duffins Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community. Portions of these communities are considered natural cover areas according to the City of Pickering.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Figure 7-5: AG Community looking northwest October 19, 2015

Wildlife

The Lower Duffins Creek Wetland Complex PSW, the Duffins Creek Coastal Marsh Candidate Life Science ANSI, and MA communities within these designated areas may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The

WOD and CGL communities may potentially provide nesting and foraging habitat for breeding birds. The CUM communities may potentially provide foraging habitat for pollinating insects.

7.1.10.2 Aquatic

The Study Area contains three watercourse: Kronso Creek, Duffins Creek and Millers Creek. Fisheries surveys were conducted by Toronto and Region Conservation Authority (TRCA) in 2006 on Frenchman's Bay Tributaries, including Kronso Creek. These surveys indicated the presence of fish species tolerant of high levels of turbidity and high temperatures in all but Kronso Creek. Kronso Creek was found to contain the highest species richness with four species including: white sucker, pumpkinseed, fathead minnow, and yellow perch. Kronso Creek also had the second highest species abundance of 28 individuals (TRCA, 2009).

Duffins Creek and Millers Creek are within the Duffins Creek Watershed. The Duffins Creek Watershed habitats are comprised of 40% small riverine coldwater, 36% small riverine warmwater, 22% intermediate riverine coldwater, and 1% large riverine. Fish species currently found in the Duffins Creek Watershed as of 2000 are listed in Section 4.6.6.2 of **Appendix A1**.

7.1.10.3 Species at Risk

A total of fifteen SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-7** below.

Table 7-7: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-6

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (, CVC, CGL) • Moderate (WOD, THD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• High (OA, SHO)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (WOD, CGL)
Acadian Flycatcher	*Empidonax virescens*	• Low (WOD)
Least Bittern	*Ixobrychus exilis*	• Moderate (OA, MA)
Black Tern	*Chlidonias niger*	• Low (OA, MA)
Eastern Wood Pewee	Contopus virens	• Low (WOD)
Common Nighthawk	*Chordeiles minor*	• Low (AG, MA)
Eastern Meadowlark	*Sturnella magna*	• Low (AG)

Bobolink	*Dolichonyx oryzivorus*	• Low (AG)
Northern Map Turtle	*Graptemys geographica*	• Moderate (OA, MA)
Blanding's Turtle	*Emydoidea blandingii*	• Moderate (OA, MA)
Snapping Turtle	*Chelydra serpentina*	• Moderate (OA, MA)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; WOD – Deciduous Woodland; FOD – Deciduous Forest; OA – Open Water; MA – Marsh; AG – Agriculture; THD – Deciduous Thicket

7.1.10.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF.

The Lower Duffins Creek Wetland Complex PSW is within the Study Area. The Duffins Creek Marsh watershed is the second largest of the Durham Region coastal wetland watersheds and has a large percentage of land in public ownership. Although the watershed supports a relatively high (37%) natural land cover, 54% is in agricultural land use. As, such there is very high turbidity and excess nutrient levels in the wetland water. Despite these impacts on water quality, sediments in the wetland remain low in contaminants. With such high turbidity in the wetland and the resulting decrease in light penetration, submerged aquatic plants are rare. Similarly, the aquatic macroinvertebrate community is characterized by low diversity and low numbers of sensitive species. While the wetland provides poor conditions for submerged plants, emergent plants such as cattails flourish and dominate the plant community in the marsh. These cattail stands provide cover for amphibian species including low numbers of American Toad and Green Frog. (Environment Canada, 2004).

Duffins Creek Coastal Marsh Candidate Life Science ANSI is considered Provincially Significant.

7.1.11 Corridor & Bridges: Section LSE-7 – Ajax Station to Whitby Station

7.1.11.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are two PSWs (Carruthers Creek Wetland Complex and Lynde Creek Coastal Wetland Complex) present within the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), and Residential Lands (CVR). The vegetated communities within this corridor section include Deciduous Forest (FOD), Deciduous Swamp (SWD), Cultural Meadow (CUM), Swamp (SW), Deciduous Woodland (WOD), Deciduous Thicket (THD), and Agriculture (AG). Open Water (OA) is present at Lynde Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, this portion of the Study Area contains intermediate (20 to 70%) canopy cover (including WOD communities).

Figure 7-6: MA and OA Communities, Carruthers Creek Wetland Complex, looking south October 19, 2015

Wildlife

The SWD communities within the Lynde Creek Coastal Wetland Complex PSW, and Lynde Shores Coastal Wetland ANSI may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The FOD, WOD, and THD communities may potentially provide nesting and foraging habitat for breeding birds. The AG and CUM communities may potentially provide foraging and nesting habitat for grassland birds and foraging habitat for pollinating insects.

7.1.11.2 Aquatic

There are five watercourses present within the Study Area: Tributary of Carruthers Creek, Kinsale Creek, Lynde Creek, and Tributary of Lynde Creek. The Tributary of Carruthers Creek and Carruthers Creek are within the Carruthers Creek Watershed**.** The Carruthers Creek Watershed habitats are comprised of 25% small riverine coldwater, 50% small riverine warmwater, 13% intermediate riverine coldwater, and 5% intermediate riverine warmwater. Fish species currently found in the Carruthers Creek Watershed as of 2000 are listed in Section 4.6.7.2 of **Appendix A1**.

Kinsale Creek, Lynde Creek and the Tributary of Lynde Creek are all within the Lynde Creek Watershed. The Lynde Creek watershed has experienced water quality degradation, increased stream temperatures and ultimately impacts to aquatic life as a result of urbanization and intensive agriculture. Despite this it still supports healthy fisheries including brook trout and rainbow trout populations. Known fish species within the Lynde Creek watershed are listed in Section 4.6.7.2 of **Appendix A1**.

7.1.11.3 Species at Risk

A total of 21 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-8** below.

Table 7-8: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-7

Species		Potential to Occur (Community)[a]
Common Name	**Scientific Name**	
Butternut	*Juglans cinerea*	• Low (CVR, CVC) • Moderate (WOD, THD, FOD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• High (SHO)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (FOD,WOD, THD, SW, SWD)
Acadian Flycatcher	*Empidonax virescens*	• Moderate (FOD)
Hooded Warbler	*Setophaga citrina*	• Low (FOD)
Least Bittern	*Ixobrychus exilis*	• High (OA)
Black Tern	*Chlidonias niger*	• Low (OA)
Eastern Wood Pewee	Contopus virens	• Low (WOD)
Wood Thrush	*Hylocichla mustelina*	• High (FOD, WOD)
Eastern Meadowlark	*Sturnella magna*	• High(AG)
Bobolink	*Dolichonyx oryzivorus*	• Moderate (AG)
Northern Map Turtle	*Graptemys geographica*	• High (OA)
Blanding's Turtle	*Emydoidea blandingii*	• High (OA)
Snapping Turtle	*Chelydra serpentina*	• High (OA)
Eastern Pondmussel	*Ligumia nasuta*	• Carruthers Creek Wetland Complex (PSW) and Lynde Shores Costal Wetland (ANSI) are Critical Habitat
Eastern Small-footed Myotis	*Myotis leibii*	• Moderate (FOD, SW, SWD, WOD)
Little Brown Myotis	*Myotis lucifugus*	• Moderate (FOD, SW, SWD, WOD)
Northern Myotis	*Myotis septentrionalis*	• Moderate (FOD, SW, SWD, WOD)

Tri-coloured Bat	*Perimyotis subflavus*	• Moderate (FOD, SW, SWD, WOD)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; CGL – Green Land; CUM – Cultural Meadow; WOD - Deciduous Woodland; FOD – Deciduous Forest; OA – Open Water; MA – Marsh; AG – Agriculture; SWD – Deciduous Swamp; SW – Swamp; THD – Deciduous Thicket; PSW- Provincially Significant Wetland; ANSI- Area of Natural and Scientific Interest

7.1.11.4 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA and Aurora District MNRF.

The Study Area contains the Provincially Significant Carruthers Creek Wetland Complex and Lynde Creek Coastal Wetland Complex. The Carruthers Creek Marsh has three-quarters of its area dominated by swamp. The vegetative structure of Carruthers Creek Marsh is unique among Durham Region coastal wetlands. The swamp provides habitat for many woodland species. Urban and agricultural land uses within the moderately-sized watershed have affected the water quality in the wetland. The main tributary, Carruthers Creek, transports relatively uncontaminated sediment loads to the wetland and causes high turbidity and moderately high nutrient concentrations in the water. As in most wetlands with high turbidity, the submerged plants in Carruthers Creek Marsh are limited due to the reduced light penetration. The swamp areas are known to support over 65 bird species, including regionally or locally uncommon species such as Veery, American Woodcock, Canada Warbler, and Magnolia Warbler. In addition, the woods are home to an abundance of Wood Frog (Environment Canada, 2004).

The Lynde Creek Coastal Marsh The vegetation in this wetland includes substantial areas of emergent plants, meadow marsh, and treed swamp. While some vegetation types are more prevalent than others, the condition of the bird community at Lynde Creek Marsh reflects the diversity of vegetation available. Most birds found in the wetland were general marsh users, such as Red-winged Blackbird, while there were fewer marsh-nesting obligates and area-sensitive species. Lynde Creek Marsh's large, heavily urbanized watershed contributes to high turbidity through sediment-laden run-off. As a result, decreased light penetration limits submerged aquatic vegetation growth. Native species and turbidity intolerant plants were rare. The aquatic macroinvertebrate community showed promise with the presence of important mollusk and crustacean species despite low overall diversity (Environment Canada, 2004).

Lynde Shores Coastal Wetlands Candidate Life Science ANSI is considered Provincially Significant.

7.1.12 Corridor & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

7.1.12.1 Terrestrial

This section of the corridor is located within Ecoregion 6E.

Wetlands

There are two PSWs (Whitby Harbour Wetland Complex and Corbett Creek Coastal Wetland Complex) present within this portion of the Study Area.

Vegetated Areas

The Study Area contains a large proportion of Commercial and Institutional lands (CVC), Transportation and Utilities (CVI), Residential Lands (CVR), and Constructed Lands (CV). The vegetated communities within this corridor section include Deciduous Thicket (THD), Cultural Meadow (CUM), Marsh (MA), Meadow Marsh (MAM), and Agriculture (AG). Open Water (OA) is present at Pringle Creek. Refer to Appendix D of **Appendix A1** for a list of plant species within each ELC vegetation community.

Based on aerial photo interpretation, vegetation communities within this portion of the Study Area contain limited canopy cover (10 to 20%). The extent of tree removals due to the installation of electrification infrastructure (e.g., OCS) are provided in the *Natural Environment Impact Assessment Report* (See **Appendix A2**).

Wildlife

The MA community within the Whitby Harbour Wetland Complex PSW, may potentially provide staging, foraging and overwintering habitat for turtles and breeding and foraging habitat for amphibians and marsh birds. The THD communities may potentially provide nesting and foraging habitat for breeding birds. The CUM communities may potentially provide foraging habitat for pollinating insects.

7.1.12.2 Aquatic

There are four watercourses within the Study Area: Pringle Creek, Tributary of Pringle Creek, Tributary of Corbett Creek, and Corbett Creek. The majority of Pringle Creek can be classified as a coolwater fishery with only one section classified as warmwater and that is located in a small tributary. Species captured in Pringle Creek in 2010 are listed in Section 4.6.8.2 of **Appendix A1**.

Thermal regimes throughout Corbett Creek (and its tributaries) vary from coldwater to warmwater. Species captured in Corbett Creek in 2010 are listed in Section 4.6.8.2 of **Appendix A1**.

According to the *Expansion of Rail Service from Oshawa to Bowmanville on the Lakeshore East Corridor: Natural Environmental Conditions Report* (AECOM, 2010), Pringle Creek watershed drains an area of 2,847 ha with a stream length of 39 km. It originates at Highway 7 and Thornton Road and outlets to Lake Ontario. The Corbett Creek watershed drains an area of 1,455 ha with a stream length of 25 km. It originates at Rossland Road and outlets to Lake Ontario.

Species at Risk

A total of 10 SAR with suitable habitat *and* potential to occur are found within this portion of the Study Area. These are summarized in **Table 7-9** below.

Table 7-9: Potential Species at Risk with Suitable Habitat and Potential to Occur within LSE-8

Species		Potential to Occur (Community)[a]
Common Name	Scientific Name	
Butternut	*Juglans cinerea*	• Low (CVR, CVC) • Moderate (THD)
Barn Swallow	*Hirundo rustica*	• Moderate (bridges structure over OA, CUM areas adjacent to OA)
Bank Swallow	*Riparia riparia*	• Low (OA, MA)
Chimney Swift	*Chaetura pelagica*	• Moderate (within chimney structures that are part of CVC)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	• Moderate (THD, CVR)
Least Bittern	*Ixobrychus exilis*	• Low (OA, MA)
Black Tern	*Chlidonias niger*	• Low (OA, MA)
Northern Map Turtle	*Graptemys geographica*	• Moderate(OA, MA)
Blanding's Turtle	*Emydoidea blandingii*	• High (OA, MA)
Snapping Turtle	*Chelydra serpentina*	• High (OA, MA)

[a] CVR – Residential Lands; CVC – Commercial and Institutional; THD – Deciduous Thicket; CUM – Cultural Meadow; FOD –Deciduous Forest; OA – Open Water; MA – Marsh; SWD – Deciduous Swamp

7.1.12.3 Designated Areas

This portion of the Study Area is located within the jurisdiction of TRCA, Central Lake Ontario Conservation Authority (CLOCA), and Aurora District MNRF.

There are two PSWs within the Study Area: Whitby Harbour Wetland Complex PSW and Corbett Creek Coastal Wetland Complex. Corbett Creek Marsh is a relatively small coastal wetland that has formed at the junction of the east and west branches of Corbett Creek in the Town of Whitby. Urban run-off from the extensive development surrounding the wetland and within the broader watershed has resulted in high nutrient levels and turbidity in the wetland waters. Sediment quality is typical of Durham Region coastal wetlands in highly urbanized watersheds (Environment Canada, 2004). The Corbett Creek Marsh is also identified as an ESA by Central Lake Ontario Conservation Authority (AECOM, 2010).

The Whitby Harbour Wetland Complex PSW lies directly adjacent to the existing CN rail and is 22.8 ha in size (AECOM, 2010).

The Corbett Creek Coastal Marsh Candidate Life Science ANSI is located to the south of the corridor Study Area and is considered Provincially Significant.

7.2 Preliminary Environmental Site Assessment

Please refer to Section 1.5.2 for a description of the methodology followed for collection of preliminary environmental assessment site baseline conditions data. Baseline conditions at each TPF site associated with the Lakeshore East Corridor have been summarized below.

A summary of the background information review, observations from the site reconnaissance, findings, ranking, and recommendations for each TPF site are provided below. The location of identified issues, if any, are indicated on **Figure 7-7 to Figure 7-8**, below.

7.2.1 East Rail Maintenance Facility Tap Location and TPS

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

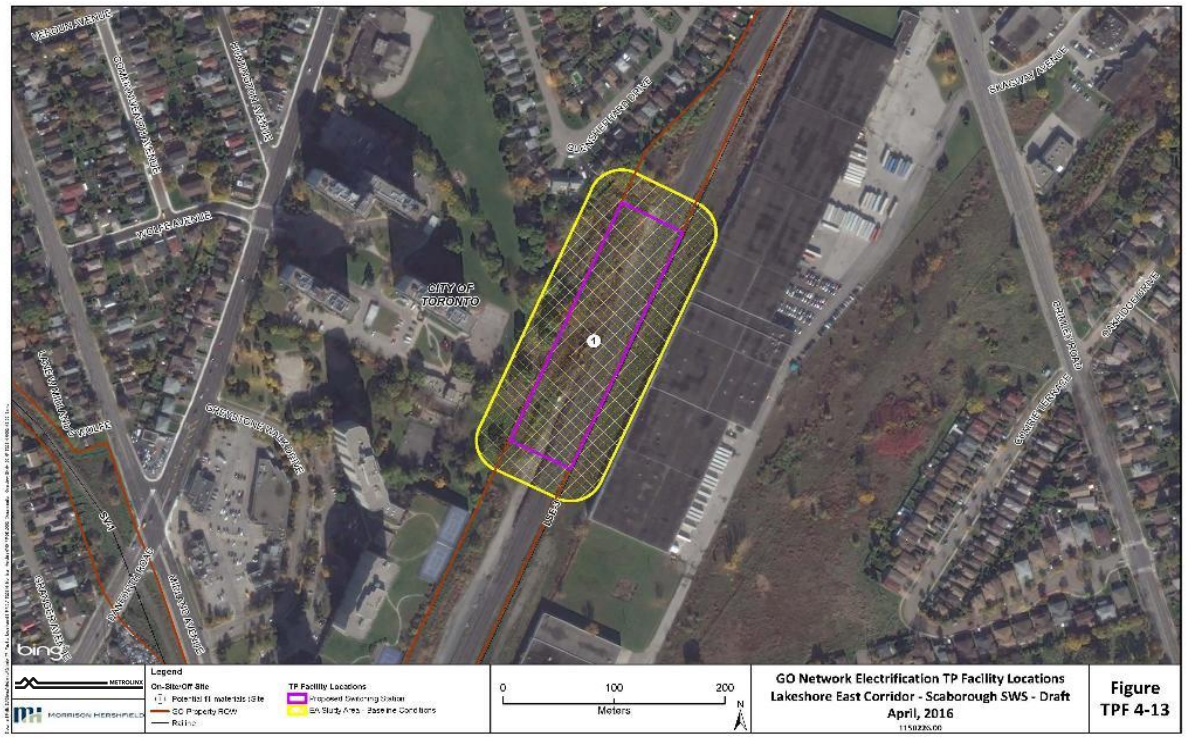
7.2.2 Scarborough SWS

Table 7-10 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Scarborough SWS site.

Table 7-10: Summary of Baseline Conditions at the Scarborough SWS Site

Drive-by Site Reconnaissance Key Observations	• The western portion of the Site consists of vacant land overgrown with vegetation which appears to be uneven. Rail tracks are present on the eastern portion of the Site. Debris was observed to be present on the vegetated areas; and, • Properties to the north, south, and west of the Site consist of vacant land overgrown with vegetation. Rail tracks are present adjacent to the east of the Site, followed by the GO train platform and associated parking area.
Identified APECs/PCAs	• Potential fill materials of unknown composition may be present across the Site
Risk Ranking	**Low**
Recommendations	• Complete a Phase I ESA if the property is to be acquired. • Complete a Limited Subsurface Investigation to assess the presence and quality of fill. • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 7-7: Potential Sources of Contamination at Proposed Scarborough SWS Site Location



7.2.3 Durham SWS

Excess soil and groundwater generated at Tap sites will be analyzed for contaminants and disposed of in accordance with applicable legislation (i.e. Ontario Environmental Protection Act Regulation 347).

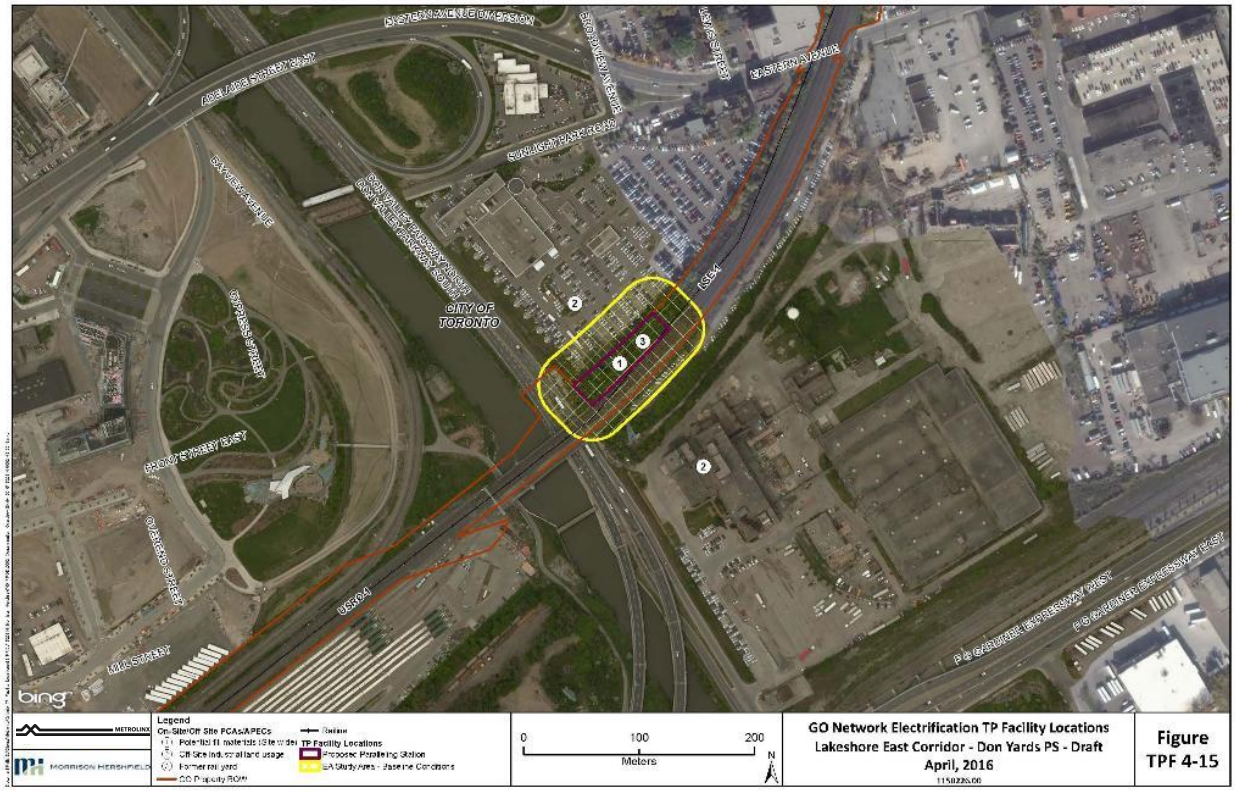
7.2.4 Don Yard PS

Table 7-11 outlines the site observations, identified APECs/PCAs, risk ranking and recommendations for the Don Yard PS site.

Table 7-11: Summary of Baseline Conditions at the Don Yard PS Site

Drive-by Site Reconnaissance Key Observations	• Due to access restrictions and lack of publically accessible land, a drive-by Site reconnaissance was not completed for the Site.
Identified APECs/PCAs	• Potential fill materials of unknown composition may be present across the Site; • The use of the Site as part of a former rail yard; and, • The industrial operations to the north and south of the Site.
Risk Ranking	**Moderate**
Recommendations	• Complete a Phase I ESA if the property is to be acquired. • Complete a Subsurface Investigation to assess the presence and quality of fill and potential impacts resulting from adjacent/nearby land uses. • Determine the need for additional subsurface investigation based on the findings of the Phase I ESA if required.

Figure 7-8: Potential Sources of Contamination at Proposed Don Yard PS Site Location



7.2.5 Lakeshore East Corridor

The Lakeshore East Corridor from the Don River to Pickering (Frenchman's Bay near Bayly Street and St. Martins Drive, see **Appendix B**) was the subject of a Phase I and Phase II ESA in 2011. These two reports by SPL Beatty were completed for Metrolinx as part of the contemplated acquisition of the railway ROW. These studies cover approximately 28 km of the 48 km long corridor, and further information on the gap analysis provided in **Appendix B**. There have also been a few site-specific site assessments typically associated with GO Station parking expansions at Danforth, Eglinton, Rouge Hill, Ajax and Oshawa; however most of these do not overlap with the proposed project footprint.

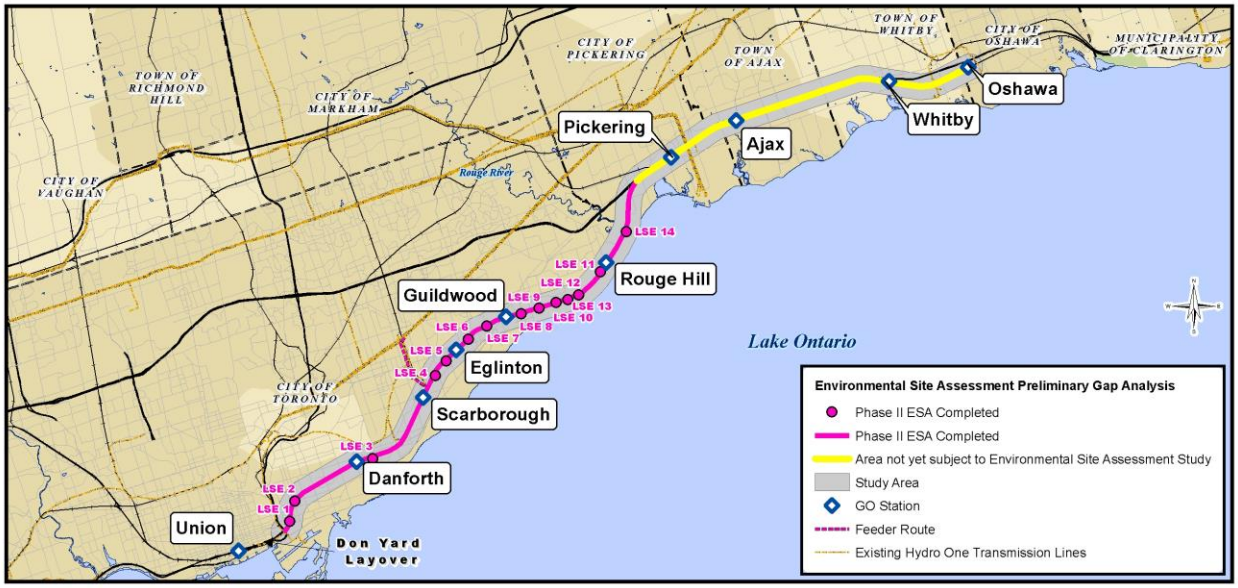
Approximately 20 km of this corridor have not been subject of site assessment. The general location of data gaps and previously identified areas of contamination are illustrated in **Figure 7-9** and described below. Detailed maps of the extent of previous investigations are provide in **Appendix B**. Further work is recommended to address the data gaps identified to prepare a complete contamination overview study for the project footprint.

In addition to the data gaps identified above, the Phase II ESA completed in 2011 by SPL Beatty identified multiple areas of known or potential contamination of soil and groundwater along the corridor ROW. The concentrations of various chemicals in soil and/or groundwater were identified to exceed MOE Table 3 Standards. No discussion of significance or recommendations for further work was provided in the 2011

Phase II ESA. It is unknown if any follow-up assessment work has been conducted on these areas. The locations where the concentrations of the parameters analyzed as part of the 2011 SPL Phase II ESA exceeded the applicable Standards shown in the overview figure for this corridor (**Figure 7-9**) and **Appendix B**, and are characterized as:

1. Area #1: Areas of PAH contamination in soil between Eastern and Queen Street (boreholes P2 BH11-1 and P2 BH11-2)
2. Area #2: PAH contamination in soil and groundwater (borehole P3 BH11-2) and lead in soil (P3 BH11-1) south of Dundas Street
3. Area #3: Zinc in soil west of Victoria Park Avenue (borehole P12 BH11-2)
4. Area #4: PAH is soil (borehole P18 BH11-5) between Midland Avenue and the proposed Scarborough SWS
5. Area #5: Volatile organic compounds (VOC) in groundwater west of McCowan Road (boreholes P20 BH11-1 and P20 11-3)
6. Area #6: VOC in groundwater west of Scarborough Golf Club Road (boreholes P24 BH11-3 and P24 11-6)
7. Area #7: VOC in groundwater east of Scarborough Golf Club Road (boreholes P25 BH11-2)
8. Area #8: VOC in soil west of Galloway Road (borehole P26 BH11-1)
9. Area #9: VOC in soil and groundwater east of Galloway Road (boreholes P27 B11-1, 2 and 3)
10. Area #10: PAH and metals (Co, Cu & Ni) in soil east of Poplar Road (P28 BH11-1)
11. Area #11: PAH in soil west of Manse Road (P29 BH11-2)
12. Area #12: PAH in soil along Copperfield Road (west of J Horgan Water Treatment Plant) (P30 BH11-8)
13. Area #13: Copper in soil and VOC in groundwater west of the Rouge Hill GO Station (P32 BH11-3)
14. Area #14: PAH in soil and VOC in groundwater east of the Rouge River bridge (P33 BH11-1)

Figure 7-9: Lakeshore East Corridor Contamination Overview Map



7.3 Cultural Heritage

Please refer to Section 1.5.3 for a description of the methodology followed for collection of cultural heritage baseline conditions data, and Section 1.5.3.1 for a description of the resources that were used for the screening of Cultural Heritage Resources.

Baseline conditions within each segment of the Lakeshore East Corridor have been summarized below. Additional details can be found in the Cultural Heritage Screening Report contained in **Appendix C1**.

7.3.1 East Rail Maintenance Facility Tap Location and TPS

See **Figure 1-3** in Section 1.3 for the location of the proposed East Rail Maintenance Facility Tap Location and TPS site. There are no heritage properties identified at the East Rail Maintenance Facility Tap location and TPS.

7.3.2 Scarborough SWS

See **Figure 1-4** in Section 1.3 for the location of the proposed Scarborough SWS site. There are no heritage properties identified at the Scarborough SWS.

7.3.3 Durham SWS

See **Figure 1-5** in Section 1.3 for the location of the proposed Durham SWS site. There are no heritage properties identified at the Durham SWS.

7.3.4 Don Yard PS

See **Figure 1-6** in Section 1.3 for the location of the proposed Don Yard PS site. There are no heritage properties identified at the Don Yard PS.

7.3.5 Corridor & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Eight potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-12** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 7-12: Cultural Heritage Resources for LSE-1

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[71]	Metrolinx Heritage Recognition[72]
N/A	11 Sunlight Rd., Toronto	Don Yard TP Site	None	Non-heritage property; CHER is not required	A CHER is not required
N/A	Don River, Toronto	Don River and Don Valley Parkway Bridge	None	Potential Provincial Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, July 19, 2016)
N/A	Eastern Ave., Toronto	Eastern Avenue Bridge	CHER previously completed. Determined to be a non-heritage property	Non-heritage property (MHC Decision Form Pending); CHER is not required	Non-Heritage Property (MHC Decision Form Pending)[73]

[71] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[72] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

[73] The Metrolinx Heritage Committee Decision Form for the Eastern Avenue Bridge CHER/CHERR was pending at the time of the EPR submission and will be provided to MTCS, as required, once available.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[71]	Metrolinx Heritage Recognition[72]
LSE-1-1	Carlaw Ave., Toronto	Carlaw Avenue Bridge	None	Conditional Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, February 6, 2017)
LSE-1-2	Gerrard St. E., Toronto	Gerrard Street East Bridge	None	Conditional Heritage Property; CHER recommended	Provincial Heritage Property (MHC Decision, February 6, 2017)
N/A	Pape Ave., Toronto	Pape Avenue Bridge	None	Conditional Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, August 15, 2016)
N/A	Jones Ave., Toronto	Jones Avenue Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Main St., Toronto	Main Street Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
LSE-1-3	Toronto	Riverdale HCD	Designated under Part V of the OHA (By-Law 951-2008)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

As noted above, CHERs were recommeded and subsequently conducted for the following CHRs:

- Don River and Don Valley Parkway Bridge;
- Carlaw Avenue Bridge;
- Gerrard Avenue East Bridge; and
- Pape Avenue Pedestrian Bridge.

A summary of the CHERs undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 7-13** below. See **Figure 7-10** through **Figure 7-13** for a visual representation of these CHRs.

Table 7-13: Summary of LSE-1 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Don River and Don Valley Parkway Bridge	Not Heritage	July 19th, 2016	Not a Provincial Heritage Property
Carlaw Avenue Bridge	9/06	August 31st, 2016	Metrolinx Heritage Property
Gerrard Avenue East Bridge	9/06	August 31st, 2016	Metrolinx Heritage Property
Pape Avenue Pedestrian Bridge	Not Heritage	August 15th, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, Don River and Don Valley Parkway Bridge and Pape Avenue Pedestrian Bridge did not meet either criterion under Ontario Regulation 9/06 and 10/06 and as such they are neither a Provincial Heritage Property nor a Provincial Heritage Property of Provincial Significance.

Carlaw Avenue Bridge and Gerrard Avenue East Bridge met at least one criterion under Ontario Regulation 9/06 and is thus considered to retain municipal/local cultural heritage value or interest. However, they does not meet the criteria contained within Ontario Regulation 10/06, which considers the subject resource within the provincial context. As such, the Carlaw Avenue Bridge and Gerrard Avenue East Bridge do not hold Provincial significance and are not considered a Provincial Heritage Property of Provincial Significance. Copies of the CHERs can be found in **Appendix M**.

Figure 7-10: Don River and Don Valley Parkway Bridge

Figure 7-11: Carlaw Avenue Bridge

Figure 7-12: Gerrard Avenue East Bridge

Figure 7-13: Pape Avenue Pedestrian Bridge

7.3.6 Corridor & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Five potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-14** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 7-14: Cultural Heritage Resources for LSE-2

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[74]	Metrolinx Heritage Recognition[75]
N/A	213 Main St., Toronto	Danforth GO Station	None	Non-Heritage Property; CHER is not required	Non-Hertiage Property
N/A	Danforth Ave., Toronto	Danforth Avenue Bridge	CHER previously completed. Determined to be a non-heritage property	Non-Heritage Property; CHER is not required	Non-Heritage Property (MHC Decision, July 19, 2016)
N/A	Birchmount Rd., Toronto	Birchmount Road Bridge	None	Conditional Heritage Property; CHER recommended	Non-Heritage Property (MHC Decision, August 15, 2016)
N/A	Woodrow Ave., Toronto	Woodrow Avenue Bridge	None	Non-Heritage Property, CHER is not required	Non-Heritage Property
N/A	Kennedy Rd., Toronto	Kennedy Road Bridge	None	Non-Heritage Property, CHER is not required	Non-Heritage Property

[74] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[75] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

As noted above, CHERs were recommended and subsequently completed for Danforth Avenue Bridge and Birchmount Road Bridge. A summary of the CHERs undertaken and Statement of Cultural Heritage Value based on the criteria contained within Regulations 9/06 and 10/06 is provided in **Table 7-15** below. See **Figure 7-14** through **Figure 7-15** for a visual representation of these CHRs.

Table 7-15: Summary of LSE-2 CHERs Undertaken and Statement of Cultural Heritage Value

CHR	CHER Recommendation	Date of MHC Meeting	MHC Decision
Danforth Avenue Bridge	Not Heritage	July 19, 2016	Not a Provincial Heritage Property
Birchmount Road Bridge	Not Heritage	August 15, 2016	Not a Provincial Heritage Property

Based on the recommendations noted above, the Danforth Avenue and Birchmount Road Bridges are neither Provincial Heritage Property nor Provincial Heritage Property of Provincial Significance. Copies of the CHERs can be found in **Appendix M**.

Figure 7-14: Danforth Avenue Bridge

Figure 7-15: Birchmount Road Bridge

7.3.7 Corridor & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Eight potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-16** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 7-16: Cultural Heritage Resources for LSE-3

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[76]	Metrolinx Heritage Recognition[77]
N/A	Brimley Rd., Toronto	Scarborough TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	3615 St. Clair Ave. E., Toronto	Scarborough GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	St. Clair Ave. E., Toronto	St. Clair Ave. East Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Midland Ave., Toronto	Midland Ave. Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	2995 Eglinton Ave. E., Toronto	Eglinton GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Eglinton Ave., Toronto	Eglinton Avenue Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Markham Rd., Toronto	Markham Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Kingston Rd., Toronto	Kingston Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

7.3.8 Corridor & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Four potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural

[76] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[77] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Heritage sections of Volume 3 – Impact Assessment. **Table 7-17** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 7-17: Cultural Heritage Resources for LSE-4

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[78]	Metrolinx Heritage Recognition[79]
N/A	4105 Kingston Rd., Toronto	Guildwood GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	6251 Lawrence Ave., Toronto	Rouge Hill GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSE-4-1	Toronto	Highland Creek Bridge	CHER previously completed, determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC – SCHV, n.d.)
LSE-4-2	90 Morningside Ave., Toronto	Purvis-Castle Log Cabin	Designated under Part IV of the OHA (By-Law 51-2004)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

7.3.9 Corridor & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Ten potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-18** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

[78] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[79] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 7-18: Cultural Heritage Resources for LSE-5

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[80]	Metrolinx Heritage Recognition[81]
LSE-5-1	Rouge River, Toronto	Rouge River Bridge	Provincial Heritage Property of Provincial Significance	Provincial Heritage Property of Provincial Significance; CHER is not required	Provincial Heritage Property of Provincial Significance (MHC Decision, April 10, 2015)
N/A	Granite Court, Pickering	Granite Court Bridge	None	Non-heritage property; CHER is not required	Non-Heritage Property
N/A	Whites Road, Pickering	Whites Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	York Sub, Pickering	York Sub Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Liverpool Rd., Pickering	Liverpool Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSE-5-2	Mile 315.4, Pickering	Petticoat Creek Culvert	CHER previously completed, determined to be a Provincial Heritage Property	Provincial Heritage Property; CHER is not required	Provincial Heritage Property (MHC Decision, June 8 2016)
N/A	Mile 313.6, Pickering	Double Stone Culvert	None	Potential Provincial Heritage Property; CHER in progress at the time of data collection for the CHSR	Non-Heritage Property (MHC Decision, June 8, 2016)
LSE-5-3	Mile 313.57, Pickering	Dunbarton Subway	None	Potential Provincial Heritage Property; CHER in progress at the time of data	Provincial Heritage Property (MHC Decision, June 8 2016)

[80] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[81] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[80]	Metrolinx Heritage Recognition[81]
				collection for the CHSR	
LSE-5-4	Pickering	Miller Memorial Tree	None (identified during public consultation)	Protected property adjacent to the Rouge River Bridge; CHER is not required	Adjacent Heritage Property
SV-6-1	1749 Meadowvale Rd., Markham	Rouge National Urban Park	Property protected under federal legislation (Rouge National Urban Park Act, S.C. 2015, c.10)	Protected property adjacent to the Stouffville and Lakeshore East rail corridors; CHER is not required	Adjacent Heritage Property

7.3.10 Corridor & Bridges: Section LSE-6 – Pickering Station to Ajax Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Seven potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-19** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 7-19: Cultural Heritage Resources for LSE-6

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[82]	Metrolinx Heritage Recognition[83]
N/A	Bayly St., Pickering	Durham TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

[82] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[83] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[82]	Metrolinx Heritage Recognition[83]
N/A	1322 Bayly St., Pickering	Pickering GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	100 Westney Rd. S., Ajax	Ajax GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Pickering North Pedestrian Bridge, Pickering	Pickering North Pedestrian Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Brock Rd., Pickering	Brock Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Church St., Ajax	Church Street Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Duffins Creek, Ajax	Duffins Creek Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property

7.3.11 Corridor & Bridges: Section LSE-7 – Ajax Station to Whitby Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Four potentialcultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-20** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

Table 7-20: Cultural Heritage Resources for LSE-7

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[84]	Metrolinx Heritage Recognition[85]
N/A	Harwood Ave. S., Ajax	Harwood Avenue South Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Lakeridge Rd., Ajax	Lakeridge Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Henry St., Whitby	Henry Street Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSE-7-1	1450 Henry Street, Whitby	The Station Gallery (Former Whitby Train Station)	Designated under Part IV of the OHA (By-Law 6240-99)	Protected property adjacent to the rail corridor and to Henry Street Bridge; CHER is not required	Adjacent Protected Property

7.3.12 Corridor & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

A cultural heritage screening process was undertaken as an initial step as part of the baseline conditions phase to identify cultural heritage resources within the study area (see Methodology section 1.5.3 for further detail). Ten potential cultural heritage resources are located in this segment of the corridor. The results presented in the 'Metrolinx Heritage Recognition' column are representative of the determinations current as of the time of writing the Cultural Heritage Screening Report (CHSR) found in Appendix C1. It should be noted that the cultural heritage assessment process continued beyond the baseline conditions phase of the TPAP, including including the preparation of Heritage Impact Assessments (HIAs) for impacted properties determined to be Provincial Heritage Properties of Provincial Significance (PHPPS). Therefore, these updates and additional details are appropriately captured in the Cultural Heritage sections of Volume 3 – Impact Assessment. **Table 7-21** summarizes these resources and provides recommendations for each (see **Appendix C1** for the screening reports).

[84] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[85] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

Table 7-21: Cultural Heritage Resources for LSE-8

CHR	Location	Property Name	Previous Heritage Recognition	Screening Outcome[86]	Metrolinx Heritage Recognition[87]
N/A	Hopkins St., Whitby	ERMF TP Site	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	1350 Brock St. S., Whitby	Whitby GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	915 Bloor St. W., Oshawa	Oshawa GO Station	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	GO Whitby Pedestrian Bridge	Whitby GO Pedestrian Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Brock Street South, Whitby	Brock Street South Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Victoria Street, Whitby	Victoria Street Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Hopkins Street, Whitby	Hopkins Street Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Thickson Road, Whitby	Thickson Road Bridge	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
N/A	Victoria St. E., Whitby	East Rail Maintenance Facility	None	Non-Heritage Property; CHER is not required	Non-Heritage Property
LSE-8-1	601 Victoria St. E., Whitby	The Emanuel Sleep House	Part IV Designation under the OHA (By-Law 1812-85)	Protected property adjacent to the rail corridor; CHER is not required	Adjacent Protected Property

[86] This column represents the outcome of application of the heritage screening questions outlined in the Metrolinx Draft Terms of Reference for Consultants: Cultural Heritage Screening Report for Built Heritage Resources and Cultural Heritage Landscapes (February 11, 2014) as part of the GO Transit Rail Network Electrification TPAP.

[87] This column outlines the heritage recognition of each feature as recognized by Metrolinx through their Cultural Heritage Management Process. Details pertaining to MHC Decision Forms, summaries of CHER results, etc. are documented in the Cultural Heritage Screening Report in EPR Appendix C.

7.4 Archaeology

A review of the historic land use of the Lakeshore East Corridor indicates that it has been occupied by Aboriginal peoples for thousands of years. It is situated within the traditional territory occupied by the ancestral Huron-Wendat, however the north shore of Lake Ontario was abandoned at around the turn of the sixteenth century. The corridor was subsequently utilized by the Seneca First Nation for hunting until the late seventeenth century; and, subsequently occupied by Ojibwa First Nations until 1805 (Sections LSE-1, LSE-2, LSE-3, LSE-4 and LSE-5); and, 1923 (Sections LSE-5, LSE-6, LSE-7 and LSE-8) (AANDC 2013f; Benn 2008; Ellis 2013; Williamson 2013). The background research also acknowledges that since the turn of the eighteenth century, the Métis have lived throughout the Province of Ontario but are often muted in the historical record (MNC n.d.; Stone and Chaput 1978:607,608). Since 1805, the corridor has been occupied by Euro-Canadian peoples and is situated within the former Townships of Scarborough and York, County of York; and, since 1790s in the former Townships of East Whitby, Pickering and Whitby, County of Ontario (Armstrong 1985). A review of 19th century mapping indicates that the corridor includes both historic features and transportation routes (Beers 1877; Miles & Co. 1878; Shier 1960; Tremaine 1860).

Please refer to Section 2.4 for a description of the methodology followed for collection of archaeological baseline conditions data. Baseline conditions within each segment of the Lakeshore East Corridor have been summarized below. Additional details can be found in the Archaeological Baseline Conditions Report contained in **Appendix D1**.

7.4.1 East Rail Maintenance Facility Tap Location and TPS

See **Figure 1-3** in Section 1.3 for the location of the proposed East Rail Maintenance Facility Tap location and TPS site. The ERMF TPS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway; Hopkins Street)
- Proximity to historic features (farmsteads)

These criteria are indicative of lands within the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Area.

The entire ERMF TPS has, however, been subject to previous archaeological assessment (TMHCI 2010) (see Figure 7-11 in **Appendix D1**). TMHCI (2010) completed a Stage 1 and 2 Archaeological Assessment GO Transit – Lakeshore East Corridor Oshawa to Bowmanville Rail Service Expansion EA. This assessment, however only addressed the proposed facility locations as well as the proposed new track segment.

7.4.2 Scarborough SWS

See **Figure 1-4** in Section 1.3 for the location of the proposed Scarborough SWS site. The Scarborough SWS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway)
- Proximity to historic features (farmsteads)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

7.4.3 Durham SWS

See **Figure 1-5** in Section 1.3 for the location of the proposed Durham SWS site. The Durham SWS meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway; Bayly Street)
- Proximity to historic features (farmsteads)

These criteria are indicative of lands within the vicinity as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Area. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

No known archaeological assessments pertaining to the Durham SWS study area have been completed, and this will be confirmed during the Stage 1 Archaeological Assessment (see **Appendix D2**).

7.4.4 Don Yard PS

See **Figure 1-6** in Section 1.3 for the location of the proposed Don Yard PS site. The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway)
- Proximity to water source (Don River)
- Proximity to resource areas (historic Don Marsh)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. The entire Don Yard PS has, however, been subject to previous archaeological assessment (ASI 2014d) (see Figure 7-7 in **Appendix D1**).

7.4.5 Corridor & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Don Mount)
- Proximity to historic transportation route (Grand Trunk Railway)
- Proximity to historic features (farmsteads)
- Proximity to water source (Don River; Lake Ontario)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 2014d) (see Figure 7-7 in **Appendix D1**). Approximately 4.3 ha have been previously assessed. No other known previous archaeological assessments have been completed within the LSE-1 section.

7.4.6 Corridor & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Grand Trunk Railway; Clonmore Drive; former alignment of Dawes Road)
- Proximity to historic features (farmsteads)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 2011b) (see Figure 7-7 in **Appendix D1**). Approximately 2.4 ha have been previously assessed. No other known previous archaeological assessments have been completed within the LSE-2 section.

7.4.7 Corridor & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Scarborough)
- Proximity to historic transportation route (Eglinton Avenue; Grand Trunk Railway; Kingston Road)
- Proximity to historic features (farmsteads)

- Well-drained sandy soils (Fox sandy loam; Woburn sandy loam)-
- Potential for deeply buried deposits (Fox sandy loam)
- Proximity to previously registered archaeological sites (AkGt-15)
- Proximity to water source (Highland Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered site is located within 50 m of Section LSE-3 (AkGt-15) (Figure 7-8 in **Appendix D1**). Available OASD information on site AkGt-15 is limited. Background research to determine the site's CHVI was included in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least three previous archaeological assessments (ASI 2014e; 2014i; 2015a) (see Figure 7-8 in **Appendix D1**). Approximately 1.9 ha has been previously assessed. No other known previous archaeological assessments have been completed within the LSE-3 section.

7.4.8 Corridor & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Port Union Station)
- Proximity to historic transportation route (Grand Trunk Railway; Kingston Road)
- Proximity to historic features (farmsteads)
- Well-drained sandy soil (Fox sandy loam)
- Proximity to previously registered archaeological sites (AkGs-27; AkGs-43) (see Figure 7-9 in **Appendix D1**)
- Proximity to water source (Highland Creek; Lake Ontario)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Two previously registered sites are located within 50 m of Section LSE-4 (AkGs-27 and AkGs-43) (Figure 7-9 in **Appendix D1**). Site AkGs-43 will not require further assessment as it is reported to not possess any further CHVI. Site AkGs-27 is considered to possess CHVI and requires further assessment. Full details of further work required to mitigate impacts of the project are included in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 2006b) (see Figures 7-8 and 7-9 in **Appendix D1**). Approximately 0.4 ha have been previously assessed. No other known previous archaeological assessments have been completed within the LSE-4 section.

7.4.9 Corridor & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Dunbarton)
- Proximity to historic transportation route (Bayly Street/Sheppard Avenue; Liverpool Road; Grand Trunk Railway)
- Proximity to historic features (farmsteads)
- Well-drained sandy soils (Brighton sandy loam)
- Proximity to previously registered archaeological sites (AkGs-25; AkGs-39; AkGs-42; AkGs-51; AkGs-484) (see Figure 7-9 in **Appendix D1**)
- Proximity to water source (Frenchman's Bay; Lake Ontario; Petticoat Creek; Rouge River)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

Five previously registered archaeological sites are located within 50 m of Section LSE-5 (AkGs-25; AkGs-39; AkGs-42; AkGs-51; AkGs-484) (Figures 7-9 and 7-10 in **Appendix D1**). Both sites AkGs-39 and AkGs-42 are considered to not possess any further CHVI. Both sites AkGs-51 and AkGs-484 refer to the same archaeological site; the site is considered to possess CHVI and further assessment was conducted during the Stage 1 Archaeological Assessment Report (see **Appendix D2**). Information available on site AkGs-25 is limited. Background research to determine the site's CHVI, as well as full details of the further work required to mitigate the impacts of the project to site AkGs-51/484 are provided in the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (ASI 1996) (see Figure 7-10 in **Appendix D1**). Approximately 0.3 ha have been previously assessed. No other known previous archaeological assessments have been completed within the LSE-5 section.

7.4.10 Corridor & Bridges: Section LSE-6 – Pickering Station to Ajax Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to historic transportation route (Church Street; Grand Trunk Railway)
- Proximity to historic features (farmsteads)

- Proximity to previously registered archaeological sites (AlGs-110)
- Proximity to water source (Duffins Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered archaeological site is located within 50 m of Section LSE-6 (AlGs-110) (Figure 7-10). Site AlGs-110 has been previously subject to Stage 4 Mitigation of Development Impacts. Construction has since removed the site, leaving no CHVI. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one archaeological assessment (ASI 2014b) (see Figure 7-10 in **Appendix D1**). Approximately 4.7 ha have been assessed. No other known previous archaeological assessments have been completed within the LSE-6 section.

7.4.11 Corridor & Bridges: Section LSE-7 – Ajax Station to Whitby Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Whitby)
- Proximity to historic transportation route (Grand Trunk Railway; Lake Ridge Road)
- Proximity to historic features (farmsteads)
- Proximity to previously registered archaeological sites (AlGr-150)
- Proximity to water source (Lynde Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

One previously registered archaeological site is located within 50 m of Section LSE-7 (AlGr-150) (Figure 7-11 in **Appendix D1**). Site AlGr-150, however, does not possess any further CHVI and as such will not require further assessment.

This section has been subject to at least seven previous archaeological assessments (ASI 1991; 2004c; 2011c; 2013; 2014j; 2015b; ASI and URS 2011) (see Figures 7-10 and 7-11 in **Appendix D1**). Approximately 37.7 ha have been previously assessed. No other known previous archaeological assessments have been completed within the LSE-7 section.

7.4.12 Corridor & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

The Study Area meets the following criteria which are indicative of archaeological potential:

- Proximity to Euro-Canadian settlement (Whitby)
- Proximity to historic transportation route (Grand Trunk Railway; Victoria Street)
- Proximity to historic features (farmsteads)
- Proximity to water source (Pringle Creek; Corbett Creek)

These criteria are indicative of the Study Area as having potential for the identification of Aboriginal and Euro-Canadian archaeological sites, depending on the degree of disturbance and physical features of the Study Areas. This was confirmed during the Stage 1 Archaeological Assessment Report (see **Appendix D2**).

This section has been subject to at least one previous archaeological assessment (TMHCI 2010) (see Figure 7-11 in **Appendix D1**). Approximately 32 ha have been previously assessed. Timmins Martelle Heritage Consultants Inc. (TMHCI 2010) completed a Stage 1 and 2 Archaeological Assessment GO Transit – Lakeshore East Corridor Oshawa to Bowmanville Rail Service Expansion EA. This assessment, however only addressed the proposed facility locations as well as the proposed new track segment. No other known previous archaeological assessments have been completed within the LSE-8 section.

Based on the available background documents, all sections and TPFs (except Don Yard PS and ERMF TPS) within the Lakeshore East Rail Corridor, include areas which had not been previously subject to archaeological assessment. Therefore, parts of the Lakeshore East Rail Corridor required further archaeological assessment. For further details on the specific areas that were further assessed, please refer to Figures 7-7 to 7-11 of the Archeology Baseline Conditions Report (**Appendix D1**).

7.5 Land Use & Socio-Economic

Please refer to Section 1.5.5 for a description of the methodology followed for collection of land use and socio-economic baseline conditions data. Baseline conditions within each segment of the Lakeshore East Corridor have been summarized below. Additional details can be found in the Land Use and Socio-Economic Baseline Conditions Report contained in **Appendix E1**.

From USRC, land transitions from urban development into a mix of suburban residential and employment uses. This pattern generally continues through the City of Pickering and Town of Ajax until reaching a more employment/industrial section in eastern Whitby and western Oshawa. There are multiple sections of natural areas in Pickering, Ajax, and Whitby and a buffer of agricultural land between Ajax and Whitby. The route passes through Regional municipality (Durham Region).

There are 121 sensitive receptor facilities (schools, child care centres, long term care centres and hospitals) in the vicinity (i.e., within approximately 500 m) of the Lakeshore East Corridor. Of these, three are less than 40 m from the rail corridor, eight are between 40 and 100 m from the rail corridor, and the remaining 110 are between 100 and 500 m from the rail corridor (see Table 4-8 and Figures B-138 to B-164 in **Appendix E1**).

7.5.1 East Rail Maintenance Facility Tap Location and TPS

7.5.1.1 Existing Land Use

The proposed East Rail Maintenance Facility (ERMF) Tap Location and TPS site (**Figure 1-13**) is located in an industrial area currently being redeveloped for the future ERMF. The site is surrounded by open space or industrial / utility uses and is therefore compatible with these uses. Lands to the north and east have a combination of commercial (office) and retail uses. It is zoned *Restricted Industrial (M1).* Official Plan Land use designations at this site are shown in Figures LSE-26 to LSE-27 in **Appendix E1**.

Figure 7-16: Existing Land Use at the Proposed ERMF Site (Northeast of Site, Looking Southwest)

There are no trails, large parks, other recreational amenities or sensitive receptor facilities in the vicinity of the ERMF Tap location TPS site.

7.5.1.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the ERMF TPS site, and there are no planned and approved recreational amenities bordering the ERMF site. The ERMF site is zoned *Restricted Industrial* under the Town of Whitby's zoning by-laws.

7.5.2 Scarborough SWS

7.5.2.1 Existing Land Use

The proposed Scarborough SWS (**Figure 1-14**) is located in an area of open space / storage area that runs alongside the rail corridor, and is surrounded by high-density residential areas over 100 m away and commercial warehouses. A community garden is located between the site and the residential towers. The site is zoned *Utility and Transportation (UT)*.Official Plan Land use designations at this SWS site are shown in Figure LSE-8 in **Appendix E1**.

Figure 7-17: Existing Land Use at the Proposed Scarborough SWS Site (South of the Tracks, facing North)

Figure 7-18: Existing Land Use at the Proposed Scarborough SWS Site (Backs of Commercial Buildings to the Southeast of the Site)

The Scarborough SWS is within the vicinity of both Greystone Park and Glenshepard Park. It is approximately 230 m from the Canadiana Court Early Learning & Child Care Centre, and 240 m from Robert Service Senior Public School.

The 25 kV Feeder route will run along the Stouffville and Lakeshore East rail corridors from the Scarborough TPS to the Scarborough SWS. From the Scarborough TPS to the Kennedy GO Station, land use consists of a hydro transmission corridor to the west of the rail corridor and low rise residential to the east. South of the Kennedy GO Station is characterized by parking lots, open spaces, Corvette Park, and varying densities of residential. This connection is proposed to consist of an aerial connection along the existing rail corridor.

7.5.2.2 Planned Land Use

There are no Secondary Plans or development applications affecting the lands adjacent to the proposed Scarborough SWS site. In the future, the lands to the southeast of the site across the rail corridor will be

redeveloped as a residential neighbourhood. A comprehensive residential development and subdivision are approved for all of these lands (at 260 Brimley Road) that currently do not hold residential uses,

There are no planned and approved recreational amenities in the vicinity of the Scarborough SWS site, and the site is zones Utility and Transportation under the City of Toronto Zoning By-law 569-2013.

7.5.3 Durham SWS

7.5.3.1 Existing Land Use

The proposed Durham SWS site (**Figure 1-15**) is located in the City of Pickering in an area of primarily open space / hydro corridor, with the Pickering Playing Fields in the southeast corner, and is surrounded by commercial uses. The northeast corner has some tree cover / vacant lots, with ponding of water in a man-made structure. The site is zoned *Storage and Light Manufacturing (M1, M1 (CR1))* and *M2 (CR1)*.

Official Plan Land use designations at this SWS site are shown in Figure LSE-20 in **Appendix E1**.

Figure 7-19: Existing Land Use at the Proposed Durham SWS Site (Northeast Corner of Site, facing West)

Figure 7-20: Existing Land Use at the Proposed Durham SWS Site (Northeast Corner of Site, facing Northwest)

The Pickering Playing Fields, a recreation area that includes mini-golf and batting cages, are located in the southeast corner of the Durham SWS site. There are no sensitive receptors in the vicinity of the Durham SWS.

7.5.3.2 Planned Land Use

There are no Secondary Plans or development applications affecting the lands at the Durham SWS site, and there are no planned and approved recreational amenities at the site. The site is zoned *Storage and Light Manufacturing* and *M2 (CR1)*.

7.5.4 Don Yard PS

7.5.4.1 Existing Land Use

The proposed Don Yard PS site (**Figure 1-16**) is located in an area which is currently treed, surrounded by parking lot, the Don Valley Parkway, the rail corridor and treed area. The site is zoned *Utility and Transportation (UT)*. The Don Yard PS site is within the current and future floodplain of the Don River, and

flood-proofing measures as part of the Don Mouth re-naturalization project will not protect this site from flooding. Official Plan Land use designations at this PS site are shown in Figure LSE-1 in **Appendix E1**.

Figure 7-21: Existing Land Use at the Proposed Don Yard PS Site (South of the Corridor, Facing Northwest)

Figure 7-22: Existing Land Use at the Proposed Don Yard PS Site (North of BMW Lot, Facing South)

There are no trails, large parks or other recreational amenities in the vicinity of the Don Yard PS site, and no sensitive receptor facilities in the vicinity of the site.

7.5.4.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to the Don Yard PS site, and no development applications at the site. However, the site is within the current and future floodplain of the Don River, floodproofing measures as part of the Don Mouth Naturalization and Port Lands Flood Protection Project will not protect this site from flooding. Additionally, it is within the study area for the Don Landing Redesign and the Lower Don Trail Master plan. The route of the planned Broadview Avenue extension also may be located in the vicinity of the Don Yard PS site.

There are no planned and approved recreational amenities in the vicinity of the Don Yard PS site, and the northern portion of the site abutting the parking lot is zoned *Employment Industrial* under the City

of Toronto Zoning By-law 59-2013. The southern portion of the PS site abutting the rail corridor is zoned *Utility and Transportation* under the City of Toronto Zoning By-law 59-2013.

7.5.5 Corridor & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

7.5.5.1 Existing Land Use

Between the Don Layover Yard and Danforth GO Station, the rail corridor passes through lands largely characterized by a mix of Employment Areas, Mixed Use Areas, and Neighbourhood lands, with some Parks, Natural Areas and a single area of Apartment Neighbourhoods. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-1 toLSE-4 in **Appendix E1**.

There are five large parks that border this section of the rail corridor, all of them east of the Don River: Jimmie Simpson Park, Bruce Mackey Park, Monarch Park, William Park Ravine, and Merril Bridge Road Park.

Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Monarch Park and Lower Don River trails. The Lower Don River Trail crosses the rail corridor just to the east of the Don Layover Yard.

Two sensitive receptor facilities (Enderby (Woodgreen) and Le Petit Chaperon Rouge – Jones) are within 40 m of the rail corridor.

7.5.5.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor, and no planned and approved recreational amenities bordering this section of the rail corridor. Lands south of the rail corridor between the Don Valley Parkway to the west, Lake Shore Boulevard to the south and Booth and Eastern Avenue to the east fall within the Unilever Precinct Plan, This planning study will develop a vision for a major employment area focused on office employment and retail space.

Under the City of Toronto Zoning By-law 569-2013 the rail corridor is zoned *Utility and Transportation*.

7.5.6 Corridor & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

7.5.6.1 Existing Land Use

Land use in this section of the rail corridor in primarily *Mixed Use Areas* between Main Street and Warden Avenue, followed by *Employment Areas* from west of Birchmount Avenue to the Scarborough GO Station. Smaller areas of *Parks* and residential *Neighbourhoods* are also present. Undeveloped land is located south of the rail corridor east of Victoria Park Avenue and east of Eastwood Avenue. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-4 to LSE-7 in **Appendix E1**.

Natal Park is the only large recreational amenity adjacent to this section of the rail corridor. Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor include the Natal Park Trail. The Natal Park Trail runs parallel to the rail corridor within Natal Park.

There are no sensitive receptor facilities within 40 m of the rail corridor.

7.5.6.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor. However a planning study is currently underway in this area. The Danforth Avenue Study looks at the area of Danforth Avenue between Victoria Park and Warden Avenue. The undeveloped land east of Victoria Park Avenue is designated *Mixed Use Areas*, and east of Eastwood Avenue is designated *Employment Areas*.

As advised by the City of Toronto, there are a number of active development applications for the lands south of the rail corridor and east of Victoria Park Avenue. These include a commercial building at Victoria Park Avenue and an expansion to FreshCo. at the Victoria Crossing Shopping Plaza south of the rail corridor. Three residential developments are proposed east of Victoria Park Avenue, south of the rail corridor. The lands are currently designated as *Mixed Use Area and Park* and are vacant / open space. A multi-family residential development (low and high rise units), in addition a stacked residential townhouse development is proposed at 2533-2541 Gerrard Street East and a stacked townhouse development is proposed at 168-184 Clonmore Avenue. There are 138 stacked townhouse units proposed at 168-184 Clonmore Avenue.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned for *Utility and Transportation* under the City of Toronto Zoning By-law 569-2013.

7.5.7 Corridor & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

7.5.7.1 Existing Land Use

East of Midland Avenue, land use alternates between *Neighbourhoods*, *Apartment Neighbourhoods*, *Employment Areas*, and *Mixed Use Areas*, with some *Parks* and a large swath of *Other Open Space Areas* between Markham Road and Guildwood GO Station. A majority of higher density residential is within *Mixed Use* areas. Undeveloped lands are located south of the rail corridor between Jeanette Street and Brimley Road and north of the rail corridor just west of the Eglinton GO Station. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-7 to LSE-11 in **Appendix E1**.

McCowan District Park is located adjacent to the rail corridor to the west of McCowan Road, and the Scarboro Golf and Country Club is located north of the rail corridor between Markham Road and Orton Park Road. Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor includes the Natal Park and McCowan District Park. The Natal Park Trail runs

parallel to the rail corridor within Natal Park. The McCowen District Park Trail runs south of the corridor west of Eglingon GO Station.

There are no sensitive receptor facilities within 40 m of the rail corridor.

7.5.7.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor. Undeveloped lands west of Brimley Road are designated *Employment Areas* and west of the Eglinton GO Station as *Mixed Use Areas*.

Lands along Kingston Road in the City of Toronto, west of Guildwood GO station east to Highland Creek are part of the Kingston Road Avenue Study. The study, being carried out in phases to amend the City of Toronto Official Plan and Zoning By-law, identifies a plan for future development along Kingston Road including improvements to streetscape planning, landscaping, road improvements and improved access to public transit.

As advised by the City of Toronto, mid-rise and low-rise developments have been proposed adjacent to the rail corridor at 253 Markham Road, 12, 10 and 30 Dunelm Street and 90 Dale Avenue. The developments at 253 Markham Road and 12, 20 and 30 Dunelm Street are south of the rail corridor, in lands that are currently open space / vacant and are designated *Neighbourhoods*. 432 residential units are proposed. The development at 90 Dale Avenue is located south of the rail corridor at underused lands at Dale Avenue and Kingston Road. The lands are designated *Apartment Neighbourhoods.* As these developments have not been approved by the City of Toronto no further assessment will be completed.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned *Utility and Transportation* under the City of Toronto Zoning By-law 569-2013.

7.5.8 Corridor & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

7.5.8.1 Existing Land Use

Land use at the Guildwood GO Station is *Mixed Use Areas* to the north of the rail corridor and residential *Neighbourhoods* to the south. Between the GO station and Manse Road, land use on the north of the rail corridor is primarily *Neighbourhoods*, interspersed with a large *Parks* area. The south of the rail corridor is primarily *Natural Areas*, transitioning into *Employment Area*. East of Manse Road, land use on both sides of the rail corridor is exclusively *Employment Areas*, *Natural Areas* (associated with Highland Creek), *Parks*, and *Other Green Spaces* to the Rouge Hill GO Station, where a small amount of *Neighbourhoods* areas are located. A large swath of undeveloped land is located east of Highland Creek, north of the rail corridor. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-11 to LSE-15 in **Appendix E1**.

A number of large parks are adjacent to the rail corridor along its route near the shores of Lake Ontario. These are: Grey Abbey Park, Grey Abbey Ravine, East Point Park, Port Union Waterfront Park, and Port Union Village Common Park. Based on currently available information, trails within the City of Toronto in the vicinity of this section of the rail corridor includes the Waterfront, Highland Creek, East Point Park and Port Union Village Common trails.The Waterfront Trail runs alongside the rail corridor between Highland Creek and Chesterton Shores (just east of the Rouge Hill GO Station). Coming from the north, the Highland Creek Trail crosses the rail corridor at Highland Creek and connects with the Waterfront Trail. The East Point Park Trail runs parallel of the rail corridor in East Point Park. The Port Union Village Common Trail crosses the rail corridor west of Rouge Hill GO Station.

There are no sensitive receptors within 40 m of the rail corridor.

7.5.8.2 Planned Land Use

The section of the rail corridor west of Guildwood GO station to east to Highland Creek are part of the City of Toronto's Kingston Road Avenue Study. The study, being carried out in phases to amend the City of Toronto Official Plan and Zoning By-law, identifies a plan for future development along Kingston Road including, improvements to streetscape planning, landscaping, road improvements and improved access to public transit.

At the eastern extremity of the rail corridor within Toronto, the Port Union Village Community is under a Secondary Plan which provides unique policies for the predominantly residential area. The undeveloped land at Highland Creek is designated *Natural Areas*.

There are no planned and approved recreational amenities bordering this section of the rail corridor, and the rail corridor is zoned Utility and Transportation under the City of Toronto Zoning By-law 569-2013.

7.5.9 Corridor & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

7.5.9.1 Existing Land Use

East of the Rouge Hill GO Station, land use to the municipal border is primarily *Neighbourhoods* to the north of the rail corridor and exclusively *Natural Areas* and *Parks* to south. Once entering Pickering, the rail corridor passes through multiple uses including *Low-Medium Density Residential*, *Prestige Employment*, a small *Local Node*, and large open space uses. These open space uses include *Natural Areas* surrounding the Rouge River, Petticoat Creek and Frenchman's Bay, and also an *Active Recreational Area* that makes up the Petticoat Conservation Area. The area surrounding the Pickering GO station is designated as *Mixed Use Corridor* and *Medium Density Residential*. A parcel of undeveloped land is located at Whites Road South, east of the rail corridor. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-15 to LSE-20 in **Appendix E1**.

Within Toronto, Rouge National Urban Park crosses the rail corridor at the Rouge River. As of May 2015, Rouge National Urban Park officially became Canada's first national urban park. An additional 21 km^2 was committed to the park on July 11th 2015, to create a total park area of 79.5 km^2. Rouge Beach is located at the mouth of the Rouge River, south of the rail corridor.

The section of the rail corridor within the City of Pickering passes through three large recreational amenities: the Petticoat Creek Conservation Area, Dunmoore Park, and the Vistula Ravine.

Based on currently available information, trails within the City of Toronto and City of Pickering in the vicinity of this section of the rail corridor includes the Waterfront Trail. The Waterfront Trail runs alongside the rail corridor between Chesterton Shores and the Rouge River, and crosses under the rail corridor on both sides of the Rouge River. The trail on the east side of the Rouge River is also part of the Trans Canada Trail.

There are no sensitive receptor facilities within 40 m of the rail corridor.

7.5.9.2 Planned Land Use

This section of the rail corridor passes through the Port Union Village Community Secondary Plan. The purpose of this plan is to promote a transit-supportive residential community that sensibly manages natural resources along the waterfront. The undeveloped parcel of land at Whites Road is designated *Mixed Use Areas – Local Node*.

A welcome area in the Rouge Beach area is proposed under the Parks Canada 2014 draft Management Plan for the Rouge National Urban Park. As advised by Parks Canada a conceptual trail route between Rouge Beach and the Glen Rouge Campground on Kingston Road is proposed.

The rail corridor is zoned *Utility and Transportation* under the City of Toronto Zoning By-law 569-2013. The rail corridor has multiple zoning designations within the City of Pickering: east of Toronto towards Whites Road it is zoned *R3* and *R4*, transitioning to *Storage and Light Manufacturing* to the west of Whites Road and *O1* east of Whites Road to Liverpool Road.

7.5.10 Corridor & Bridges: Section LSE-6 – Pickering Station to Ajax Station

7.5.10.1 Existing Land Use

The Pickering GO Station is designated as *Urban Growth Centre/Regional Centre* in Durham Region's Official Plan. East of the Pickering GO Station land use is largely characterized by *Prestige* and *General Employment Lands*. However, there is also a significant Hydro Transmission Corridor running north from the Pickering Nuclear Generating Station, which is designated as a *Potential Multi-use Area*. Towards the Town of Ajax, land use transitions into *Environmental Protection* areas and a swath of *Prestige Employment* surrounding Duffins Creek. A large swath of undeveloped land is located south of the rail corridor between Squires Beach Road and Regional Road 24.

At Ajax GO Station, land north of the corridor is *Low Density Residential* while land south of the corridor is *Prestige* and *General Employment.* In Ajax, Highway 401 is located to the north of the rail corridor, while an *Environmental Protection Area* around Duffins Creek is to the south before entering the *GO Transit Station Mixed Use Area*. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-19 to LSE-22 in **Appendix E1**.

The Annandale Golf and Country Club is to the south of the rail corridor in Ajax. The Duffins Creek Trail, which is also part of the Trans Canada Trail, crosses under the rail corridor just west of Regional Road 24. Church Street South is part of the Trans Canada Trail. There are no sensitive receptor facilities within 40 m of the rail corridor.

7.5.10.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor, and no planned and approved recreational amenities bordering this section of the rail corridor. The undeveloped land between Squires Beach Road and Regional Road 24 is designated *Prestige Employment*.

The rail corridor within the City of Pickering from Liverpool Road west to the Town of Ajax is zoned *Storage and Light Manufacturing*.

7.5.11 Corridor & Bridges: Section LSE-7 – Ajax Station to Whitby Station

7.5.11.1 Existing Land Use

Moving east from the *Downtown Central Area* of Ajax, there is a small pocket of *Low Density Residential* followed by a few sites of *Prestige Employment* and *Open Space*. Just west of Lakeridge Road, *Rural* uses are found up to the Ajax border with a small pocket of *Environmental Protection* land surrounding a watercourse. Small parcels of undeveloped land are located along Station Street, west of Salem Road South, and at the end of Achilles Road.

On the Whitby side of this section, lands are largely characterized by *Hazard Lands* surrounding Lynde Creek and more *Open Space*. The area surrounding the Whitby GO Station is designated as *Mixed Use* largely surrounded by *Major Open Space* lands and *Harbour Development Zones*. A new 400-series Highway, designated Highway 412, is being constructed to connect Highways 401 and 407, east of Lake Ridge Road. Highway 412 is scheduled to be open in the spring of 2016.

Large swaths of undeveloped lands are located south of the rail corridor between Lake Ridge Road and Montecorte Street. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-21 to LSE-25 in **Appendix E1**.

Iroquois Park is the only large park that borders this section of the rail corridor. Victoria Street East, which crosses the rail corridor east of Brock Street South, is designated as a Regional Cycling Spine in the City's Cycling and Leisure Trails Plan. One sensitive receptor facility (Ballycliffe Lodge Nursing Home) is within 40 m of the rail corridor.

7.5.11.2 Planned Land Use

The rail corridor runs adjacent to the West Whitby Secondary Plan. The section of the Secondary Plan that is adjacent to the rail corridor is reserved for the West Durham Link. This is the section of land that will be used to create a north-south connection from the Highway 407 to Highway 401.

The undeveloped lands at Station Street, Salem Road South and Achilles Road are designated *Prestige Employment*. Undeveloped lands between Lake Ridge Road and Montecorte Street are designated *Hazard Land* and *Major Open Space.* The Whitby GO station and the surrounding lands north to Highway 401 and south to Lake Ontario are subject to the Port Whitby Community Secondary Plan. Land use intensification and growth is anticipated for this area and the secondary plan recognizes potential growth of the lands situated between Highway 401, Brock Street, Victoria Street and Henry Street as a transportation gateway facility (Harbour Development Area 5). Expansion of the Whitby GO station is recognized as well as the potential opportunity for more intensive uses such as hotels, office space, ancillary retail, cultural and public open space activities. High density residential use is planned for south of Victoria Street and east of Dufferin Street South.

A Boulevard Multi-use Path and Trail/Walkway north of Highway 401 and the rail corridor, south of Michael Boulevard, is proposed in the Town of Whitby's Cycling and Leisure Trails Plan. In addition a Boulevard Multi-use Path is proposed along Victoria Street West, crossing the rail corridor west of South Blair Street. The rail corridor does not have any zoning designation under the Town of Ajax Zoning By-law 95-2003 and Town of Whitby's zoning by-laws.

7.5.12 Corridor & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

7.5.12.1 Existing Land Use

East of the Whitby GO Station land use is largely characterized by substantial sections of *Prestige Industrial land*. *Prestige Industrial lands* are located to the north and south of the rail corridor between the Whitby GO Station and South Blair Street. The *Prestige Industrial lands* extend to the north of the corridor and Highway 401, east of South Blair Street. The majority of land east of South Blair Street and south of the corridor are designated *General Industrial*. Lands from the western municipal border to the Oshawa GO Station are entirely designated as *Industrial*. East of the Oshawa GO Station, lands are designated as *Industrial* south of the rail corridor and *Planned Commercial Centre* and *Special Purpose Commercial* north of the rail corridor.

Some undeveloped land is located north of the rail corridor east of Brock Street South. Larger swaths of undeveloped land are located on both sides of the rail corridor between South Blair Street and the Oshawa GO Station. Official Plan Land use designations along this section of the rail corridor are shown in Figures LSE-25 to LSE-27 in **Appendix E1**.

Two trails cross this section of the rail corridor (the Joseph Kolodzie Oshawa Creek Bike Path and the Michael Starr Trail), and the rail corridor is not in the vicinity of any sensitive receptor facilities.

7.5.12.2 Planned Land Use

There are no Secondary Plans affecting the lands adjacent to this section of the rail corridor. Undeveloped land east of Brock Street South is designated *Utility*. The larger swaths of undeveloped land between South Blair Street and the Oshawa GO Station are designated *General Industrial*, *Commercial Node* and *Hazard Land* in Whitby and *Industrial* in Oshawa.

A Boulevard Multi-use Path is proposed along Victoria Street West, crossing the rail corridor west of South Blair Street. The rail corridor does not have any zoning designation under the Town of Whitby's zoning by-laws and the City of Oshawa Zoning By-law 60-94.

7.6 Air Quality

Portions of the Lakeshore East Corridor have been classified as Urban, Suburban and Rural land use categories. A brief summary of the findings for each category are provided below.

In general, the pollutant concentrations are highest in the urban areas. However, most contaminants remain well within the applicable criteria. The most significant exceptions are benzene and benzo(a)pyrene, which significantly exceed the MOECC's air quality criteria for annual average concentration. Criteria for 24-hour concentration of $PM_{2.5}$ (respirable particulate matter), and PM_{10} (inhalable particulate matter) are slightly exceeded.

Pollutant concentrations in the suburban areas are somewhat lower than those in the urban areas. However, annual average benzene and benzo(a)pyrene concentrations still exceed their criteria. Criterion for 24-hour concentration of $PM_{2.5}$ is slightly exceeded. Data on PM_{10} were unavailable for the suburban land use category.

Pollutant concentrations are lowest in the rural areas. All contaminants are within their applicable air quality criteria, with the exception of benzo(a)pyrene which, even in the rural areas, significantly exceeds its MOECC criterion for annual average concentration.

Table 7-22 through Table 7-24 show air quality statistics for each land use category (urban, suburban and rural). See **Appendix F1** for station-by-station summaries of the air quality monitoring data.

Table 7-22 through Table 7-24 also show the applicable air quality criteria, which are the desirable maximum concentrations. The criteria shown are the AAQCs except for $PM_{2.5}$ which has a CAAQS, as described in Section 1.5.6.

Table 7-22: Summary of Urban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	232	287	422	826	1-hr	258	2366	N/A	1384
Nitrogen Dioxide	400	200	-	-	24	34	54	87	1-hr	29	133	77	N/A
$PM_{2.5}$	-	27	8.8	-	6	9	16	30	1-hr	7.4	65	31	N/A
PM_{10}	-	50	-	-	13	17	28	45	24-hr	15	N/A	53	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.58	0.80	1.35	2.37	24-hr	0.78	N/A	2.76	N/A
1,3-Butadiene	-	10	2	-	0.05	0.06	0.09	0.15	24-hr	0.06	N/A	0.22	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.00009	0.00019	0.00049	0.0008	24-hr	0.00020	N/A	0.0008	N/A

Note: N/A – data not available

Table 7-23: Summary of Suburban Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	205	255	362	757	1-hr	229	2437	N/A	1509
Nitrogen Dioxide	400	200	-	-	18	27	47	80	1-hr	23	121	71	N/A
$PM_{2.5}$	-	27	8.8	-	5	8	14	28	1-hr	6.7	62	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Acetaldehyde	-	500	-	500 (½-hr)	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Benzene	-	2.3	0.45	-	0.46	0.58	0.80	1.14	24-hr	0.57	N/A	1.77	N/A
1,3-Butadiene	-	10	2	-	0.03	0.05	0.07	0.12	24-hr	0.04	N/A	0.13	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	N/A	N/A	N/A	N/A	24-hr	0.00018	N/A	0.0036	N/A

Note: N/A – data not available

Table 7-24: Summary of Rural Baseline Conditions

Contaminant	Criterion (µg/m³)				Baseline Conditions								
					Percentile Concentrations				Percentile Averaging Period	Annual Mean (µg/m³)	Maximum Concentration (µg/m³)		
	1-hr	24-hr	Annual	Other	50th	70th	90th	99th			1-hr	24-hr	8-hr
Carbon Monoxide	36200	-	-	15700 (8-hr)	N/A	N/A	N/A	N/A	1-hr	N/A	N/A	N/A	N/A
Nitrogen Dioxide	400	200	-	-	9	15	28	54	1-hr	13	81	51	N/A
$PM_{2.5}$	-	27	8.8	-	4	7	13	25	1-hr	5.8	47	29	N/A
PM_{10}	-	50	-	-	N/A	N/A	N/A	N/A	24-hr	N/A	N/A	N/A	N/A
Formaldehyde	-	65	-	-	1.96	2.55	3.89	5.06	24-hr	2.06	N/A	5.21	N/A
Acetaldehyde	-	500	-	500 (½-hr)	0.56	0.80	1.15	1.93	24-hr	0.64	N/A	2.18	N/A
Benzene	-	2.3	0.45	-	0.22	0.38	0.51	0.87	24-hr	0.28	N/A	1.03	N/A
1,3-Butadiene	-	10	2	-	0.00	0.01	0.01	0.04	24-hr	0.01	N/A	0.06	N/A
Benzo(a)Pyrene	-	0.00005	0.00001	-	0.000013	0.000018	0.000031	0.000064	24-hr	0.000018	N/A	0.000067	N/A

Table 7-25 summarizes the Stouffville Corridor sections and the air quality categories for the corridor.

Table 7-25: Summary of LSE Corridor Air Quality Baseline Conditions

Corridor Section		Length (km)	Traction Power Facilities	Baseline Air Quality Category	Baseline Air Quality Table Reference
LSE-1	Don Yard Layover to Danforth Station	5.7	Don Yards PS	Suburban	7-23
LSE-2	Danforth Station to Scarborough Station	5.1		Suburban	7-23
LSE-3	Scarborough Station to Guildwood Station	6.5	Scarborough SWS	Suburban	7-23
LSE-4	Guildwood Station to Rouge Hill Station	6.7		Suburban	7-23
LSE-5	Rouge Hill Station to Pickering Station	6.8		Urban	7-22
LSE-6	Pickering Station to Ajax Station	4.3	Durham SWS	Urban	7-22
LSE-7	Ajax Station to Whitby Station	8.3		Urban	7-22
LSE-8	Whitby Station to Oshawa Station	4.8	ERMF TPS ERMF Tap	Urban	7-22

7.7 Noise & Vibration

Receptors for this assessment include the following noise sensitive land uses:

- Residences;
- Hotels, motels and campgrounds;
- Schools, universities, libraries and daycare centres;
- Hospitals and clinics, nursing / retirement homes; and
- Churches and places of worship.

Receptors within the Study Area are mainly residential houses located adjacent to the LSE rail corridor. In general, areas of receptors were identified using publicly available address point databases or through visual identification using publicly available satellite aerial images. Preliminary modelling was completed for all these receptors; however, results are presented for selected representative receptors**. Table 7-26** presents the predicted baseline noise levels for the Lakeshore East Corridor. Maps depicting the Receptor IDs identified in **Table 7-26** and **Table 7-27** are shown below.

Table 7-26: Predicted Baseline Noise Levels for the Lakeshore East Corridor

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
R001	Daytime	55.0
	Nighttime	50.8
R002	Daytime	66.8
	Nighttime	61.9
R003	Daytime	64.8
	Nighttime	60.1
R004	Daytime	59.0
	Nighttime	55.4
R005	Daytime	69.0
	Nighttime	64.0
R006	Daytime	63.0
	Nighttime	58.9
R007	Daytime	64.5
	Nighttime	60.2
R008	Daytime	64.1
	Nighttime	60.3
R009	Daytime	59.5
	Nighttime	55.5
R010A	Daytime	62.1
	Nighttime	57.7
R010B	Daytime	60.1
	Nighttime	55.9
R011	Daytime	58.2
	Nighttime	53.5
R012	Daytime	64.9
	Nighttime	61.8
R013	Daytime	64.4
	Nighttime	60.0
R014	Daytime	57.7
	Nighttime	53.3
R015	Daytime	63.7
	Nighttime	59.2
R016A	Daytime	62.6
	Nighttime	58.2
R016B	Daytime	59.0
	Nighttime	54.8
R017	Daytime	61.1

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	61.2
R018	Daytime	55.0
	Nighttime	50.0
R019A	Daytime	60.0
	Nighttime	56.0
R019B	Daytime	62.7
	Nighttime	59.3
R020	Daytime	62.6
	Nighttime	61.3
R021A	Daytime	62.8
	Nighttime	58.5
R021B	Daytime	67.5
	Nighttime	62.7
R022A	Daytime	63.3
	Nighttime	59.1
R022B	Daytime	61.7
	Nighttime	57.3
R023A	Daytime	63.5
	Nighttime	59.0
R023B	Daytime	64.1
	Nighttime	61.4
R024A	Daytime	56.1
	Nighttime	56.3
R024B	Daytime	55.0
	Nighttime	56.2
R025	Daytime	55.0
	Nighttime	51.1
R026	Daytime	60.9
	Nighttime	56.0
R027	Daytime	64.6
	Nighttime	60.0
R028A	Daytime	55.0
	Nighttime	50.0
R028B	Daytime	61.9
	Nighttime	57.7
R029	Daytime	60.2
	Nighttime	55.8
R030	Daytime	61.6

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	57.6
R031	Daytime	65.6
	Nighttime	61.0
R032	Daytime	67.3
	Nighttime	63.1
R033	Daytime	57.1
	Nighttime	53.1
R034	Daytime	61.2
	Nighttime	58.7
R035	Daytime	56.2
	Nighttime	53.0
R036A	Daytime	63.4
	Nighttime	59.8
R036B	Daytime	55.0
	Nighttime	50.0
R037A	Daytime	55.0
	Nighttime	55.5
R037B	Daytime	55.0
	Nighttime	53.6
R038	Daytime	55.0
	Nighttime	50.0
R039	Daytime	55.0
	Nighttime	50.0
R040	Daytime	55.0
	Nighttime	53.2
R041A	Daytime	56.3
	Nighttime	52.4
R041B	Daytime	61.3
	Nighttime	57.0
R042	Daytime	58.4
	Nighttime	54.2
R043	Daytime	63.0
	Nighttime	58.7
R044	Daytime	58.5
	Nighttime	54.7
R045	Daytime	62.7
	Nighttime	58.6
R046	Daytime	59.6

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	56.0
R047	Daytime	55.0
	Nighttime	50.0
R048	Daytime	60.7
	Nighttime	56.4
R049	Daytime	55.0
	Nighttime	50.0
R050	Daytime	55.0
	Nighttime	55.4
R051	Daytime	55.0
	Nighttime	50.3
R052	Daytime	57.3
	Nighttime	52.9
R053	Daytime	59.9
	Nighttime	56.9
R054	Daytime	60.1
	Nighttime	57.1
R055	Daytime	66.9
	Nighttime	62.6
R056	Daytime	55.0
	Nighttime	50.0
R057	Daytime	62.3
	Nighttime	59.2
R058	Daytime	59.4
	Nighttime	55.3
R059	Daytime	58.3
	Nighttime	54.1
R060	Daytime	60.3
	Nighttime	56.2
R061	Daytime	61.9
	Nighttime	58.2
R062	Daytime	57.0
	Nighttime	53.8
R063	Daytime	58.3
	Nighttime	55.2
R064	Daytime	60.6
	Nighttime	56.5
R065	Daytime	61.5

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	57.6
R066	Daytime	57.0
	Nighttime	53.1
R067	Daytime	56.3
	Nighttime	52.4
R068	Daytime	66.3
	Nighttime	62.3
R069	Daytime	58.4
	Nighttime	54.6
R070	Daytime	63.6
	Nighttime	60.5
R071	Daytime	61.8
	Nighttime	58.4
R072	Daytime	64.2
	Nighttime	60.0
R073A	Daytime	62.4
	Nighttime	58.9
R073B	Daytime	58.3
	Nighttime	54.6
R074	Daytime	63.8
	Nighttime	60.2
R075	Daytime	58.6
	Nighttime	58.4
R076	Daytime	63.9
	Nighttime	60.4
R077	Daytime	65.7
	Nighttime	62.6
R078	Daytime	55.0
	Nighttime	50.0
R079	Daytime	66.3
	Nighttime	64.0
R080	Daytime	70.2
	Nighttime	64.1
R081	Daytime	66.0
	Nighttime	60.5
R082	Daytime	76.0
	Nighttime	69.6
R083	Daytime	62.7

Receptor ID	Period [a]	Baseline Noise Levels (Existing) (dBA)[a]
	Nighttime	61.7
R084	Daytime	67.9
	Nighttime	64.3
R085	Daytime	73.8
	Nighttime	67.5
R086	Daytime	69.2
	Nighttime	66.0
R087	Daytime	66.2
	Nighttime	61.0
R088	Daytime	73.0
	Nighttime	66.7
R089	Daytime	66.4
	Nighttime	62.0
R090	Daytime	66.8
	Nighttime	62.9
R091	Daytime	61.3
	Nighttime	58.9
R092	Daytime	55.0
	Nighttime	50.0

[a] The LEQ (Day) is evaluated for a 16-hour period (i.e., from 0700h to 2300h) and the LEQ (Night) is evaluated for an 8-hour period (i.e., from 2300h to 0700h).

Table 7-27 presents the predicted baseline vibration levels for the Lakeshore East Corridor.

Table 7-27: Predicted Baseline Vibration Levels for the Lakeshore East Corridor

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
Go Train	R021B	153	No	30	0.11
VIA Train		152			0.11
Freight Train		104			0.81
Go Train	R023B	153	No	35	0.09
VIA Train		152			0.09
Freight Train		104			0.66
Go Train	R037B	153	No	42	0.08

Train Type Assessed	Receptor [1]	Speed Over Track (km/h)	Special Trackwork Present?	Distance to Rail Component	Predicted Vibration Level
			Existing	Existing (m)	Existing (mm/s)
VIA Train		152			0.08
Freight Train		104			0.53
Go Train	R043	153	No	74	0.04
VIA Train		152			0.04
Freight Train		104			0.29
Go Train	R013	153	No	25	0.14
VIA Train		152			0.14
Freight Train		104			1.03
Go Train	R077	153	No	30	0.11
VIA Train		152			0.09
Freight Train		104			0.81
Go Train	R031	153	No	35	0.09
VIA Train		152			0.09
Freight Train		104			0.66
Go Train	R027	153	No	40	0.08
VIA Train		152			0.08
Freight Train		104			0.56

Figure 7-23: LSE Corridor Receptor and Existing Barrier Locations 1

Figure 7-24: LSE Corridor Receptor and Existing Barrier Locations 2

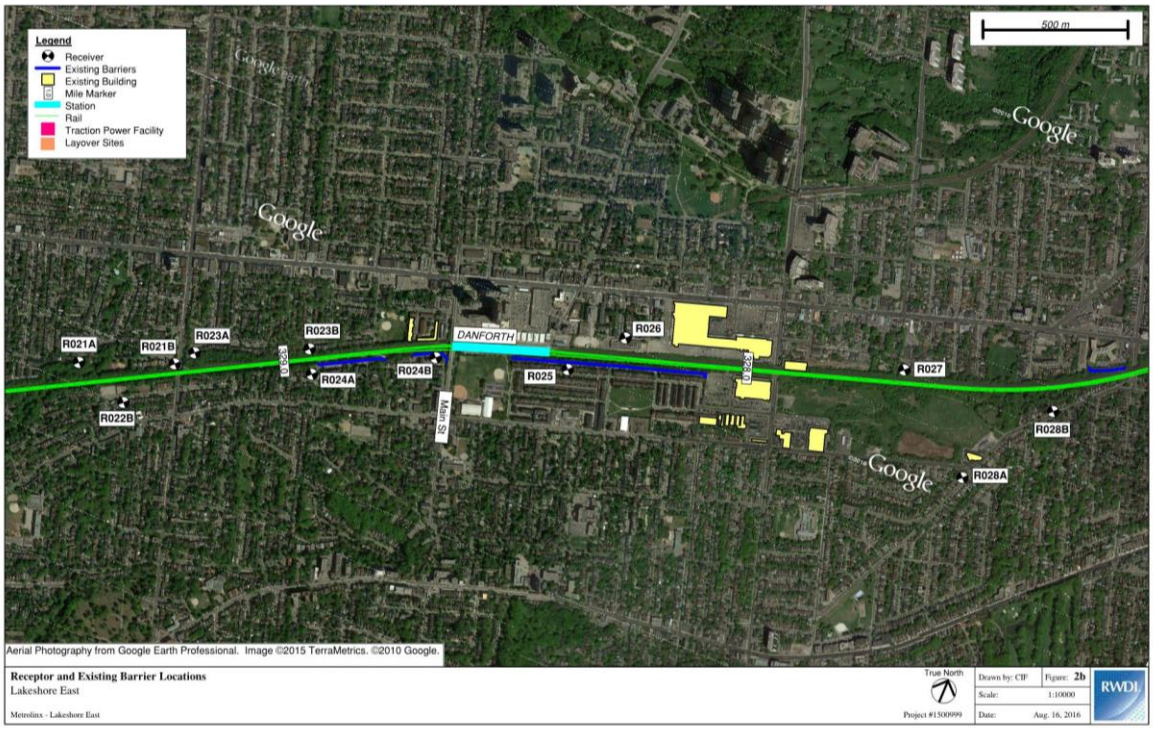


Figure 7-25: LSE Corridor Receptor and Existing Barrier Locations 3

Figure 7-26: LSE Corridor Receptor and Existing Barrier Locations 4

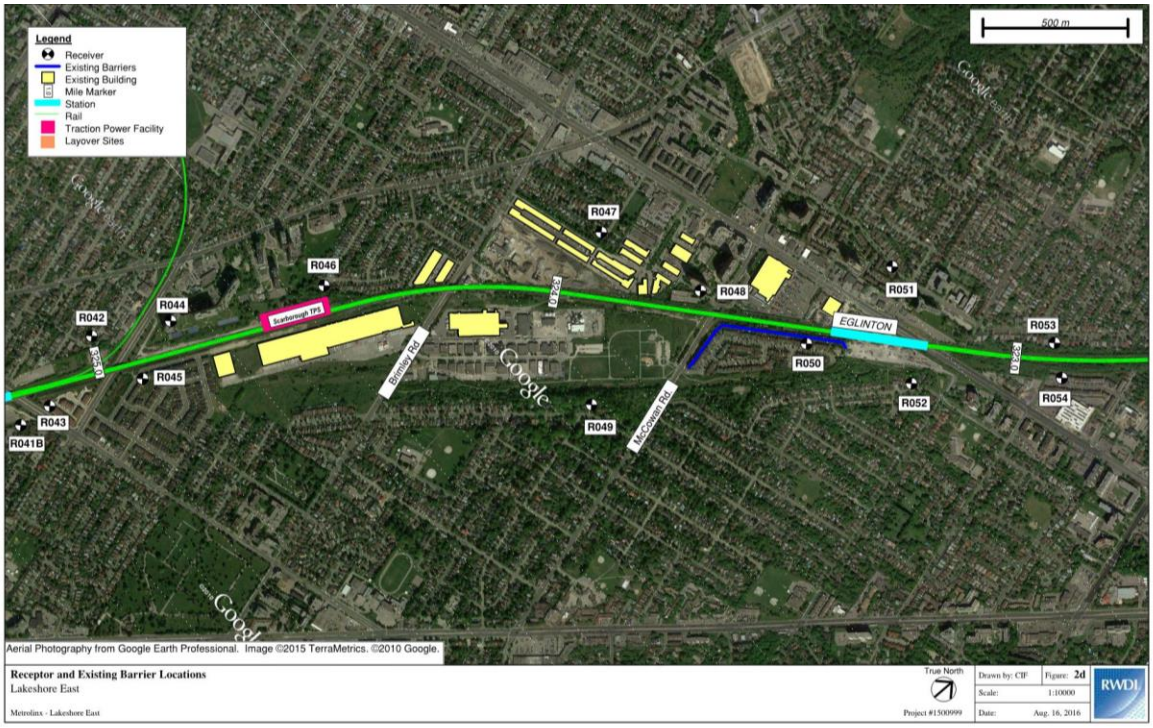


Figure 7-27: LSE Corridor Receptor and Existing Barrier Locations 5

Figure 7-28: LSE Corridor Receptor and Existing Barrier Locations 6

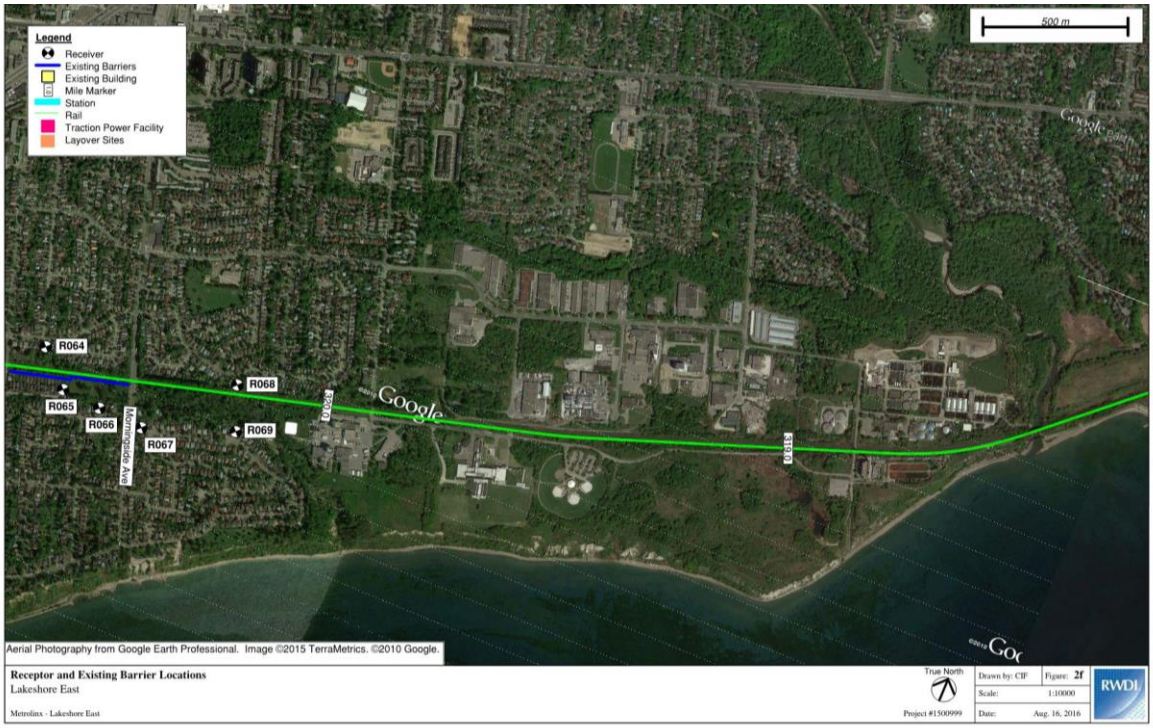


Figure 7-29: LSE Corridor Receptor and Existing Barrier Locations 7

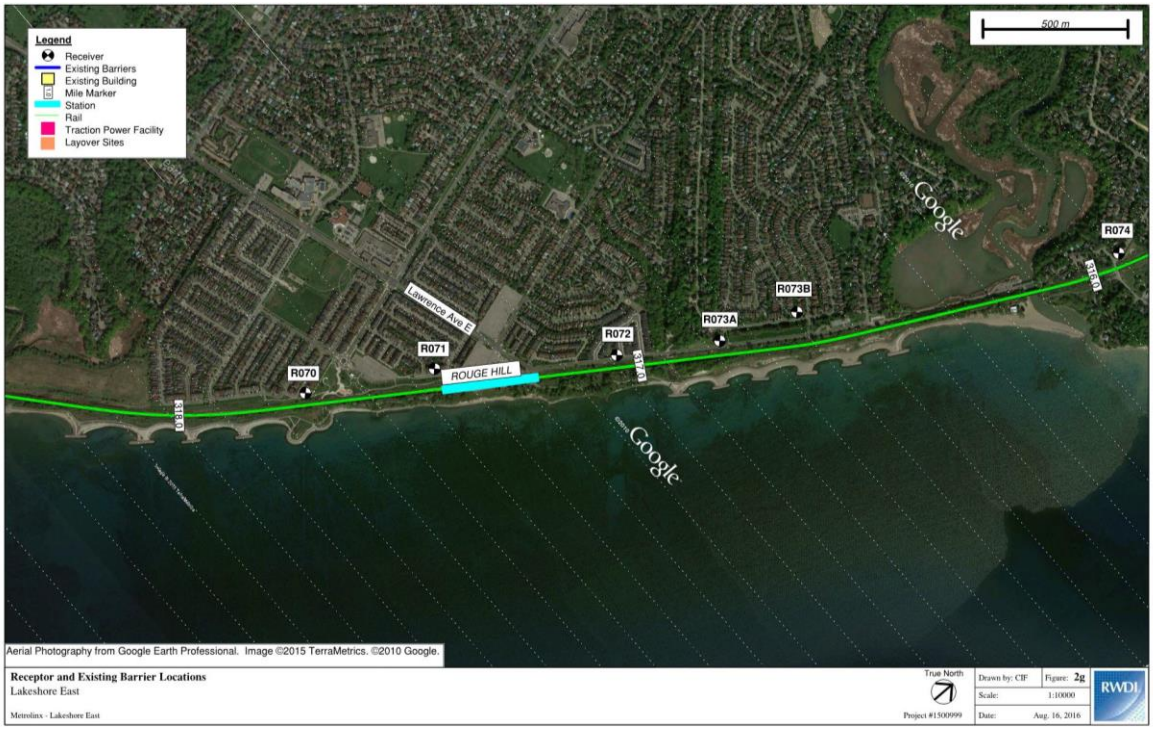


Figure 7-30: LSE Corridor Receptor and Existing Barrier Locations 8

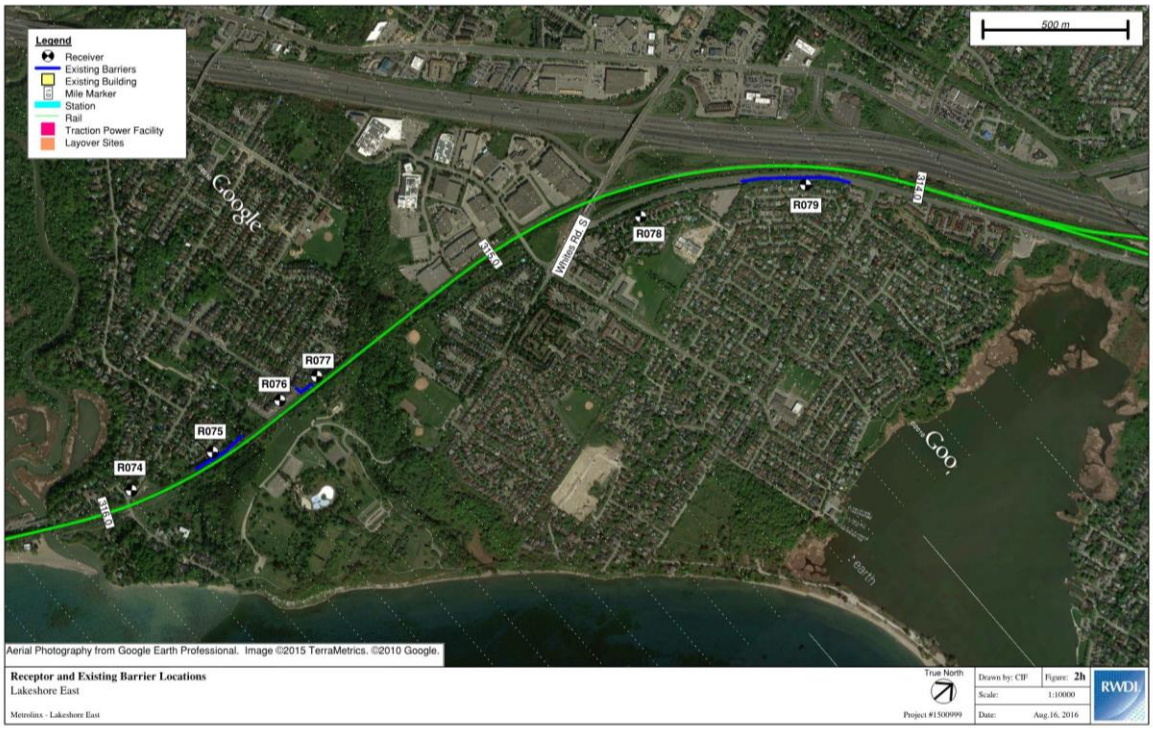


Figure 7-31: LSE Corridor Receptor and Existing Barrier Locations 9

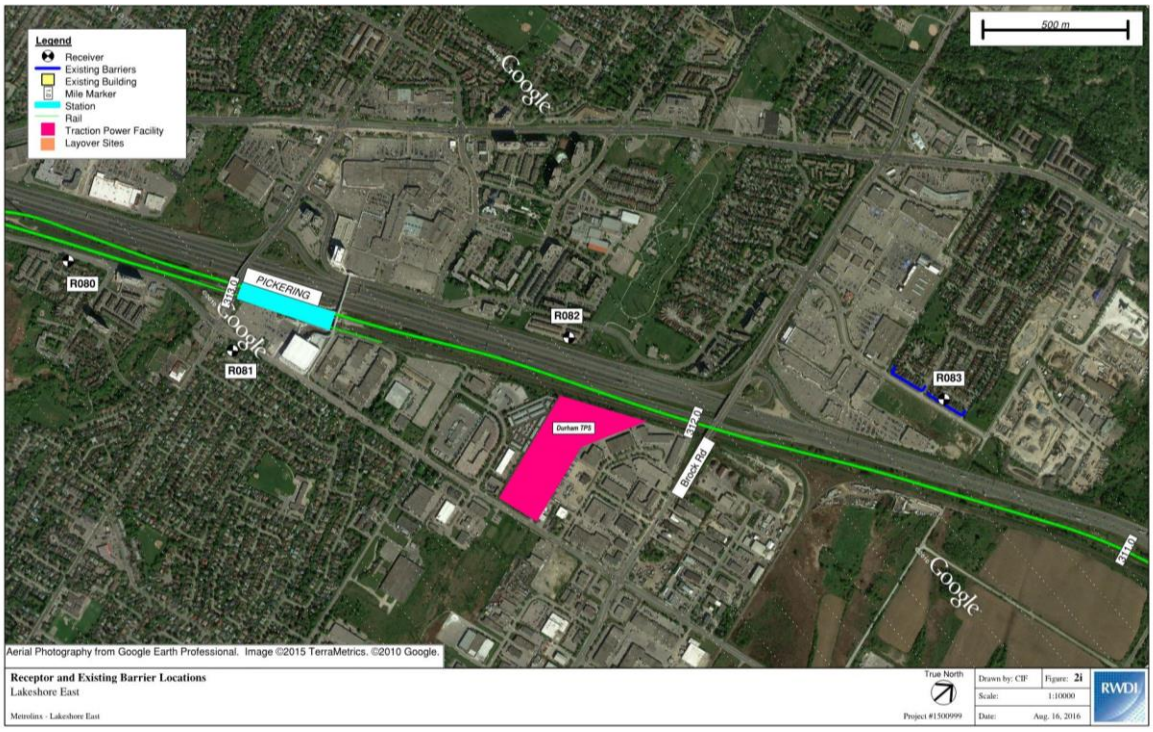


Figure 7-32: LSE Corridor Receptor and Existing Barrier Locations 10

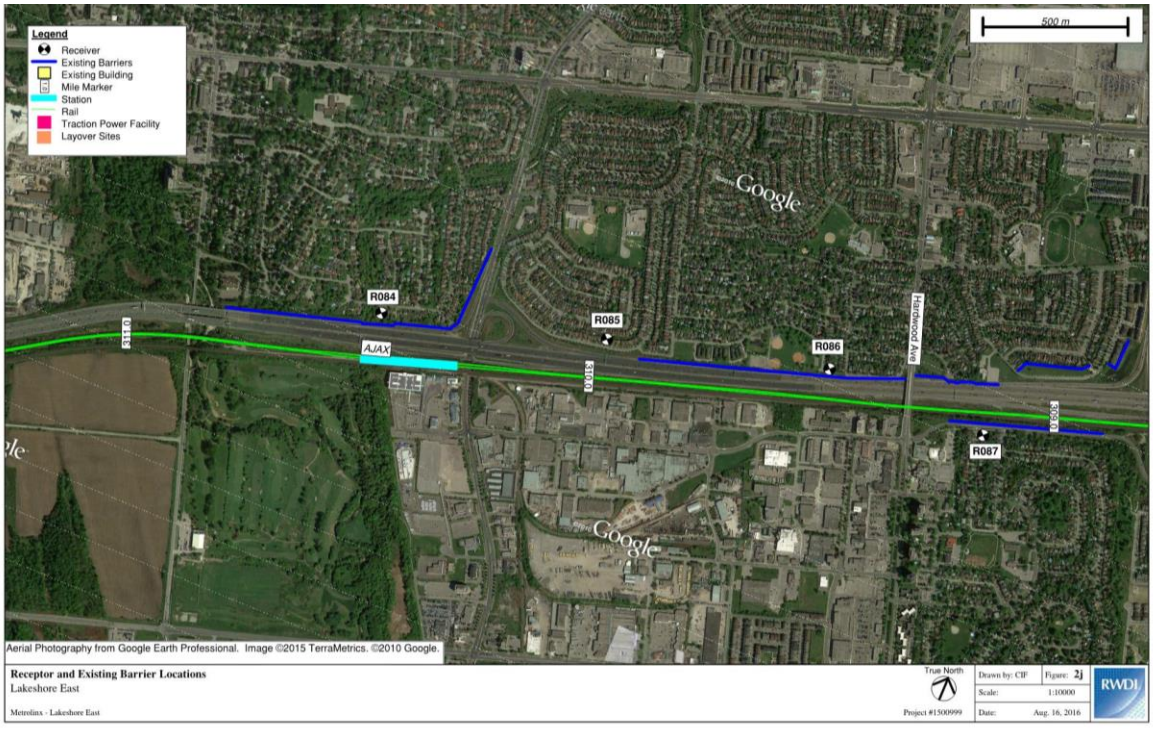


Figure 7-33: LSE Corridor Receptor and Existing Barrier Locations 11

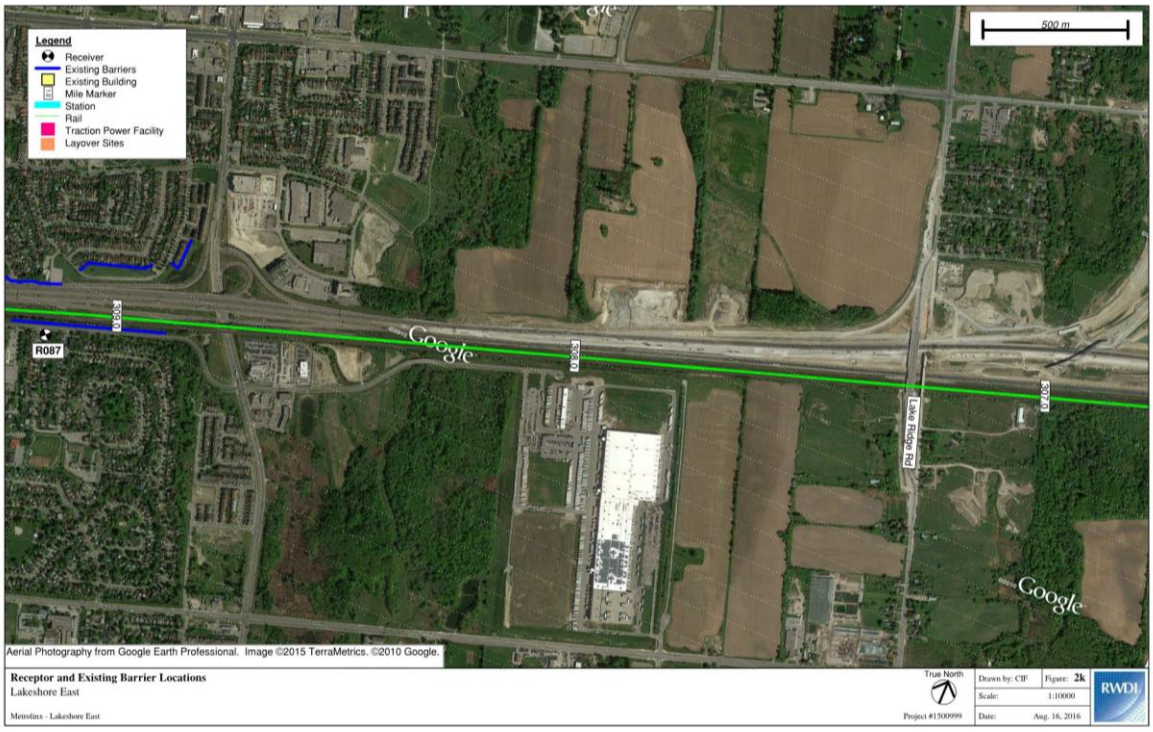


Figure 7-34: LSE Corridor Receptor and Existing Barrier Locations 12

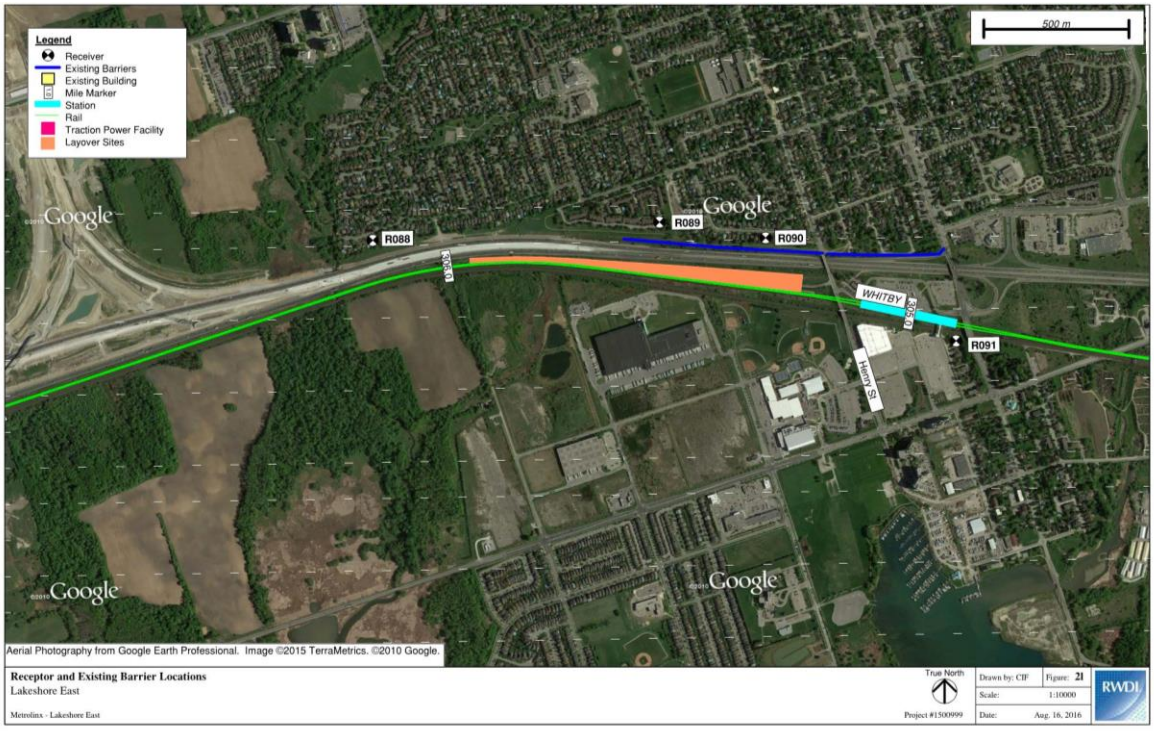
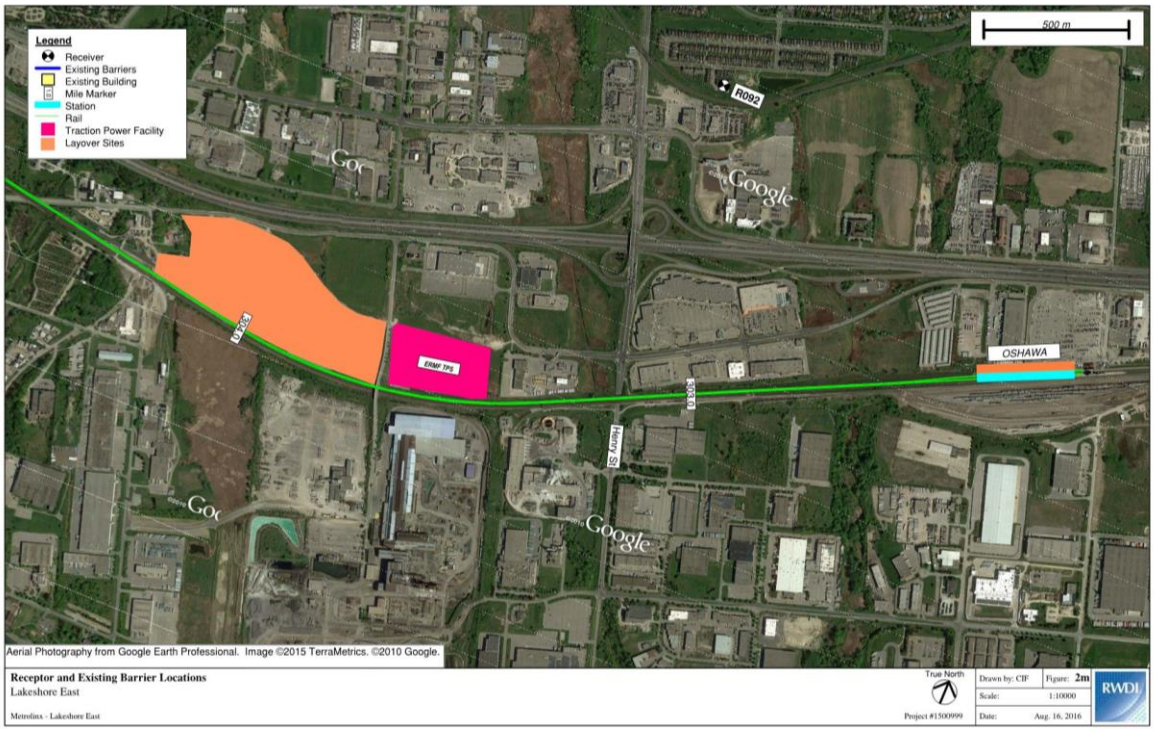


Figure 7-35: LSE Corridor Receptor and Existing Barrier Locations 13



7.8 Visual

Please refer to Section 1.5.8 for a description of the methodology followed for collection of visual baseline conditions data. Baseline conditions within each segment of the Lakeshore East Corridor have been summarized below. Additional details can be found in the Visual Assessment Baseline Conditions Report contained in **Appendix H1**.

7.8.1 East Rail Maintenance Facility Tap Location and TPS

See **Figure 1-13** in Section 1.3 for the location of the proposed East Rail Maintenance Facility Tap Location site. The East Rail Maintenance Facility TAP is located with the East Railroad Maintenance Facility TPS north of the railroad on a vacant parcel of land adjacent to the future site of the East Railroad Maintenance Facility. The ERMF will be located on the opposite side of Hopkins Street. The site is surrounded by industrial development.

7.8.2 Scarborough SWS

See **Figure 1-14** in Section 1.3 for the location of the proposed Scarborough SWS site. The site of the Scarborough SWS is located in this section. The site is on the north side of the railroad behind a high rise apartment complex off Danforth Road. The site is over 100 metres from the closest apartment building which does not have windows facing in the direction of the facility. Other apartment buildings are farther

away. The grounds to these buildings have landscaping that will help screen the facility from its surroundings. On the south side of the railroad an industrial building screens the site from view.

7.8.3 Durham SWS

See **Figure 1-15** in Section 1.3 for the location of the proposed Durham SWS site. The site for the Durham SWS is located in this section. The site is located on the south side of the railroad behind industrial buildings on Salk Road, an industrial cul de sac. The site is entirely surrounded by industrial development.

7.8.4 Don Yard PS

See **Figure 1-16** in Section 1.3 for the location of the proposed Don Yard site. The Don Yard PS is located in this section. The site is on the embankment north of the railroad located behind a commercial building and associated parking lot. The site is not readily visible from the Don Valley Parkway or its surroundings.

7.8.5 Corridor & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

This section traverses some of Toronto's inner city neighbourhoods developed with buildings close to the edge of the rail right-of-way. Most of the development along the rail corridor is single-family housing interspersed with small-scale industrial and commercial development. The backyards of many of these houses abut the corridor, and while there is some existing vegetative buffer along the tracks, most is in the form of deciduous trees and shrubs which are more transparent in winter, allowing possible views of electrification infrastructure from backyards and. Other homes face the rail corridor with a frontage road immediately adjacent to the rail right-of-way. Frequently the right-of-way is fenced with two-meter-high wood fencing, in addition to an existing vegetative cover. While this fencing hides the tracks from view, electrification infrastructure, usually much taller than the fencing, may be visible.

Figure 7-36: Typical Home Adjacent to Right of Way on Beach View Crescent - Vegetation behind Right of Way Fence may be removed during construction

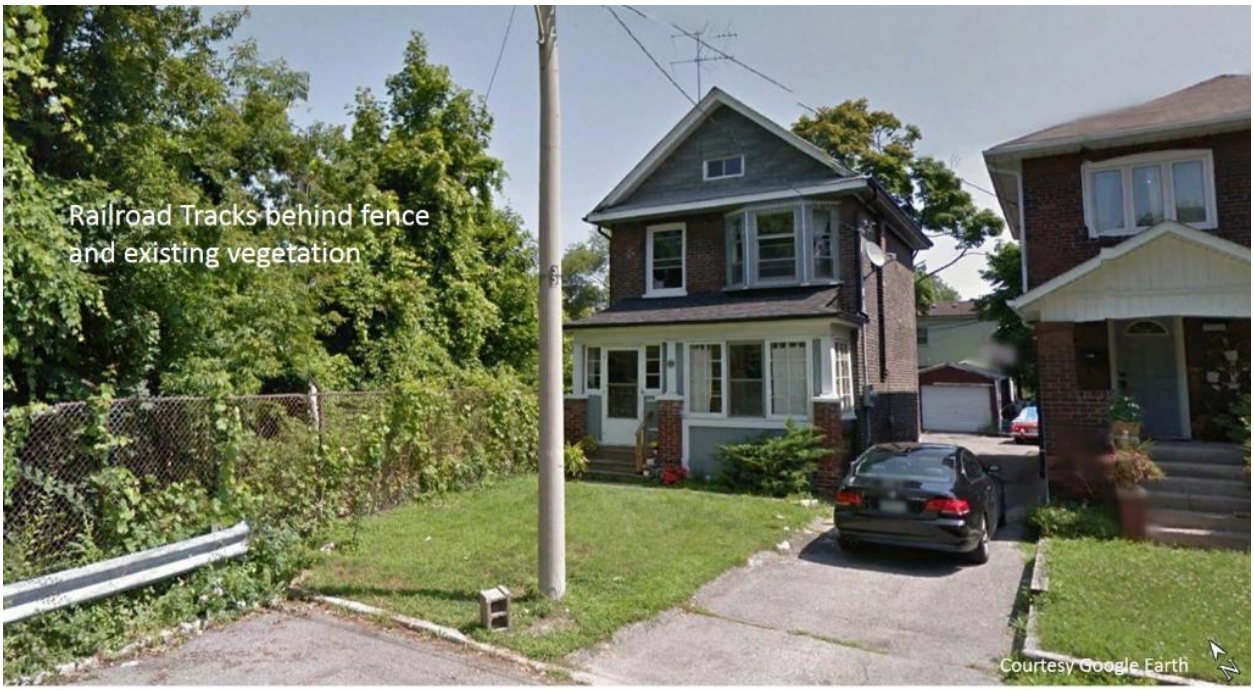


Figure 7-37: Homes on Little York Road Facing Rail Right of Way behind Fence on Right of Picture

Some parcels have been redeveloped with infill development that includes mid-rise and high-rise residential projects. There is a 21-storey high-rise residential building on Logan Avenue with clear views up and down the rail corridor that may be impacted by the electrification infrastructure. There are also several small neighbourhood parks, recreation fields, and schools backing up to the rail corridor, all of which are currently buffered to some degree by deciduous vegetation along the right-of-way.

Figure 7-38: High Rise Residential Building Close to Rail Corridor on Logan Avenue

Figure 7-39: Mid Rise Residential Buildings on Coatesville Crescent Backing up to Rail Corridor (at end of Driveway)

The rail corridor bridges over ten roadways at Don Valley Parkway, Eastern Avenue, Queen Street East, Dundas Street East, Logan Avenue, Carlew Avenue/Gerrard Street East, Jones Avenue, Greenwood Avenue, Coxwell Avenue, and Woodbine Avenue. In addition, there are two bridges over the railroad: a pedestrian bridge at Pape Avenue and a road bridge at Main Street, immediately west of Danforth Station. There are no grade crossings in this section.

The view of rail bridges over streets may change due to the construction of electrification infrastructure. Where street bridges pass over the rail corridor, the view from bridges will be affected by safety barriers installed to protect pedestrians from the OCS passing under these bridges.

There are no stations in this section.

The most significant view-shed in this section is the crossing of the Don Valley Parkway and the adjacent crossing of the Don River. This is an open area where with no visual barriers. The bridges are highly visible from a distance on either side of the rail corridor.

Figure 7-40: View of Rail Corridor from Don Valley Parkway

7.8.6 Corridor & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

This section traverses mostly small-scale suburban development within the City of Toronto, including a mixture of single-family housing, industrial properties, and commercial buildings. The backyards of many houses abut the rail corridor, and while there is some existing vegetative buffer along the tracks, most is in the form of deciduous trees and shrubs which are more transparent in winter, allowing possible views of electrification infrastructure from backyards and windows. Other homes face the rail corridor with a frontage road immediately adjacent to the rail right-of-way. Frequently, the right-of-way is fenced with two-metre-high wood fencing in addition to a vegetative cover. While this fencing hides the tracks from view, electrification infrastructure, usually much taller than the fencing, may be visible.

Figure 7-41: Homes on Layton Avenue immediately adjacent to Railroad Embankment on the Left

For much of this section, commercial buildings back up to the tracks resulting in no concern regarding the visual impact of electrification infrastructure.

There is a high-rise multi-family housing complex behind Danforth GO Station that overlooks the rail corridor. While views of the rail infrastructure from the lower floors will likely be blocked by the storage buildings in front of the station, electrification infrastructure may be visible from higher floors. There is also a mid-rise residential development at Danforth Avenue and Warden Avenue with views over the rail corridor.

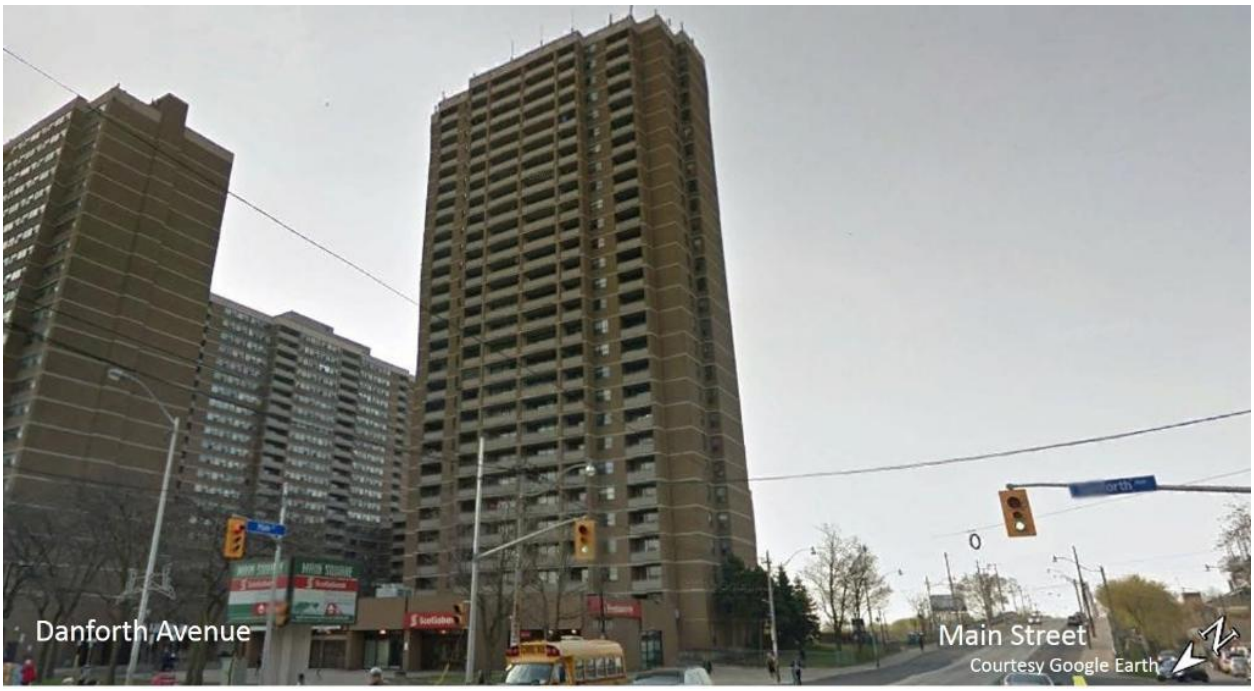
Several parks and recreation fields are interspersed with the residential development adjacent to the rail corridor.

There are three bridges where the rail corridor crosses over roadways at Victoria Park Road, Danforth Avenue, and St. Clair Avenue East. In addition, there are three bridges over the rail corridor: two road bridges and a pedestrian bridge at Woodrow Avenue. The road bridges are at Birchmount Road and Kennedy Road. The view of rail bridges over streets may change due to the construction of electrification infrastructure. Where street bridges pass over the rail corridor, the view from bridges may be affected by safety barriers installed to protect pedestrians from the OCS passing under these bridges. There are no grade crossings in this section.

Two stations are located in this section: Danforth GO Station and Scarborough GO Station. Passengers arriving at Danforth GO Station either walk or use bus transit as there is no parking provided. The station

is not very visible from its surroundings due to the storage buildings immediately behind it. New electrification infrastructure will be visible from the platform and the approach path.

Figure 7-42: High Rise Residential Buildings at the Corner of Danforth Avenue and Main Street in front of Danforth GO Station



Scarborough GO Station has a large parking lot east of the tracks. Passengers arriving at the station have a clear open view of the station platform and canopy. This view may be altered by the introduction of electrification infrastructure along the rail corridor.

Figure 7-43: Scarborough GO Station from Station Parking Lot

7.8.7 Corridor & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

This section traverses a mixture of suburban development within the City of Toronto, including a mixture of single-family and high-rise housing interspersed with industrial and commercial buildings. The backyards of some houses abut the rail corridor, and while there is currently some vegetative buffer along the tracks, most is in the form of deciduous trees and shrubs which are more transparent in winter, allowing possible views of electrification infrastructure from backyards and windows.. There are a number of high-rise residential complexes in this section which provide residents with long views of the rail corridor from the upper floors.

Figure 7-44: High Rise Buildings adjacent to Rail Right of Way and Markham Road Bridge

The Scarboro Golf and Country Club is adjacent to the tracks which is landscaped but has holes close to the rail corridor and potential views though mixed vegetation to future electrification infrastructure.

There are two bridges over the rail corridor at Markham Road and Kingston Road. In addition, there are three bridges under the rail corridor at Midland Avenue, Brimley Road and McCowan Road, along with one grade crossing. Where roads cross over the rail corridor, barriers which will be erected for protection will alter the view, especially for pedestrians walking over the bridges. Roads under the rail corridor may also have a changed view when electrification infrastructure is erected along the bridges. The grade crossing at Scarborough Golf Club Road connects the golf course and a residential neighbourhood. Electrification infrastructure across the grade crossing may alter the view of the crossing.

Figure 7-45: Scarboro Golf and Country Club Golf Course adjacent to Rail Right of Way

There is only one station in this section: Eglinton GO Station. This station has parking on both sides and open views for passengers of the station and rail corridor. Electrification infrastructure may be clearly visible for passengers and passers-by viewing the station.

Figure 7-46: Eglinton GO Station from Parking Lot

7.8.8 Corridor & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

This section is entirely within the City of Toronto. Land use between Guildwood GO Station and the lakefront consists of single-family residential development (similar to earlier sections) backing up to the tracks and large industrial/municipal utility sites. From approximately Beechgrove Drive east, the railroad follows the Lake Ontario waterfront.

In the vicinity of the waterfront, there are a number of major local and regional parks including Grey Abbey Ravine, Lower Highland Creek Park, East Point Park, Port Union Waterfront Park, and the Port Union Village Commons Park. The rail corridor crosses Highland Creek, affording views up the creek and to its mouth in Lake Ontario. Views from all these open space amenities may be altered by the introduction of electrification infrastructure.

There are no road bridges over or under the rail corridor in this section. There is however, a trail which crosses under the rail corridor connecting Port Union Village Common Park and Port Union Waterfront Park. Electrification infrastructure on the rail bridge may be visible from the path on both sides of the rail corridor. There are four grade crossings at Galloway Road, Poplar Road, Morningside Avenue and Manse Road, two of which access industrial areas and two which connect residential neighbourhoods. While the industrial crossings are not a concern, those that connect residential areas should be evaluated to determine any visual effects from electrification infrastructure.

Figure 7-47: Highland Creek Crossing

Figure 7-48: Port Union Waterfront Park with Trail

There are two stations in this section: Guildwood GO Station and Rouge Hill GO Station. Guildwood GO Station has parking lots on both sides of the tracks with open views of the rail corridor. Electrification infrastructure may be clearly visible for passengers and passers-by viewing the station. Rouge Hill Stations has one parking lot to the north of the station, from which electrification infrastructure may be visible. The Rouge Hill Station currently has clear views across the rail corridor to the lake. Homes facing Lakeridge Drive also have clear views across the rail corridor to the lake.

Figure 7-49: Rouge Hill GO Station Showing View to Lake Beyond

7.8.9 Corridor & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

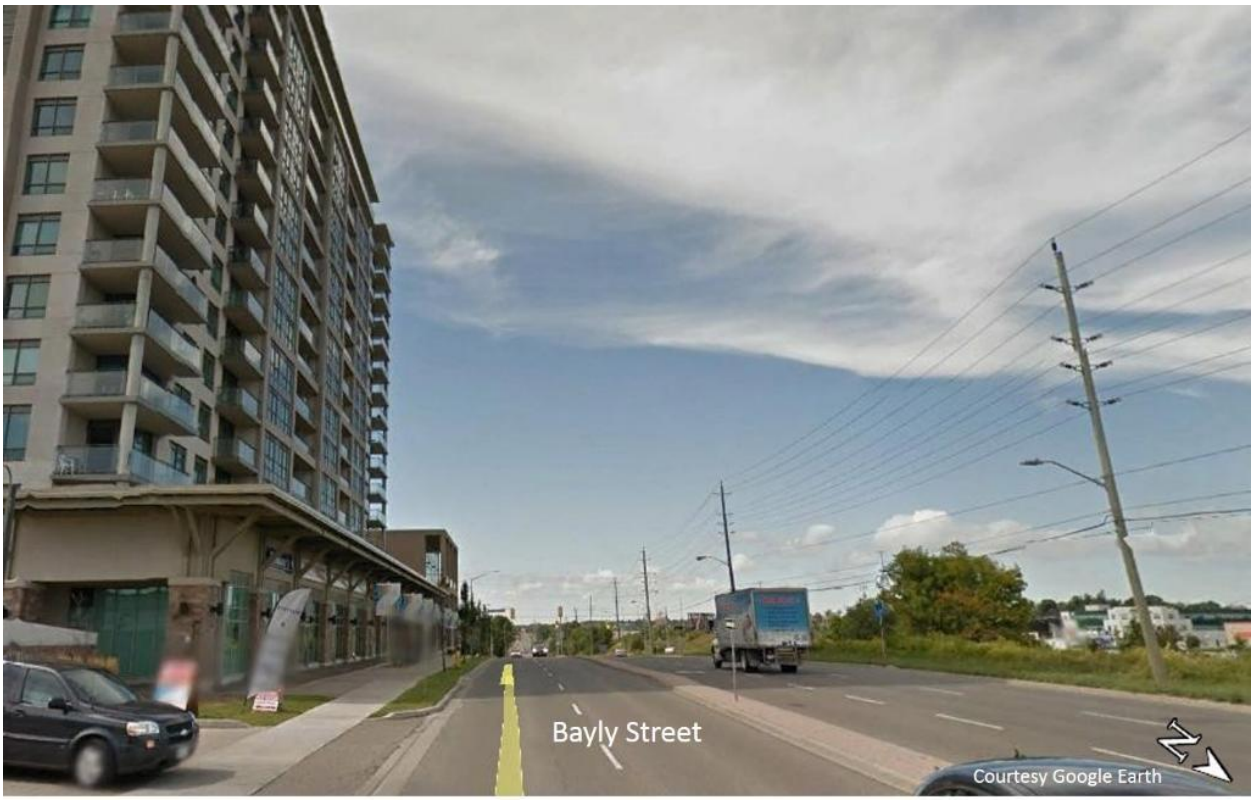
This section passes through the City of Toronto and the City of Pickering. Land use from Rouge Hill GO Station to the Rouge River estuary is single-family residential on the north side and lakeshore parkland on the south side. Electrification infrastructure will intrude into the view from these homes to the lake and may make the rail corridor more noticeable from the park. Today it is only visible when trains are travelling through the area. The Rouge River Estuary and Rouge National Urban Park are a popular recreational spots with a pedestrian bridge across the estuary paralleling the rail bridge. Electrification infrastructure on the rail bridge may affect the view from the pedestrian bridge out across the lake.

Figure 7-50: Rouge River Estuary with Pedestrian Bridge and Rail Bridge Beyond

East of Rouge River, the rail corridor continues through an area of single-family residential development and additional parkland with industrial properties on the north side where the rail right-of-way curves to follow Highway 401. Residential development on the far side of the highway is protected from views of the rail corridor by noise walls. South of the rail corridor, single-family residential development and a high-rise residential building front Bayly Street, immediately adjacent to the rail corridor.

There are three bridges over the rail corridor in this section at Granite Court, Whites Road and Liverpool Road. Where street bridges pass over the rail corridor, the view from bridges may be affected by safety barriers installed to protect pedestrians from the OCS passing under these bridges. There are no roadway underpasses but two grade crossings, one immediately north of the station which is a trail crossing to access the lakeshore trail and one at Rodd Avenue in a residential neighbourhood.

Figure 7-51: High Rise Residential Development on Bayly Street overlooking Rail Corridor immediately to the Right of the Roadway



There is only one station in this section: Pickering GO Station. Recent improvements at the station include a parking garage and an architecturally significant pedestrian bridge which crosses the rail corridor and Highway 401. Views of the station from the bridge and the parking lot may be altered by the introduction of electrification infrastructure as well as views of the bridge from the surrounding area.

Figure 7-52: Pickering Station Pedestrian Bridge

7.8.10 Corridor & Bridges: Section LSE-6 – Pickering Station to Ajax Station

The rail corridor continues to parallel Highway 401 through this section, which is located partly in the City of Pickering and partly in the Town of Ajax. Residential development on the opposite side of Highway 401 is protected from views of the rail corridor by sound walls or is so far away that views of electrification infrastructure will likely be insignificant.

South of the tracks, land use is commercial, industrial, farmland and, immediately before Ajax GO Station, a golf course. One of the holes on the course parallels the rail corridor, which is elevated on an embankment. Gaps in the vegetation adjacent to the rail corridor open up views from the golf course to the rail corridor, making electrification infrastructure potentially visible.

There is one bridge over the rail corridor at Brock Road and two bridges under the rail corridor at Church Street and Westney Road South. Where street bridges pass over the rail corridor, the view from bridges may be affected by safety barriers installed to protect pedestrians from the OCS passing under these bridges. There are no grade crossings in this section.

There is only one station in this section: Ajax GO Station. This station has recently been improved with a parking garage. Views for passengers across the parking lot and at the station platform may be changed by the electrification project.

7.8.11 Corridor & Bridges: Section LSE-7 – Ajax Station to Whitby Station

In this section, the rail corridor passes through the Town of Ajax and the Town of Whitby. The rail corridor continues to parallel Highway 401, with single-family residential uses beyond the highway. These residences currently have views across other infrastructure, and are too far away to be affected by the electrification project. On the south side, land use is mostly commercial and industrial. There is one mid-rise residential building just west of Harwood Avenue, but appears to be set far enough back with existing vegetation between it and the rail corridor for electrification infrastructure to be hidden from view.

Between Harwood Avenue and Salem Road are single-family homes behind a frontage road. The backs of the majority of these homes face the frontage road. The rail corridor is in a cut section with an existing vegetated bank that provides a buffer which would mitigate the visual impact of the electrification infrastructure in this area.

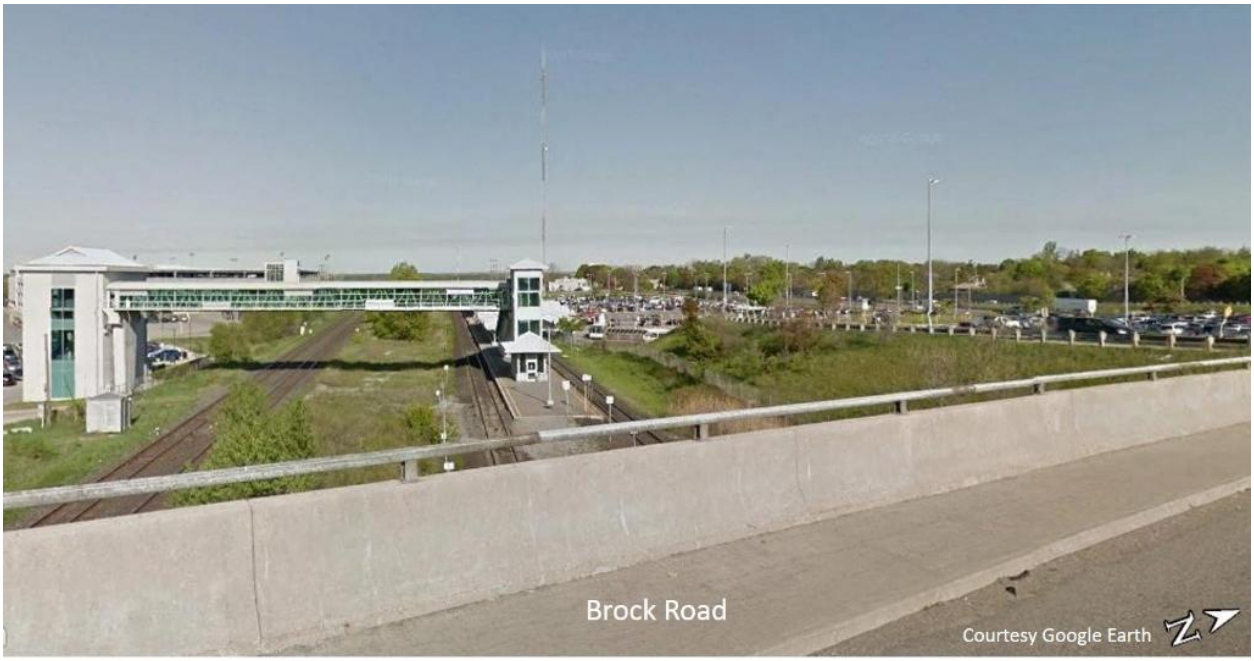
Beyond Salem Road there are a few commercial buildings on either side of the rail corridor close to the Salem/Highway 401 interchange. East of that is mostly open land with no development.

Farther to the east, Highway 401 and the rail corridor diverge from one another. There is residential development north of Highway 401, but too far from the rail corridor to be affected by the electrification project. To the south are one or two large-scale industrial complexes interspersed with open land.

There is one bridge under the rail corridor at Salem Road and three bridges over the rail corridor at Harwood Avenue, Lake Ridge Road, and Henry Street. Where road bridges pass over the rail corridor, the view from bridges may be affected by safety barriers installed to protect pedestrians from the OCS passing under these bridges.

Only one station is located in this section: Whitby GO Station. This station has parking lots on both sides of the rail corridor as well as a garage on the south side. There is also a pedestrian bridge connecting the two sides of the station. Views from the parking lots and the pedestrian bridge may be altered by the electrification infrastructure, as well as the view of the station and pedestrian bridge from the Brock Road Bridge.

Figure 7-53: View of Station and Pedestrian Bridge from Brock Road Bridge



7.8.12 Corridor & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

In this section, the rail corridor passes through the Town of Whitby and the City of Oshawa The land use on either side of the tracks is either open land or large-scale industrial buildings.

There are two rail bridges over the highway at Victoria Street East and Thickson Road, and two road bridges that pass over the rail corridor at Brock Street South and Hopkins Street. Where road bridges pass over the rail corridor, the view from bridges may be affected by safety barriers installed to protect pedestrians from the catenary wires passing under these bridges. There are no grade crossings in this section.

There is only one station in this section: Oshawa GO Station. This station has a large parking lot north of the rail corridor and a freight rail yard south of the station tracks. Electrification infrastructure may be visible for passengers arriving at or departing from the station.

Figure 7-54: Oshawa GO Station

7.9 Utilities

Please refer to Section 1.5.9 for a description of the methodology followed for collection of utilities baseline conditions data. Baseline conditions within each segment of the Lakeshore East Corridor have been summarized below. Additional details can be found in the Utilities Baseline Conditions Report contained in **Appendix I1**.

7.9.1 East Rail Maintenance Facility Tap Location and TPS

See **Figure 1-13** in Section 1.3 for the location of the proposed East Rail Maintenance Facility Tap location TPS site. In addition to the utility requests for Section LSE-8 (see Section 7.9.13), an ON1Call planning request was logged for the entire property for the ERMF TPS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed ERMF TPS notified two communication companies: Bell and Rogers. Whitby Hydro was also identified as having underground plant on the proposed property. These ON1Call members and Durham Region were contacted directly by MH for information regarding their existing and future infrastructure in the area of the proposed ERMF TPS site. In addition, the Town of Whitby will be contacted for information regarding their infrastructure in the Study Area.

Table 7-28: Summary of Utilities at Proposed East Rail Maintenance Facility Tap Location

Utility	Description
Hydro	Hydro One owns one 230kV overhead line on or near the ERMF TPS and Tap Location. Whitby Hydro owns one overhead line of unknown voltage on or near the ERMF TPS and Tap Location.
Pipelines	There are no records found of third party pipelines on or near the proposed ERMF site.
Watermains	There are no records found of third party watermains on or near the proposed ERMF site.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the proposed ERMF site.
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed ERMF site.
Gas Mains	Enbridge Gas owns one 2in.-diameter and one 16in.-diameter buried gas main on or near the ERMF TPS and Tap Location.
Communication Companies	There are no records found of third party communication infrastructure on or near the ERMF TPS and Tap Location..

7.9.2 Scarborough SWS

See **Figure 1-14** in Section 1.3 for the location of the proposed Scarborough SWS site. In addition to the utility requests for Section LSE-3 (see section 7.9.8), an ON1Call planning request was logged for the entire property for the proposed Scarborough SWS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Scarborough SWS notified two communication companies: Bell and Rogers. These companies and the City of Toronto were contacted individually by MH for further information regarding their utilities in the area of the proposed Scarborough SWS site.

Table 7-29: Summary of Utilities at Proposed Scarborough SWS Site

Utility	Description
Hydro	There are no records found of third party hydro facilities on or near the proposed Scarborough SWS site.
Pipelines	There are no records found of third party pipelines on or near the proposed Scarborough SWS site.
Watermains	There are no records found of third party watermains on or near the proposed Scarborough SWS site.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the proposed Scarborough SWS site.

Utility	Description
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed Scarborough SWS site.
Gas Mains	There are no records found of third party gas mains on or near the proposed Scarborough SWS site.
Communication Companies	Zayo, Bell, and Telus each own one buried conduit on or near the Scarborough SWS.

7.9.3 Durham SWS

See **Figure 1-15** in Section 1.3for the location of the proposed Durham SWS site. In addition to the utility requests for Section LSE-6 (see Section 7.9.10), an ON1Call planning request was logged for the entire property for the proposed Durham SWS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Durham SWS notified three communication companies: Allstream, Bell and Rogers. Veridian was also notified. These utility companies, as well as Durham Region and the City of Pickering were contacted individually by MH for further information regarding their utilities in the area of the proposed Durham SWS site.

Table 7-30: Summary of Utilities at Proposed Durham SWS Site

Utility	Description
Hydro	Hydro One owns one 230kv overhead line on or near the Durham SWS. Veridian owns four overhead lines from 13.8kV to 44kV and three buried lines of unknown voltage on or near the Durham SWS.
Pipelines	There are no records found of third party pipelines on or near the proposed Durham SWS site.
Watermains	Durham Region owns one 300mm-diameter and one 750mm-diameter buried watermain on or near the Durham SWS.
Sanitary Sewers	Durham Region two buried sanitary sewers on or near the Durham SWS: one is 200-250mm and the other is 3000mm in diameter.
Stormwater Sewers	Durham Region owns one buried stormwater sewer of unknown size on or near the Durham SWS.
Gas Mains	There are no records found of third party gas mains on or near the proposed Durham SWS site.
Communication Companies	Rogers owns one overhead cable on or near the Durham SWS.

7.9.4 Don Yard PS

See **Figure 1-16** in Section 1.3 for the location of the proposed Don Yard PS site. In addition to the utility requests for Section LSE-1 (see section 7.9.5), an ON1Call planning request was logged for the entire property for the proposed Don Yard PS site. To augment the information received, a visual survey of the site was also performed using Google Earth.

The ON1Call planning ticket for the proposed Don Yard PS notified two communication companies: Bell and Rogers. These companies as well as the City of Toronto were contacted individually by MH for further information regarding their utilities in the area of the proposed Don Yard PS site.

Table 7-31: Summary of Utilities at Proposed Don Yard PS Site

Utility	Description
Hydro	There are no records found of third party transmission lines on or near the Don Yard PS. Toronto Hydro owns two buried conduits and four buried duct banks on or near the Don Yard PS and Access Road.
Pipelines	There are no records found of third party pipelines on or near the proposed Don Yard PS site.
Watermains	There are no records found of third party watermains on or near the proposed Don Yard PS site.
Sanitary Sewers	There are no records found of third party sanitary sewers on or near the proposed Don Yard PS site.
Stormwater Sewers	There are no records found of third party stormwater sewers on or near the proposed Don Yard PS site.
Gas Mains	There are no records found of third party gas mains on or near the proposed Don Yard PS site.
Communication Companies	Bell owns two buried duct banks on or near the Don Yard PS and Access Road.

7.9.5 Corridor & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

Table 7-32: Summary of Utilities within Section LSE-1

Utility		Description
Hydro	***Transmission***	Hydro One owns one overhead and six buried 115kV crossings in Section LSE-1. Hydro One also owns two buried 115kV lines that run parallel to the ROW in this Section..
	Local Distribution	Toronto Hydro owns one overhead 13.8kV crossing and four overhead lines that run parallel to the ROW in Section LSE-1. Toronto Hydro owns five buried cables, one buried conduit at Pape Ave, and 14 buried duct bank crossings in this Section.

Utility		Description
		Toronto Hydro also owns two buried duct banks that run parallel to the ROW in this Section. TTC owns nine buried cable crossings in this Section.
Pipelines		Sun-Canadian owns one 200mm-diameter buried pipeline crossing in Section LSE-1. Trans-Northern owns one 400mm-diameter buried pipeline crossing in this Section. Imperial Oil owns one 250mm-diameter buried pipeline crossing in this Section.
Watermains		City of Toronto owns two buried watermain crossings in Section LSE-1.
Sanitary Sewers		City of Toronto owns four buried sanitary sewers of various size in Section LSE-1.
Stormwater Sewers		There are no records found of third party stormwater sewers in Section LSE-1.
Gas Mains		Enbridge Gas owns five buried gas main crossings ranging from 150mm to 750mm in diameter in Section LSE-1. Enbridge Gas also owns one buried 150mm-diameter gas main that runs parallel to the ROW in this Section near Gerrard St E.
Communication Companies		Zayo owns five buried conduit crossings in section LSE-1 and two buried conduits that run parallel to the ROW. Bell owns two buried conduits and nine buried duct bank crossings in Section LSE-1. Bell also owns one overhead cable from Leslie St to Seymour Ave, two buried cables, and three buried conduits that run parallel to the ROW in this Section. Cogeco Peer 1 owns four buried conduit crossings in this section. Rogers owns one buried conduit crossing in this Section, near Queen St E. Telus owns one buried duct bank crossing in this Section, near Gerrard St E.

7.9.6 Corridor & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

Table 7-33: Summary of Utilities within Section LSE-2

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSE-2.
	Local Distribution	Toronto Hydro owns three 27.6kV overhead crossings and four buried crossings of varying voltage in Section LSE-2. Two of these buried crossings are proposed to be removed. Toronto Hydro owns three duct banks that run parallel to the ROW in this Section. Toronto Hydro also owns five pieces of infrastructure on three overpasses in this Section. H. Paulin and Co. owns one overhead line of unknown voltage that runs parallel to the ROW in this Section from Milne Ave to Birchmount Rd. TTC owns three buried crossings of unknown voltage in this Section.
Pipelines		There are no records found of third party pipelines in Section LSE-2.
Watermains		City of Toronto owns four buried watermain crossings of varying size in Section LSE-2.
Sanitary Sewers		City of Toronto owns three buried sanitary sewer crossings of varying size in Section LSE-2.

Utility	Description
Stormwater Sewers	There are no records found of third party stormwater sewers in Section LSE-2.
Gas Mains	Enbridge Gas owns one 400mm-diameter buried gas main crossing in Section LSE-2, near Birchmount Rd.
Communication Companies	Zayo owns one buried conduit crossing in Section LSE-2, near Main St. Bell owns one cable near Danforth Ave, one conduit near Danforth Ave, and three duct bank crossings in this Section. Bell also owns one buried cable that runs parallel to the ROW in this Section west of Victoria Park Ave. Cogeco Peer 1 owns one buried conduit near Main St and two overhead cable crossings in this Section. Rogers owns one buried conduit crossing near Warden Ave and one conduit on the Main St overpass in this Section.

7.9.7 Corridor & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

Table 7-34: Summary of Utilities within Section LSE-3

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSE-3.
	Local Distribution	Toronto Hydro owns eight overhead crossings from 120V to 27.6kV in Section LSE-3. Toronto Hydro owns six buried conduits and four buried duct bank crossings in this Section. Toronto Hydro owns two duct banks that run parallel to the ROW in this Section. Toronto Hydro also owns three lines on the Kingston Rd and Markham Rd overpasses in this Section.
Pipelines		There are no records found of third party pipelines in Section LSE-3.
Watermains		The City of Toronto owns seven buried watermain crossings of varying size in Section LSE-3.
Sanitary Sewers		The City of Toronto owns three buried sanitary sewer crossings in Section LSE-3, varying from 300mm to 600mm in diameter.
Stormwater Sewers		The City of Toronto owns three buried stormwater sewer crossings in Section LSE-3, varying from 300mm to 1500mm in diameter.
Gas Mains		Enbridge Gas owns seven buried gas main crossings in Section LSE-3, varying from 50mm to 300mm in diameter.
Communication Companies		Zayo owns two buried conduit crossings and three buried conduits that run parallel to the ROW in Section LSE-3. Bell owns two overhead cables, one buried cable near Eglinton Ave E, and eight buried conduit crossings in this Section. Bell also owns one cable near Glenshephard Dr and two buried cables that run parallel to the ROW in this Section. Cogeco Peer 1 owns three overhead cable crossings and two buried conduit crossings in this Section. Rogers owns four overhead cable crossings and six buried conduit crossings in this Section. Shaw owns one buried conduit crossing in this Section, near Kingston Rd.

Utility	Description
Other	Metrolinx has indicated plans to construct a grade separation at Scarborough Golf Club Rd.

7.9.8 Corridor & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

Table 7-35: Summary of Utilities within Section LSE-4

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSE-4.
	Local Distribution	Toronto Hydro owns six overhead crossings of sizes ranging from 120V to 27.6kV and one 120V to 8kV overhead line that runs parallel to the ROW in Section LSE-4. Toronto Hydro also owns one buried duct bank crossing in this Section, near Rouge Hill GO Station.
Pipelines		There are no records found of third party pipelines in Section LSE-4.
Watermains		The City of Toronto owns eight buried watermain crossings of varying size in Section LSE-4.
Sanitary Sewers		The City of Toronto owns three buried sanitary sewer crossings of varying size in Section LSE-4.
Stormwater Sewers		The City of Toronto owns two buried stormwater sewer crossings in Section LSE-4: one is 750mm in diameter near Manse Rd and the other is 2300mm in diameter near Morningside Ave. City of Toronto also owns one 450mm ditch culvert crossing in this Section, near Poplar Rd.
Gas Mains		Enbridge Gas owns six buried gas main crossings in Section LSE-4, varying in size from 100mm to 300mm in diameter.
Communication Companies		Zayo owns two buried conduits that run parallel to the ROW in Section LSE-4. Bell owns three buried cables and five buried conduit crossings in this Section. Bell also owns two buried cables that run parallel to the ROW in this Section. Cogeco Peer 1 owns two buried conduit crossings in this Section. Rogers owns three buried conduit crossings in this Section.
Other		Metrolinx has indicated plans to construct grade separations at Morningside Ave and Galloway Rd.

7.9.9 Corridor & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

Table 7-36: Summary of Utilities within Section LSE-5

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSE-5.
	Local Distribution	Toronto Hydro owns one 8kV overhead crossing and two buried duct bank crossings in Section LSE-5. Toronto Hydro also owns one overhead line of unknown voltage that runs parallel to the ROW in this Section. Veridian owns three 27.6kV overhead crossings and one buried 13.8kV crossing in this Section.
Pipelines		There are no records found of third party pipelines in Section LSE-5.
Watermains		City of Toronto owns one buried 200mm-diameter watermain crossing in Section LSE-5, near Portwine Dr. Durham Region owns four buried watermain crossings of varying size in this Section.
Sanitary Sewers		Durham Region owns three buried sanitary sewer crossings ranging from 150mm to 675mm in diameter in Section LSE-5..
Stormwater Sewers		City of Toronto owns one buried stormwater sewer crossing of unknown size in Section LSE-5, near Chesterton Shores. City of Toronto also owns two ditch culvert crossings in this section: one is 2500mm near Starspray Blvd and the other is 3600mm near Portwine Dr. City of Pickering owns four ditch culvert crossings of varying size in this Section.
Gas Mains		Enbridge Gas owns three buried gas main crossings in Section LSE-5, varying from 50mm to 300mm in diameter. Enbridge Gas also owns one buried 300mm-diameter gas main that runs parallel to the ROW in this Section, near Dixie Rd.
Communication Companies		Zayo owns one overhead cable crossing in Section LSE-5, near Granite Ct. Bell owns three overhead cables, five buried cables, and nine buried conduit crossings in this Section. Bell also owns two buried cables and one buried duct bank near Bayly St that runs parallel to the ROW in this Section. Rogers owns one overhead cable and three buried conduit crossings in this Section. Telus Mobility owns one signal broadcast tower in this Section, near Portwine Dr.

7.9.10 Corridor & Bridges: Section LSE-6 – Pickering Station to Ajax Station

Table 7-37: Summary of Utilities within Section LSE-6

Utility		Description
Hydro	***Transmission***	Hydro One owns eight overhead 230kV crossings in Section LSE-6.
	Local Distribution	Veridian owns five overhead crossings of varying voltage and one buried 27.6kV crossing in Section LSE-6.
Pipelines		There are no records found of third party pipelines in Section LSE-6.
Watermains		Durham Region owns two 600mm-diameter buried watermain crossings in Section LSE-6.
Sanitary Sewers		Durham Region owns four buried sanitary sewer crossings ranging from 500mm to 3050mm in diameter in Section LSE-6.
Stormwater Sewers		City of Pickering owns one ditch culvert crossing of unknown size in Section LSE-6.
Gas Mains		Enbridge Gas owns one 300mm-diameter and one 150mm-diameter buried gas main crossing in Section LSE-6.
Communication Companies		Zayo owns one buried conduit that runs parallel to the ROW in Section LSE-6, near Sandy Beach Rd. Bell owns three buried conduit crossings in Section LSE-6. Bell also owns one buried cable near Church St S, one buried conduit near Westney Rd S, and one buried duct bank from Westney Rd S to Salem Rd S that all run parallel to the ROW in this Section. Rogers owns one overhead cable crossing in this Section. Telus owns two buried duct bank crossings in this Section.

7.9.11 Corridor & Bridges: Section LSE-7 – Ajax Station to Whitby Station

Table 7-38: Summary of Utilities within Section LSE-7

Utility		Description
Hydro	***Transmission***	There are no records found of third party hydro transmission lines in Section LSE-7.
	Local Distribution	Veridian owns four overhead crossings ranging from 13.8kV to 44kV in Section LSE-7. Whitby Hydro owns two overhead crossings ranging from 13.8kV to 44kV and one overhead line that runs parallel to the ROW in this Section.
Pipelines		There are no records found of third party pipelines in Section LSE-7.
Watermains		Durham Region owns three buried watermain crossings ranging from 600mm to 2400mm in diameter in Section LSE-7.
Sanitary Sewers		Durham Region owns four buried sanitary sewer crossings ranging from 300mm to 900mm in diameter in Section LSE-7.
Stormwater Sewers		Durham Region owns one buried stormwater sewer crossing of unknown size in Section LSE-7.
Gas Mains		Enbridge Gas owns three gas main crossings ranging from 150mm to 300mm in Section LSE-7. Enbridge Gas also owns one 150mm-diameter buried gas main that runs parallel to the ROW in this Section.

Utility	Description
Communication Companies	Bell owns eight buried conduit crossings and one buried conduit that runs parallel to the ROW in Section LSE-7. Rogers owns four overhead cable crossings in this Section.

7.9.12 Corridor & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

Table 7-39: Summary of Utilities within Section LSE-8

Utility		Description
Hydro	***Transmission***	Hydro One owns one overhead 230kV crossings in Section LSE-8.
	Local Distribution	Whitby Hydro owns three overhead crossings ranging from 13.8kV to 44kV in Section LSE-8. Whitby Hydro owns one overhead line of unknown voltage that runs parallel to the ROW in this Section. Whitby Hydro also owns one 44kV line on the Hopkins St overpass in this Section. Ontario Provincial Police owns one overhead electrical crossing of unknown voltage in this Section.
Pipelines		There are no records found of third party pipelines in Section LSE-8.
Watermains		Durham Region owns four buried watermain crossings in Section LSE-8, varying from 150mm to 1200mm in diameter.
Sanitary Sewers		Durham Region owns five buried sanitary sewer crossings ranging from 250mm to 2050mm in diameter in Section LSE-8.
Stormwater Sewers		Town of Whitby owns one 900mm ditch culvert and one 1050mm ditch culvert crossing in Section LSE-8.
Gas Mains		Enbridge Gas owns nine buried gas main crossings of varying size in Section LSE-8. Enbridge Gas also owns one 25mm gas main that runs parallel to the ROW in this Section, west of Thornton Rd S.
Communication Companies		Bell owns one overhead cable crossing near Brock St S, four buried cables, six buried conduits, and two buried duct bank crossings in Section LSE-8. Rogers owns one overhead cable near Brock St S and one buried conduit crossing near Victoria St E in this Section. Telus owns one buried duct bank crossing in this Section, near South Blair St. Telus Mobility owns one signal broadcast tower in this Section, East of Victoria St E.

7.10 EMI & EMF

7.10.1 Traction Power Facilities

Table 7-40 summarizes the ELF EMF measurements for the traction power facilities within the Lakeshore East Corridor, as well as the GPS coordinates where the measurements were taken. For those locations where the Resultant Flux Density magnitude was less than 1.0 mG, the designation of “Background Only” is shown.

Table 7-40: ELF EMF Measurement Results at Lakeshore East Traction Power Facilities

Facility Name	Latitude	Longitude	Resultant Flux Density Magnitude (mG)	Comments
Scarborough SWS	43.722445	-79.251863	Background Only	Measured from Metrolinx service area.
Scarborough TPS	43.731891	-79.262114	Background Only	Measured from parking lot near GO Station.
Scarborough TPS Tap Point	43.745318	-79.269927	4.8	Measured from parking lot near Jack Goodlad Park.
Durham SWS	43.836724	-79.07221	Background Only	Measured from parking lot near Busy Bee Tools.
ERMF TPS	43.863557	-78.908061	1.4	Measured from parking lot near Ultramar Bus Company.

7.10.2 Lakeshore East Corridor

7.10.2.1 EMI Sensitive Sites

Based on the baseline mapping for the Stouffville Corridor, no EMI sensitive sites were identified within Zone 3 or closer (i.e., less than 100 m from the closest track) or between 100 m and 250 m (the conservative evaluation zone) from the Lakeshore East Corridor.

7.10.2.2 ELF EMF Measurements

The tables in Section 4.2.7.2 to Section 4.2.7.10 in the EMI/EMF Baseline Conditions Report (**Appendix J1**) present the ELF EMF measurements at select points along the Lakeshore East Corridor. There were no high-ELF (> 10 mG) areas along this corridor, and so there are no locations where post-electrification measurement of ELF EMF is recommended.

7.11 Stormwater Management

Please refer to Section 1.5.11 for a description of the methodology followed for collection of stormwater management baseline conditions data. Baseline conditions for each TPF site within the Lakeshore East Rail Corridor has been summarized below. Additional details can be found in the Preliminary Stormwater Management Assessment Report contained in **Appendix K**.

7.11.1 East Rail Maintenance Facility Tap/TPS

The proposed ERMF Tap and TPs site is located between the West Corbett Creek tributary, to the east, and the Pringle Creek tributary, to the west. Under the existing condition, the proposed site is a tributary to the West Corbett Creek and is in a floodplain within the Central Lake Ontario Conservation Authority

(CLOCA) regulated area. The existing drainage pattern and drainage features for the ERMF Tap/TPS site are shown on **Figure 7-55**. The total TPF Assessment Area is approximately 6.6 ha.

The proposed Tap/TPS is a part of the Metrolinx East Rail Maintenance Facility larger site area of approximately 32.21 ha. Stantec Consulting Ltd. prepared a report titled "*East Rail Maintenance Facility Stormwater Management Design Report*", dated August 6, 2015, for the larger ERMF Site including the TPF Assessment Area. This report was reviewed and the relevant information is summarized below. Excerpts from this report are presented in **Appendix K** of the EPR.

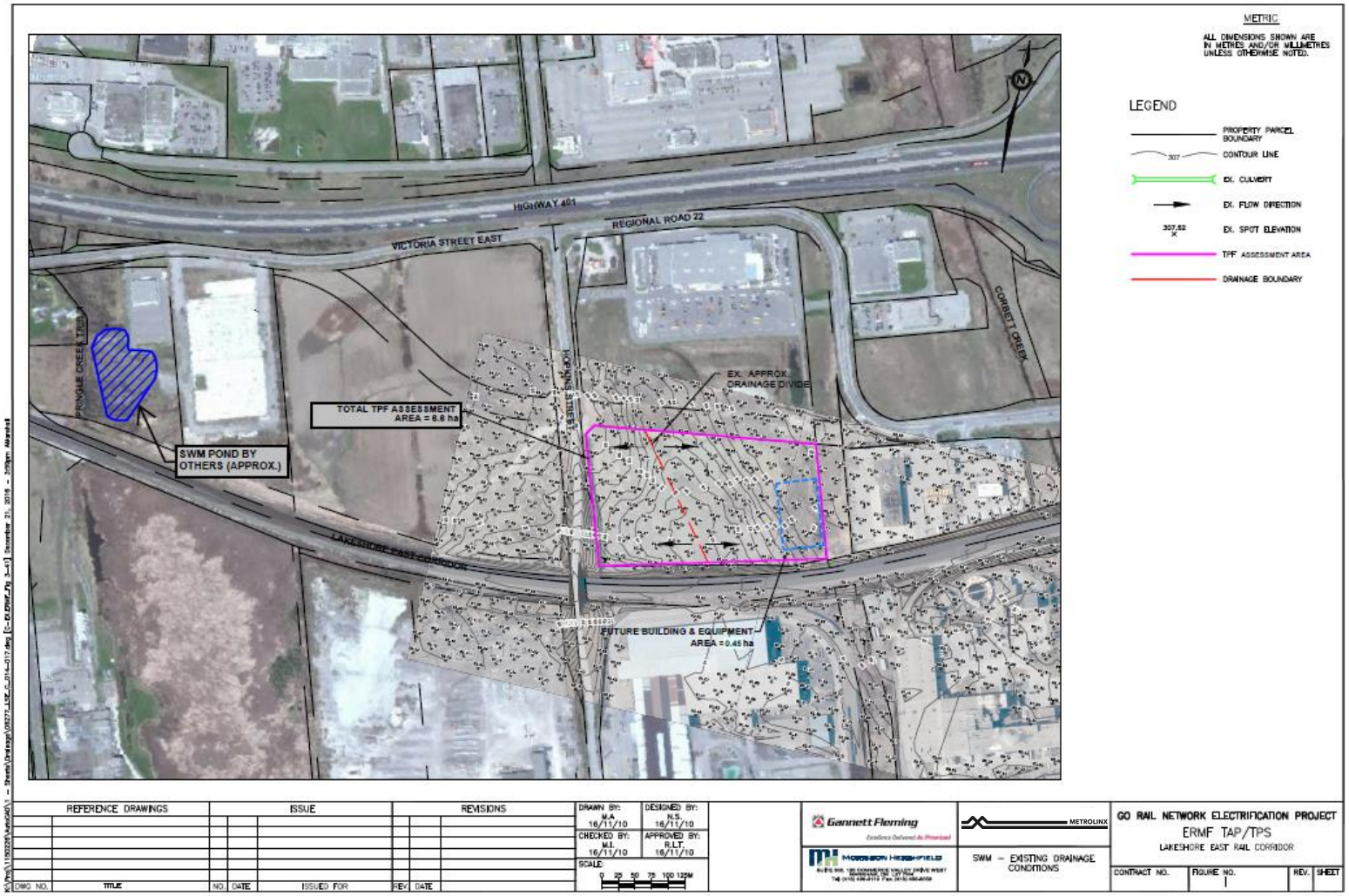
- The report provides a detailed Stormwater Management Plan for the site area including the design of a Wet Stormwater Management Pond, close to the west limit of the facility, for both peak shaving and the quality control. The pond discharges to Pringle Creek tributary.
- For the design of the pond, the drainage area from the TPF Assessment Area is considered fully impervious at a runoff coefficient of 0.9.
- The report has proposed measures to maintain water balance for all of the site area.
- Under existing condition, the TPF Assessment Area partially drains towards the east and partially towards the west. After construction of the larger ERMF is completed, the area draining in easterly direction from the TPF site will be directed towards a proposed headwall and a 1200 mm diameter storm sewer to the south near the rail corridor. The storm sewer is designed to covey the 100 year storm runoff, from the site, to the wet pond mentioned above.

Under existing conditions, the proposed Tap/TPF is a tributary to the West Corbett Creek, however, based on the Stantec report discussed above, after the construction of the larger ERMF Site, the Tap/TPF area will become a tributary to the Pringle Creek.

For the existing condition, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0% for the drainage area of 0.45 ha.

Based on the information extracted from the south half Ontario Soil Survey Report No. 23, the soil type for the TPF Assessment Area is generally Clay Loam (See **Appendix K**).

Figure 7-55: ERMF Tap/TPS Existing Drainage Conditions



7.11.2 Durham SWS

The proposed Durham SWS site is a tributary to the Krosno Creek and is located within the conservation area of TRCA but is outside the regulated area. The existing drainage pattern for the site is shown on **Figure 7-56**. The total TPF Assessment Area is approximately 7.71 ha and consists of existing commercial building and parking area, grassed playing fields and hydro corridor.

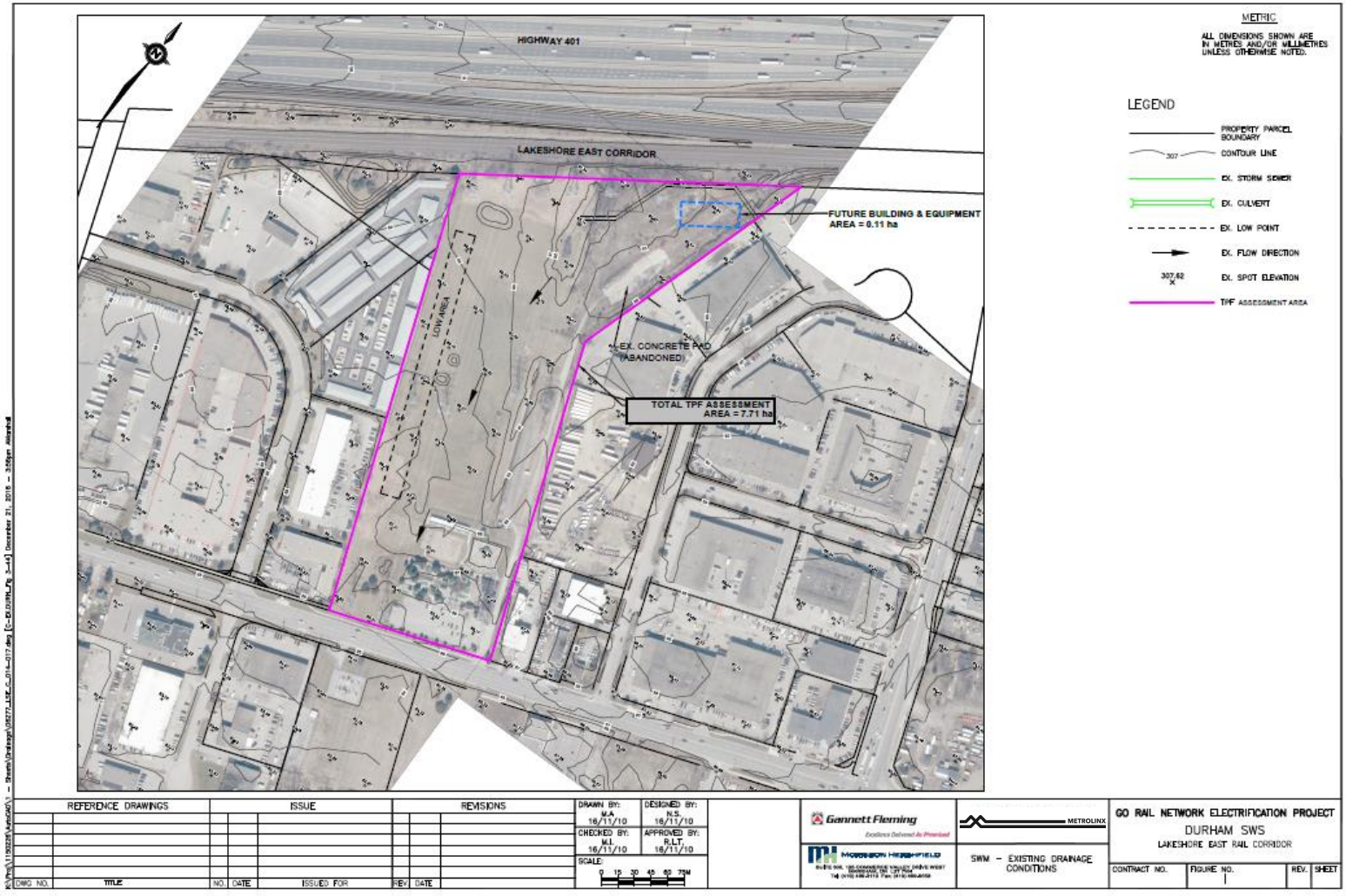
Under existing conditions, there is no defined drainage system for the site area. In general the ground elevations drop in the south and west direction. Stormwater runs overland toward Bayly Street to the south of the property parcel where minor flow discharges to the road catchbasins and major storm runoff runs on the road to the west direction. Based on the available information, both major and minor storm runoff ultimately discharge to Krosno Creek south of Bayly St, just east of Krosno Blvd.

For the existing condition, based on the type of the land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0% for the drainage area of 0.18 ha.

Based on the information extracted from the South half Ontario Soil Survey Report No. 23, the soil type for the Durham SWS site is generally Clay Loam (see **Appendix K)**. Detail geotechnical investigations will be done at detail design stage to precisely determine the soil type.

The stormwater drainage outlets for the site, mentioned above, are for both the minor and the major storm runoff. As the external flow contribution to existing systems and their capacities are not known at this stage, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at these locations. It will be further investigated at the detail design stage.

Figure 7-56: Durham SWS Existing Drainage Conditions



7.11.3 Scarborough SWS

The proposed Scarborough SWS site is a tributary to the Don River and is located within the conservation area of TRCA but is outside the regulated area. The existing drainage pattern for the site is shown on **Figure 7-57**. The total TPF Assessment Area is approximately 1.5 ha consisting of rail tracks and undeveloped area.

Under existing conditions, there is no defined drainage system for the site area. Storm water runs overland to the north and southwest direction. Near west end of the site, the runoff exists the site towards a westerly direction to discharge into the neighbouring property's existing drainage system.

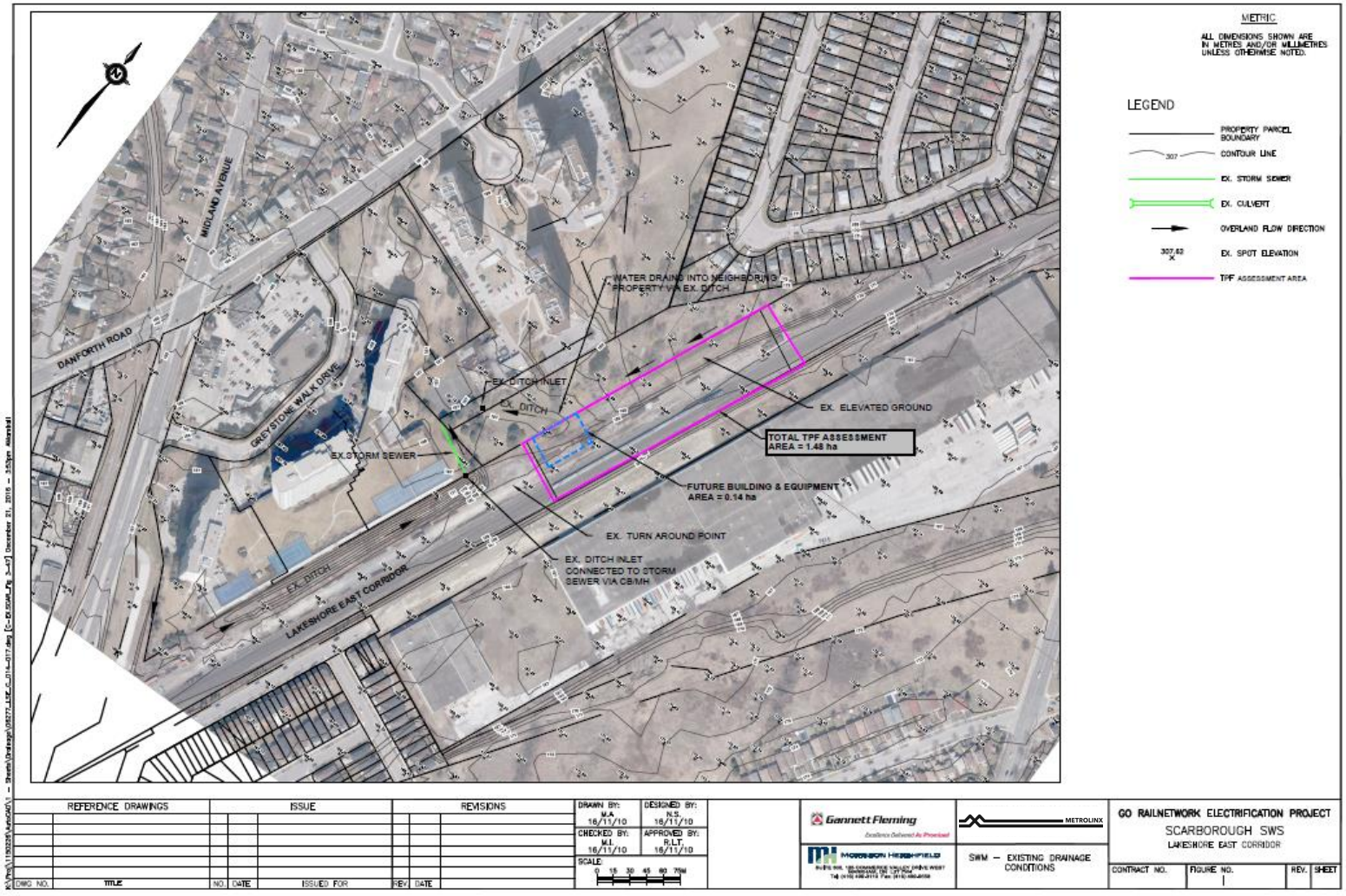
There is an existing ditch which flows from southwest towards the site area and ends just a few meters away from the site. At this location the runoff from the ditch discharges into an existing storm sewer system via a ditch inlet as identified on **Figure 7-57**. This location could be a potential discharge point for the proposed drainage.

For the existing condition, based on the type of the land use, the runoff coefficient, 'C' is estimated at 0.3 and the percent impervious at 0.3 or 14% for the drainage area of 1.5 ha.

Based on the information extracted from Ontario Geological Survey, Preliminary Map P.2204, by Ministry of Natural Resources, Ontario, the soil type for the Scarborough SWS is generally Clayey Silt Till (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. As the external flow contribution to the existing watercourse, ditches and culverts, and the capacities of the conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 7-57: Scarborough SWS Existing Drainage Conditions



7.11.4 Don Yard PS

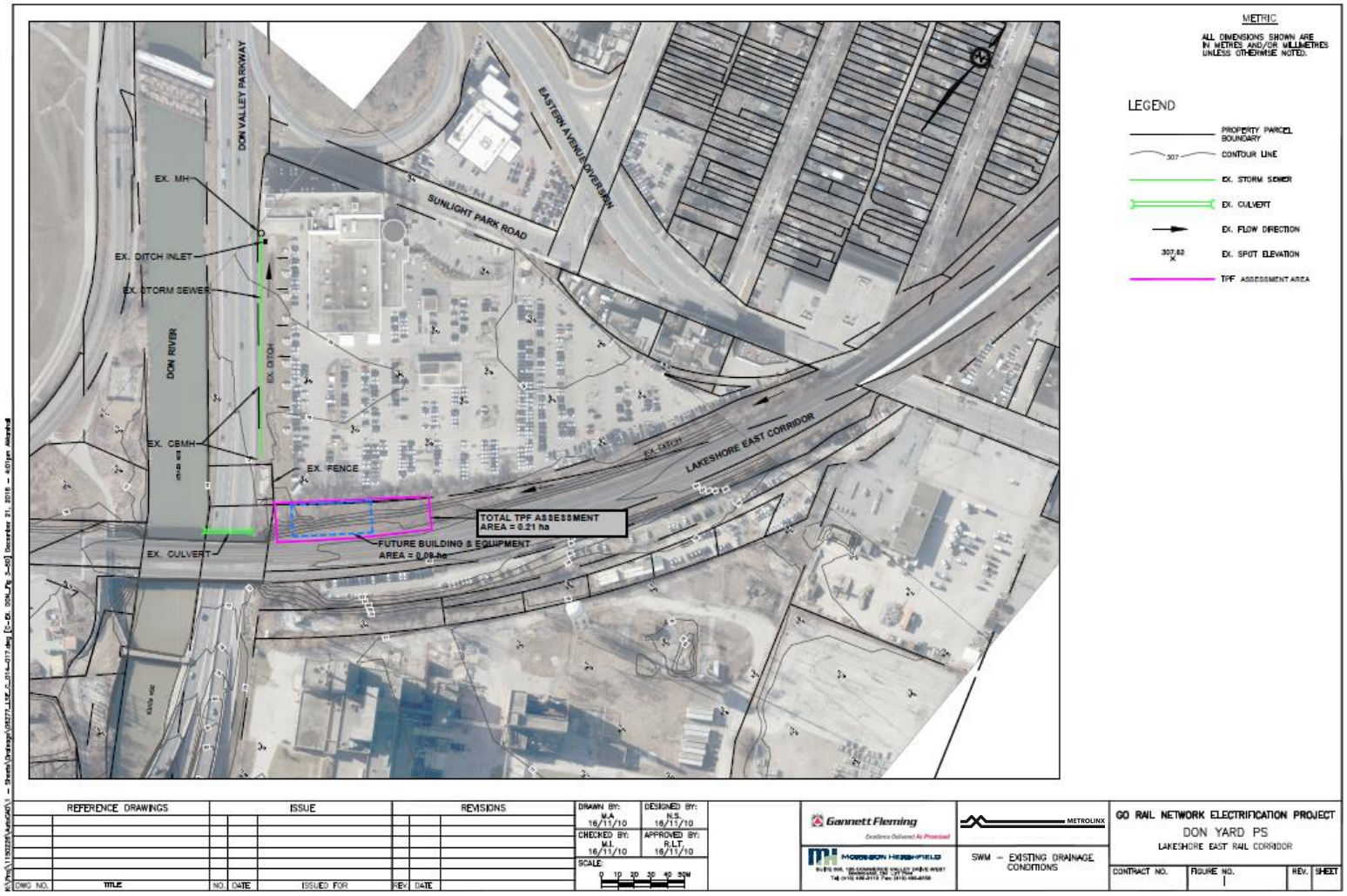
The proposed Don Yard PS site is a tributary to the Don River and is located within the TRCA regulated area. The existing drainage pattern for the Don Yard site is shown on **Figure 7-58**. The total TPF Assessment Area including future access road is approximately 0.31 ha of undeveloped land. The site area is situated is on a steep slope between rail corridor and the neighbouring property parking area. The rail corridor elevation is approximately 5 m higher than the toe of the slope. A ditch runs along the rail corridor at the toe of the slope and discharges to the Don River to the west via an existing culvert under the Highway. Construction of the Don Yard PS will cover part of the existing ditch and an alternate drainage route would be required to convey the runoff.

For the existing condition, based on the type of land use, the runoff coefficient, 'C' is estimated at 0.2 and the percent impervious at 0.2 or 0% for the drainage area of 0.31 ha.

Based on the information extracted from Ontario Geological Survey, Preliminary Map P.2204, by Ministry of Natural Resources, Ontario, the soil type for the Don Yard PS site is generally Sand, Silty Sand (see **Appendix K)**. Detailed geotechnical investigations will be done at detailed design stage to precisely determine the soil type.

The stormwater drainage outlets for the site mentioned above are for both the minor and the major storm runoff. As the external flow contribution to the existing watercourse, ditches and culverts, and the capacities of the conveyance systems are not known, it cannot be determined that these outlets are sufficient and adequate for the runoff from the site to discharge at the existing locations. This will be further investigated at the detailed design stage.

Figure 7-58: Don Yard PS Existing Drainage Conditions



7.12 Groundwater and Wells

Please refer to Section **1.5.12** for a description of the methodology followed for collection of Groundwater and Wells baseline conditions data. Baseline conditions within the Lakeshore East Rail Corridor has been summarized below. Additional details can be found in the Groundwater Impact Assessment Report contained in **Appendix V**.

7.12.1 East Rail Maintenance Facility Tap

There was one (1) domestic supply well identified within 500 m of the East Rail Maintenance Facility Tap. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, tributary of West Corbett Creek, located within 500 m of the Tap location.

7.12.2 East Rail Maintenance Facility TPS

There were six (6) domestic supply wells identified within 500 m of the East Rail Maintenance Facility traction power station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, a tributary of West Corbett Creek and the Whitby Harbour Wetland Complex, located within 500 m of the traction power station.

7.12.3 Scarborough SWS

There were no water supply wells identified within 500 m of the Scarborough switching station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There were no waterbodies identified in this segment.

7.12.4 Scarborough 25kV Feeder Route

There were no water supply wells identified within 500 m of the Scarborough 25kV feeder route. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There were no waterbodies identified in this segment.

7.12.5 Durham SWS

There was one (1) domestic supply well identified within 500 m of the Durham switching station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, Kronso Creek, located within 500 m of the switching station.

7.12.6 Don Yard PS

There were no water supply wells identified within 500 m of the Don Yard paralleling station. The surrounding area is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, Don River and Lake Ontario, located within 500m of the paralleling station.

7.12.7 OCS & Bridges: Section LSE-1 – Don Yard Layover to Danforth Station

There was one (1) domestic supply well and one (1) industrial/commercial supply well identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There are two (2) waterbodies, Don River and Lake Ontario, located within 500 m of the rail corridor in this section.

7.12.8 OCS & Bridges: Section LSE-2 – Danforth Station to Scarborough Station

There were no water supply wells identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There were no waterbodies identified within 500 m of the rail corridor in this section.

7.12.9 OCS & Bridges: Section LSE-3 – Scarborough Station to Guildwood Station

There was one (1) industrial/commercial supply well identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There is one (1) waterbody, West Highland Creek, located within 500 m of the rail corridor.

7.12.10 OCS & Bridges: Section LSE-4 – Guildwood Station to Rouge Hill Station

There was one (1) domestic supply well and one (1) industrial/commercial supply well identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There are three (3) waterbodies, Lake Ontario, Highland Creek and Highland Creek Wetland Complex, located within 500 m of the rail corridor.

7.12.11 OCS & Bridges: Section LSE-5 – Rouge Hill Station to Pickering Station

There were 15 domestic supply wells and two (2) supply wells of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells is likely negligible. There are seven (7) waterbodies, Lake Ontario, Rouge River Marshes Wetland Complex, Petticoat Creek, Amberlea Creek, Dunbarton Creek, Pine Creek and Frenchman's Bay Coastal Wetland Complex, located within 500 m of the rail corridor.

7.12.12 OCS & Bridges: Section LSE-6 – Pickering Station to Ajax Station

There were one (1) domestic supply well, four (4) commercial/industrial supply wells and one (1) supply well of unknown type identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There were four (4) waterbodies, Kronso Creek, Duffins Creek, Millers Creek, and Lower Duffins Creek Wetland Complex, located within 500 m of the rail corridor.

7.12.13 OCS & Bridges: Section LSE-7 – Ajax Station to Whitby Station

There were 25 domestic supply wells and five (5) supply wells of unknown type identified within 500 m of the rail corridor in this section. However, this section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There were five (5) waterbodies, tributary of Carruthers Creek, Carruthers Creek, Kinsale Creek, Carruthers Creek Wetland Complex and Lynde Creek Coastal Wetland Complex, located within 500 m of the rail corridor.

7.12.14 OCS & Bridges: Section LSE-8 – Whitby Station to Oshawa Station

There were four (4) domestic supply wells identified within 500 m of the rail corridor in this section. This section is characterized by an urban setting and the use of private water wells in this area is likely negligible. There were five (5) waterbodies, Pringle Creek, tributary of Corbett Creek, Corbett Creek, Whitby Harbour Wetland Complex and Corbett Creek Coastal Wetland Complex, located within 500 m of the rail corridor.